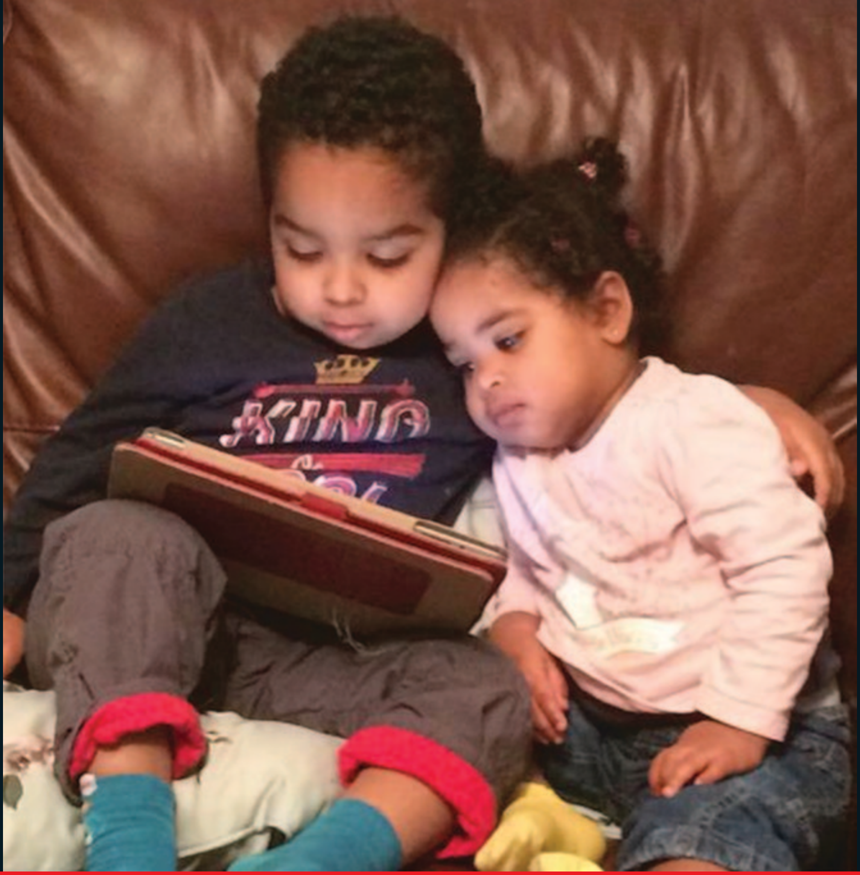

DIRECTIONS IN DEVELOPMENT
Human Development

Expanding Opportunities for the Next Generation

Early Childhood Development in the Middle East and North Africa

Safaa El-Kogali and Caroline Krafft

WORLD BANK GROUP

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Foreword

One of the most exciting developments in early childhood development (ECD) in the past 10 years has been the accumulation of evidence, from a number of disciplines, that investments in ECD significantly improve a child's health, learning ability, future earnings, and life expectancy. Rigorous impact evaluations from Africa, Asia, Latin America, and the United States show that children who receive cognitive stimulation, nutrition supplements, and pre-primary education in their first 60 months lead healthier lives, stay in school longer, and earn more than children of similar socioeconomic backgrounds who did not receive these interventions. Pathbreaking neurological research helps explain why: most of the brain's neural connections are formed in the first few years of life, and repeated interactions between children and their parents or caregivers reinforce these connections. Conversely, the absence of such interactions, or stresses caused by poor nutrition and neglect, can impair the development of the brain.

Despite this compelling evidence, the Middle East and North Africa (MENA) region's investment in early childhood development is among the lowest in the world. In 2011, gross enrollment in pre-primary education stood at 27 percent, half the world rate and below every other region except Sub-Saharan Africa. The shortfall is significant for at least two reasons. First, the region has invested heavily in the education of children aged 6 and above, with good results in terms of enrollment and completion rates. But learning outcomes have been disappointing. Indeed, one of the causes of the region's high unemployment rate is the mismatch between young people's cognitive and noncognitive skills and the demands of the workplace. Secondly, the region's resource-rich countries are trying to diversify their economies to be better prepared for the post-oil era. Since it is difficult to predict which industries will be profitable 20 or 30 years from now, the key is to have a population that is sufficiently skilled to take advantage of the opportunities available in the future. Investing in ECD, one of the more powerful ways of building the human capital of the next generation, is therefore part of the region's diversification strategy.

This meticulously researched book attempts to bridge the gap between the current state of ECD in MENA and its potential. It does so by first documenting the status of very young children, the investments in their development, and the factors that would determine that investment, across MENA countries and in comparison with other countries. This information alone can be a powerful way of spurring investment in ECD. For if parents see the value of investing in their children's early development, they may devote more of their own resources, and lobby for more public resources, towards these activities.

But the book goes further and conducts an individual analysis for 12 countries and territories that looks at their particular circumstances, extracts (for the first time, in some cases) the data on ECD efforts, and, critically, proposes a path forward to enhance the chances of improving the welfare of the next generation. That these programs and policies were discussed with governments and other stakeholders from the region augurs well for their adoption.

Economists are often skeptical when confronted with an investment with exceptionally high rates of return. ("If it is so lucrative, why hasn't it already been undertaken?" they might ask.) But in the case of ECD, the scientific evidence is relatively new. And policy makers in MENA have, especially recently, been occupied by other problems. Having read this book, I am convinced that putting resources into early childhood development is one of the best investments the people of MENA can make.

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Acknowledgments

Given the dearth of information on the status of early childhood development (ECD) in the Middle East and North Africa (MENA), a team from the Human Development Department of the MENA region of the World Bank developed a program for analytical and advisory work entitled Early Childhood Development for a Better Chance (ECD-4-ABC). The objective of the program was to contribute to building the evidence base for ECD in order to inform policy makers and development practitioners in designing policies and programs that can support the development of this important stage. The ECD-4-ABC program used the latest available national survey data to analyze the status of ECD in 12 MENA countries and territories (Algeria, Djibouti, the Arab Republic of Egypt, Iraq, Jordan, Lebanon, Libya, Morocco, the Syrian Arab Republic, Tunisia, West Bank and Gaza, and the Republic of Yemen). This book is a product of that work, presenting the status of ECD in the MENA region, with interregional and intraregional comparisons and case studies of the 12 countries and territories. This is the first time in the MENA region that national survey data has been used to conduct a comprehensive analysis of the status of ECD that not only covers health, nutrition, and education, but also examines the cognitive, emotional, and psychosocial development of children. Moreover, it investigates the background characteristics that influence ECD outcomes, the equality of opportunity in ECD, and the contribution of the background factors to the difference in opportunities for children.

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Caroline Krafft received her master's degree in public policy from the Humphrey School of Public Affairs and is now pursuing her PhD in applied economics at the University of Minnesota. Her research examines issues in development economics, primarily labor, education, health, and inequality in the Middle East and North Africa. She is currently engaging in research on the Egyptian labor market, the economics of marriage in North Africa, education in the Arab Republic of Egypt and Jordan, and early childhood development throughout the Middle East and North Africa region.

Abbreviations

ABC	A Better Chance
BCG	Bacillus Calmette-Guérin (Tuberculosis vaccine)
CCT	conditional cash transfer
DHS	Demographic and Health Survey
DPT	diphtheria, pertussis, tetanus
DRC	Democratic Republic of Congo
ECCE	early childhood care and education
ECD	early childhood development
ECD-4-ABC	Early Childhood Development for a Better Chance
ECERS-R	Early Childhood Environment Rating Scale—Revised Version
EDI	Early Development Instrument
EFA	Education for All
ERF	Economic Research Forum
ERfKE	Educational Reform for a Knowledge Economy
GDP	gross domestic product
GNI	gross national income
HDI	human development index
HiB	Haemophilus influenza type b
IQ	intelligence quotient
MDGs	Millennium Development Goals
MENA	Middle East and North Africa
MICS	Multiple Indicator Cluster Survey
MNSHE	Middle East and North Africa Human Development—Education
OECD	Organisation for Economic Co-operation and Development
PAPFAM	Pan Arab Project for Family Health
PROGRESA	Programa de Educacion, Salud y Alimentacion (Mexican government conditional cash transfer program)
SABER	Systems Approach for Better Education Results

SD	standard deviation
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund

CHAPTER 1

Introduction

Introduction

Early childhood[1] is the most important stage for human development. The success—or failure—of countries in promoting early childhood development (ECD) will shape not only the life course of young children, but also the trajectories of countries' development. School success and labor market outcomes are grounded in children's early development. The early years of a child's life are particularly formative because during this time the developing brain is extremely responsive to the physical, social, and emotional environment. The formation of synapses—the building blocks of the brain and nervous system—begins in utero and peaks within the first few years of life (Shonkoff and Phillips 2000). Early experiences can have a lasting impact on children's brain development and health. Development in early childhood is therefore a vital foundation for success during the school years and in adult life. When children suffer ill health or malnutrition, or experience inadequate early stimulation, they are at risk for diminished development. At least 200 million children under the age of five worldwide will survive childhood but still fail to develop to their full potential because of deficits during the early years (Walker et al. 2007). Repeated and prolonged adverse experiences, ranging from poverty to exposure to violence, that generate "toxic" levels of stress in early childhood are particularly likely to damage cognition, learning, behavior, and physical health (Shonkoff and Garner 2012).

Early childhood is also a time when there are some of the most effective interventions to promote human development. The most recent literature on ECD shows that while there are a wide array of biological and psychosocial factors that put children at risk for poor development—such as inadequate cognitive stimulation, stunting, iodine deficiency, or maternal depression (Walker et al. 2011)—there are also a wide variety of protective factors and effective strategies that can improve ECD (Engle et al. 2011; Walker et al. 2011). Early childhood interventions can have immediate health and behavioral effects, leading to improved physical and cognitive development in the near term, and long-term improvements in educational attainment and human development. For instance, children who do not receive enough of the nutrient iodine will have poorer brain development, resulting in substantially lower intelligence (Qian et al. 2005). However, iodine supplementation, often provided by iodizing salt, can prevent this loss of human potential. Early childhood education can also be an important early childhood intervention. One study found that 15-year-old students who had attended pre-primary education performed better on a reading assessment than those who did not. Even after accounting for socioeconomic differences among students, those who attended pre-primary had higher performance, a difference equivalent to almost one year of formal schooling (OECD 2011). In India, children who participated in ECD programs were more likely to be enrolled in school even up through age 18 (Hazarika and Viren 2013).

Early childhood care and education (ECCE) is not only beneficial for children's development but also for children's families, since ECCE can free up the time of siblings or parents to invest in other productive activities, such as schooling or work (Lokshin, Glinskaya, and Garcia 2000; Schlosser 2005). Promoting ECD can also be effective as a public works program, providing employment opportunities, particularly for young women. For example, a public works program in South Africa trained almost 20,000 unemployed youth (mostly females) to work in ECD sites in poor areas (Antonopoulos and Kim 2011).

Deficits early in life tend to be irreversible and to perpetuate cycles of poverty and inequality. Inequality begins in early childhood, and inequality in early childhood contributes to intergenerational cycles of poverty and social exclusion. Children from poorer households accumulate less human capital and therefore are more likely to be impoverished as adults. Differences in motor development related to household socioeconomic status have been detected as early as six months in the Arab Republic of Egypt (Kirksey et al. 1994). Associations between poverty and multiple areas of child development (including cognitive, physical, and socioemotional) were also recorded as early as 12 months in Brazil, 10 months in India, and 18 months in Bangladesh (Grantham-McGregor et al. 2007). In addition, among preschool-aged children, linguistic and cognitive delays can accumulate rapidly if not addressed. For example, in Ecuador, while differences in vocabulary among three-year-old children tended to be small, by age six, children in less wealthy or less educated households fell far behind children in wealthier or more educated households (Paxson and Schady 2007). ECD programs can help reduce these gaps; for instance, an ECD program in Indonesia reduced the achievement gap between rich and poor children (Jung and Hasan 2014). Expanding public pre-primary has been identified as the education policy with the largest impact on reducing earnings inequality (Checchi and van de Werfhorst 2014). ECD therefore plays an important role in social inclusion.

Investments in ECD have large economic benefits (Nores and Barnett 2010). Countries that invest in human capital have stronger economic growth (Sala-i-Martin, Doppelhofer, and Miller 2004). Investments in early childhood have the highest rates of return to human capital. Heckman (2006) has shown that the benefits of investing in preschool programs far outweigh investments in schooling and job training. Furthermore, program benefits for ECD more than exceed costs. A recent simulation showed the potential long-term economic effects of increasing preschool enrollment to 25 percent or 50 percent in developing countries have a benefit-cost ratio between 6.4 and 17.6 (Engle et al. 2011). The importance of early childhood to countries' development is demonstrated by the prominence of early childhood in the Millennium Development Goals (see box 1.1). Not only are the economic benefits high for investing in ECD, but insufficient investments at this critical stage incur high economic costs later in life in terms of reduced human capital. For example, investing in children's health early can prevent stunting, which damages human capital. Stunting leads to a loss in human resources that causes[2] a 20 percent decrease in adult income (Grantham-McGregor et al. 2007). Although most stunted children will remain stunted through adulthood (Grantham-McGregor et al. 2007), interventions that identify and target children whose growth is faltering can prevent stunting and the loss in human capital it

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Box 1.1 Early Childhood Development and the Millennium Development Goals

Focusing on early child development is one of the most effective approaches for achieving the Millennium Development Goals (MDGs). The MDGs are eight goals that address the world's main development challenges and include specific targets to be achieved by 2015. The actions and targets required to attain the MDGs were set forth in the Millennium Declaration of 2000. Of the eight MDGs, five of the goals address improving the health, nutrition, and education of children.

The five child-related goals are:

- To halve the proportion of people (disproportionately children) who suffer from hunger,
- To ensure that all boys and girls complete a full course of primary schooling,
- To eliminate gender disparities in primary and secondary education,
- To reduce the under-five mortality rate by two-thirds, and
- To reduce by three-fourths the maternal mortality rate.

Reducing the maternal mortality rate and under-five mortality requires a sustained focus on the health and welfare of mothers and the development of children before, during, and after birth. Prenatal care, skilled delivery care, and postnatal care are important components of reducing maternal and neonatal (first month) mortality. Health, nutrition, and child-rearing practices all contribute to children's early survival, and all can be improved with a sustained focus on ECD. In order to halve the proportion of people who suffer from hunger, ECD programs that identify and support children suffering from malnutrition will have to be expanded. Early childhood interventions are also an important part of achieving the second goal, a full course of primary schooling for all children. Programs and policies that support ECD can help ensure that children are ready for school and can succeed in school. Early interventions can also help ensure that boys and girls enter school on equal footing, helping to reduce gender disparities.

The MDGs cannot be achieved, and the world's main development challenges cannot be addressed, without a wide-ranging and sustained effort to support and enhance children's early development.

Sources: Save the Children 2012; World Bank 2011.

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causes (Naudeau et al. 2011). This loss of human resources is mediated through not just decreased physical and cognitive potential, but also other domains of development. Children who are stunted lack psychosocial competencies such as self-efficacy and self-esteem, which are linked to success in the labor market (Dercon and Sanchez 2011). ECD interventions also enhance equity, since they tend to have the largest impact on disadvantaged children (Heckman and Masterov 2007). Early childhood is therefore a time when economic efficiency and equity do not have to be traded off, but instead can be enhanced together.

The Middle East and North Africa (MENA)[3] stands out as a region that until now has not invested sufficiently in ECD. For instance, early childhood education in MENA is seriously lagging behind other regions. Gross enrollment in pre-primary education stands at 27 percent as of 2011. The only region with a lower level of enrollment is sub-Saharan Africa at 18 percent (World Bank 2014). The MENA region, as well as having low enrollment in pre-primary education, also has the lowest public provision of pre-primary, with only 29 percent of pre-primary enrollment in public programs and 71 percent of pre-primary enrollment in private preschools and nurseries (UNESCO 2014). MENA countries and territories also have the world's highest rates of violent child discipline (UNICEF 2013) and the region has the lowest coverage of iodine, an important nutrient for brain development (UNICEF 2012). These deficits in ECD in MENA are limiting the potential of a generation of children, and making the region less productive and competitive in the long run. Another important reason to study ECD in MENA is the serious shortage of data and research on ECD in the region. A recent meta-analysis of the high-quality evidence on ECD (Nores and Barnett 2010) included 56 different studies from 23 countries from all regions of the world except MENA; there were no studies from the MENA region. Without quality research on the state of ECD, and contextualized information on the impact, costs, and benefits of ECD investments, it is difficult for policy makers to prioritize ECD investments.

In light of the above, the objective of the analysis provided in this book is to offer evidence on the state of ECD in MENA in order to allow policy makers to implement better policies and programs, as well as to target programs to those with the greatest need. The information will also allow countries to benchmark their progress and to learn from the experiences of other countries and regions.

Measuring Early Childhood Development

Healthy ECD occurs across a variety of different dimensions. As well as developing in terms of physical health and nutrition, it is important that children experience healthy cognitive development, healthy emotional development, and the development of healthy social relationships (see box 1.2).

Health and Nutrition

Early death represents the ultimate loss of all a child's development potential, and the compounded effects of malnutrition and diseases. This book examines

Box 1.2 ECD Indicators Examined in MENA

Prenatal care
Trained attendant at delivery
Neonatal mortality (dying in the first month)
Infant mortality (dying in the first year)
Fully immunized
Stunting/Height-for-age
Iodized salt
Parental development activities
Early childhood care and education
Violent discipline
Child labor

both *neonatal mortality* (dying in the first month of life) and *infant mortality* (dying in the first year of life). Most early deaths are preventable. Globally, neonatal deaths are primarily due to preterm births, birth asphyxia, and infections (sepsis, pneumonia, tetanus, and diarrhea) (Lawn, Cousens, and Zupan 2005). Low birth weight can contribute indirectly to early deaths (Black et al. 2008). Increasing coverage of care during childbirth and the early postnatal period is vital to reducing neonatal mortality (Lawn, Cousens, and Zupan 2005). Addressing both early mortality and ECD begins during pregnancy. Children's development begins even before they are born; therefore *prenatal care* is an opportunity to prevent or detect and treat health issues, especially deficiencies in maternal nutrition and fetal growth that are connected to immediate outcomes such as birth weight, and to child mortality, childhood illness, and ultimately to lost development and productivity over a child's entire lifetime (Bhutta et al. 2008; Walker et al. 2011). *Delivery with a skilled attendant*[4] is also vital to reducing newborn mortality and morbidity. As well as aiding in a safe delivery, skilled attendants play an important role in identifying health issues and providing postnatal care (World Health Organization 2004). Prenatal care and delivery care are important components of achieving the Millennium Development Goals (MDGs) (see box 1.2). The *full immunization* of children plays an important role in reducing child mortality—diseases such as measles are a major cause of child mortality. Immunizations also prevent the illnesses that can hamper healthy physical growth (Molina 2012) and are extremely cost-effective (Fiedler and Chuko 2008).

Adequate nutrition throughout childhood plays a vital role in healthy physical and cognitive development. Nutrition has two important components. A child needs to receive enough "macro" nutrients—calories and protein—and enough "micro" nutrients—such as iron, Vitamin A, and iodine. Height measures accumulated calories and protein over a child's life, from his or her daily nutritional intake. This book compares children in MENA to a global "reference population" of healthy children, and calculates how far from the average of a healthy child of the same age and gender a child is. This is called a *height-for-age* "z-score," which is measured in standard deviations (SD) from the healthy reference population median. *Stunting*, that is, being more than two SD below the median height of a healthy reference child of the same age and gender, has been connected to decreased cognition, poorer school performance, decreased productivity later in life, and decreased income (Glewwe and Miguel 2008; Grantham-McGregor et al. 2007; Walker et al. 2011). Two other common measures are weight-for-age and weight-for-height, which are relative to the weight of a healthy child of the same sex and age (or height). Children whose weight-for-age falls more than 2 SD below the population reference median are considered to be clinically underweight. Children whose weight-for-height falls more than 2 SD below the population reference median are considered to be wasted. While height-for-age is the best indicator of accumulated (mal)nutrition, weight-for-age and weight-for-height can be helpful in identifying shorter-term episodes of malnutrition.

Children's physical and cognitive growth also depends on the quality of nutrients. Micronutrients are "tiny" nutrients that have big effects on ECD. Iron, vitamin A, and iodine are examples of micronutrients that can be naturally found in some foods but are often not found at the levels necessary for healthy development. These micronutrients can also be given as supplements or added to food. For instance, iodine is often added to salt to make iodized salt. Micronutrients in early childhood play an important role in increasing weight, motor development, cognitive development, and psychosocial development, with lasting effects (Walker et al. 2011). Micronutrient supplementation is also incredibly cost-effective, and has been identified as a top priority among all global development challenges (Lomborg 2009). To assess children's access to micronutrients, this book focuses on *salt iodization*, specifically whether or not the household a child lives in has adequately iodized salt. Iodine deficiency is the most common cause of mental retardation in the world (Molina 2012). Iodine-deficient individuals average 10-point-lower IQs than nondeficient individuals (Molina 2012).

Cognitive, Social, and Emotional Development

Children develop cognitively, socially, and emotionally by engaging in *development activities* with their families. Reading, playing, looking at picture books, singing songs, and other activities all help children grow and learn. Parenting quality, in terms of parents' responsiveness to their children and reading to their children, is related to cognitive test scores in young children (Paxson and Schady 2007). These activities also promote learning and school readiness (Tinajero and Loizillon 2012). Parents can learn about the connections between interaction and play and child development, and how to promote interaction and development in everyday activities. When parents acquire these new parenting skills, it improves their children's mental and physical development; larger impacts are observed on children who start with low mental and physical development

(Eickmann et al. 2003). Adult engagement in multiple activities that promote learning is an important support of cognitive development, and an important indicator of parenting practices and the social-emotional engagement of parents with their children. Attending *ECCE* improves cognition and socioemotional development, with benefits that can last a lifetime. In the near term, ECCE improves test scores, decreases grade repetition, and decreases school dropout. Over the long term, ECCE increases educational attainment and raises wages later in life (Krafft 2011; UNESCO 2006). ECCE is also one of the most cost-effective educational interventions; earlier interventions have a greater impact, at lower cost, than those later in life.

Disciplining children is an important part of child rearing. Although child discipline is important and necessary, violent discipline is not a necessary form of child discipline. *Violent child discipline* hampers children's development, learning, and school performance in the short term, ultimately reducing human capital and damaging children's socioemotional development (UNICEF 2010). Violent child discipline also violates the rights of children to protection from all forms of violence (UNICEF 2010).

There are competing perspectives on children working, and on what, exactly, constitutes child labor. Child labor is usually identified as that subset of child work that presents a threat to the health and development of children, usually due to the type of work, working conditions, or the time spent engaged in work (Edmonds 2008; Tafere, Abebe, and Assazinew 2009). Children who engage in work are less likely to attend school and are at risk for cycles of chronic poverty (Edmonds 2008; UNESCO 2006). One perspective on child work is therefore that it is generally harmful to children's education, health, and their physical, cognitive, and socioemotional development. However, another perspective is that child work that does not hamper children's health or development, and that does not prevent schooling, may in fact be an important and positive part of children's education and development into productive adults (Bourdillon et al. 2010; Tafere, Abebe, and Assazinew 2009). This book specifically examines child work at age five, including both work outside the home and business or chores in the home. At age five, doing work in a business or family enterprise, or engaging in household chores such as collecting firewood, cleaning, fetching water, or caring for other children, puts the health and development of young children at risk, and may hamper their ability to successfully transition into school. This book therefore terms all of these activities "child labor" and maintains the perspective that, while there may be exceptions, in general *child labor* at age five is a negative indicator that will harm ECD.

ECD is a cumulative process, with healthy or faltering growth in one dimension of outcomes interacting with other dimensions of growth. All the different elements of healthy development are interrelated. Due to data availability, the development indicators this book examines are a mix of "inputs" such as immunizations, and "outcomes" such as early death. Different indicators contribute to different important development outcomes. For instance, nutrition contributes to mortality, physical health and development, and children's early cognitive development. ECCE and development activities contribute to children's early social and emotional development, their cognitive development, and early learning. ECCE and development activities can interact and complement each other in promoting children's development. Development outcomes can also interact; children who suffer from poor physical health will be at a disadvantage in terms of their capacity for early learning and cognitive development. The different indicators and outcomes in early childhood interact and accumulate throughout the early lifecourse and the developmental experiences and outcomes children have in early childhood shape their subsequent learning, schooling, health, employment, social engagement, and in general, their life opportunities.

Risk and Protective Factors

A variety of background characteristics may put children at risk for poor ECD outcomes. Poor ECD outcomes may be related to gender, wealth, mother's and father's education, rural or urban residence, and region of residence. To understand the factors that put children at risk, this book examines how each of these individual characteristics is "associated" with the ECD indicators. This helps answer questions such as, how likely is a rural child to attend ECCE compared to an urban child? However, it may be the case that the rural/urban differences in ECCE attendance are actually because rural areas tend to be poorer, and if we looked at children from the same wealth level and compared rural and urban areas, children of the same wealth level would have the same attendance in rural and urban areas. Therefore, using multivariate regression (a statistical technique, see appendix A for details) can and does answer the question of the relationship between background characteristics and ECD after accounting for other characteristics. This method can show the difference in attending ECCE between urban and rural areas, after accounting for rural/urban differences in mother's and father's education, wealth, gender, and region of residence.

Unequal Opportunities

Children face unequal opportunities when differences in their ECD are driven by differences in their circumstances—over which they have no control. For instance, there are natural variations in the height of children. Walking down the street and seeing two different three-year-old boys who have different heights does not necessarily mean that those children faced unequal opportunities for healthy growth. However, when those children have different chances of being stunted due to factors beyond their control, such as because they were born in a rural area, or to an uneducated father, this is a case of unequal opportunities. Childhood also represents a time when unequal opportunities are clearly due to circumstances. While differences in outcomes for adults, such as wages, can be partly due to how hard adults worked, or how hard they studied in school, children cannot impact their own early development. What children experience while still in utero and in the early years is entirely outside their control. This book quantifies the unequal opportunities children face in several ways. First, the extent of inequality in each country and territory and for each indicator is measured using a dissimilarity index (see appendix A for details). Then the contributions of different circumstances to inequality—such as household wealth or gender—are calculated using a Shapley decomposition (see appendix A for details). Lastly, to measure disparities in children's chances for healthy development, we construct a profile for a "least advantaged" and "most advantaged" child for each country and territory and calculate how different children's outcomes are based on differences in just a few circumstances (see appendix A for details).

How this Book Examines Early Childhood Development

In order to assess the state of ECD in MENA, this book proceeds in three steps. First, we compute the average level of an ECD indicator for each of the countries and territories. Second, we observe the relationship of ECD indicators with a number of background characteristics of children such as gender, wealth, parent's education, and urban versus rural residence to identify factors associated with a risk of poor ECD outcomes and to test the significance of the relationship when the background factors are taken collectively into account (using multivariate regression models, see appendix A for details). Finally, we investigate the inequality of opportunity in ECD for each of the ECD indicators and the extent of inequality among children with different background characteristics.

The Data

The analyses presented in this book use a number of different nationally representative surveys. Statistics presented are based on World Bank calculations unless otherwise noted. The analyses are based on the latest available data covering ECD. See appendix A for details on the surveys used in each country and territory. While under normal circumstances, ECD indicators change relatively slowly, on the ground today, in light of a number of ongoing conflicts, political changes, and economic crises in the region, there may have been more rapid and substantial changes, providing both new challenges and new opportunities to improve ECD in MENA.

How the Book Is Organized

The first part of the book offers an introduction (chapter 1), an overview with a global and regional perspective of ECD (chapter 2) and some program and policy options to promote ECD in MENA (chapter 3). The second part examines ECD in each of twelve MENA countries and territories: Algeria, Djibouti, Egypt, Iraq, Jordan, Lebanon, Libya, Morocco, the Syrian Arab Republic, Tunisia, West Bank and Gaza, and the Republic of Yemen.

Notes

1. There are different definitions of early childhood. This book focuses on early childhood development from before children are born (in utero) through age five. Around age six is when children in most MENA countries and territories enter school, which substantially changes their needs and development, as well as opportunities for interventions.
2. The diminished human resources are due to decreased cognitive ability and productivity from stunting.
3. In this book, we specifically examine Algeria, Djibouti, the Arab Republic of Egypt, Iraq, Jordan, Lebanon, Libya, Morocco, the Syrian Arab Republic, Tunisia, West Bank and Gaza, and the Republic of Yemen.
4. A doctor, nurse, or midwife.

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CHAPTER 2

Global and Regional Perspectives of Early Childhood Development in the Middle East and North Africa

Introduction

An initial step toward understanding the status of early childhood development (ECD) in the Middle East and North Africa (MENA) is to examine how the MENA region fares compared to other regions in the world. Moreover, identifying the specific situation of individual countries and benchmarking their status provides greater insight into the progress made by different countries. This type of comparative analysis offers an occasion for the region as a whole and for the individual countries to identify deficits in ECD and can lead to opportunities for learning and exchange of experiences. This chapter provides an overview of the status of ECD in the MENA region (a) compared to other regions and (b) benchmarking the status of ECD in 12 MENA countries. As explained in chapter 1, ECD in MENA is measured in terms of health, nutrition, and cognitive, social, and emotional development of children using a number of indicators.

The health status of children is examined through indicators of early mortality, prenatal care, having a trained attendant at birth, and immunizations. Children's nutritional status is measured by stunting (height-for-age) as well as the availability of micronutrients, specifically iodine. To assess cognitive and social or emotional development, the analysis looks at the extent to which children are engaged in developmental learning activities, attendance in early childhood care and education, whether children are violently disciplined, and whether children are engaged in child labor at age five. These were the indicators selected to measure ECD in MENA (see box 2.1). The use of these indicators is predicated on the available data. Examining additional indicators could provide an even richer picture of ECD in MENA.

To better understand the context and conditions that influence ECD outcomes, the analysis also examines background factors that may be associated with ECD outcomes at the individual, household, and community levels, and their

Box 2.1 ECD Indicators Examined in MENA

Prenatal care
Trained attendant at delivery
Neonatal mortality (dying in the first month)
Infant mortality (dying in the first year)
Fully immunized
Stunting/Height-for-age
Salt iodization
Early childhood care and education
Parental development activities
Violent child discipline
Child labor

relationships. Finally, the analysis measures the gaps and extent of inequality in ECD outcomes across MENA countries. Children should have equal opportunities for healthy development during their early years, regardless of their circumstances. The analysis is based on the latest available data for each of the countries studied.[1] While under normal circumstances ECD indicators change relatively slowly, on the ground today, in light of the Arab Spring and conflicts in the region, there may be substantial changes in ECD. Children may face additional challenges, but there may also be new opportunities to promote ECD.

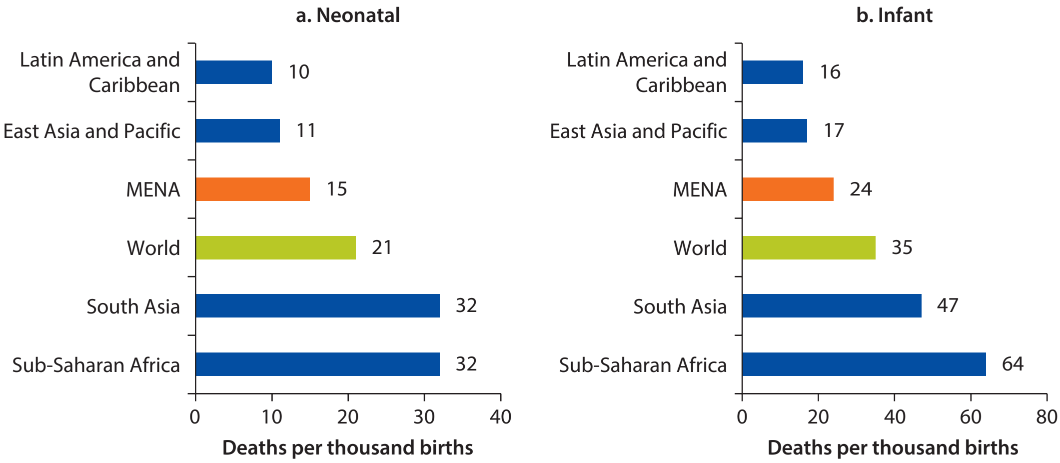
Early Childhood Development in MENA—A Global Setting

Survival, Health Care, and Nutrition

The first step in healthy ECD is simply surviving early childhood. In MENA, around one in every 40 children dies in the first year of life. Although there have been improvements over time, too many children still die of preventable causes. Numerous dimensions of a country's development and children's experiences shape early mortality. Many different inputs to children's early development can affect early mortality, including health and health services, nutrition, caregivers' child-rearing knowledge, birth timing and spacing, and access to clean water and sanitation (Naudeau et al. 2011).

Early death represents the ultimate loss of all a child's development potential and the compounded effects of malnutrition and diseases. MENA's infant mortality rate (dying in the first year of life) of 24 deaths per thousand births is lower than the world average of 35 deaths per thousand births (figure 2.1); however, it is higher than in East Asia and the Pacific (17 deaths per thousand births) and Latin American and the Caribbean (16 deaths per thousand births)—regions with income levels similar to MENA. Most of infant mortality is composed of neonatal mortality (dying in the first month of life). MENA has fewer deaths in the first month of life (a lower neonatal mortality rate) than the world average,

Figure 2.1 Infant and Neonatal Mortality Rates (Deaths per Thousand Births)—Regional Comparison, 2012



Source: UNICEF 2014.
Note: MENA = Middle East and North Africa.

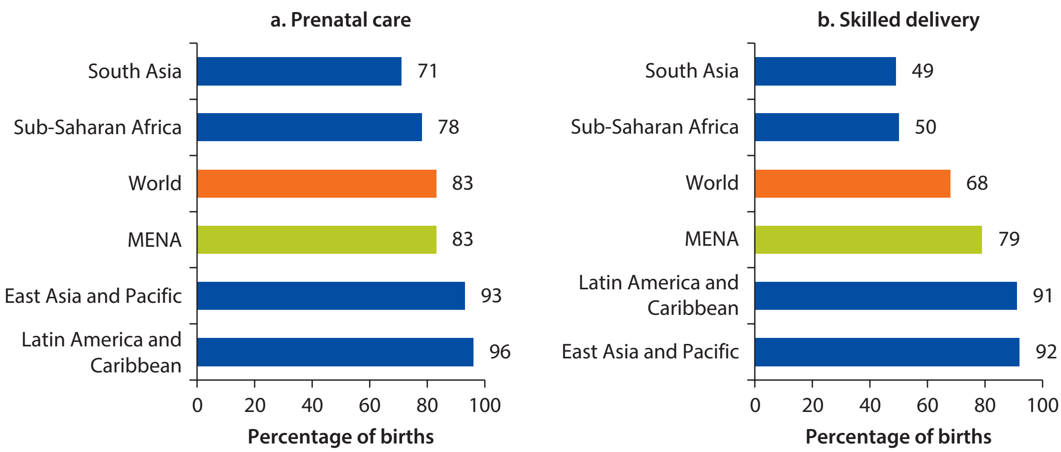
but its rate of 15 deaths per thousand births means that 1 in every 67 children dies in the first month of life (figure 2.1).

Addressing both early mortality and ECD begins during pregnancy. In MENA, 83 percent of births receive prenatal care. While this is the same as the world average, it is substantially lower than regions with similar income levels, such as East Asia and the Pacific and Latin America and the Caribbean, where over 90 percent of births receive prenatal care. MENA has only a 5-percentage-point higher rate of prenatal care than Sub-Saharan Africa. Delivery with a skilled attendant is also an important component of reducing newborn mortality and illness. At 79 percent, the rate of deliveries handled by a skilled attendant in MENA is substantially higher than the world average of 68 percent (figure 2.2), but below Latin America and the Caribbean and East Asia and the Pacific.

The full immunization of children plays an important role in reducing child mortality—diseases such as measles are a major cause of child mortality. MENA is approaching high immunization coverage, with 89 percent of children fully immunized against diphtheria, pertussis, and tetanus (DPT) (UNICEF 2014). Immunizations also prevent the illnesses that can hamper healthy physical growth (Molina 2012). While there are a variety of other important immunization needs, at least in terms of DPT, MENA is doing better than the world average (84 percent), and is close to other high-performing developing regions, such as Latin America and the Caribbean (93 percent) and East Asia and the Pacific (92 percent).

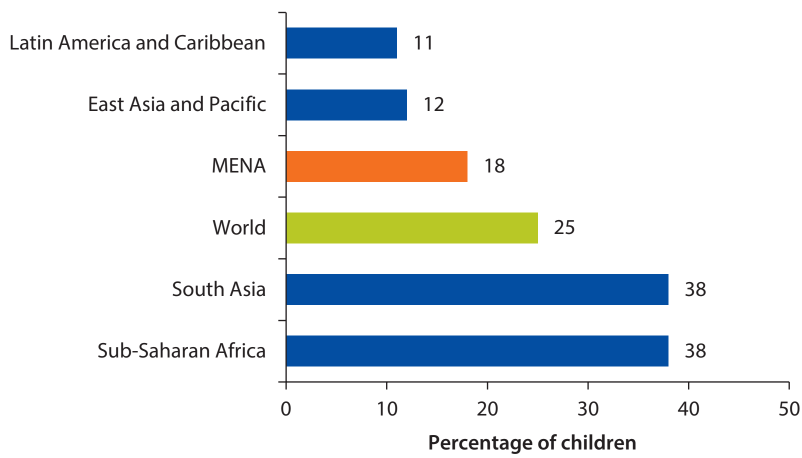
Malnutrition, which impairs the growth of almost a fifth of children, is a major challenge for MENA. Stunting—being more than two standard deviations below the height of a healthy reference child of the same age and gender—has been connected to decreased cognition, poorer school performance, decreased productivity later in life, and decreased income (Glewwe and Miguel 2008;

Figure 2.2 Prenatal Care and Delivery with a Skilled Attendant—Regional Comparison, 2008–12



Source: UNICEF 2014.
Note: MENA = Middle East and North Africa.

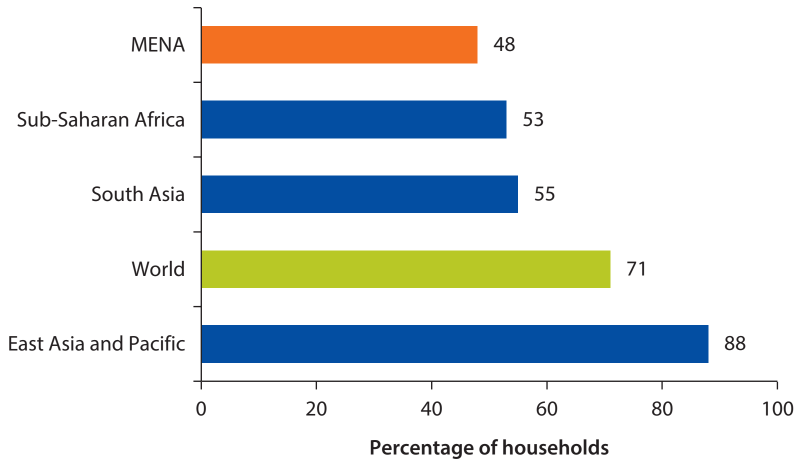
Figure 2.3 Children Stunted, Ages 0–59 Months—Regional Comparison, 2008–12



Source: UNICEF 2014.
Note: MENA = Middle East and North Africa.

Grantham-McGregor et al. 2007; Walker et al. 2011). Almost a fifth (18 percent) of children in MENA are stunted. As a result of being stunted, children in MENA will accumulate less health and human capital and face lower wages later in life. This is one-fifth of the future workforce that will be less productive in their working years, because of almost entirely preventable malnutrition. While MENA's rate of stunting is lower than the world average, as well as South Asia or Sub-Saharan Africa, it is higher than that of Latin America and the Caribbean, where 11 percent of children are stunted, and East Asia and Pacific, where 12 percent of children are stunted (figure 2.3).

Figure 2.4 Households with Adequately Iodized Salt—Regional Comparison, 2006–10



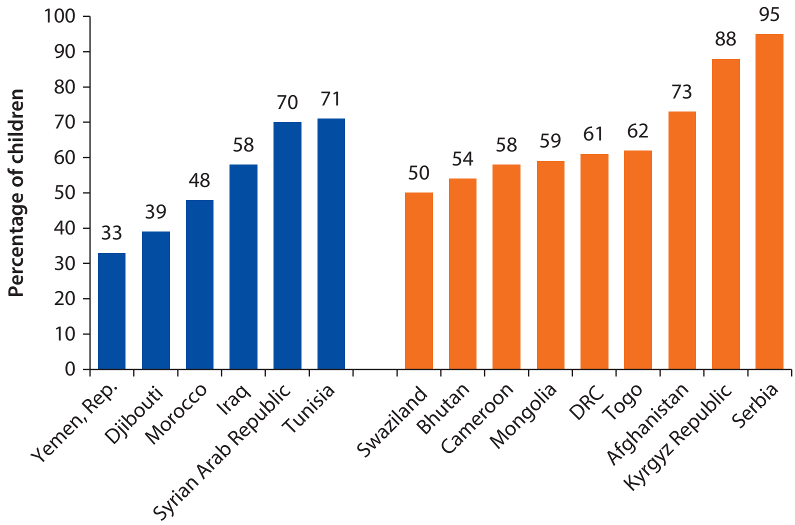
Source: UNICEF 2012.
Note: MENA = Middle East and North Africa. The period 2006–10 is the last period with comparable data for MENA.

MENA has the fewest households with adequately iodized salt[2] of any region, putting children at great risk for impaired cognitive development. Micronutrients such as iron, vitamin A, zinc, and iodine, play an important role in both physical and cognitive development. Iodine-deficient individuals average 10-point-lower IQs than non-deficient individuals (Molina 2012). Iodized salt is the primary means for delivering iodine to children. At a rate of 48 percent of households with adequately iodized salt, MENA is lower than Sub-Saharan Africa (53 percent) and South Asia (55 percent), and falls well below the world average of 71 percent of households having adequately iodized salt (figure 2.4).

Social, Emotional, and Cognitive Development

Although it has been proven that play and interaction are important components of ECD, children in MENA are missing out on important opportunities to develop socially and emotionally, and are at a substantial disadvantage compared to other regions. Parents' engagement in activities that promote learning is an important support of cognitive development, and an important indicator of parenting practices and the social-emotional engagement of parents with their children. Figure 2.5 shows the percentage of children ages 36–59 months engaged in at least four of six different activities that support child development,[3] comparing a number of MENA countries with a random subsample of other countries. As the figure shows, the performance of MENA countries is generally lower than the other countries in terms of supporting early development. Only 33 percent of children in the Republic of Yemen, 39 percent of children in Djibouti, and 48 percent of children in Morocco are engaged in development activities—below the lowest of the random sample of other countries, Swaziland, where 50 percent of children are engaged in development activities. While Iraq, the Syrian Arab

Figure 2.5 Children Aged 36–59 Months Experiencing at Least Four of Six Development Activities, Selected Countries



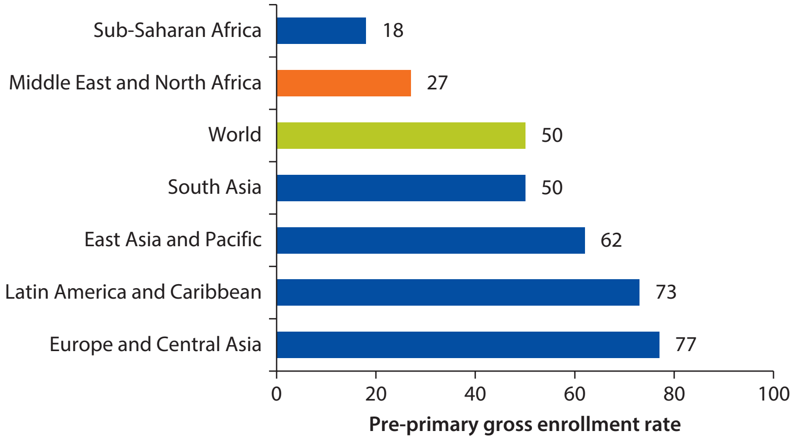
Source: UNICEF (2013), except Djibouti (Ministry of Health [Djibouti], Institute of Statistics and Demographic Studies, and League of Arab States 2012), Iraq (The Central Statistics Organization and the Kurdistan Regional Statistics Office 2012), and Tunisia (Ministry of Development and International Cooperation, National Institute of Statistics, and UNICEF 2013).
Note: DRC = Democratic Republic of the Congo. Djibouti is for 24–59 months.

Republic (pre-conflict), and Tunisia do better, their rates are still low. In the random subsample of other countries, Afghanistan, Kyrgyzstan, and Serbia do better than any of the MENA countries with data. Looking at all the MENA countries with data, Tunisia performs the best but still ranks 24th out of 49 countries in terms of development activities. Iraq is 31st, Morocco 40th, Djibouti 44th, and Yemen 47th out of the 49 countries.

Early childhood education and early learning play an important role in school success. However, the MENA region is substantially underinvesting in this important stage of education. Despite evidence that early childhood care and education (ECCE) improves cognition and socioemotional development and endows lifetime benefits, pre-primary gross enrollment in MENA is almost half that of the world average. MENA's rate of pre-primary enrollment is lower than all other regions except Sub-Saharan Africa and is about one-third the rate of Europe and Central Asia and Latin America and the Caribbean (figure 2.6).

Another challenge that risks hindering the healthy development of children is violent discipline. Violent child discipline[4] is widespread in MENA, negatively impacting children's physical, psychological, and social development. Comparing MENA countries with available data and countries in other regions shows that MENA countries have the highest percentage of children aged 2–14 years who are violently disciplined.[5] Yemen and the West Bank and Gaza have the highest rates of violent discipline (out of 50 countries), with 95 percent of children violently disciplined. Tunisia, Iraq, Algeria, Syria (pre-conflict), Morocco, and the Arab

Figure 2.6 Gross Enrollment Rates in Pre-Primary—Regional Comparison, 2011



Source: World Development Indicators.

Republic of Egypt all have high rates of violent discipline, between 79 and 93 percent. Tunisia has the 5th highest rate of violent discipline, Egypt the 8th highest, Morocco the 11th highest, Syria (pre-conflict) the 14th highest, Algeria the 17th highest, and Iraq the 26th highest. Only Djibouti has a lower rate, around 38 percent and ranks 49th in violent child discipline among the 50 countries.

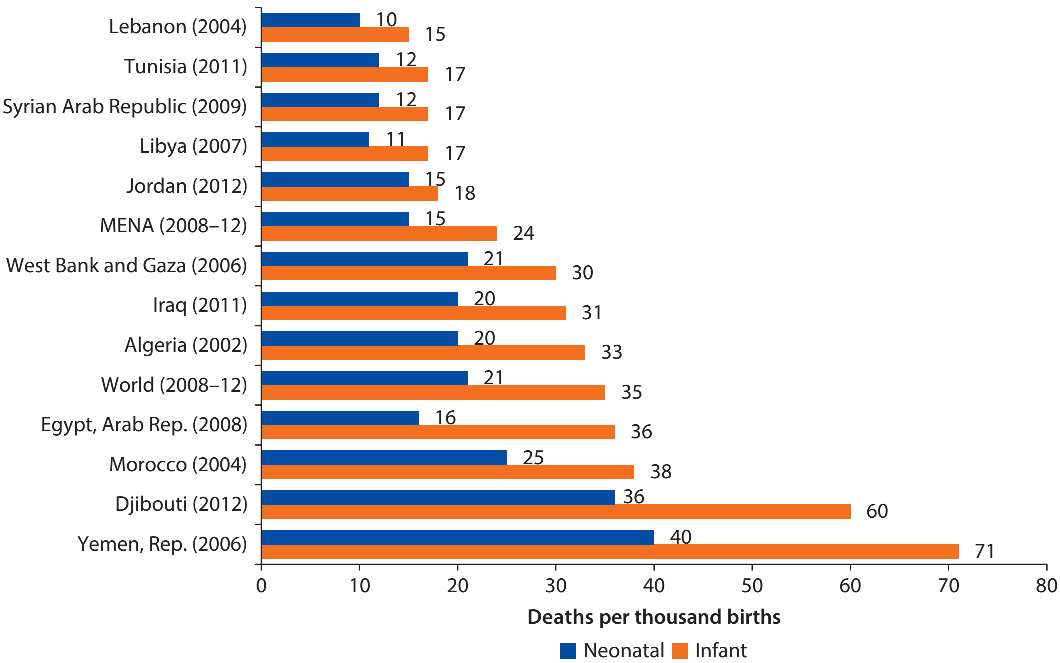
Early Childhood Development in MENA—Comparing Countries in MENA

Survival, Health Care, and Nutrition

There is wide variation in the status of ECD among countries in MENA. Infant mortality rates vary, with the highest rates in Yemen and lowest in Lebanon (figure 2.7). Djibouti and Yemen have infant mortality rates that are much higher than world average and closer to Sub-Saharan Africa. One in 15 children dies in the first year of life in these countries. In Yemen, one in every 25 children dies in the first month of life. Morocco, Egypt, Algeria, Tunisia, and the West Bank and Gaza all had higher neonatal and infant mortality rates, as of their last survey, than the 2010 regional average. Egypt is notable for the unusually large gap between neonatal and infant mortality. Compared to other countries with similar infant mortality rates, Egypt has a much lower neonatal mortality rate. Children are less likely to die in the first month of life, but more likely to die in the remainder of the first year of life, suggesting Egypt is facing different early health challenges than other countries. Lebanon, Jordan, Libya, and Syria (pre-conflict) all had lower rates than the regional averages, although the recent conflicts in Libya and especially Syria are likely to have altered this situation.

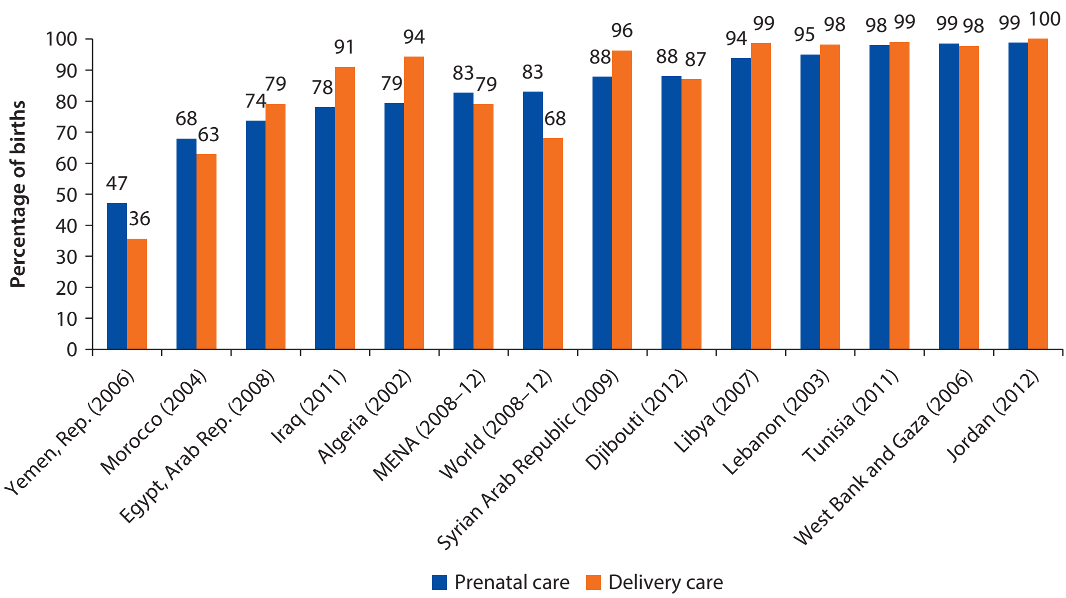
Most MENA countries do well in terms of use of prenatal care and in having skilled attendants at birth. However, several countries have substantial gaps in coverage, putting mothers and children at great risk (figure 2.8). A number of

Figure 2.7 Neonatal and Infant Mortality by Country or Territory Deaths per Thousand Births—Most Recent Survey



Source: World Bank calculations based on household surveys (see annex 2B, table 2B.1). World and MENA averages from UNICEF (2014).
Note: MENA = Middle East and North Africa.

Figure 2.8 Prenatal and Delivery Care in MENA by Country or Territory—Most Recent Survey

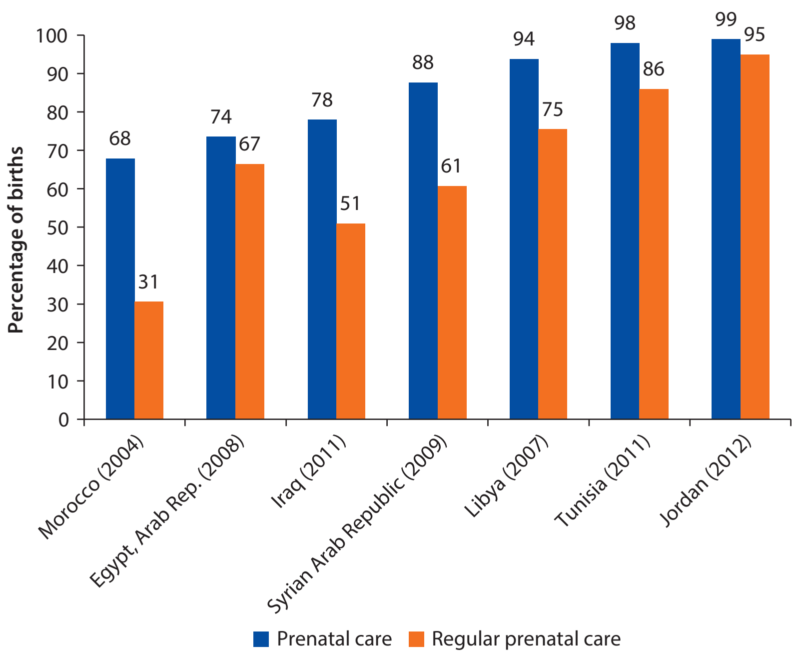


Source: World Bank calculations based on household surveys (see annex 2B, table 2B.1). World and MENA averages from UNICEF (2014).
Note: MENA = Middle East and North Africa.

MENA countries are approaching universal prenatal and delivery care, including Tunisia, Djibouti, Libya, Lebanon, West Bank and Gaza, and Jordan. In Syria (pre-conflict), Iraq, and Algeria there are moderate shortfalls, with prenatal care coverage that is lower than the percentage of births with skilled delivery attendants. In Egypt and Morocco, between a third and a fifth of births are occurring without prenatal care or without skilled delivery attendants. Yemen has very low rates, with only 47 percent of births receiving prenatal care and 36 percent of births attended by a skilled professional.

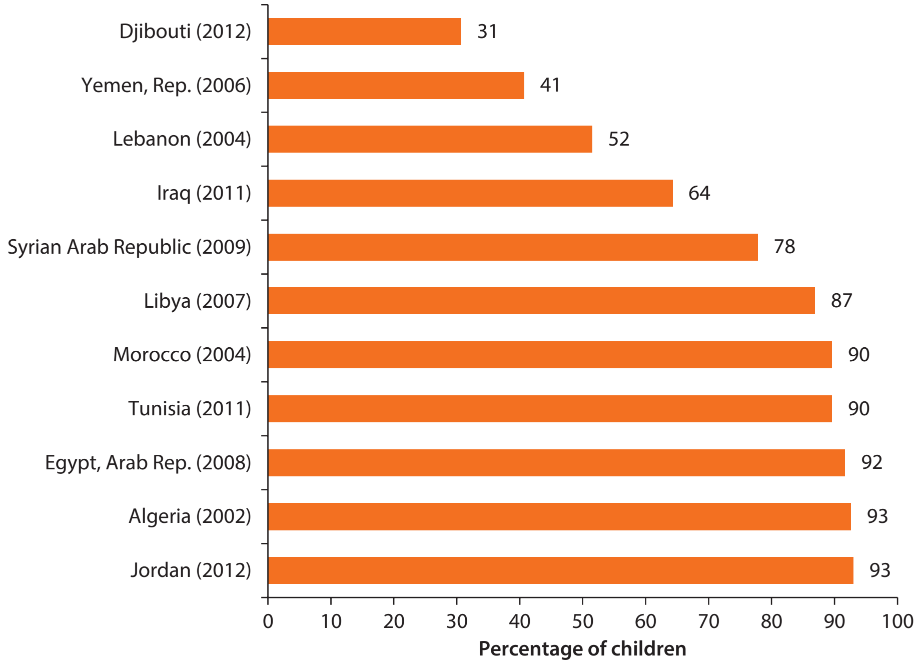
Access to regular prenatal care needs to increase in most MENA countries. While MENA does well in terms of births receiving at least one visit of prenatal care, there are large gaps in the amount of regular prenatal care (at least four visits) received by mothers (figure 2.9). Among countries with data, Jordan performs best, with 99 percent of births receiving prenatal care and 95 percent receiving regular prenatal care. Tunisia also does well, with 98 percent of births receiving prenatal care and 86 percent regular prenatal care. Libya and Syria (pre-conflict) have moderate gaps between prenatal care and regular prenatal care, while in Egypt, almost all of those who receive prenatal care (74 percent of births) do so regularly (67 percent). In Morocco, while 68 percent of births receive prenatal care, only 31 percent of all births do so regularly, and in Iraq, while 78 percent of births receive prenatal care, only 51 percent do so regularly. It is important to address these gaps, but different outreach is likely to be required to address the different types of gaps.

Figure 2.9 Prenatal Care and Regular Prenatal Care by Country—Most Recent Survey



Source: World Bank calculations based on household surveys (see annex 2B, table 2B.1).

Figure 2.10 Children Aged 12–23 Months Fully Immunized, by Country—Most Recent Survey

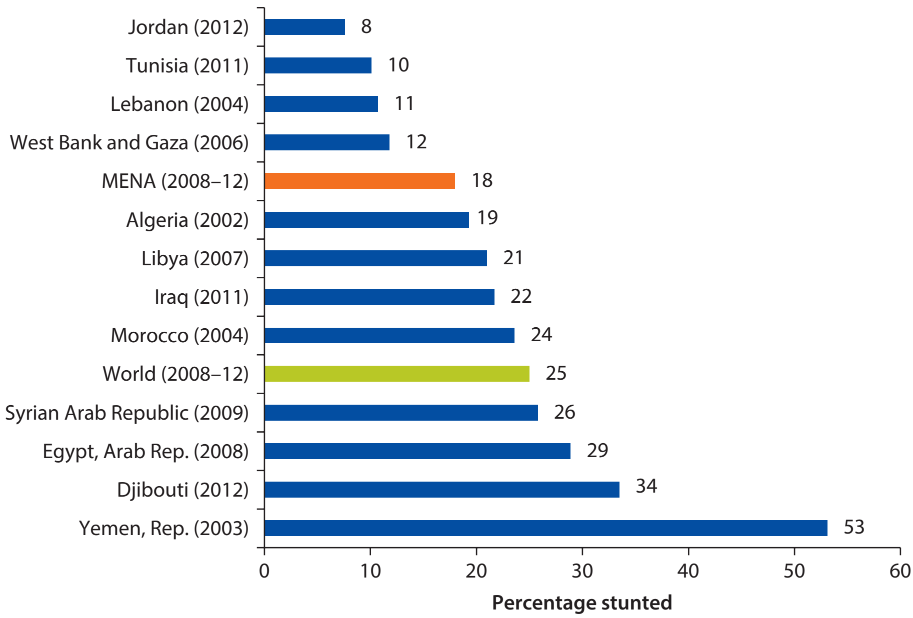


Source: World Bank calculations based on household surveys (see annex 2B, table 2B.1).
Note: Lebanon lacked information on the Bacillus Calmette-Guérin (BCG) vaccine, so full immunization was calculated for the other vaccines for Lebanon. Algeria lacked information on the measles vaccine and the second and third polio doses, so full immunization was calculated for the other vaccines for Algeria. Tunisia is 18–29 months of age.

A number of MENA countries are approaching an adequate level of immunizations, while others have not achieved the necessary level of immunization coverage to protect children against preventable illnesses and deaths (figure 2.10). Children are considered fully immunized if they have received immunizations for all six major preventable childhood diseases: tuberculosis, diphtheria, whooping cough, tetanus,[6] polio,[7] and measles. They should be fully immunized by 12 months of age.[8] A number of MENA countries have achieved the level of immunizations that will confer herd immunity,[9] including Morocco, Tunisia, Egypt, Jordan, and Algeria. Libya, with 87 percent of children fully immunized, is quite close to adequate coverage. In Syria (pre-conflict) as of 2009, only 78 percent of children were fully immunized, and immunization rates are likely to have fallen as a result of the recent conflict. Yemen, Djibouti, Iraq, and Lebanon have very low rates of full immunization, ranging from 31–64 percent.

Receiving a full course of multidose vaccines is one of the greatest challenges in countries with lower immunization rates. Comparing the deficits in immunizations in Yemen, Djibouti, and Iraq shows that countries face somewhat different challenges in terms of immunization coverage; for instance, Iraq does much better on polio coverage than on DPT. Djibouti does better at Bacillus Calmette-Guérin vaccine coverage than Yemen, but Yemen does better than Djibouti on measles coverage. Children also tend to not complete a full course of multidose

Figure 2.11 Children Aged 0–59 Months Stunted, by Country or Territory—Most Recent Survey



Source: World Bank calculations based on household surveys (see annex 2B, table 2B.1). World and MENA averages from UNICEF (2014).
Note: MENA = Middle East and North Africa.

immunizations; in Djibouti, while around 70 percent of children receive the first polio dose, only around 40 percent receive the third dose. Increasing the rates of immunization coverage will require targeting all these different types of gaps, which are often country-specific.

Stunting is pervasive in all of the MENA countries. Figure 2.11 shows the percentage of children ages 0–59 months who are stunted in MENA countries. Although Jordan, Tunisia, Lebanon, and the West Bank and Gaza have rates that are relatively low, that 8–12 percent of children are stunted represents substantial harm to hundreds of thousands of children in terms of development and human capital accumulation. In a number of countries (Algeria, Libya, Morocco, Iraq, and Syria [pre-conflict]), a fifth to a quarter of children are stunted, meaning children have between a 1 in 5 to 1 in 4 chance of diminished physical and cognitive health and lower wages later in life. Egypt has more stunting than the world average, with 29 percent of children stunted. Djibouti is similar, with a third (34 percent) of children stunted. Yemen in particular has a very serious problem with nutrition and stunting, with more than 53 percent of children stunted; more than half the children in Yemen are falling short of their full development potential.

MENA countries have continually struggled to reduce stunting. Djibouti has had increases in stunting, from 28 percent in 1989 to 34 percent in 2012, and stunting in Yemen has remained above 50 percent since 1992 (World Development Indicators). Although Egypt was making progress in decreasing stunting through the early 2000s, rates have since increased substantially. Stunting has risen and fallen in Algeria, Syria (pre-conflict), and West Bank and Gaza and remained essentially constant in Iraq, Lebanon, and Libya. Only Tunisia, Jordan, and Morocco have made some overall progress in decreasing stunting, with some fluctuations.

Children's chances of having access to adequately iodized salt, which aids in healthy brain development, vary dramatically within MENA, from 0–97 percent.[10] Djibouti has the lowest rate—less than 1 percent—and Morocco, Iraq, Yemen, and Syria (pre-conflict) all have very low rates—between 20 and 30 percent. Libya (53 percent) and Algeria (61 percent) do better than the MENA average but are below the world average. Egypt, West Bank and Gaza, Jordan, and Lebanon all do fairly well—between 77 and 88 percent—but still have room for improvement. Only Tunisia has nearly universal coverage (97 percent). The gaps in iodized salt access need to be rapidly addressed to ensure that children in MENA develop their full cognitive potential; iodizing salt is one of the most cost-effective development interventions in the world.

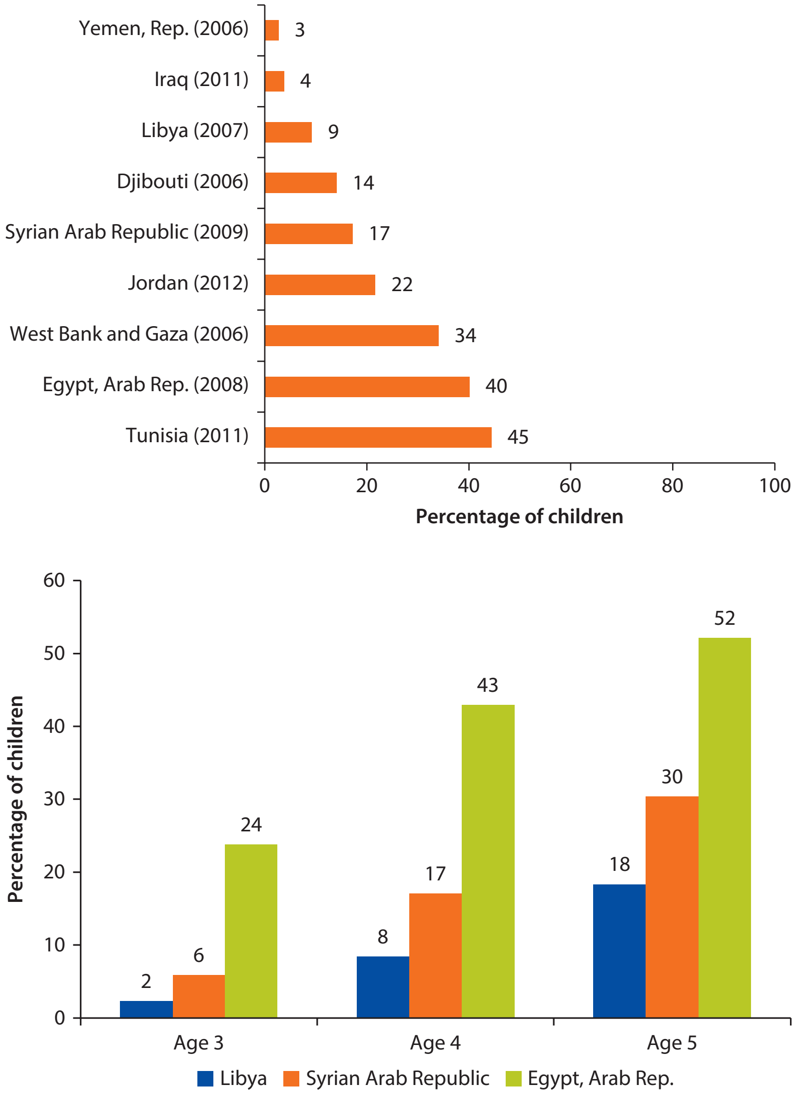
Social, Emotional, and Cognitive Development

Children in MENA are missing out on important opportunities to develop cognitively, socially, and emotionally and to prepare for school. Just a third of children ages zero to four years in Djibouti (37 percent) and a quarter in Yemen (26 percent) experience activities that support their cognitive and educational development, and only half of children in Iraq (54 percent), West Bank and Gaza (47 percent), and Syria (pre-conflict) (55 percent) experience development activities. Jordan (82 percent) and Tunisia (71 percent) do better, but still show substantial deficits. While all activities are important to social and emotional development, reading and naming, counting, and drawing have an important educational and cognitive component. As activities, singing songs, being taken outside, and playing, are particularly common. However, reading books, telling stories, and naming/counting/drawing are far less common. While families are often engaged socially and emotionally with their children, there is room for improvement in the cognitive development of children, especially in terms of reading, naming, counting, and drawing.

While rates vary, in every country surveyed, less than half of children participate in early childhood care and education. Figure 2.12 shows the percentage of children in ECCE in different MENA countries. Rates are particularly low in Iraq and Yemen, where only 3–4 percent of children attend ECCE. Libya, Djibouti, and Syria (pre-conflict) also have low rates (9–14 percent). In Jordan around a fifth (22 percent) of children attend ECCE. While West Bank and Gaza (34 percent), Egypt (40 percent), and Tunisia (44 percent) do relatively well for MENA, in these countries and territories more than half the children are missing out on this important development opportunity.

Although attendance tends to be higher among five-year-olds, many children never attend ECCE. Figure 2.12 also shows the percentage of children at ages three, four, and five who attend ECCE in Libya, Syria (pre-conflict), and Egypt. Few three-year-olds in Syria (pre-conflict) and Libya attend ECCE, while

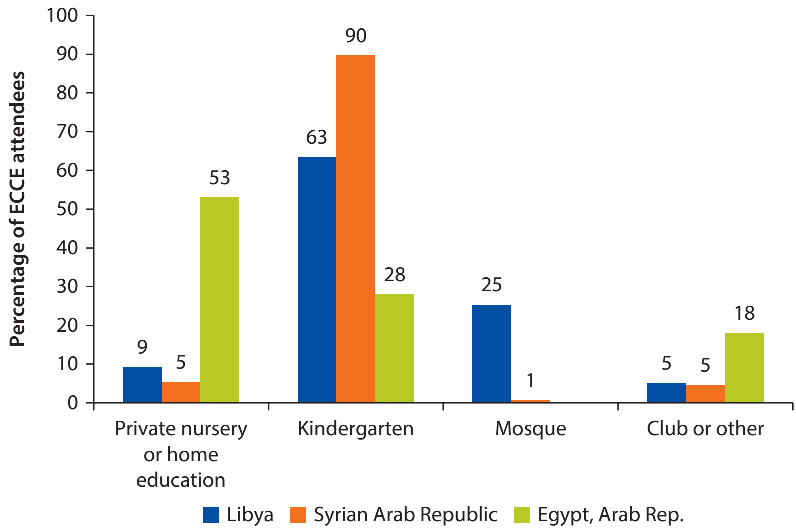
Figure 2.12 Percentage of Children in ECCE, by Country or Territory and by Age
Age is for selected countries



Source: World Bank calculations based on household surveys (see annex 2B, table 2B.1).
Note: Ages 3–4 in Tunisia, Jordan, West Bank and Gaza, Iraq, Djibouti, and Yemen. Ages 3–5 in Egypt, Syria (pre-conflict), and Libya. All are current ECCE attendance, except for Egypt, which is ever attendance.

in Egypt 24 percent of three-year-olds have attended ECCE. Rates are still relatively low for four-year-olds in Libya and Syria (pre-conflict). Only at age five are a fifth (18 percent) of children in Libya and a third (30 percent) of children in Syria (pre-conflict) attending ECCE. Half of children in Egypt have attended ECCE by age five. Even when accounting for lower rates of attendance among younger children, most children are missing out on this important opportunity for early development and school readiness.

Figure 2.13 ECCE Types by Country, Children Attending ECCE, Ages 3–5



Source: World Bank calculations based on household surveys (see annex 2B, table 2B.1).
Note: Syria (pre-conflict) and Libya are current early childhood care and education (ECCE) attendance. Egypt is ever attendance. Mosque was not a response option in Egypt.

Different countries have different ECCE systems. Figure 2.13 shows the different types of ECCE attended in Libya, Syria (pre-conflict), and Egypt. Kindergartens provide 90 percent of ECCE in Syria (pre-conflict), 63 percent in Libya, and 28 percent in Egypt. Mosques are an important ECCE provider in Libya (25 percent). Kindergartens in Egypt are a mix of public and private programs; private nurseries (53 percent of ECCE) are actually the most common form of ECCE. These different types of ECCE are likely to have varying quality and offer differing support for early development.

Even among very young children—ages two to five—violent discipline is common practice in MENA. In Djibouti, 36 percent of children ages two to five are violently disciplined, and this is the lowest rate in the region. In Syria (pre-conflict) the rate is 85 percent, and in Iraq 77 percent. Yemen and Tunisia have rates of 93 percent, and West Bank and Gaza is the highest, with 96 percent of children ages two to five violently disciplined.

Moreover, at age five a substantial proportion of children in MENA are engaged in some type of child labor—that is, working for someone not a member of the household, doing household chores, or doing other family work. Work and chores at such an early age are likely to endanger children's development and may reduce their chances of successfully transitioning into school. There is variation among countries in MENA in the proportion of five-year-olds who are engaged in child labor: 24 percent in Tunisia, 19 percent in Djibouti, 16 percent in Yemen, 12 percent in Syria (pre-conflict), 10 percent in Iraq, and 7 percent in Libya.

Factors That Influence Early Childhood Development in MENA

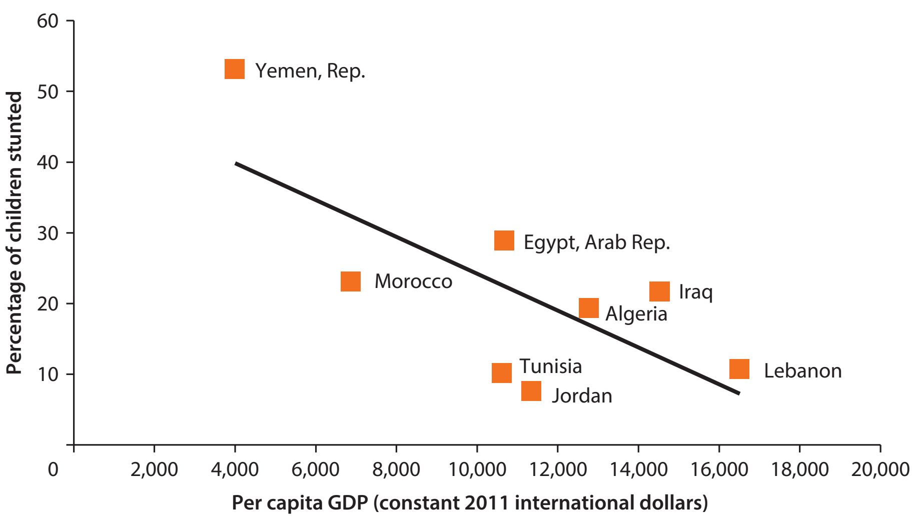
Country Development and ECD

Countries' success in promoting ECD depends to some extent on their overall level of development. However, the differences in ECD across countries with similar levels of development also demonstrate that countries which commit to addressing ECD can make substantial progress regardless of their GDP or other development indicators. As figure 2.14 shows, places with quite similar levels of income, such as Egypt and Tunisia, have widely varying stunting rates, ranging from 29 percent in Egypt to 10 percent in Tunisia. In fact, Lebanon's stunting rate (11 percent) is quite close to that of Tunisia, which has substantially lower per capita GDP than Lebanon.

Stunting is linked with other indicators of human development. Figure 2.15 shows how stunting and the Human Development Index (HDI) are linked in each country. The HDI incorporates measures of income, education, and life expectancy. Countries with low HDI have high stunting, and stunting generally decreases with higher HDI. Although there is a clear link between overall human development and stunting, some countries' rates of stunting do not follow this pattern. For instance, Egypt, Libya, and Yemen have high stunting rates relative to their HDI, while Jordan and West Bank and Gaza have lower stunting than would be expected given their HDI.

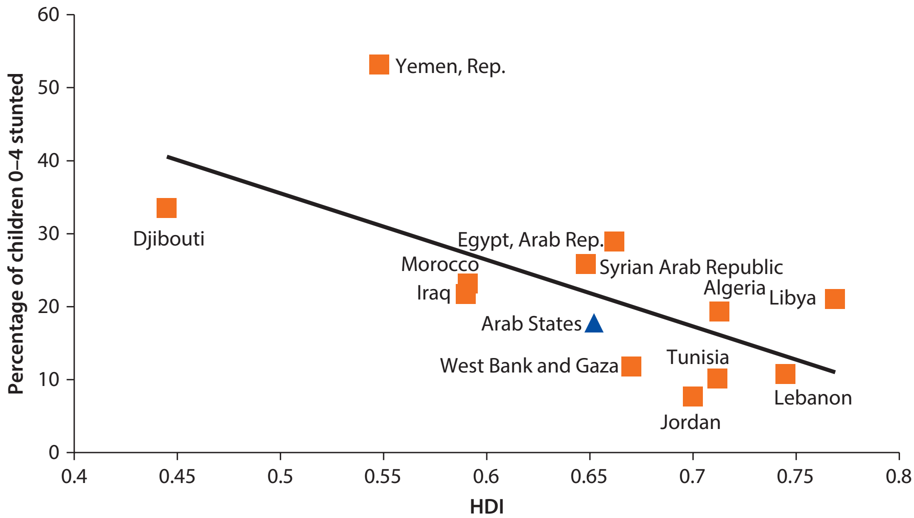
Countries with similar primary enrollments often have very different pre-primary enrollments. Figure 2.16 shows the pre-primary gross enrollment and primary gross enrollment rates for different MENA countries. Countries with comparable and high primary gross enrollment rates have very different pre-primary enrollment rates. For instance, Iraq has a 104 percent gross enrollment rate in primary, but only a 6 percent rate for pre-primary. Lebanon, with the

Figure 2.14 Children Aged 0–4 Stunted and per Capita GDP, by Country



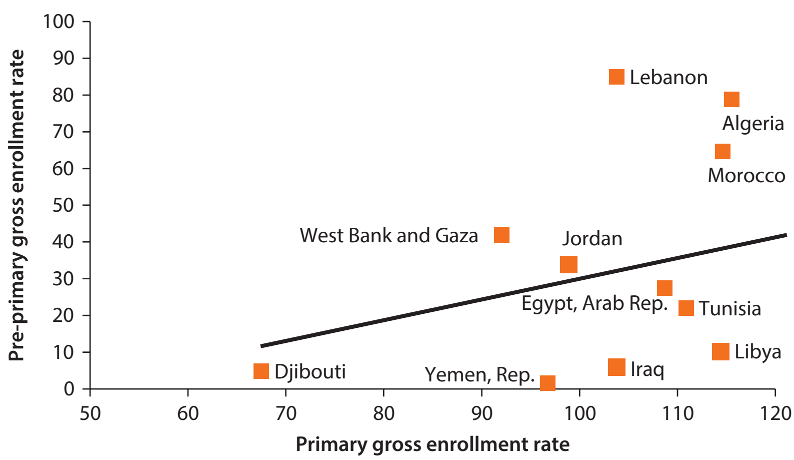
Source: World Bank calculations (stunting) and World Bank (2014) (GDP).

Figure 2.15 Children Aged 0–4 Stunted and the Human Development Index (HDI), by Country or Territory



Source: World Bank calculations (stunting) and UNDP (2014) (HDI).

Figure 2.16 Pre-Primary versus Primary Gross Enrollment Rates, by Country or Territory



Source: World Development Indicators (2014 data).
Note: Iraq data are from 2004; Libya, 2006; Tunisia, 2003 (last available year with both indicators).

same 104 percent gross enrollment rate in primary, has an 85 percent rate for pre-primary. Pre-primary enrollments vary widely even in countries with otherwise similar basic education capacity. MENA countries' commitments to basic education are not necessarily translating into investments in pre-primary. While other development indicators such as education, per capita GDP, and HDI are linked to countries' progress in ECD, it is also clear that countries can make substantial strides in ECD at all levels of economic development.

Children's Background and ECD

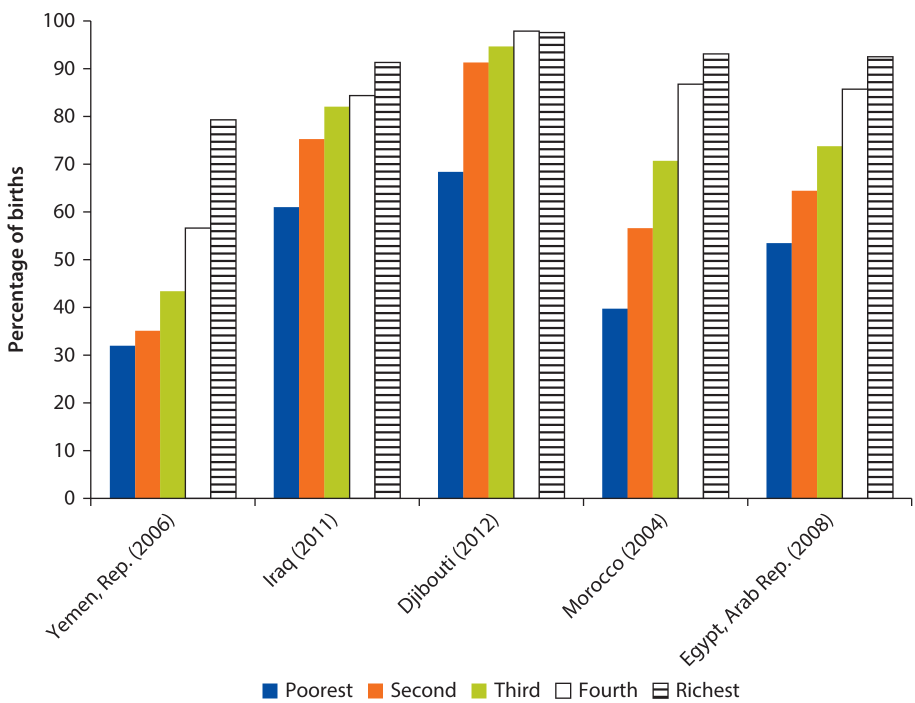
A number of background characteristics at the child, family, and community levels affect ECD outcomes: gender, parents' education, household socioeconomic status (wealth),[11] geographic location (region or governorate), and residence (urban/rural). Understanding these relationships can help identify why some children have poor ECD outcomes and which children to target with policy or programmatic interventions.

Although wealth, education, and geographic differences are all found to influence ECD in MENA, there are no substantive or systematic differences in ECD based on gender. Violent discipline is a pervasive problem in MENA, regardless of children's background, and child labor, which is a substantial problem in MENA, is not systematically related to children's background. All other dimensions of early development tend to be shaped by children's backgrounds.

Household Wealth and ECD

Access to prenatal care is closely related to the wealth of the household. In every country included in the analysis, children born to poorer households are less likely to receive prenatal care than children born to richer households. However, the extent of differences based on wealth varies substantially by country. Households were divided into wealth quintiles to observe the relationship

Figure 2.17 Prenatal Care by Wealth Level and Country, Selected MENA Countries

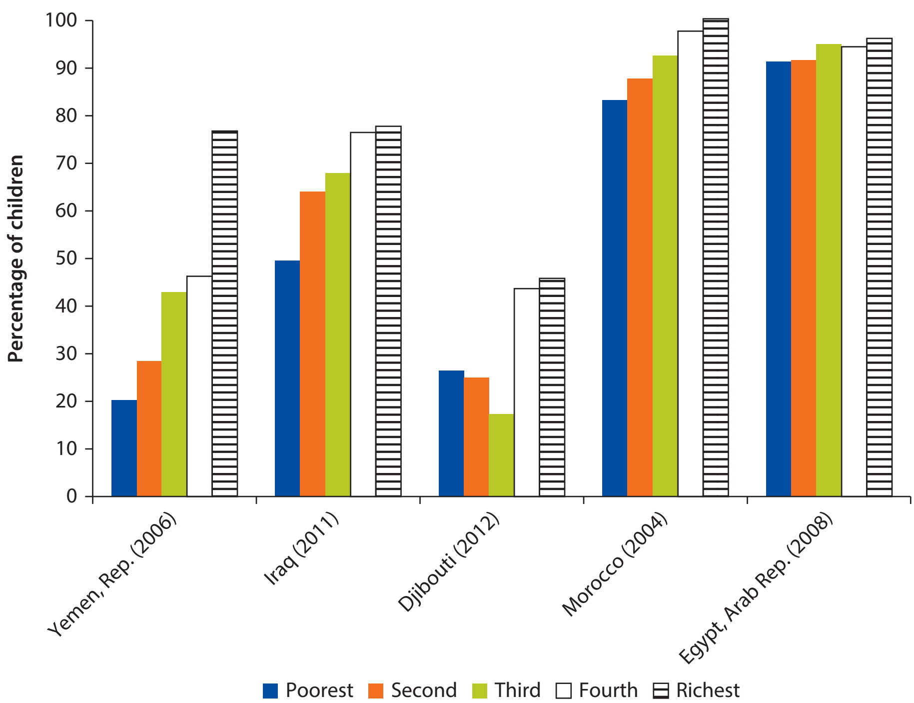


Source: World Bank calculations based on household surveys (see annex 2B, table 2B.1).
Note: MENA = Middle East and North Africa.

between their wealth level and the various ECD indicators. Figure 2.17 shows the relationship between wealth level and use of prenatal care. The influence of wealth ranges from a moderate difference in Djibouti between the poorest and richest 20 percent of households to a large disparity in Yemen, where the gap between the richest and poorest is much bigger. In Djibouti, use of prenatal care ranges from 69 percent among the poorest to 98 percent among the richest; yet in Yemen, the rate of prenatal care among the poorest households (32 percent) is less than half the rate of the richest households (79 percent). The disparity between the richest 20 percent and the poorest 20 percent is also stark in Morocco, and to a lesser extent in Egypt. The poorest children are at the greatest risk for missing out on prenatal care, but the differences in prenatal care by wealth vary substantially by country.

In some countries, children are fully immunized regardless of wealth, but in others, children's chances of being protected against common illnesses are closely related to their families' wealth. For example, in Egypt there are small differences in rates of immunizations based on wealth, whereas in Iraq and Morocco, children from poorer households are less likely to be fully immunized (figure 2.18). In Yemen, children from poorer households are much less likely to be fully immunized: a child from the poorest fifth of households has only a 20 percent

Figure 2.18 Children Aged 12–23 Months Fully Immunized, by Wealth Level and Country, Selected MENA Countries



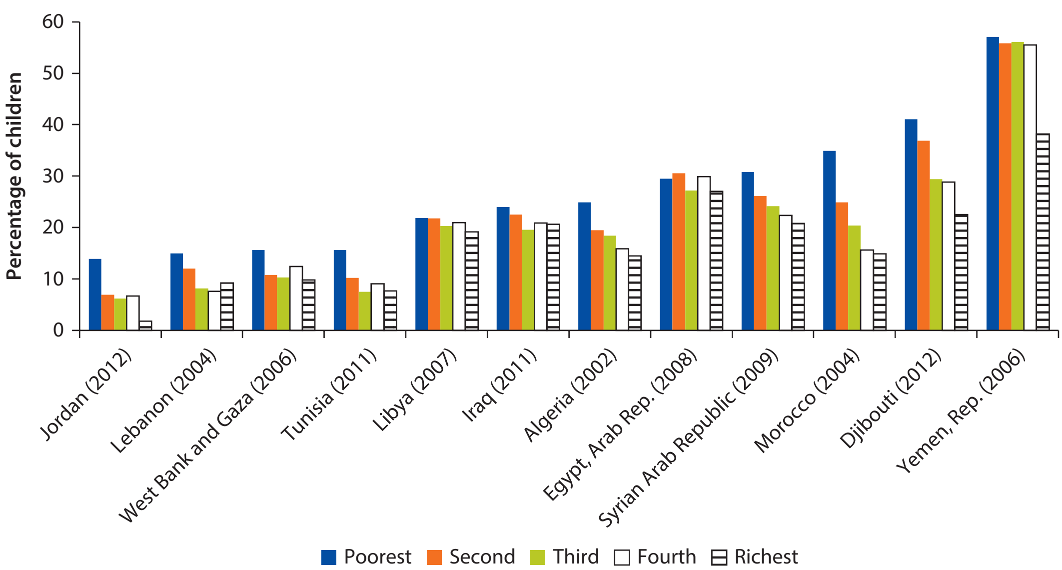
Source: World Bank calculations based on household surveys (see annex 2B, table 2B.1).
Note: MENA = Middle East and North Africa.

chance of being immunized, while a child from the richest fifth of households has a 75 percent chance. Even being from the fourth level of wealth gives a child a much lower chance of being fully immunized in Yemen—only 45 percent.

Comparing the patterns of immunizations and prenatal care based on the level of a household's wealth shows that in Djibouti, children have equal access to these important early health inputs regardless of wealth. In Egypt, despite substantial differences in prenatal care based on wealth, children are relatively equitably immunized. Iraq has moderate differences based on wealth in both prenatal care and early immunizations, as does Djibouti, while Morocco shows much greater differences in prenatal care than immunizations. In Yemen, there are enormous differences based on wealth in children's chances of receiving both prenatal care and immunizations. Especially in countries with inequitable prenatal care but more equitable immunizations, examining how immunizations reach children regardless of wealth can provide important lessons for other countries, and for extending other health services.

While in some countries stunting is a pervasive problem regardless of a household's wealth level, in other countries household wealth is closely associated with stunting. Overall, MENA has a substantial problem with stunting, but the contributions of public health problems, low nutrition quality, and food affordability vary substantially by country. In Libya and Egypt, there are small differences in the percentage of children who are stunted based on the wealth level of the household, which suggests that stunting is a pervasive public health and nutrition quality problem rather than an issue of food costs (figure 2.19). A number of countries, including Lebanon, West Bank and Gaza, Algeria, Iraq, Syria (pre-conflict),

Figure 2.19 Stunting by Wealth Level and Country or Territory, Ages 0–4

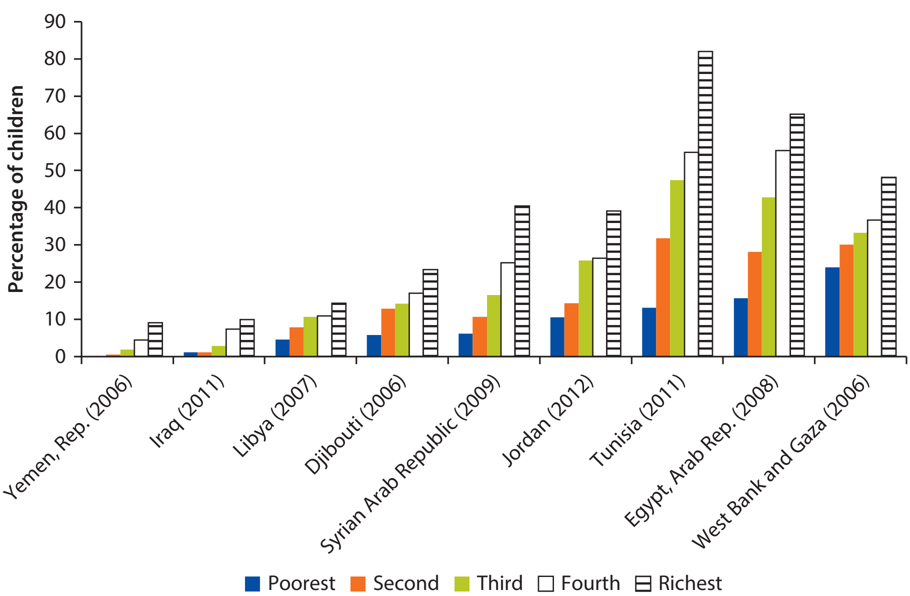


Source: World Bank calculations based on household surveys (see annex 2B, table 2B.1).
Note: MENA = Middle East and North Africa.

Morocco, Djibouti, and Yemen, show some differences in the level of stunting based on household wealth, but there are still high rates of stunting even among the wealthiest. In Morocco and Djibouti, the poorest fifth of households has particularly high stunting. In Yemen, only the richest fifth of households has lower stunting than other wealth levels. Among all the countries and territories surveyed, it is only in Jordan that the richest 20 percent of households has stunting levels less than 2 percent—the level that would occur naturally in a healthy population.

Throughout MENA, children have very different chances of attending ECCE depending on their families' wealth. Figure 2.20 shows how ECCE attendance varies by wealth. In countries with low overall rates of ECCE attendance, such as Iraq and Yemen, children from the poorest households, who are the most likely to benefit from ECCE, have less than a 2 percent chance of attending, while in Iraq the richest children have a 10 percent chance, and in Yemen a 9 percent chance. In Libya, a child's chance of attending ECCE rises from 5 percent if he or she is from the poorest fifth of households to 14 percent if he or she is from the richest fifth of households. In Djibouti, the difference is 6 percent versus 23 percent. While the poorest children in Jordan have an 11 percent chance, the richest children have a 39 percent chance. In West Bank and Gaza, a child from the richest fifth of households is twice as likely to attend ECCE (48 percent) as a child from the poorest fifth of households (24 percent). In Egypt, a child from the richest fifth of households is more than four times as likely to attend ECCE (65 percent) as a child from the poorest fifth of

Figure 2.20 Children Attending ECCE, by Wealth Level and Country or Territory, Selected MENA Countries and Territories



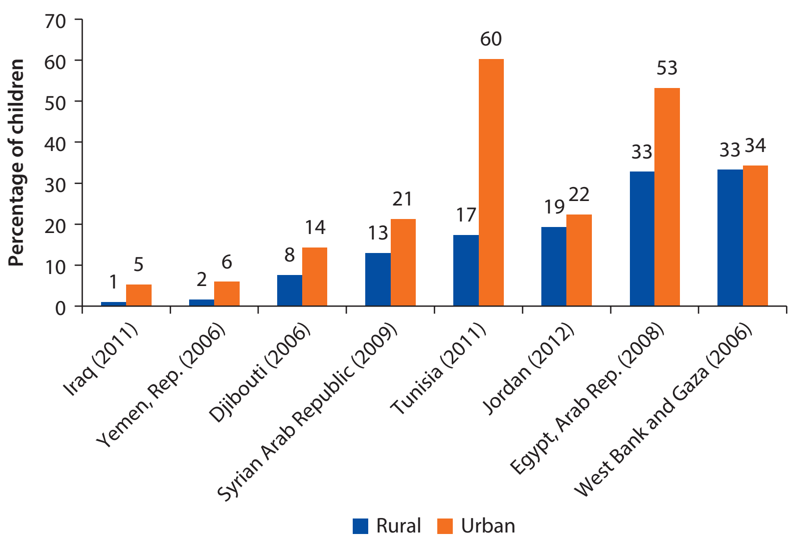
Source: World Bank calculations based on household surveys (see annex 2B, table 2B.1).
Note: Ages 3–4 in Jordan, Tunisia, West Bank and Gaza, Iraq, Djibouti, and Yemen. Ages 3–5 in Egypt, Syria (pre-conflict), and Libya. All are current early childhood care and education (ECCE) attendance except for Egypt, which is ever attendance.

households (16 percent). In Syria (pre-conflict), a child from the richest fifth of households is more than six times as likely to attend ECCE (41 percent) as a child from the poorest fifth of households (6 percent). A similar pattern is observed in Tunisia, where the poorest children have a 13 percent chance and the richest an 82 percent chance. These differences mean that, depending on the wealth of their households, children reach primary school age having had very different chances of attending ECCE, preparing for school, and developing cognitively, emotionally, and socially.

Location of Residence and ECD

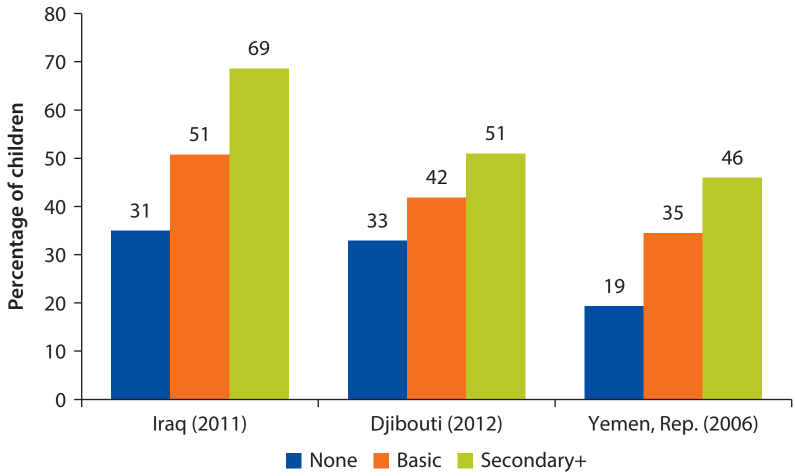
Whether a child lives in an urban or a rural area is also associated with ECD outcomes. For instance, there are large urban/rural gaps in ECCE attendance. Figure 2.21 shows the different chances children have of attending ECCE depending on whether they live in an urban or rural area. Only in the West Bank and Gaza are urban and rural rates of ECCE attendance nearly the same, although they are also close in Jordan. Children in Iraq and Yemen are nearly four times as likely to attend ECCE if they live in an urban as opposed to rural area. In Syria (pre-conflict), while a rural child has a 13 percent chance of attending ECCE, an urban child has a 21 percent chance. In Egypt, there is a 20 percentage point gap between urban (53 percent) and rural (33 percent) children. Tunisia has the largest gap, 43 percentage points, with 17 percent of rural children attending ECCE compared to 60 percent of urban children. These early

Figure 2.21 Children Attending ECCE, by Urban/Rural Residence and Country or Territory, Selected MENA Countries and Territories



Source: World Bank calculations based on household surveys (see annex 2B, table 2B.1).
Note: Ages 3–4 in Jordan, Tunisia, West Bank and Gaza, Iraq, Djibouti, and Yemen. Ages 3–5 in Egypt, Syria (pre-conflict), and Libya. All are current early childhood care and education (ECCE) attendance except for Egypt, which is ever attendance.

Figure 2.22 Children Aged 0–4 Experiencing at Least Four Development Activities, by Mother's Education and Country, Selected MENA Countries



Source: World Bank calculations based on household surveys (see annex 2B, table 2B.1).

differences in access to early learning based solely on where children live will shape their cognitive development and school success.

Mother's Education and ECD

Children with less-educated mothers are less likely to be engaged in development activities. Figure 2.22 shows how development activities vary by mother's education in Iraq, Djibouti, and Yemen. In Iraq, while 35 percent of children with uneducated mothers experienced at least four development activities, 69 percent of children with secondary or higher educated mothers did so. In Djibouti, the differences are more moderate: 33 percent of children of uneducated mothers versus 51 percent of children with secondary or higher educated mothers. In Yemen there is a large gap even between uneducated mothers (19 percent) and mothers with just a basic education (35 percent), as well as mothers with a secondary or higher education (46 percent). Although the patterns vary somewhat by country, children with less-educated mothers have poorer chances of fully developing their social, emotional, and cognitive potential. They will be less prepared for school and more likely to attain lower levels of education, perpetuating cycles of inequality. A similar pattern is observed in terms of father's education.

Unequal Opportunities for Early Childhood Development in MENA

Children in MENA face unequal opportunities for healthy development, based on factors beyond their control. To measure the extent of inequality, the analysis calculates (a) the percentage of opportunities that needed to have been distributed differently for equality of opportunity to have occurred for each of the ECD indicators, and (b) the chance of whether these differences might have occurred by random variation (table 2.1).

Table 2.1 Dissimilarity Indices Measuring Inequality of Opportunity for ECD in MENA

	Algeria	*Djibouti*	*Egypt, Arab Rep.*	*Iraq*	*Jordan*	*Lebanon*	*Libya*	*Morocco*	*Syrian Arab Republic (pre-conflict)*	*Tunisia*	*West Bank and Gaza*	*Yemen, Rep.*
Prenatal care	7.7***	6.4**	9.0***	20.9	0.5	2.6	2.0*	14.3***	5.1***		0.5	16.8**
Skilled delivery	2.4 *	9.6***	9.0***	2.9***	0.2		0.7*	19.6***	2.1***		0.8*	26.1***
Fully immunized	2.2	22.2	1.7	8.6***	2.3	18.4	2.7	3.6	6.2*	4.4		20.6*
Neonatal mortality	13.9	insig.	24.9	9.7	19.7		30.7	19.5	insig.	40.0	insig.	insig.
Infant mortality	14.7	insig.	20.3	6.1	20.3		25.8	19.8	insig.	33.4	insig.	15.5
Stunted	9.9	9.6	9.0**	7.1**	24.1*	insig.	6.3	16.1***	13.0***	19.8	13.4**	4.9*
Iodized salt			7.2***	20.3***			16.9***		32.3***		insig.	
Development activities		13.9 *		12.6***	3.4				10.6***	11.8**	5.7**	19.3***
Violent discipline		11.6		2.6	4.5				1.7	insig.	0.8	
ECCE		34.6	21.8***	43.5***	24.4***		23.7***		36.3***	25.5***	12.1**	
Child labor		23.2		17.0***			25.7		12.1	21.7		25.1

Source: World Bank calculations based on household surveys (see annex 2B, table 2B.1).
Note: Data are Dissimilarity Index. ECCE = early childhood care and education; MENA = Middle East and North Africa.
$^{*}p < .05$ $^{**}p < .01$ $^{***}p < .001$
Insig. denotes an insignificant underlying model. Some outcomes could also not be modeled because rates were too high or low.

Children face unequal opportunities for healthy development while still in utero. There are substantial differences in whether their mothers receive prenatal care and whether their births are attended by a skilled birth attendant; few of these differences are due to chance.[12] Morocco, Iraq, and Egypt have some of the most extensive inequality in prenatal and skilled delivery care.

While the inequality in rates of early deaths tends to be high, given the relative infrequency of early deaths it cannot be determined if this is due to chance or a systematic pattern. Children's chances of being fully immunized are relatively equitably distributed; however, in Syria (pre-conflict), Iraq, and especially Yemen there is substantial and significant inequality of opportunity.

Children tend to face unequal opportunities for healthy physical growth, with significant differences in stunting rates in Egypt, Iraq, Jordan, Morocco, Syria (pre-conflict), the West Bank and Gaza, and Yemen. Children also face very unequal opportunities for healthy brain development, in terms of access to iodized salt. In every country except West Bank and Gaza there is substantial and significant inequality in children's access to iodized salt.

Children's chances of experiencing development activities also tend to be unequally distributed, with statistically significant inequality in Djibouti, Iraq, Syria (pre-conflict), Tunisia, West Bank and Gaza, and Yemen. Inequality on this measure is particularly high in Yemen. There is no substantial or significant inequality in children's chances of violent discipline; it is a pervasive problem. While the inequality is fairly high for rates of child labor at age five, this could almost always be due to random variation. The greatest inequality tends to be in rates of ECCE attendance, with significant inequality in Egypt, Iraq, Jordan, Libya, Syria (pre-conflict), Tunisia, and West Bank and Gaza, as well as very high measures of inequality.

In sum, children face unequal chances for healthy development from before they are born throughout the early life course, with particularly unequal chances for attending early childhood care and education. Children's unequal chances for early development across a variety of domains are likely to compound each other such that children have very different chances of healthy development and school success as they get older.

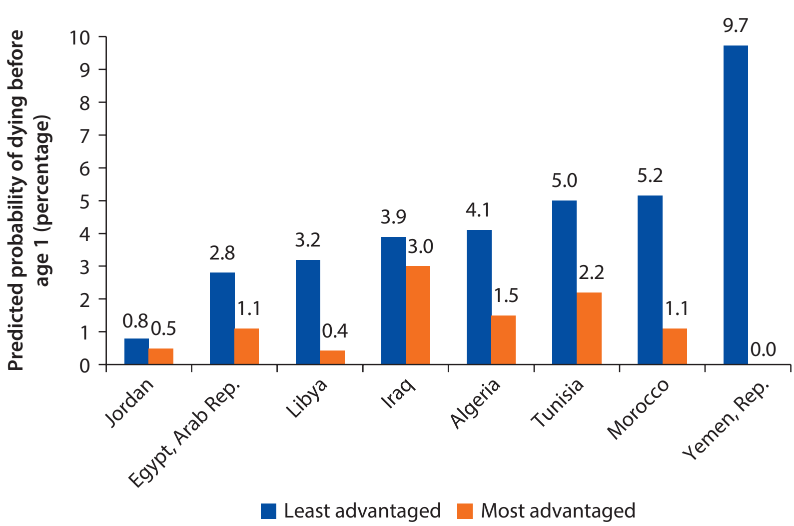
A number of factors contribute to the inequality in ECD outcomes. Household wealth, mother's education, and urban/rural location make the largest contributions to children's unequal chances. Father's education tends to play a smaller role in inequality than mother's education. The contributions of urban/rural and regional differences vary substantially by country. However, where the data are available, self-reported access to health care does not contribute substantially to inequality. Children's gender also contributes little to inequality. While children in MENA may experience unequal opportunities later in life due to gender, during early childhood males and females face relatively equitable chances to develop. If children are to have equal chances for early development, the different circumstances contributing to inequality will have to be targeted in each country and for each issue.

Children tend to be consistently advantaged or disadvantaged across a variety of dimensions of ECD, and can face very different life chances based on just a few characteristics. Early childhood is when cycles of poverty and inequality are transmitted across generations. A child who lives in the poorest 20 percent of households and with uneducated parents (a least advantaged child) has very different chances for healthy ECD compared to a child who has parents with secondary or higher education and is from the richest 20 percent of households (a most advantaged child). Differences in chances for the least and most advantaged children may also vary by urban/rural residence and region. The analysis that follows presents the chance (predicted chance) of different ECD outcomes (based on multivariate regressions) for a least advantaged and most advantaged child.

Children are systematically more likely to die in the first year of life based on just a few characteristics. Figure 2.23 presents the simulations for the most and least advantaged child in terms of infant mortality (neonatal mortality follows a similar pattern). The most advantaged child has at most a 2.2 percent chance of dying in the first year of life across all the countries, while the least advantaged child has a much higher chance that varies widely between countries. In Iraq and Jordan, the least advantaged child is a little more likely to die in the first year of life; in Tunisia, Egypt, and Algeria, she or he is two to three times as likely to die; in Morocco, almost five times as likely to die; and in Libya, eight times as likely to die. In Yemen, where the gap is highest, the least advantaged child has a 9.7 percent chance of dying in the first year of life compared to the most advantaged child, who has a near-zero chance of dying.[13]

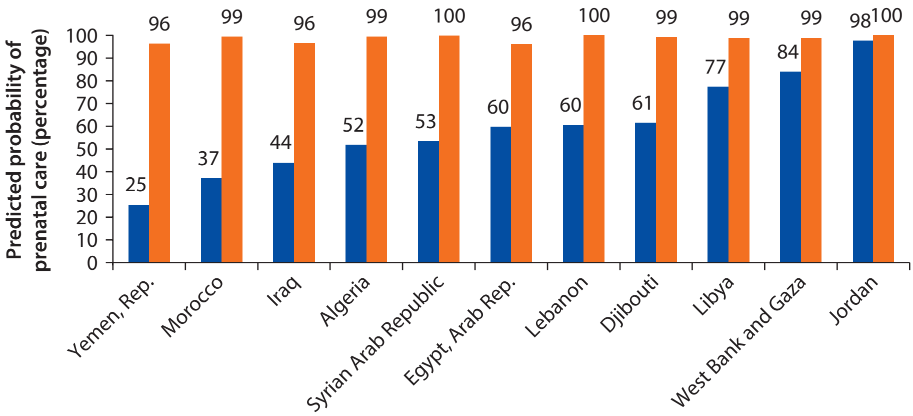
Everywhere in MENA, the most advantaged child is almost certain to receive prenatal care, but the least advantaged child has substantially lower and varying chances (figure 2.24). The chances of a most advantaged child receiving prenatal care are 96–100 percent, while the chances of a least advantaged child receiving

Figure 2.23 Infant Mortality—Most and Least Advantaged Simulations



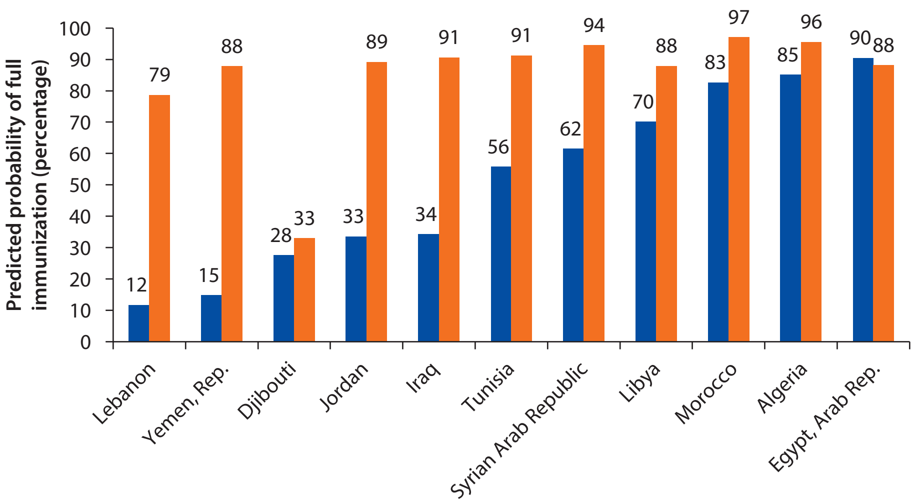
Source: World Bank calculations based on household surveys (see annex 2B, table 2B.1).

Figure 2.24 Prenatal Care—Most and Least Advantaged Simulations



Source: World Bank calculations based on household surveys (see annex 2B, table 2B.1).

Figure 2.25 Children Fully Immunized at Age 1—Most and Least Advantaged Simulations



Source: World Bank calculations based on household surveys (see annex 2B, table 2B.1).

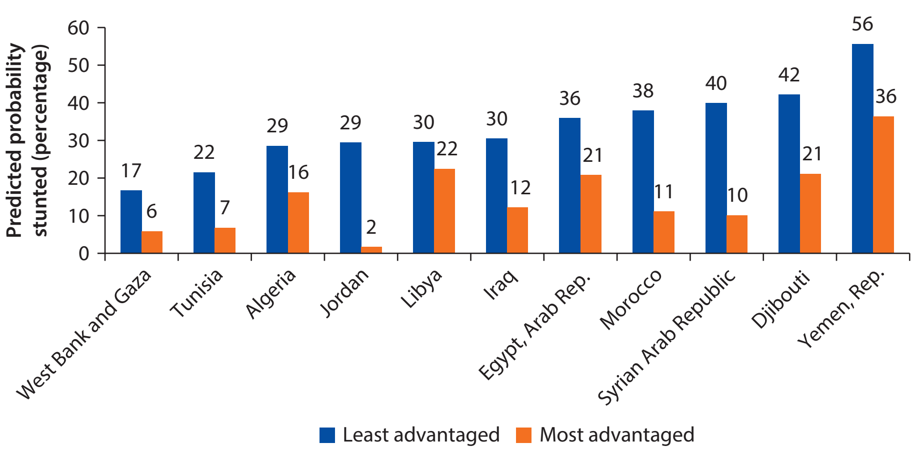
prenatal care range from 25 percent in Yemen to 98 percent in Jordan. Even in countries with relatively high rates of prenatal care coverage, such as Iraq, the least advantaged child may have a low chance of prenatal care, indicating that children with multiple disadvantages are at particularly high risk for poor early health. The pattern for skilled delivery care tends to be similar to that for prenatal care.

While in some countries children have relatively equal chances of being fully immunized regardless of their circumstances, in others children have substantially different chances based on just a few characteristics. Figure 2.25 shows the chances a most advantaged and least advantaged child have of being fully immunized at age one, by country. The most advantaged child has a fairly high chance of being immunized (88–97 percent) everywhere except in Lebanon (79 percent) and Djibouti (33 percent). Lebanon and especially Djibouti have systematically low immunization rates. The chances of a least advantaged child being fully immunized vary widely by country. In Egypt, the least advantaged child actually has a slightly higher chance of being fully immunized—a result that is notable for its rarity. In Libya, Morocco, and Algeria, the least advantaged child has an 83–89 percent chance of being fully immunized at age one. In Syria (pre-conflict), the least advantaged child has only a 62 percent chance and in Djibouti, a 28 percent chance. In Jordan, which has relatively high immunization rates, the least advantaged child is nonetheless at a substantial disadvantage, with only a 33 percent chance of being fully immunized. In Lebanon and Yemen, the least advantaged child has a very small chance of being immunized, between 12 and 15 percent.

Everywhere, the least advantaged child has a higher chance of stunting than the most advantaged child, although the magnitude of differences varies substantially. Figure 2.26 shows how chances of stunting vary for the least and most advantaged children. While the chances of a most advantaged child being stunted vary from 2 percent in Jordan to 36 percent in Yemen, the chances of a least advantaged child being stunted vary from 17 percent in the West Bank and Gaza to 56 percent in Yemen. The least advantaged child always has a high chance of being stunted. In some countries, such as in Libya and Yemen, the relative differences are not very large; in others, such as Jordan, Syria (pre-conflict), and Morocco, the differences are substantial.

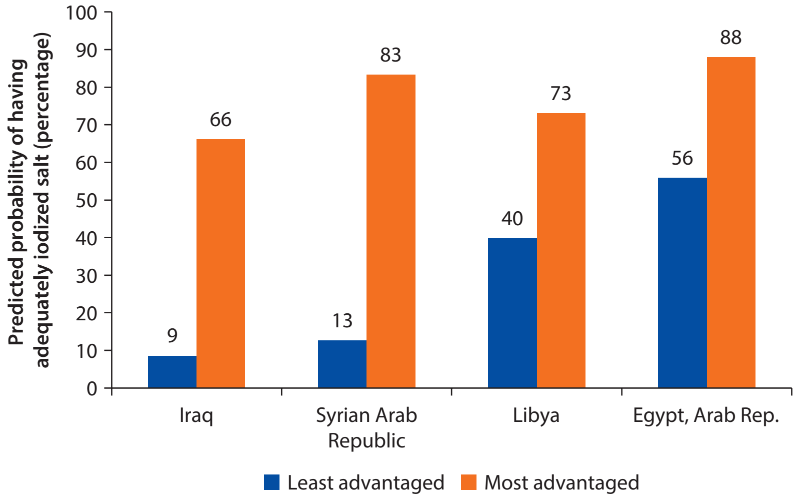
Children have very different chances for healthy brain development based on their circumstances. Figure 2.27 shows that the chances of having adequately iodized salt in their household vary between the least and most advantaged child. Notably, the West Bank and Gaza is not included in the figure because the model

Figure 2.26 Stunting, Ages 0–59 Months—Most and Least Advantaged Simulations



Source: World Bank calculations based on household surveys (see annex 2B, table 2B.1).

Figure 2.27 Iodized Salt—Most and Least Advantaged Simulations

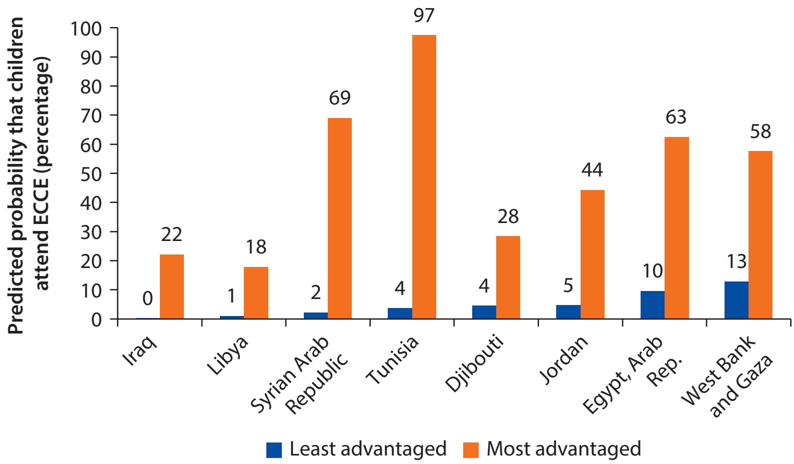


Source: World Bank calculations based on household surveys (see annex 2B, table 2B.1).

itself was insignificant, suggesting that there are no systematic differences by circumstances in terms of access to iodized salt in the West Bank and Gaza. However, in Iraq, Syria (pre-conflict), Libya, and Egypt there are very different chances depending on children's circumstances. While the most advantaged child has between a 66 and 88 percent chance of having adequately iodized salt, the least advantaged child has between a 6 and 56 percent chance across the different countries. Gaps are particularly large in Iraq, where the least advantaged child has a 9 percent chance while the most advantaged child has a 66 percent chance. Even in Egypt, which has relatively more equality than other countries, the most advantaged child has a 32 percentage point greater chance of having adequately iodized salt and healthy brain development.

Children also face radically different chances of attending ECCE and therefore developing cognitively and being school-ready based on circumstances. Figure 2.28 shows how chances for attending ECCE compare for the most and least advantaged child in each country. While the most advantaged child has an 18–97 percent chance of attending ECCE, depending on the country, the least advantaged child has a 0–13 percent chance. Differences in children's relative chances are enormous. In the West Bank and Gaza, the most advantaged child is more than four times as likely to attend ECCE as the least advantaged child, and this is the smallest relative gap. In Djibouti and Egypt, the most advantaged child is more than six times as likely to attend ECCE as the least advantaged child. In Iraq, Libya, and Tunisia, the most advantaged child is more than 17 times more likely to attend ECCE, and in Syria (pre-conflict), the most advantaged child is 32 times more likely to attend ECCE than the least advantaged child, 69 percent versus 2 percent. Children's chances of attending early childhood care and education in MENA are very different depending on just a few circumstances.

Figure 2.28 Attending ECCE—Most and Least Advantaged Simulations



Source: World Bank calculations based on household surveys (see annex 2B, table 2B.1).
Note: ECCE = early childhood care and education.

Conclusions

Early childhood is a critical time in human development and a time for effective policies and programs to ensure that children attain their full potential. In MENA, more needs to be done to ensure that children are experiencing healthy development. There have been some improvements over time, particularly in reducing early deaths and increasing use of prenatal and delivery care. However, there remain gaps in early health care that put children (and mothers) at risk for illness and death. Given the proven cost-effectiveness of immunizations in protecting children's health, all MENA countries should be approaching universal coverage; while some have made progress, many are far from this goal.

The high rates of stunting and low coverage of important micronutrients put too many children in MENA at risk for impaired physical and cognitive development. The low rates of development activities and low coverage of ECCE mean that children are not developing to their full cognitive, social, and emotional potential. The very high rates of violent discipline and the prevalence of child labor even at age five endanger children's early development. Although there are many challenges to ensuring that all children in MENA can develop to their full potential, there are also many proven policies and programs that can overcome these challenges and enhance and protect children's early development.

Children should have equal opportunities for healthy development regardless of their early circumstances. Factors over which children have no control, such as where they were born, their gender, or their families' characteristics, should not affect children's chances to grow and thrive. Additionally, research indicates that disadvantaged children receive the greatest benefits from early interventions. However, in MENA there are very unequal chances for children to develop, based on just a few circumstances; the most disadvantaged children are the least likely to receive early developmental supports. Inequality in the early years, particularly in terms of early childhood care and education, means that children reach school age with very different chances to succeed. This inequality will only compound as children continue to develop. Early childhood is an important time to give children equal chances to succeed in school and in adult life. More must be done to ensure that children in MENA have equal opportunities to grow and thrive. Investing in the early years and redressing inequality have the potential to dramatically change the lives of millions of children, and even the development trajectories of MENA countries.

Annex 2A: Early Childhood Development Indicators, by Country or Territory

Table 2A.1 ECD Indicators, by Country or Territory
Percentage

	Prenatal care	*Skilled delivery*	*Fully immunized*	*Neonatal mortality*	*Infant mortality*	*Stunted*	*Iodized salt*	*Develop. activities*	*Violent discipline*	*ECCE*	*Child labor (age 5)*
Algeria	79.2	94.4	92.6	2.0	3.3	19.3	—	—	—	—	—
Djibouti	87.9	87.4	30.7	3.6	6.0	33.5	0.4	36.6	36.2	14.1	18.6
Egypt, Arab Rep.	73.6	79.0	91.7	1.6	2.4	28.9	76.7	—	—	40.2	—
Iraq	77.7	90.8	64.3	2.0	3.1	21.7	24.4	53.5	77.2	3.8	10.1
Jordan	99.1	99.6	93.0	1.5	1.8	7.6	—	81.6	91.3	21.7	—
Lebanon	95.4	98.2	51.5	1.0	1.5	10.7	—	—	—	—	—
Libya	93.8	98.7	86.9	1.1	1.7	21.0	52.5	—	—	9.3	7.0
Morocco	67.9	62.9	89.6	2.5	3.8	23.1	—	—	—	—	—
Syrian Arab Republic	87.7	96.3	77.9	1.2	1.7	25.8	30.4	55.0	85.0	17.2	12.3
Tunisia	98.1	98.6	89.6	1.2	1.7	10.1	—	71.1	94.9	44.5	24.0
West Bank and Gaza	98.5	97.7	—	2.1	3.0	11.8	87.7	46.8	95.5	34.1	—
Yemen, Rep.	47.0	35.7	40.7	4.0	7.1	53.1	—	25.5	93.2	2.7	15.8

Source: World Bank calculations based on household surveys (see annex 2B, table 2B.1).
Note: ECCE = early childhood care and education. — = not available.

Annex 2B: Microdata Datasets

Table 2B.1 Data Sources

Country	*Surveys (references)*
Algeria	PAPFAM 2002 (National Office of Statistics, Ministry of Health Population and Hospital Reform, and League of Arab States 2003)
Djibouti	PAPFAM 2012 (Ministry of Health [Djibouti], Institute of Statistics and Demographic Studies, and League of Arab States 2012) and MICS 2006 (Ministry of Health and League of Arab States 2007)
Egypt, Arab Rep.	DHS 2008 (El-Zanaty and Way 2009)
Iraq	MICS 2011 (The Central Statistics Organization and the Kurdistan Regional Statistics Office 2012)
Jordan	DHS 2012 (Department of Statistics [Jordan] and ICF International 2013)
Lebanon	PAPFAM 2004 (The Arab League and The Republic of Lebanon Central Administration of Statistics 2006)
Libya	PAPFAM 2007 (League of Arab States 2009)
Morocco	DHS 2003/4 (Ministry of Health, ORC Morocco, and League of Arab States 2005)
Syrian Arab Republic	MICS 2006 (Central Bureau of Statistics et al. 2008) and PAPFAM 2009 (League of Arab States and Syrian Arab Republic 2011)
Tunisia	MICS 2011/2012 (Ministry of Development and International Cooperation, National Institute of Statistics, and UNICEF 2013)
West Bank and Gaza	PAPFAM/MICS (NHS) 2006 (Palestinian Central Bureau of Statistics 2007)
Yemen, Rep.	PAPFAM 2003 (Ministry of Health and Population Republic of Yemen and Pan-Arab Project for Family Health) and MICS 2006 (Ministry of Health and Population and UNICEF 2008)

Note: DHS is the Demographic and Health Survey, MICS is the Multiple Indicator Cluster Survey, and PAPFAM is the Pan-Arab Project for Family Health Survey. The 2006 NHS for West Bank and Gaza was a combined PAPFAM/MICS survey.

Notes

1. Some of the data is from surveys that are several years old; however, it is the latest available, and it offers an opportunity to analyze the status of ECD at that point of time, which also presents a baseline for future analysis when newer data is available.
2. More than 15 ppm of iodine in the salt.
3. The six activities were: (1) read books or look at picture books with the child; (2) tell stories to the child; (3) sing songs with the child; (4) take the child outside the home, compound, yard, or enclosure; (5) play with the child; and (6) spend time with the child, naming, counting, and/or drawing things.
4. Per the MICS definitions, violent child discipline is based on discipline by anyone in the household within the last month, and includes psychological aggression (shouted, yelled, or screamed at the child; called the child dumb, lazy, or another name like that); physical punishment (shook the child; spanked, hit or slapped the child on the bottom with a bare hand; hit the child on the bottom or elsewhere on the body with something like a belt, hairbrush, stick, or other hard object; hit or slapped the child on the hand, arm, or leg); and severe physical punishment (hit or slapped the child on the face, head, or ears; beat the child with an implement (hit over and over as hard as one could).
5. Source is UNICEF (2013), except Djibouti (Ministry of Health (Djibouti), Institute of Statistics and Demographic Studies, and League of Arab States 2012), Iraq (The Central Statistics Organization and the Kurdistan Regional Statistics Office 2012), and Tunisia (Ministry of Development and International Cooperation, National Institute of Statistics, and UNICEF 2013).

6. The DPT vaccine is a combination vaccine that covers diphtheria, whooping cough (pertussis), and tetanus. Children must receive three doses to be fully immunized.
7. Children must receive three doses to be fully immunized against polio.
8. This analysis focuses on children 12–23 months of age to allow for optimal parental recall.
9. Herd immunity occurs when even unvaccinated individuals in the population (the "herd") are protected against illness because the disease can no longer spread. This is achieved once around 90–95 percent of infants are vaccinated.
10. Morocco, Yemen, Algeria, Jordan, Lebanon, and Tunisia data are for households rather than children. Children data are from World Bank calculations using household surveys (see annex 2B, table 2B.1). Household data are from World Development Indicators.
11. Wealth is defined in terms of which 20 percent of households a child falls into, based on an asset (wealth) index of durable goods.
12. Throughout, we use a 5 percent level of significance.
13. Such a low rate may be due to sampling variability.

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CHAPTER 3

The Way Forward: Some Policies and Programs to Promote Early Childhood Development in the Middle East and North Africa

Shortfalls in Development Can Be Prevented

The state of early childhood development (ECD) in the Middle East and North Africa (MENA) can be improved but it will require countries to directly and intentionally address ECD deficits with targeted policies and programs. Simply focusing on overall economic development is not enough; ECD will not necessarily improve as a result of a country's economic growth. For instance, a study of 36 low- and middle-income countries using 121 Demographic and Health Surveys demonstrated that macroeconomic growth alone is not enough to combat malnutrition. Increases in per capita GDP were found to have either no or very little relationship with various measures of malnutrition. The results of this broad study emphasize the need for direct investment in child health (Vollmer et al. 2014). Growth alone will not address problems in ECD; direct policy and programmatic action is needed.

There are a variety of interventions targeting different dimensions of ECD that are effective (often very cost-effective) and scalable. There are many successful models of maternal, infant, and child health programs that could be implemented or expanded in MENA. Immunization and micronutrient supplementation programs have extremely high benefits relative to their costs (Behrman, Alderman, and Hoddinott 2004), and many MENA countries already have substantial, but incomplete, coverage. Other programs innovatively cover mothers' and infants' nutrition, health, and stimulation by providing supplements and services, encouraging behavioral changes in parents, and raising awareness of ECD in households and communities. The most common forms of early learning interventions include preschools and child care centers, especially for low income and disadvantaged children.

While not an exhaustive list, this chapter presents some approaches and programs that have been implemented successfully around the world, and from which children in MENA would benefit.

Improving Health

The large number of deaths in the first month and year of life observed in MENA are not inevitable; most early deaths are preventable. There are effective programs and policies that could reduce early deaths. Globally, neonatal deaths are primarily due to preterm births, birth asphyxia, and infections (sepsis, pneumonia, tetanus, and diarrhea) (Lawn, Cousens, and Zupan 2005). Low birthweight can contribute indirectly to early deaths (Black et al. 2008). Expanding prenatal and skilled delivery care toward universal coverage and targeting the poorest and less educated women, who have the lowest prenatal care rates, would improve children's and women's survival and early health. Moreover, increasing continuity of care and connecting women's and children's health services can also be an important practical element of improving child and maternal health on the ground. The West Bank and Gaza has developed the first Arabic language "Mother and Child Health Hand Book," which is a single document that tracks maternal and child health in pregnancy, prenatal care, delivery care, postnatal care, newborn health, family planning, child immunization, and child growth monitoring (Palestinian Ministry of Health 2012). The handbook not only helps track health and nutrition information, it provides health education, including on ECD.

MENA needs to substantially expand postnatal care. Worldwide, between 25 and 45 percent of neonatal deaths occur in the first day, and 75 percent within the first week (UNICEF 2008), providing an important window of opportunity to reduce early deaths during this postnatal period. Additional analysis of the surveys indicates low coverage of postnatal care. Increasing coverage of care during the early postnatal period is vital to reducing neonatal mortality (Lawn, Cousens, and Zupan 2005). A study in Bangladesh found that a postnatal home visit by a community health worker (see box 3.1 for more on community health workers) within two days of the birth reduced neonatal mortality by two-thirds (Baqui et al. 2009). The network of existing professionals and facilities that provide prenatal and skilled delivery care can be used and expanded to provide postnatal care. As well as addressing early childhood health and reducing early mortality, targeted improvements in health care in the early days of children's lives can have long-lasting impacts. Low birthweight infants in Chile and Norway who received additional care experienced not only lower infant mortality but higher levels of academic achievement in school (Bharadwaj, Løken, and Neilson 2013).

Increasing the coverage of immunizations would help prevent illness and early deaths. Although some MENA countries have achieved broad immunization coverage, a number have not. One of the reasons that the Arab Republic of Egypt may have been particularly successful in terms of broad and equitable immunization coverage is that immunizations are mandated by law, and mandated to be provided free of charge by health units, with a child's father or guardian

Box 3.1 Expanding Access to Health Care and Healthy Development with Community Health Workers

Community health workers can be an important support for children's early development and health, particularly in settings where expanding health facilities and recruiting highly trained personnel are difficult. When appropriately trained, workers recruited from the local community can have an important impact on early health, even when they have no professional certification in health care. For instance, community health workers can provide prenatal care, promote the use of skilled delivery care, provide safe delivery kits for home deliveries, and provide postnatal care (Haines et al. 2007). As well as improving health and nutrition outcomes and reducing mortality, community health workers can educate parents about other aspects of early childhood development (ECD), including how they can support their children's, cognitive, social, and emotional development (UNICEF and World Health Organization 2011).

responsible for ensuring the child is immunized (Egyptian Cabinet: The National Council for Childhood and Motherhood, 2008).

Since all countries are already providing some immunizations to some children, expanding the current system is key to universal coverage. Increasing the number and frequency of immunization campaigns is one approach, as even immunizations alone are extremely cost-effective. Immunizations can also be combined with other ECD interventions in child health days. In Ethiopia, child health days that typically include vitamin A, immunizations, deworming, and growth monitoring cost $1.04 per child, or $2.08 per child per year if held twice a year. The cost per death averted is $228 (Fiedler and Chuko 2008). In MENA, it is particularly important that such interventions be targeted to poorer areas, and reach out to poor and less educated families, as these children are at the greatest risk for missing out on immunizations and faltering in their early development.

Improving Nutrition

Decreasing MENA's high rates of stunting requires identifying children at risk for poor growth, monitoring their health, and supporting their nutrition. Growth promotion programs to combat malnutrition can take a variety of different forms to identify and protect children whose development is faltering. Growth promotion programs should include growth monitoring and help to educate parents on feeding and health care, while linking children to vital health services and supplementary feeding if needed (Bhutta et al. 2008; World Bank 2006). Preventing malnutrition is a better strategy than allowing malnutrition to take hold and then providing treatment (Horton et al. 2010). Since the early signs of moderate to mild malnutrition are not obvious, it is important that at-risk populations have regular monitoring of children's weight and height on a growth chart. Community health workers are ideal for delivering growth promotion services, because they are less expensive and more readily accessible to local populations (World Bank 2006). When children whose development is threatened by malnutrition have been identified, food supplementation programs can be an effective response to malnutrition. For instance, in Ethiopia, children 6–24 months who received food aid grew on average 1.8 cm faster than if no food aid had been available (Yamano 2005).

Poverty is one of the greatest risk factors for poor early development; conditional cash transfer (CCT) programs can play an important role in promoting children's healthy development. PROGRESA, a CCT program in Mexico, included conditions that children 0–60 months visit nutrition monitoring clinics. Children under 24 months were then given nutritional supplements regardless of growth status, and children 24–60 months were given nutrition supplements if their growth was assessed as poor. An evaluation based on random assignment showed that children 12–36 months who received PROGRESA were, on average, 1 centimeter taller and 8.6 percent less likely to be stunted (Gertler 2004). In the MENA countries where there are substantial differences in nutritional status by wealth, CCTs are a particularly promising approach to address both poverty and nutrition.

Investing in additional micronutrients could have enormous returns for MENA. Less than half of households have sufficiently iodized salt, leaving children at risk for entirely preventable gaps in cognitive development. Iodizing salt raises its cost approximately 5 percent; the benefit/cost ratio for iodization is for benefits between $15 and $520 for every dollar invested (Behrman, Alderman, and Hoddinott 2004). Rapid expansion is achievable; Madagascar increased coverage of iodized salt from 0 percent of households in 1995 to 98 percent of households in 1999, just four years later. It is important to address both the supply and demand for iodized salt, by both raising public awareness of iodine deficiency and the importance of iodized salt and by ensuring access to a supply of adequately iodized salt by focusing on compliance in the salt industry through monitoring and enforcement of iodization standards (Goh 2002). In MENA, countries often have programs, legislation, or policies that mandate the iodization of salt, but these have not been fully and universally implemented on the ground (FAO 2003, 2005, 2011). Coverage and deficiencies in other micronutrients, such as vitamin A and iron, should be investigated; fortification, supplements, and other forms of micronutrient supplementation are very cost-effective and a top priority among all global development challenges (Lomborg 2009).

Parenting and Community Involvement to Promote Development

There are successful programs that can help parents learn to engage their children and promote cognitive, social, emotional, and physical development. Jordan has examples of programs engaging parents and the community (see box 3.2). A program in a poor area in Brazil provided workshops to mothers on why play and interaction are important for children's development, and how to promote development through play and interaction even in everyday activities and household tasks. Workshops were followed with home visits to reinforce and support

Box 3.2 Engaging Parents and the Community in Jordan

Recognizing that most young parents do not have the knowledge or skills to provide a stimulating home environment or promote social and emotional development, Jordan developed the Better Parenting project. The project particularly targeted disadvantaged families, and was implemented through partnerships between UNICEF and local NGOs. Topics covered include child development and the role of the family, positive discipline, and the importance of play.

During its early years, the program struggled to reach fathers. Mosques were identified as an ideal place to connect with fathers and the community, and so the program reached out to the religious community. An Imam Guide on early childhood development (ECD) was produced and used to train imams and khatibs (mosque preachers) on how to teach about better parenting during or after Friday prayers. The guide emphasized ways parents can actively support their children's development, and especially the role of fathers. This approach to outreach engaged communities and parents, and substantially increased the participation of men in Better Parenting.

Source: UNICEF 2009.

mothers' new skills. Compared to a control group, significant improvements in children's development were observed as a result of the program (Eickmann et al. 2003). Better parenting can pay off in the long run; an early childhood stimulation program in Jamaica targeting stunted children used weekly visits from community health workers over two years to enhance parenting skills and encourage interactions that developed cognitive, social, and emotional skills. Twenty years later, the intervention increased earnings by 25 percent (Gertler et al. 2014). Existing health worker programs can also incorporate early childhood messages. For instance, in Pakistan an ECD module was integrated into the Lady Health Workers Program, which delivered ECD messages through home visits and community group meetings, which were also integrated with health and nutrition services. The integrated program enhanced the early development of children and cost $4 per month per child (Gowani et al. 2014).

Parent-focused programs and community involvement can help raise awareness and promote better parenting. In Turkey, an enrichment project targeting mothers of young children incorporated lessons on discipline and parent-child communication into group meetings that covered a variety of ECD topics. Mothers in the enrichment program were less likely to use physical or verbal punishment and more likely to reason with their children and communicate effectively than mothers not in the program (Kagitcibasi, Sunar, and Bekman 2001). When parents have a better understanding of their children's development and more positive ways to engage in discipline, children's development is protected and enhanced.

Reaching out to engage communities and communicate about ECD through multiple outlets can also help in supporting children's development and decreasing violent discipline. In the Maldives, 12 core messages on early development were communicated through print, radio, and television media (Naudeau et al. 2011). Messages about engaging children in developmental activities and appropriate child discipline can also be incorporated whenever children contact the health system during their early years—at immunizations, during child health days, or when mothers and children come in contact with health professionals for care. It is particularly important that messaging be tailored to reach the populations with the greatest risk for poor ECD outcomes. For instance, illiterate parents cannot be educated about the importance of development activities through written messages. However, sequences of pictures can be used to illustrate development activities—this was the approach used in Brazil to effectively teach mothers to support their children's development (Eickmann et al. 2003).

Promoting Early Learning

Opportunities for early learning can be expanded in a variety of ways. In MENA, pre-primary gross enrollment is just 27 percent (World Bank 2014), which means that almost three-quarters of children are missing an important opportunity to develop and become school ready. Rapid expansion of pre-primary classrooms is one approach to expanding access to early childhood care and education (ECCE) (see box 3.3 for an example of pre-primary expansion in Algeria). In Argentina, in 1993, a year of compulsory pre-primary was added to the education system. Over the next six years, additional classrooms were built with enough capacity for more than 180,000 students. The additional building was targeted to poor areas with low pre-primary enrollment based on preschool enrollment in 1991 (Berlinski, Galiani, and Gertler 2009). A study of the effect of pre-primary education on subsequent educational outcomes in Argentina found that one year of pre-primary increased test scores, classroom attention, effort, discipline, and participation (Berlinski, Galiani, and Gertler 2009), essentially improving both cognitive and

Box 3.3 Algeria: A MENA Early Childhood Education Success Story

In 1999, Algeria had a gross enrollment ratio of just 2 percent in pre-primary education. By 2011, just 12 years later, this had risen to 75 percent. The case of Algeria illustrates that rapid expansion is possible for Middle East and North Africa (MENA) countries. How did Algeria expand early childhood education so quickly? In 2004, a pre-primary curriculum was introduced, along with a goal to increase the gross enrollment ratio to 80 percent by 2010. Algeria rapidly expanded government provision of pre-primary. It now has the highest share of government provision in the region, at 86 percent of pre-primary education provided through the government. Expansion in private provision of pre-primary education was also encouraged, with ongoing oversight of the curriculum in both government and private settings.

Source: UNESCO 2014.

social-emotional skills. Improvements in cognitive and socioemotional skills have important implications for adult outcomes. A study of a high-quality early childhood program targeted at disadvantaged children in the United States found that the program created long-lasting improvements in personality skills, which ultimately improved labor market outcomes and health as well as reducing crime (Heckman, Pinto, and Savelyev 2013).

As well as expanding pre-primary classrooms, home-based models of ECCE can also be an effective route to promote early development, especially when expansion of pre-primary is difficult (see box 3.4 for a discussion of promoting children's development in times of crisis). In Colombia, a child care and nursery program used local "community mothers" to provide child care and feeding to children living in poverty in home-based "centers." The program covers nearly one million children under age seven, and has been shown to improve child health and school attendance (Vegas and Santibanez 2010). In the Arab states, traditional Koranic schools, operating out of mosques, taught and cared for young children (UNESCO 2010). In Kenya, children in a Madrasa preschool program that used an Islamic-integrated active learning pedagogy showed substantial improvements in early intelligence, and also performed better than children in a non-Madrasa setting (Mwaura, Sylva, and Malmberg 2008). Mosque-based and Madrasa programs can be expanded and enhanced. Providing a curriculum of activities that is age-appropriate and enhances early development is an important component of all types of ECCE programs. It is also very important to maintain program quality in implementing scaled-up ECCE programs of any type (see box 3.5 for a discussion of tools to assess quality); problems in implementation of three different types of ECCE programs in Cambodia diminished the benefits of the programs (Bouguen et al. 2013).

Box 3.4 Protecting Development in Times of Crisis

Children—and their early development—are particularly vulnerable during times of conflict, but there are effective strategies to protect and support children in conflict and refugee settings. For countries dealing with a refugee crisis due to the conflict in the Syrian Arab Republic, strategies to protect and enhance the development of refugee children should be prioritized. Countries facing their own ongoing conflicts and violence should prioritize creating safe spaces for children. Creating spaces for children to play can ensure children have a safe environment and space with structure and stimulation. Incorporating early learning into children's spaces can help ensure children can successfully transition to school. Preschool teachers in particular can be important emotional supports to children. For example, a refugee camp in Ethiopia effectively integrated early childhood development (ECD) into the community by creating supportive spaces specifically for preschool-age children.

Source: International Rescue Committee 2006.

Box 3.5 Tools for Assessing Early Environments and Development

There are a variety of tools that can help guide countries' work to promote early childhood development (ECD). These tools can help with both research and self-assessment. For instance, the Early Childhood Environment Rating Scale-Revised Version (ECERS-R) can be used to assess early learning and care, in terms of both the classroom environment and quality. The ECERS-R can be used by researchers or policy makers working to identify systematic challenges in early care; it can also be used by early care programs and providers to assess and address their own strengths and weaknesses. Similarly, the Early Development Instrument (EDI) can be used to assess children's school readiness along a variety of dimensions during pre-primary years. Both of these tools have been used widely in international settings and could be helpful to Middle East and North Africa (MENA) countries assessing ECCE programs and school readiness.

Source: Guhn, Janus, and Hertzman 2007; Sakai et al. 2003.

Addressing Multiple Dimensions of Development

There is evidence that ECD interventions focusing on multiple dimensions of development may be more effective. Evidence on the combined effects of nutrition and child stimulation is demonstrated from a study in Jamaica. Nine- to 24-month-old children receiving both nutritional supplements and stimulation who were stunted scored higher on developmental tests than children receiving only one or neither of the interventions (Grantham-McGregor et al. 2007). After two years of intervention (1 kilogram of milk-based formula per week and 1-hour weekly home visits by community health workers to improve mother-child interactions through play), the development quotient gap between stunted and non-stunted children was nearly erased among the malnourished. More research is needed on which combinations of interventions are effective, as there have been few studies to date (Engle et al. 2011; Grantham-McGregor et al. 2014; Nores and Barnett 2010). The balance of evidence for the case of combining nutrition and stimulation is that combining interventions certainly does not decrease their effects, although synergies may be small or nonexistent. Combining interventions does have substantial practical advantages, such as the fact that children at risk for poor nutrition are also likely to face poor development in other dimensions, or that additional benefits may be achieved at a lower cost when adding a component to an existing program (Grantham-McGregor et al. 2014).

The Role of Early Childhood Development in Shared Prosperity

Promoting ECD can be an important element of addressing inequality of opportunity and promoting shared prosperity. A key element of countries' social contracts is often that individuals will have equal opportunities to succeed, a "level playing field." Under such a social contract, children should not face different chances of success based on the advantages or disadvantages of the circumstances into which they are born. In early childhood, this implies universal access to experiences and services that promote development, including health, nutrition, and education (Narayan, Saavedra-Chanduvi, and Tiwari 2013). Disadvantaged children can particularly benefit from early childhood programs. For instance, in Indonesia, an early childhood education and development program decreased the achievement gap between poor and rich children (Jung and Hasan 2014). Expanding public pre-primary has also been identified as the most effective education reform to reduce income inequality (Checchi and van de Werfhorst 2014). Since inequalities in early childhood underlie many adult inequalities, programs that address gaps during early childhood can be powerful tools for addressing inequality.

National Strategies and National Action

ECD can be supported by and integrated into many programs and policies, but having an overarching national commitment to ECD is an important element of promoting children's healthy development (see box 3.6 for an example of how

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Box 3.6 Public Commitment to Reduce Chronic Malnutrition Pays Off in Peru

Like many countries, Peru struggled to reduce malnutrition. In 1996, 32 percent of children under five were stunted. Despite numerous nutrition programs, little progress had been made when, a decade later in 2005, 30 percent of children under five were stunted. A key turning point for children's nutrition was in 2005, when stakeholders joined together in a coalition, the Child Malnutrition Initiative, incorporating both government agencies and nongovernment actors. This coalition played a crucial role in advocacy, pushing for political and public commitments to reducing malnutrition. During the 2006 presidential campaign, the coalition challenged presidential candidates to prioritize malnutrition, and all the candidates pledged to reduce malnutrition by five percentage points in children under five within five years, referred to as the "5 by 5 by 5" campaign. Region presidents also promised a 5 percentage point reduction in malnutrition by 2011.

These public commitments were complemented by policy actions. In 2005, Peru adopted a conditional cash transfer (CCT) program targeting children at high risk for malnutrition. Then in 2007, the national strategy for poverty reduction was rolled out, representing a major shift in policy. The policy recognized the many contributing factors driving malnutrition, and in addition to traditional food distribution interventions, incorporated interventions such as health worker training, teaching parents cooking skills, and addressing hygiene and water.

The public commitments and national strategies paid off. While in 2005 around 30 percent of children were stunted, by 2011 this number had dropped to 18 percent. While there is still work to do, the public commitment of the government, backed by a national strategy and the engagement of civil society, has made addressing malnutrition a national priority and made an enormous difference in the health and development of Peru's children.

Source: Acosta and Haddad 2014.

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a national commitment to ECD can make a difference in the lives of children in Peru). ECD is multisectoral, and multiple actors are engaged in work related to ECD. For instance, promoting pre-primary education is part of the strategy of the Ministry of Education in West Bank and Gaza, while child health issues are addressed by the Ministry of Health (Ministry of Education and Higher Education [West Bank and Gaza] 2014; Palestinian Ministry of Health 2012). National strategies can help integrate and coordinate ECD initiatives and actions across sectors, ministries, and agencies.

A national focus on ECD can also spur action. Jordan is an example of a MENA country that has taken a number of steps to prioritize and integrate ECD policies and programs. Jordan launched a comprehensive national ECD strategy in 2000, which led to a Plan of Action in 2003–2007, and linked to a National Plan of Action for Children for 2004–2013 (UNICEF 2009). This work has raised the profile of ECD within the government and across agencies, set clear goals for progress, and spurred the development and expansion of numerous programs. For instance, ECD is one of the four components of Jordan's Educational Reform for a Knowledge Economy (ERfKE) project, funded in part by the World Bank. ERfKE is an initiative designed to improve education quality and enhance human capital in Jordan. ERfKE takes a lifelong learning approach to education, starting in early childhood. The reform strategy recognizes the importance of early childhood in school readiness, and works to increase institutional capacity, train kindergarten teachers, expand kindergartens for the poor, and raise public awareness of ECD.

As part of national strategies, it is important to identify or establish a leading agency or high-level council to plan, coordinate, implement, and evaluate national action on ECD (UNESCO 2010). The Republic of Yemen has established a Higher Council for Motherhood and Childhood. This is the sole body that coordinates across ministries, NGOs, and other ECD actors in Yemen. The Council is also responsible for drawing up policies, legislation, and strategies that promote ECD (World Bank 2012). National strategies can also be furthered by laws and legislation to promote ECD. For instance, countries have implemented legislation that incorporates pre-primary into basic education (UNESCO 2010).

Prioritizing ECD in a country requires identifying the policies in place and policy gaps in ECD promotion. One tool that can be useful for countries in assessing their policies for ECD is the Systems Approach for Better Education Results (SABER) ECD tool (World Bank 2013). This tool assesses policies from a multisectoral perspective and across a variety of actors to identify countries' progress towards ECD goals and to generate policy steps to promote ECD. A checklist approach can be used to identify whether policies to promote ECD are in place at a country level, including such indicators as childhood immunizations, salt iodization, parenting programs, free pre-primary, and legal protections of young children (see box 3.7 for a discussion of countries' current legal commitments to young children). The tool focuses on three policy goals across systems: (1) establishing an enabling environment, (2) implementing widely, and (3) monitoring and assuring quality. This tool has been used to

Box 3.7 MENA Countries' Commitment to Children's Rights

A number of Middle East and North Africa (MENA) countries have made an important commitment to children by signing on to the Convention on the Rights of the Child (CRC). The CRC provides a framework under which children have legal rights in a variety of dimensions, including in terms of political, economic, and social rights. Parents, communities, and governments have an obligation to help children realize those rights, such as the right to the highest attainable health. These rights have implications for early childhood development (ECD) programs. For example, providing early childhood care and education (ECCE) could be one method for protecting children's rights. Algeria, Djibouti, the Arab Republic of Egypt, Iraq, Jordan, Lebanon, Libya, Morocco, Syria, Tunisia, and the Republic of Yemen have all signed this important treaty.

Sources: United Nations 1989; UNESCO 2010, 2012; UNICEF 2013.

assess ECD globally, including in some MENA countries. Assessing policies, both "on the books" and "on the ground," connecting them to outcomes, and identifying a way forward with SABER-ECD can be powerful tools for countries' protection of children and human development.

The Importance of Information and Knowledge

One important aspect of ensuring children's healthy development in MENA is collecting better information on and during early childhood and sharing knowledge within MENA and globally. While MENA countries face somewhat different challenges, they can learn from each other. Adding and improving regional and national statistics on the state of children's health and development during the early years is vital for identifying problems and monitoring progress in improving ECD. For instance, in keeping with its national ECD strategy, Jordan is also working on data collection that allows for the monitoring of ECD. Demographic and Health Surveys (DHS surveys, fielded as the Jordan Population and Family Health Surveys, have been implemented in 1990, 1997, 2002, 2007, 2009, and 2012. The 2007 survey included the first ECD survey module, with seven questions to mothers of children aged three to eight about their youngest child's development, including counting ability, early literacy, dispute resolution, hygiene, reading, and participation in family discussions (Department of Statistics and Macro International Inc. 2008). As of 2012 the Jordanian DHS surveys have added ECD questions on the home environment, development activities, early childhood education programs, and violent discipline (Department of Statistics [Jordan] and ICF International 2013).

Conducting additional in-depth surveys and research on ECD, and making data and findings publicly available is an important step to better understanding the challenges facing young children in MENA. Only with information on the risk and protective factors children face during their early years can the children at greatest risk for poor ECD outcomes be targeted for interventions. Only with a full understanding of the challenges children face during their early years will it be possible to ensure children in MENA can achieve their full potential.

Conclusions

The shortfalls in ECD in MENA represent a substantial threat to generations of children and the human and economic development of MENA countries. There are a number of obstacles and challenges that make enhancing ECD difficult. ECD is multisectoral, with dimensions of health, education, and social protection. Many actors' choices affect ECD, starting with children's parents, but also a broad network of private sector, NGO, and public sector bodies. Connecting and coordinating these diverse sectors and actors is a substantial challenge to promoting ECD. The lack of data on the state of ECD in MENA also presents an obstacle to improving ECD in the region. Without good data, countries cannot assess their state or monitor progress in enhancing ECD. Compounding the lack of data on the state of ECD is a shortage of evidence on what works in the MENA region, as there is very little research on ECD programs in the region.

Although the MENA region faces many challenges in working to improve ECD, the good news is that there are some "easy wins" where proven strategies, based on international evidence, can be rapidly expanded. For instance, salt iodization and immunizations should be essentially universal. Often it's an issue of scaling up to full coverage. For instance, all the MENA countries have substantial immunization programs, but not all had scaled up to the level of immunizations that would effectively protect children against disease outbreaks. Enormous progress can also be made rapidly, as in the case of Algeria's rapid expansion of pre-primary from 2 percent to 75 percent enrollment over just 12 years. When countries make ECD a priority, great changes are possible, changes that can alter the course of human development for millions of children in MENA.

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CHAPTER 4

Algeria

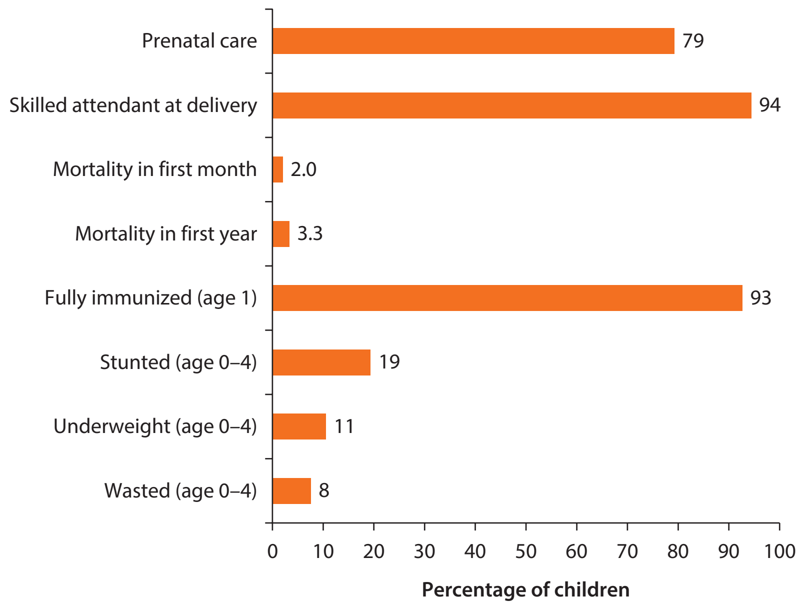
The State of Early Childhood Development in Algeria

Early childhood development (ECD) in Algeria is fairly advanced in some areas but not in others, putting children at risk of falling short of their full potential for early development. Figure 4.1 shows summary indicators of ECD in Algeria. In terms of early health care, Algeria does fairly well. While only 79 percent of births received prenatal care, 94 percent had a skilled attendant at delivery. In the first month of life, 2.0 percent of children die, and 3.3 percent die in the first year of life. Algeria has high immunization rates, with 93 percent of children age one fully immunized. Malnutrition is a problem in Algeria, where 19 percent of children are stunted, 11 percent are underweight, and 8 percent are wasted.

This chapter presents a detailed analysis of the status of ECD in Algeria. The health status of children is examined through indicators (see box 4.1) of early mortality, prenatal care, having a skilled attendant at birth, and immunizations. Children's nutritional status is measured by stunting (height-for-age), underweight (weight-for-age) and wasting (weight-for-height). To better understand the context and conditions that influence ECD outcomes, the analysis also examines background factors that may be associated with ECD outcomes at the individual, household, and community levels and their relationships (see annexes 4A, 4B, and 4C for additional information on the data and these relationships). For the overall country context, see box 4.2. Finally, the analysis measures the gaps and extent of inequality in ECD outcomes.

The analysis is based on the latest available data: the Pan Arab Project for Family Health survey (PAPFAM) from 2002. The data covers primarily the health dimension of early childhood from before a child is born up through age four. If more indicators were available and examined, they could provide an even richer picture of ECD in Algeria. This chapter also refers to the summary findings of the 2006 Algerian Multiple Indicator Cluster Survey (Ministry of Health, Population and Hospital Reform and National Office of Statistics 2008). The microdata for this survey were not available and therefore could not be used for this chapter.

Figure 4.1 ECD Summary Indicators



Source: World Bank calculations based on Algeria PAPFAM 2002.
Note: ECD = early childhood development.

Box 4.1 ECD Indicators Examined in Algeria

Prenatal care
Skilled attendant at delivery
Neonatal mortality (dying in the first month)
Infant mortality (dying in the first year)
Fully immunized
Stunting/height-for-age
Underweight/weight-for-age
Wasting/weight-for-height

Survival, Health Care, and Nutrition

The first step in healthy ECD is simply surviving early childhood. In Algeria, 1 in every 30 children dies before the age of one. In 2002, infant mortality, which refers to children dying before their first birthday, was 33 children per thousand.[1] Most infant mortality is composed of neonatal mortality—children dying within the first month of life. In Algeria, 20 children out of every thousand die during their first month of life. While infant mortality has been falling over time—down from around 55 children per thousand in 1990, compared to other countries in the region, Algeria has made somewhat less progress (World Development Indicators).

Box 4.2 Summary of Development Indicators in Algeria

Algeria is an upper-middle-income country with a gross domestic product per capita in 2012 of about $5,348 (in current US Dollars, table B4.2.1). Algeria has an estimated population of 38 million, of which 27 percent are under the age of 15. The average life expectancy at birth is 71 years. The primary school gross enrollment rate in Algeria was 119 percent in 2012. Overall, Algeria ranks 93 out of 186 countries with comparable data in the 2012 Human Development Index.

Table B4.2.1 Algeria's Socioeconomic Indicators

	1990	*2012*
Total population (millions)	26.2	38.5
% of population under 15	44	27
GDP per capita (current US Dollars)	$2,365	$5,348
Life expectancy at birth (years)	67	71
School enrollment, primary (% gross)	90	117

Sources: UNDP 2014; World Development Indicators.
Note: GDP = gross domestic product.

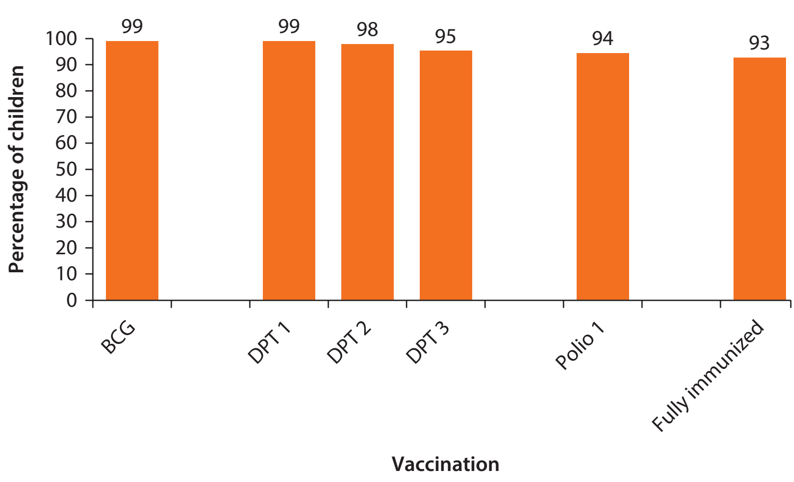
Addressing both early mortality and ECD begins during pregnancy and delivery. Yet, in Algeria as of 2002, only 79 percent of births received prenatal care from a health professional.[2] This means that one-fifth (21 percent) of births did not receive prenatal care, putting children (and mothers) at great risk. Although Algeria has been making progress in raising prenatal care rates, which were 58 percent in 1992 (World Development Indicators), there is still substantial room for improvement. Despite progress from 2002 to 2006, when the rate was 89 percent (Ministry of Health, Population and Hospital Reform and National Office of Statistics 2008), there remain gaps in prenatal care coverage.

In terms of delivery, however, almost all (94 percent) births[3] in Algeria in 2002 were attended by a health professional. This rate remained essentially the same (95 percent) in 2006 (Ministry of Health, Population and Hospital Reform and National Office of Statistics 2008). Algeria has been doing well on delivery care for decades; in 1992, the rate was already at 72 percent (World Development Indicators). Algeria is well above the regional average for delivery care of 79 percent (UNICEF 2014); however, there is a notable gap of 15 percentage points between prenatal care, at 79 percent, and delivery care, at 94 percent. The gap indicates that there are health services available to women that are not being used for prenatal care.

Algeria has good immunization coverage, with around 93 percent of one-year-olds fully immunized and therefore protected against preventable childhood illnesses, loss of life, and impaired development. Children are considered fully immunized if they have received immunizations for all six major preventable childhood diseases: tuberculosis, diphtheria, whooping cough, tetanus,[4] polio,[5] and measles. Data was not available in the PAPFAM survey on measles vaccine coverage, or the second and third polio doses, so full immunization is calculated based on the other immunizations. Children should be fully immunized by twelve months of age; this analysis focuses on children 12–23 months to allow for optimal parental recall. For the immunizations with available data in the PAPFAM, Algeria is close to full immunization coverage; 93 percent of children 12–23 months are fully immunized.[6] As figure 4.2 shows, the first polio vaccine has the lowest coverage rates (94 percent), suggesting that if data were available on the second and third doses, lower rates of immunization would be observed. However, as of 2002 Algeria had achieved near-universal coverage of the BCG (Bacillus Calmette-Guérin) and DPT (diphtheria, pertussis, tetanus) vaccines, indicating substantial health system capacity for delivering immunizations. In 2006, with data on all immunizations, the rate of full immunizations was 88 percent. Measles vaccines had the lowest coverage, at 91 percent, and there were deficits in receiving the full sequence of three-dose vaccines (Ministry of Health, Population and Hospital Reform and National Office of Statistics 2008).

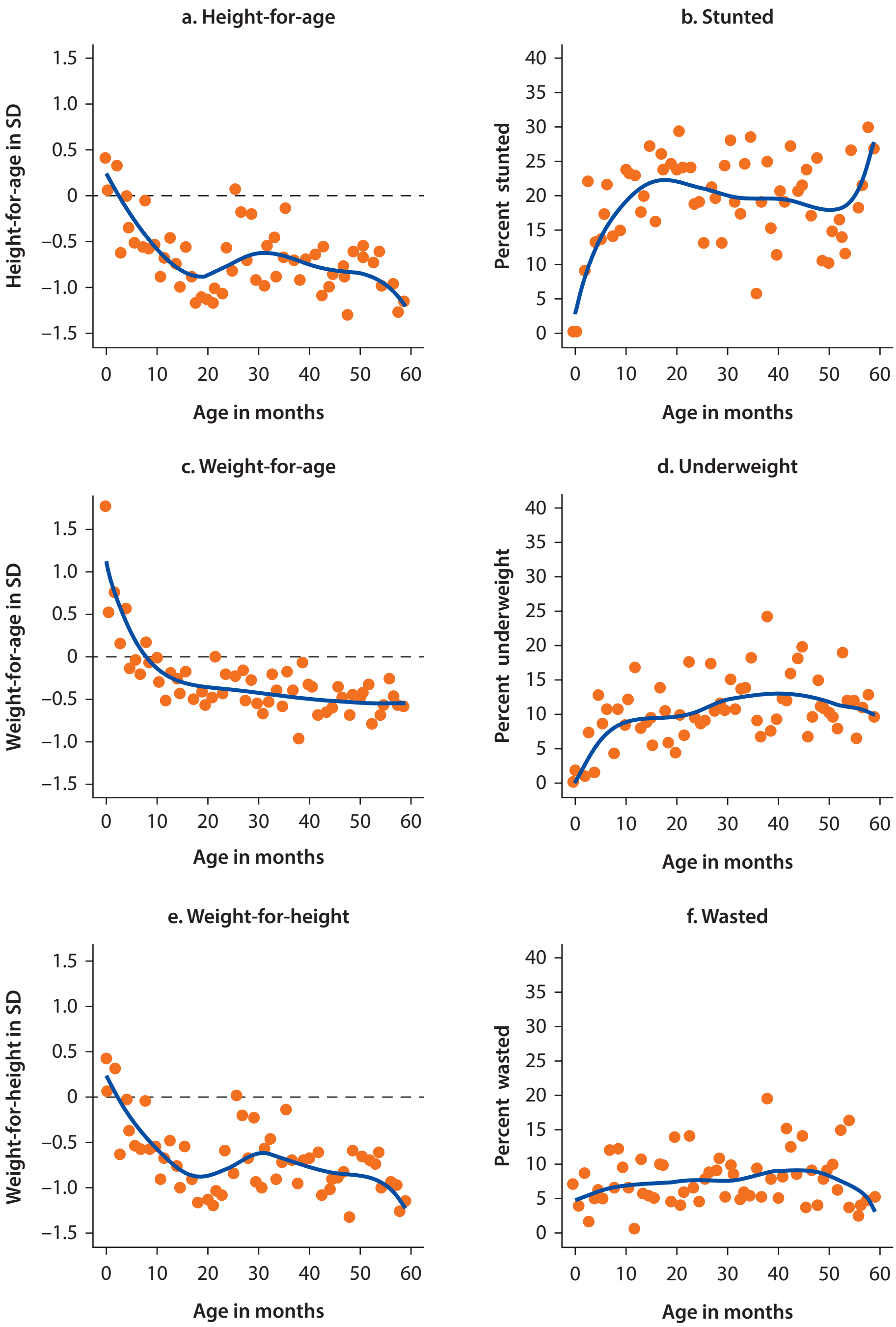
Children in Algeria start their lives on fairly healthy footing, in terms of nutrition measured by height-for-age; however, over the first two years of life, they experience a substantial falling off from healthy growth. Figure 4.3 shows how Algerian children fare compared to a healthy reference population.[7] We examine nutrition status in Algeria using six indicators: stunting and height-for-age, underweight and weight-for-age, wasting and weight-for-height. In 2002, almost one in five children (19 percent) ages zero to four were stunted, 11 percent were underweight, and 8 percent were wasted. Substantial improvements had occurred in nutrition by 2006, when 11 percent of children were stunted, 4 percent underweight, and 3 percent wasted (Ministry of Health, Population and Hospital Reform and National Office of Statistics 2008).

Figure 4.2 Percentage of Children Aged 12–23 Months Immunized, by Vaccination



Source: World Bank calculations based on Algeria PAPFAM 2002.
Note: BCG = Bacillus Calmette-Guérin (tuberculosis vaccine); DPT = diphtheria, pertussis, tetanus. Since there were data issues with the polio 2 vaccine and information on polio 3 and measles was missing for Algeria, the percentage of children fully immunized is likely a slight over-estimate.

Figure 4.3 Average Height-for-Age, Weight-for-Age, and Weight-for-Height Compared to Healthy Reference Population in Standard Deviations and Percentage Stunted, Underweight, and Wasted, by Age in Months, Ages 0–4 Years



Source: World Bank calculations based on Algeria PAPFAM 2002.
Note: SD = standard deviations.

Nutrition patterns vary across the different measures. In 2002, children in Algeria began life with height-for-age that is similar to the healthy reference population. However, their growth falters early, with height-for-age that is below the healthy average within the first several months of life. At birth, children are similar to the height of the healthy reference population, slightly above average in weight, and average in weight-for-height. Height-for-age is low for the population, fluctuating between around −1 SDs (standard deviations) and −0.5 SDs from 15 months onward. Correspondingly, stunting rises rapidly; more than 20 percent of children are stunted by 20 months of age. Stunting decreases slightly between 20 months and 50 months, but then appears to rise again between 50 months and 60 months, corresponding to a drop in height-for-age. In the first year of life, children's weight-for-age falters. Weight-for-age remains about half an SD below the reference median after age one. Likewise, around 10 percent of children are underweight by age one, and between 10 and 15 percent of children are underweight between ages one and five. Weight-for-height, graphed against age, shows that children fall below a healthy weight-for-height in the first year of life and fluctuate between −0.5 and −1 SD below the healthy reference median thereafter. Wasting, being far below a healthy weight-for-height, generally increases with age.

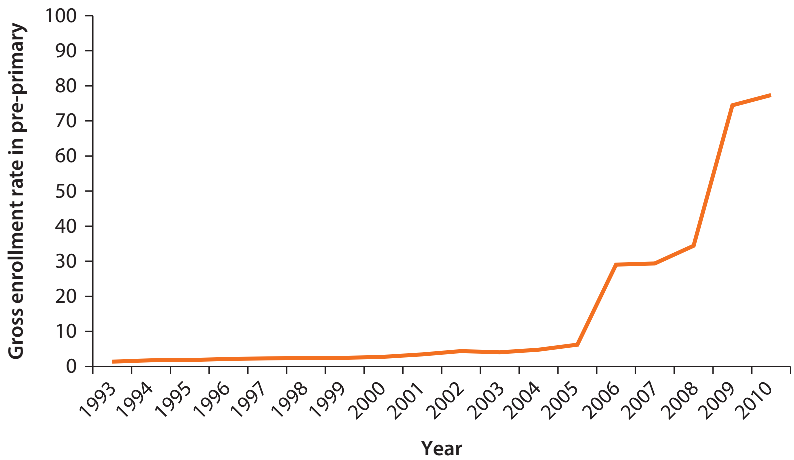
Micronutrients such as iron, vitamin A, zinc, and iodine play an important role in both physical and cognitive development. Iodine plays a vital role in cognitive development, and iodine deficiency is the most common cause of preventable mental retardation and brain damage in the world (El-Zanaty and Way 2009). Iodized salt is the primary means for delivering iodine to children. In 2006, although about two thirds (61 percent) of households had adequately iodized salt,[8] the lack of iodized salt in the remaining third (39 percent) of households puts children in these households at great risk for impaired cognitive development (Ministry of Health, Population and Hospital Reform and National Office of Statistics 2008).

Cognitive, Social, and Emotional Development

Evidence has shown that early childhood care and education (ECCE) improves cognition and socioemotional development, with benefits that can last a lifetime. While the 2002 PAPFAM does not collect data on early childhood education, other sources indicate that, as of 2010, Algeria has a 77 percent gross enrollment rate in pre-primary (World Development Indicators). Algeria has made enormous progress in ECCE attendance in recent years (figure 4.4). Starting in 1993, gross enrollment in pre-primary was only 1 percent. As recently as 2005, the gross enrollment rate in pre-primary was only 6 percent, but starting in 2006, enrollments rapidly increased.

Although it has been proven that play and interaction are important components of ECD, children in Algeria are missing out on these opportunities for psychosocial growth. In the 2006 MICS survey, caretakers of children ages zero to four were asked whether adults in the household had engaged in any of six different activities that support child development.[9] The results showed that less than two-thirds (62 percent) of children zero to four had experienced four or

Figure 4.4 Gross Enrollment Rate in Pre-Primary, 1993–2010



Source: World Development Indicators.

more development activities (Ministry of Health, Population and Hospital Reform and National Office of Statistics 2008).

Another challenge that risks hindering the healthy development of children in Algeria is violent discipline. Disciplining children is an important part of child rearing. However, research has found that violent discipline negatively impacts the physical, psychological, and social development of children (UNICEF 2010). Violent child discipline[10] is common in Algeria, with 83 percent of children ages two to four having experienced it as of 2006 (Ministry of Health, Population and Hospital Reform and National Office of Statistics 2008).

Key Factors Affecting Early Childhood Development

A number of background characteristics at the child, family, and community levels affect ECD outcomes: gender, parents' education, household socioeconomic status (wealth),[11] geographic location (region or governorate), and residence (urban/rural). Understanding these relationships can help identify why some children have poor ECD outcomes and which children to target with policy or programmatic interventions.

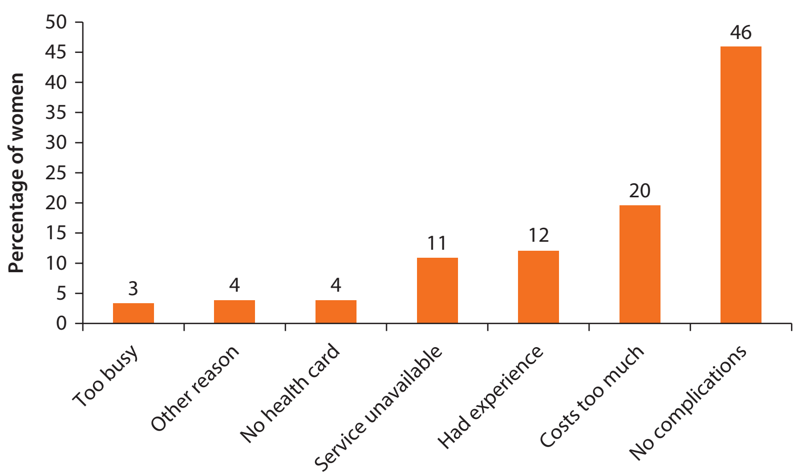
Survival, Health, and Nutrition

An Algerian child's chance of dying in the first year varies substantially by background characteristics. As of 2002, boys have a higher chance of dying in the first year of life than girls; this is a common pattern globally due to genetic factors (Hill and Upchurch 1995). Wealth is also related to mortality early in life: neonatal mortality was 24 per thousand in the poorest fifth of households compared to 16 per thousand in the richest fifth of households. The gap is even larger in infant mortality which was 39 per thousand in the poorest fifth of households compared to 21 per thousand in the richest fifth of households. Similar differences were observed with women's education and partner's education as with wealth. Rural areas have slightly higher infant mortality than urban areas. After accounting for multiple characteristics, children from the fourth level of wealth were less likely to die in the first month of life than children from the poorest fifth of households. Female children were less likely to die in the first month of life. Children from the fourth and richest fifth of households and those with secondary-educated household heads were less likely to die in the first year of life.

Use of prenatal care is closely associated with wealth, education, and geography. Use of prenatal care is 79 percent on average nationally as of 2002. While 93 percent of births in the richest fifth of households received prenatal care, only 63 percent of births in the poorest fifth of households did so. The differences between a mother or father with no education and a mother or father with secondary or higher education were very similar to the wealth gaps. Births in rural areas were less likely to receive prenatal care (71 percent) than births in urban areas (86 percent). Taking into account other characteristics, use of prenatal care was significantly[12] higher for births from all other wealth statuses as compared to the poorest fifth of households. Mothers and fathers with more education were significantly more likely to use prenatal care. Being in a rural as opposed to urban area significantly decreased the chance of prenatal care.

Lack of perceived need, cost, and unavailability are all barriers to the use of prenatal care. The 21 percent of women who did not use prenatal care were asked why they did not (figure 4.5). The most common reason was that they had no complications (46 percent). This reason and "had experience" (11 percent) indicate that prenatal care is often misperceived as curative,

Figure 4.5 Reasons for Not Receiving Prenatal Care, Reported by Women Who Did Not Use Prenatal Care



Source: World Bank calculations based on Algeria PAPFAM 2002.

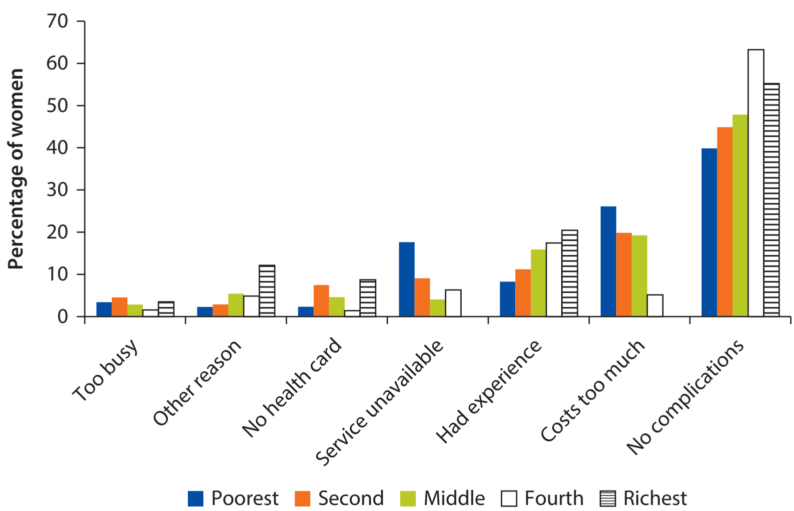
rather than preventive, medicine. Cost was the next most common barrier to prenatal care use (20 percent) along with unavailability of prenatal care (11 percent).

Cost and unavailability differentially affect women by wealth level (figure 4.6). Poorer women, who are less likely to use prenatal care, are also more likely to report cost or availability barriers. While 18 percent of women from the poorest fifth of households cited service unavailability as their primary reason for not using prenatal care, 0 percent of women from the richest fifth of households did so. Likewise, 26 percent of women from the poorest fifth of households cited cost as their reason for not using prenatal care, compared to 0 percent of women from the richest fifth of households.

Differences in deliveries by skilled birth attendants, based on wealth, education, and geography, were smaller than in prenatal care, but are still related to background. Births in the poorest fifth of households had an 87 percent chance of being handled by a skilled attendant, compared to a 98 percent chance in the richest fifth of households. Similar patterns were observed by women's and partner's education. The urban rate of delivery care was 97 percent while the rural rate was 90 percent. After taking into account multiple characteristics, use of delivery care increased significantly with higher wealth. There were significant differences in use of delivery care by women's education and partner's education. Rural areas have significantly lower chances of deliveries by skilled attendants.

Algeria has a high level of full immunizations (93 percent) and moderate differences in access to this important health resource based on background. There are some disparities in immunization coverage by parent's education level, geography, and wealth. For instance, while only 84 percent of children

Figure 4.6 Reasons for Not Receiving Prenatal Care by Wealth Level, Reported by Women Who Did Not Use Prenatal Care



Source: World Bank calculations based on Algeria PAPFAM 2002.

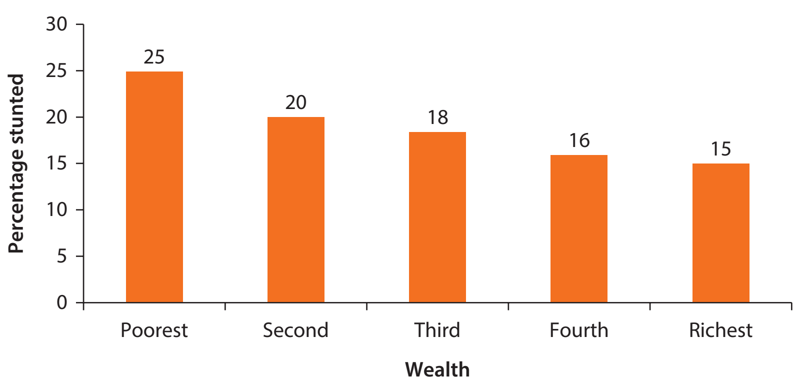
12–23 months from the poorest fifth of households have been fully immunized 93–97 percent of children from other wealth levels have been immunized. The second fifth of households actually has the highest immunization rates, at 97 percent. There was a gap between illiterate mothers, 90 percent of whose children were immunized, and secondary- or higher-educated mothers, 95 percent of whose children were immunized. There is a small rural-urban gap, with 91 percent of rural children immunized compared to 94 percent of urban children.

After taking into account other characteristics, children in the second and third fifths of households in terms of wealth were significantly more likely to be immunized than the poorest children. Children with primary-educated mothers were significantly more likely to be immunized than illiterate mothers, but there were no other significant differences based on parent's education. Overall, it is notable that while Algeria struggles to reach the poorest households and illiterate mothers for immunizations, generally the immunization program is acting as a broad public health program without large differences based on background.

In Algeria, stunting shows moderate differences by wealth level, suggesting that both poverty and public health and nutrition problems are behind stunting. For instance, stunting is highest in the poorest fifth of households (25 percent) and decreases with increasing wealth to a still-high 15 percent of the richest fifth of households (figure 4.7). Although information is not available on parent's education in the anthropometric data, information on household head's education is (and the head is likely to be one of the parents). Stunting decreases consistently with increasing household head education, dropping from 23 percent for children with illiterate household heads to 15 percent for children with highly educated parents. Males were slightly more likely to be stunted (21 percent) than females (18 percent), and urban children less likely (18 percent) than rural children (21 percent).

After taking into account other characteristics, children from higher wealth levels are significantly less likely to be stunted as compared to the poorest fifth

Figure 4.7 Percentage of Children Aged 0–4 Stunted, by Wealth Level



Source: World Bank calculations based on Algeria PAPFAM 2002.

of households. In terms of height-for-age, children from the third, fourth, and richest fifth of households all have significantly higher height-for-age than children from the poorest fifth of households. Stunting and height-for-age were also affected by the household head's education. Having a preparatory-educated household head significantly decreased the chance of stunting and increased height-for-age. Female children were significantly less likely to be stunted and have significantly higher height-for-age than male children.

Similar but somewhat smaller differences occurred in underweight rates by background characteristics, compared with stunting. The chance of being underweight decreased with wealth and household head's education. There were no appreciable regional or rural/urban differences in rates of being underweight, but rural areas show lower average weight-for-age. After taking into account other characteristics, children were significantly less likely to be underweight in the fourth and richest fifth of households as compared to the poorest fifth of households. In terms of weight-for-age, children from the richest fifth of households have significantly higher weight-for-age than children from the poorest fifth of households. Having a preparatory-educated household head significantly decreased the chance of being underweight, and increased weight-for-age. Female children were significantly less likely to be underweight and have significantly higher weight-for-age than male children.

Wasting and weight-for-height show even smaller differences by background characteristics compared to stunting or underweight and height- or weight-for-age. There was a slight wealth gradient and a slight education gradient for wasting and especially weight-for-height. While there was no difference in wasting for rural/urban areas, there was a difference in average weight-for-height, with rural areas having lower average weight-for-height than urban areas. After taking into account other characteristics, the statistical pattern for wasting and weight-for-height was essentially identical to that of underweight and weight-for-age. In sum, wealth and parents' education appear to have an important impact on early childhood mortality, health, and nutrition.

Children Face Unequal Opportunities for Healthy Development

Children in Algeria face unequal opportunities for healthy development, based on factors beyond their control. To measure the extent of inequality, the analysis calculates (a) the percentage of opportunities that needed to have been distributed differently for equality of opportunity to have occurred for each of the ECD indicators, and (b) the chance of whether these differences might have occurred by random variation (table 4.1). Children face unequal opportunities for healthy development while still in utero. There is moderate inequality in whether their mothers receive prenatal care. The analysis shows that 7.7 percent of opportunities would have to be distributed differently for children to have equal opportunities for prenatal care. The opportunity for delivery with a skilled professional is more equal, with only 2.4 percent of opportunities needing to be redistributed for equality of opportunity to have prevailed. While there are unequal chances to

Table 4.1 Percentage of Opportunities to Be Redistributed

	Dissimilarity index
Prenatal care	7.7***
Skilled delivery	2.4*
Fully immunized	2.2
Neonatal mortality	13.9
Infant mortality	14.7
Stunted	9.9

Source: World Bank calculations based on Algeria PAPFAM 2002.
Note: Significance level: * = chance <5 percent, ** = chance <1 percent, *** = chance <0.1 percent.

Table 4.2 Contributions of Background Characteristics to Inequality
Percentage

	Wealth	*Woman's education*	*Partner's education*	*Rural*	*Head's education*	*Child's sex*
Prenatal care	21.3	37.0	26.4	15.4	n.a.	n.a.
Skilled delivery	17.9	36.8	22.3	23.0	n.a.	n.a.
Fully immunized	44.5	36.2	16.3	3.0	n.a.	n.a.
Neonatal mortality	28.9	n.a.	n.a.	2.2	19.0	2.2
Infant mortality	42.8	n.a.	n.a.	5.0	41.9	5.0
Stunted	56.4	n.a.	n.a.	4.2	32.0	4.2

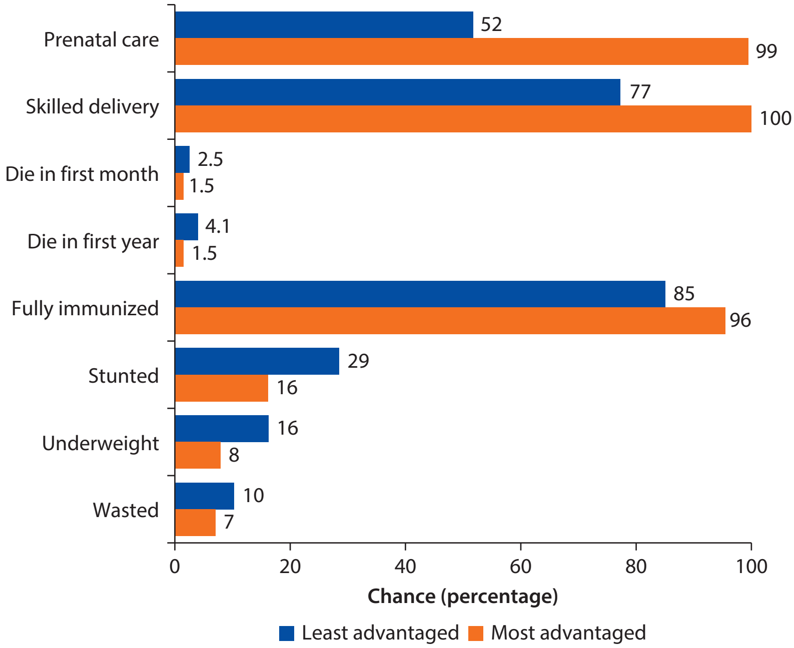
Source: World Bank calculations based on Algeria PAPFAM 2002.
Note: Shapley decompositions of the dissimilarity index. n.a. = not applicable or not available.

die early in life, since this is a rare occurrence, it is not possible to ascertain whether these differences are due to chance. Differences observed in immunizations and stunting may also be due to chance.

Wealth and education make the largest contributions to children's unequal opportunities. Table 4.2 shows the different contributions of circumstances to inequality for different outcomes as percentages. Wealth plays a particularly large role in immunizations and stunting, although differences may be random. Mother's education is particularly important for prenatal care and skilled delivery. Father's education plays a small but important role in inequality for these outcomes as well. Household head's education contributes to stunting. Rural/urban differences are small, and a child's sex contributes very little to inequality.

Children tend to be consistently advantaged or disadvantaged across a variety of different dimensions of ECD, and can face different life chances based on just a few characteristics. Early childhood is when cycles of poverty and inequality are transmitted across generations. If we observe a child who lives in a rural area, in the poorest 20 percent of households, with uneducated parents (a least advantaged child) and compare that child to one who has parents with higher education, is from the richest 20 percent of households, and lives in an urban area (a most advantaged child), we find that they have different chances of healthy ECD. Figure 4.8 presents the chances (predicted chance) of

Figure 4.8 Most Advantaged and Least Advantaged Simulations



Source: World Bank calculations based on Algeria PAPFAM 2002.

different ECD indicators (based on the regressions) for these "least advantaged" and "most advantaged" individuals.

On every indicator, the least advantaged child faces poorer prospects for healthy early development. While a least advantaged child has a 52 percent chance of receiving prenatal care, a most advantaged child has a 99 percent chance—a 47 percentage point gap in prenatal care. In terms of having a skilled delivery attendant, the most advantaged child has a 100 percent chance of having a skilled delivery attendant, compared to a 77 percent chance for the least advantaged child. Children face different prospects for surviving the first month and year of life based on their profile. While a most advantaged child has a 1.5 percent chance of dying in the first month or year, a least advantaged child has a 2.5 percent chance of dying in the first month, and a 4.1 percent chance of dying in the first year. In terms of being fully immunized, a most advantaged child has a 96 percent chance, compared to an 85 percent chance for a least advantaged child. In terms of height and weight, a least advantaged child has a 29 percent chance of being stunted while a most advantaged child has a 16 percent chance, and while a least advantaged child has a 16 percent chance of being underweight, a most advantaged child is half as likely to be underweight (8 percent). There is a smaller gap in wasting, with a 10 percent chance for the least advantaged child compared to a 7 percent chance for the most advantaged child.

Conclusions

Children in Algeria face a number of challenges in their early years. There are some gaps in early health care, especially prenatal care, and early mortality remains relatively high despite good immunization coverage. Malnutrition is a problem for children in Algeria, generating deficits in human development that will last throughout children's lives. There are shortfalls in access to adequately iodized salt, which threaten children's cognitive development. However, Algeria has made substantial progress in providing ECCE to most children. Children's development is threatened by high rates of violent discipline and low rates of development activities. Children also face unequal chances for healthy development based on their circumstances. More must be done to ensure children have equal opportunities to develop to their full potential, particularly focusing on those who are disadvantaged.

Annex 4A: The Data

The Data Set

The analysis utilizes cross-sectional data on the well-being of women and children collected in the Pan Arab Project for Family Health survey (PAPFAM) for 2002 in Algeria. The PAPFAM survey has a household questionnaire that includes important background characteristics of individuals and families. It also has a questionnaire for ever-married women ages 15–49, which captures information on important components of early childhood development (ECD) such as prenatal care, skilled assistance with the delivery of children, and children's immunizations. Weight and height data are collected for children under five years of age. The survey is nationally representative, and includes data that allows for an analysis of the relationship between ECD and child and household indicators within Algeria.

The Sample

The 2002 PAPFAM dataset for Algeria sampled 5,532 households, 9,597 ever-married women ages 15–49, and 4,348 children younger than 5 (anthropometric measures). The analysis in this note is weighted in order to be representative at the national level. The sample sizes reported (N) in each of the tables are based on the unweighted number of observations in the data.

Annex 4B: Indicators by Background Characteristics

Table 4B.1 Indicators by Background Characteristics

	Prenatal care	*Skilled attendant*	*Fully immunized*	*Died in first month*	*Died in first year*	*Stunted*	*Height-for-age (SD)*	*Underweight*	*Weight-for-age (SD)*	*Wasted*	*Weight-for-height (SD)*	*Percent of children*
Gender												
Male				2.3	3.5	20.8	–0.79	11.9	–0.43	8.1	–0.79	50.1
Female				1.7	3.1	17.8	–0.64	9.2	–0.29	7.0	–0.64	49.9
Wealth quintile												
Poorest	63.4	87.1	84.4	2.4	3.9	24.9	–0.96	13.5	–0.62	9.9	–0.96	26.4
Second	77.8	94.7	97.1	2.6	4.2	19.5	–0.80	11.8	–0.40	7.1	–0.80	22.0
Third	79.9	93.9	94.8	2.1	3.6	18.4	–0.67	9.9	–0.40	8.0	–0.67	17.7
Fourth	87.9	97.4	92.5	1.2	2.0	15.9	–0.56	8.1	–0.17	5.5	–0.56	18.0
Richest	92.6	98.2	94.8	1.6	2.1	14.5	–0.42	7.2	–0.05	6.2	–0.42	15.9
Residence												
Urban	86.3	97.0	93.7	2.0	3.0	18.2	–0.63	10.3	–0.29	7.6	–0.63	53.5
Rural	70.5	90.3	91.1	2.1	3.6	20.5	–0.81	10.8	–0.44	7.6	–0.81	46.5
Woman's education												
Illiterate	67.3	89.1	89.5	2.3	4.1							37.6
Read/write	80.6	95.6	92.7	1.8	2.6							15.3
Primary	90.0	97.5	96.6	2.0	2.7							24.7
Preparatory	92.6	98.6	92.8	1.6	2.0							18.4
Secondary+	99.2	100.0	95.3	1.1	1.1							4.1

table continues next page

Table 4B.1 Indicators by Background Characteristics *(continued)*

	Prenatal care	*Skilled attendant*	*Fully immunized*	*Died in first month*	*Died in first year*	*Stunted*	*Height-for-age (SD)*	*Underweight*	*Weight-for-age (SD)*	*Wasted*	*Weight-for-height (SD)*	*Percent of children*
Partner's education												
Illiterate	63.4	87.0	91.9	2.1	3.8							20.3
Read and/or write	78.2	94.0	91.6	2.3	3.8							25.2
Primary	83.6	97.3	91.6	1.9	2.9							25.6
Preparatory	92.6	97.3	95.0	1.6	2.0							21.3
Secondary +	95.0	97.8	94.8	1.9	2.6							6.8
Don't know	75.8	90.1	82.1	2.0	3.7							0.3
Missing	56.6	93.0	100.0	3.8	6.4							0.4
Head's education												
Illiterate						23.2	–0.88	13.4	–0.51	8.3	–0.88	32.2
Read and/or write						20.1	–0.80	10.2	–0.45	7.5	–0.80	13.2
Primary						18.5	–0.70	9.4	–0.34	6.2	–0.70	16.4
Preparatory						15.6	–0.60	9.3	–0.28	7.9	–0.60	19.2
Secondary						17.1	–0.55	8.5	–0.15	7.3	–0.55	13.9
Higher education						14.5	–0.33	6.9	–0.09	6.8	–0.33	5.1
Total	79.2	94.4	92.6	2.0	3.3	19.3	–0.72	10.5	–0.36	7.6	–0.72	100.0
N (observations)	4,297	3,431	780	11,950	11,950	4,348	4,348	4,348	4,348	4,348	4,348	

Source: World Bank calculations based on Algeria PAPFAM 2002.
Note: Blank cells indicate not applicable or not available. SD = standard deviations.

Annex 4C: Relationship between ECD Indicators and Background, When Accounting for Multiple Characteristics

Table 4C.1 Relationship between ECD Indicators and Multiple Background Characteristics

	Prenatal	*Delivery*	*Fully immunized*	*Stunted*	*Height-for-age (SD)*	*Underweight*	*Weight-for-age (SD)*	*Wasted*	*Weight-for-height (SD)*	*Neonatal mortality*	*Infant mortality*
Wealth—20% of households—compared to poorest											
Second	+	+	+	−			+				
Third	+		+	−	+		+				
Fourth	+	+		−	+	−	+	−	+	−	−
Richest	+	+		−	+	−	+	−	+		−
Woman's education—compared to illiterate											
Read/write	+	+		n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Primary	+	+	+	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Preparatory	+	+		n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Secondary+	+	+		n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Partner's education—compared to illiterate											
Read/write	+	+		n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Primary	+	+		n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Preparatory	+	+		n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Secondary+	+			n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Rural	−	−									
Household head education—compared to illiterate											
Read/write	n.a.	n.a.	n.a.								
Primary	n.a.	n.a.	n.a.								

table continues next page

Table 4C.1 Relationship between ECD Indicators and Multiple Background Characteristics *(continued)*

	Prenatal	*Delivery*	*Fully immunized*	*Stunted*	*Height-for-age (SD)*	*Underweight*	*Weight-for-age (SD)*	*Wasted*	*Weight-for-height (SD)*	*Neonatal mortality*	*Infant mortality*
Preparatory	n.a.	n.a.	n.a.	–	+	–	+				
Secondary	n.a.	n.a.	n.a.				+				–
Higher education	n.a.	n.a.	n.a.								
Female	n.a.	n.a.	n.a.	–	+	–	+			–	
P-value (model)	0.000	0.000	0.021	0.000	0.000	0.000	0.000	0.184	0.009	0.015	0.000
Pseudo R-squared	0.123	0.120	0.069	0.014		0.016		0.009		0.012	0.014
Observations (N)	4,297	3,304	780	4,345	4,345	4,345	4,345	4,345	4,345	11,947	11,947

Source: World Bank calculations based on Algeria PAPFAM 2002.
Note: Blank cells indicate no statistically significant relationship. Constant Included, Robust Standard Errors Used, Woman's Education Secondary+ is a perfect predictor for delivery care; ECD = early childhood development; n.a. = not applicable or not available; SD = standard deviations.+ = chance <.05 and positive effect on outcome, – = chance < .05 and negative effect on outcome.

Notes

1. Mortality rates are for children born 1–10 years prior to the survey.
2. A doctor, a registered nurse, or a midwife.
3. As was true for prenatal care, delivery questions are asked about most recent live births in the last five years only. Since live births are likely to be associated with care by a health professional, the percent of live births with a health professional is likely to overestimate the number of deliveries with a health professional.
4. The DPT vaccine is a combination vaccine that covers diphtheria, whooping cough (pertussis), and tetanus. Children must receive three doses to be fully immunized.
5. Children must receive three doses to be fully immunized against polio.
6. As with prenatal and delivery care, these questions were asked of the most recent live birth in the past five years.
7. The units show how different Algerian children are compared with the reference population in terms of standard deviations (SD).
8. More than 15 ppm of iodine in the salt.
9. The six activities are: (1) read books or look at picture books with the child; (2) tell stories to the child; (3) sing songs with the child; (4) take the child outside the home, compound, yard, or enclosure; (5) play with the child; (6) spend time with the child naming, counting, and/or drawing things.
10. Per the MICS definitions, violent child discipline is based on discipline by anyone in the household within the last month, and includes: psychological aggression (shouted, yelled, or screamed at the child; called the child dumb, lazy, or another name like that); physical punishment (shook the child; spanked, hit or slapped the child on the bottom with a bare hand; hit the child on the bottom or elsewhere on the body with something like a belt, hairbrush, stick, or other hard object; hit or slapped the child on the hand, arm, or leg); and severe physical punishment (hit or slapped the child on the face, head, or ears; beat the child with an implement; hit over and over as hard as one could).
11. Wealth is defined in terms of which 20 percent of households a child falls into, based on an asset (wealth) index of durable goods.
12. Throughout we use a 5 percent level of significance.

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CHAPTER 5

Djibouti

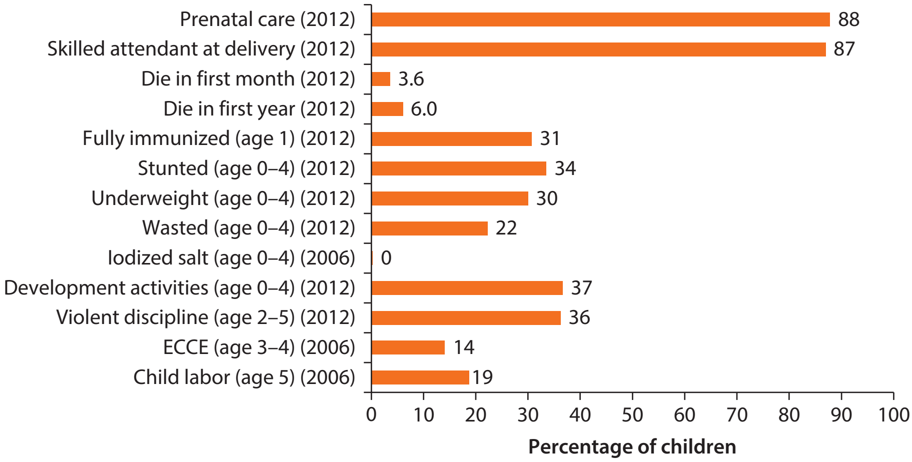
The State of Early Childhood Development in Djibouti

With a number of deficits in early childhood development (ECD), children in Djibouti are falling short of their full potential. Figure 5.1 summarizes the status of ECD in Djibouti. As the figure shows, Djibouti has moderate gaps in prenatal and delivery care; 88 percent of births received prenatal care and 87 percent had a skilled attendant at delivery. In the first month of life, 3.6 percent of children die, and in the first year of life, 6.0 percent of children die. Djibouti also has low immunization rates, with only 31 percent of children age 1 fully immunized. Malnutrition is a serious problem in Djibouti, where 34 percent of children are stunted, 30 percent are underweight, and 22 percent are wasted. Zero percent of children in Djibouti have access to adequately iodized salt, seriously jeopardizing their cognitive development. Social and emotional development is also low among children in Djibouti, with only 37 percent experiencing development activities and 36 percent of children being violently disciplined. Children are more likely to be engaged in child labor at age five (19 percent) than to attend early childhood care and education (ECCE) at ages three to four (14 percent).

This chapter presents an analysis of the status of ECD in Djibouti using a number of indicators (see box 5.1). The health status of children is examined through indicators of early mortality, prenatal care, having a trained attendant at birth, and immunizations. Children's nutritional status is measured by stunting (height-for-age), underweight (weight-for-age), and wasting (weight-for-height), as well as the availability of micronutrients, specifically iodine. To assess cognitive and social or emotional development, the analysis looks at the extent to which children are engaged in developmental learning activities, attendance in ECCE, whether children are violently disciplined, and whether children are engaged in child labor at age five. If more indicators were available and examined, they could provide an even richer picture of ECD in Djibouti.

To better understand the context and conditions that influence ECD outcomes, the analysis also examines background factors that may be associated with ECD outcomes at the individual, household, and community levels, and their relationships (see annexes 5A, 5B, and 5C for additional information on the data

Figure 5.1 ECD Summary Indicators



Source: World Bank calculations based on Djibouti PAPFAM 2012 and Djibouti MICS 2006.
Note: ECCE = early childhood care and education; ECD = early childhood development.

Box 5.1 ECD Indicators Examined in Djibouti

Prenatal care
Trained attendant at delivery
Neonatal mortality (dying in the first month)
Infant mortality (dying in the first year)
Fully immunized
Stunting/Height-for-age
Underweight/Weight-for-age
Wasting/Weight-for-height
Early childhood care and education
Parental development activities
Violent child discipline
Child labor

and these relationships). For the overall country context, see box 5.2. Finally, the analysis measures the gaps and extent of inequality in ECD outcomes. The analysis is based on the latest available data: the Pan-Arab Family Health Survey of 2012 and the Multiple Indicator Cluster Survey (MICS) from 2006. The data cover the various dimensions of early childhood from before a child is born up until the age of school entry (six years old, in Djibouti).

Survival, Health Care, and Nutrition

The first step in healthy ECD is simply surviving early childhood. In Djibouti, 1 in every 17 children dies by age one. As of 2012, infant mortality, dying in the first year of life, was 60 deaths per thousand births,[1] a rate that is more than twice

Box 5.2 Summary of Development Indicators in Djibouti

Djibouti is a lower-middle-income country with a gross domestic product per capita in 2012 of about $1,062 (in current US Dollars, table B5.2.1). Djibouti has an estimated population of 0.9 million, of which a third are under the age of 15. The average life expectancy at birth is 61 years, which compares poorly with other countries at this level of development. The primary gross enrollment rate in Djibouti was 70 percent in 2012. Overall, Djibouti ranks 164 out of 186 countries with comparable data in the 2012 Human Development Index.

Table B5.2.1 Djibouti's Socioeconomic Indicators

	1990	*2012*
Total population (millions)	0.6	0.9
% of population under 15	45	34
GDP per capita (current US Dollars)	$767	$1,062
Life expectancy at birth (years)	57	61
School enrollment, primary (% gross)	33	70

Sources: UNDP 2014; World Development Indicators.
Note: 2012 gross domestic product (GDP) is 2007 data.

the average for the Middle East and North Africa (MENA) region (24 per thousand) (UNICEF 2014). Most of infant mortality is neonatal mortality, deaths in the first month of life. As of 2012, the neonatal mortality rate in Djibouti was 36 deaths per thousand births. Early mortality represents the ultimate loss of human potential, and reducing under-five mortality rates by two-thirds from 1990 to 2015 is one of the Millennium Development Goals (MDGs). Djibouti has made limited progress in reducing neonatal and infant mortality over time; over the six years from 2006 to 2012, infant mortality decreased only slightly, from 67 deaths per thousand births (Ministry of Health and League of Arab States 2007) to 60 deaths per thousand births.

Addressing both early mortality and ECD begins during pregnancy and delivery. Delivery with a skilled attendant[2] is vital to reducing newborn mortality and morbidity. Prenatal care and delivery care are important components of achieving the MDGs. In Djibouti, 88 percent of mothers who had live births[3] had received prenatal care from a health professional, and 87 percent of the births were attended by a skilled health professional.[4,5] This is above both the MENA region average for both indicators (83 percent for prenatal care and 79 percent for skilled delivery) and the average for the least developed countries (UNICEF 2014). Although Djibouti is doing relatively well in early health care, especially for its level of income, there are still some births that receive no prenatal care and do not have skilled delivery care, putting these children and mothers at great risk.

Access to prenatal care and attended delivery in Djibouti has shown uneven improvements over time; in 2003, 67 percent of births received prenatal care and 61 percent of births were attended by a health professional (World Development Indicators). By 2006, these rates were 93 percent (prenatal care) and

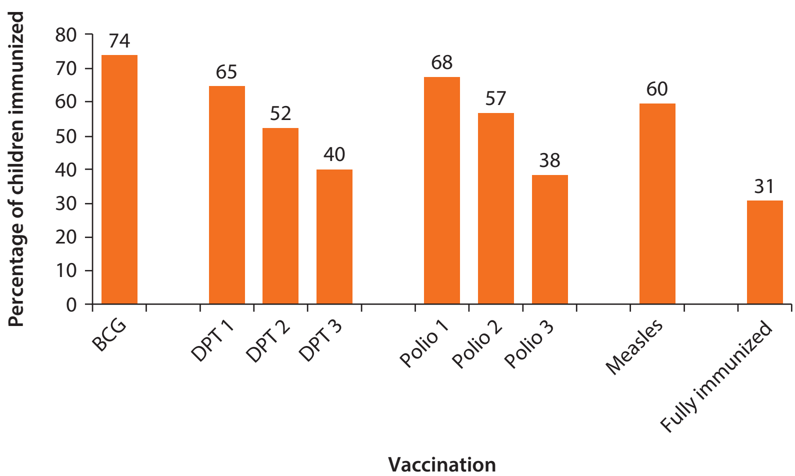
92 percent (delivery care). Rates in 2012, 88 percent for prenatal care and 87 for delivery care, therefore represent a slight decrease in early health care.

The full immunization of children plays an important role in reducing childhood diseases that can hamper growth or cause death. Yet, only a third (31 percent) of children age one in Djibouti are fully immunized. Children are considered fully immunized if they have received immunizations for all six major preventable childhood diseases: tuberculosis, diphtheria, whooping cough, tetanus,[6] polio,[7] and measles. They should be fully immunized by 12 months of age. Djibouti falls short of the level of immunization coverage that will allow for herd immunity,[8] with only 31 percent of children 12–23 months fully immunized.

A variety of different vaccines are underutilized (figure 5.2). Measles vaccines have only 60 percent coverage. Children are often not receiving all the doses of DPT (diphtheria, pertussis, tetanus) or polio vaccines, with only around 40 percent of children receiving the third doses of each vaccine. Most children are, however, receiving some vaccinations, which provides contact with the health care system and the opportunity to readily achieve fuller coverage by following up on multiple immunizations.

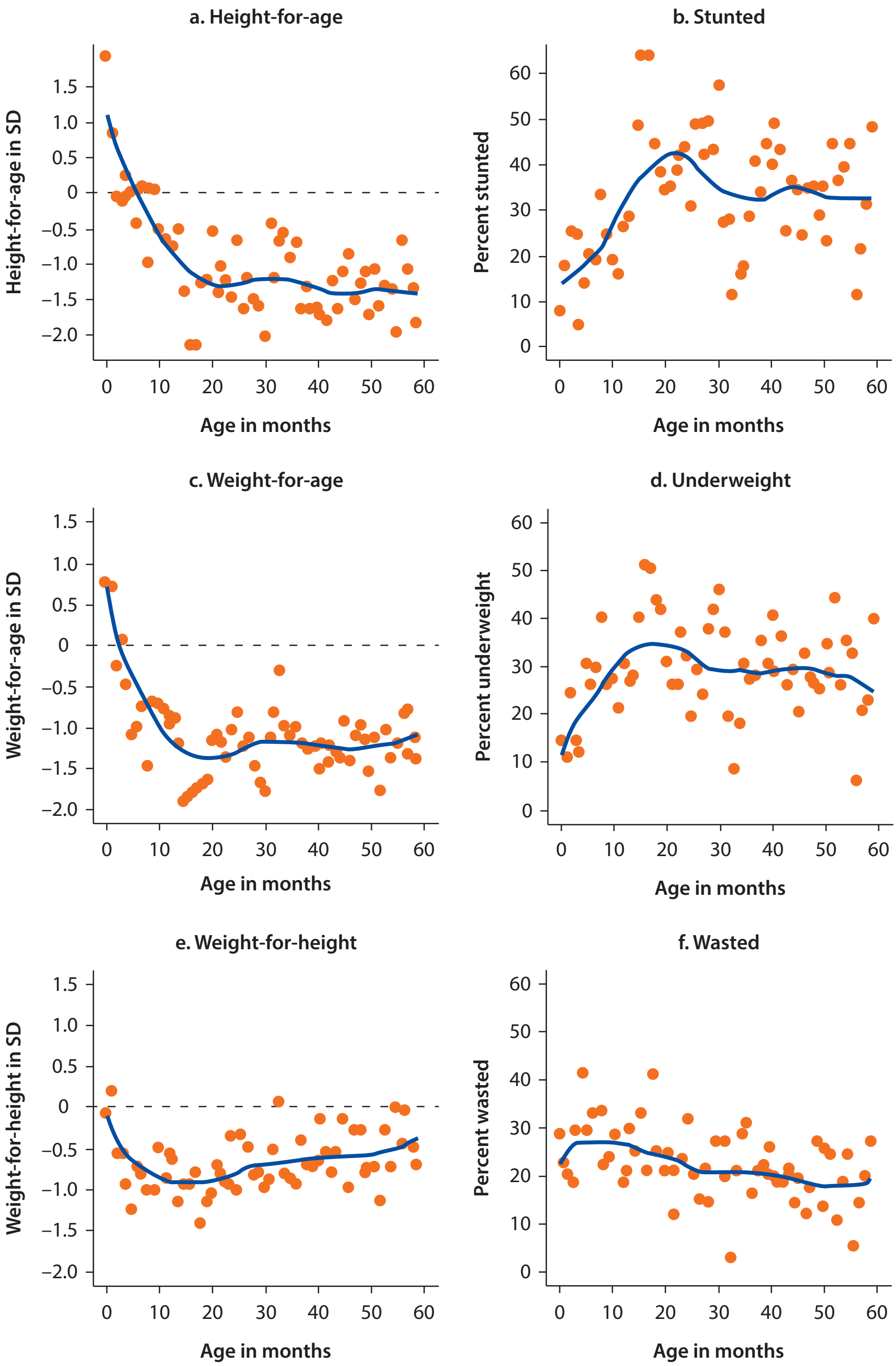
In terms of nutrition, children in Djibouti start their lives on fairly healthy footing; however, over the first two years of life, they experience a substantial falling off from healthy growth. Figure 5.3 shows how Djiboutian children fare in terms of growth compared to a healthy reference population.[9] One-third of children in Djibouti are stunted, 30 percent are underweight, and 33 percent are wasted as of 2012. Up through around the eighth month of life, children are, on average, at or above the height-for-age and weight-for-age of the reference population, but fall below healthy weight-for-height within the first few months of life. Up through 18 months, there is faltering in height-for-age and weight-for-age

Figure 5.2 Percentage of Children Aged 12–23 Months Immunized, by Vaccination



Source: World Bank calculations based on Djibouti MICS 2012.
Note: BCG = Bacillus Calmette-Guérin (tuberculosis vaccine); DPT = diphtheria, pertussis, tetanus.

Figure 5.3 Average Height-for-Age, Weight-for-Age, and Weight-for-Height Compared to Healthy Reference Population in Standard Deviations and Percentage Stunted, Underweight, and Wasted, by Age in Months, Ages 0–4 Years



Source: World Bank calculations based on Djibouti PAPFAM 2012.
Note: SD = standard deviations. Most interviews took place in June, July, and August, so those would be "month zero."

that brings the average far below the healthy reference population. Thereafter, the average remains below the healthy reference population by at least 1 SD, generally fluctuating between -1 and -1/2 SD.

The trends in stunting and being underweight are similar, with low stunting and underweight among young children (but fairly high wasting), and rising rates of stunting and underweight from birth through 20 months of age. Stunting peaks at around 50 percent of children age 20 months, and underweight peaks at around 35 percent of children age 20 months. While stunting falls slightly as children age, underweight and wasting are fairly level, and all remain around 20–30 percent of children through age five.

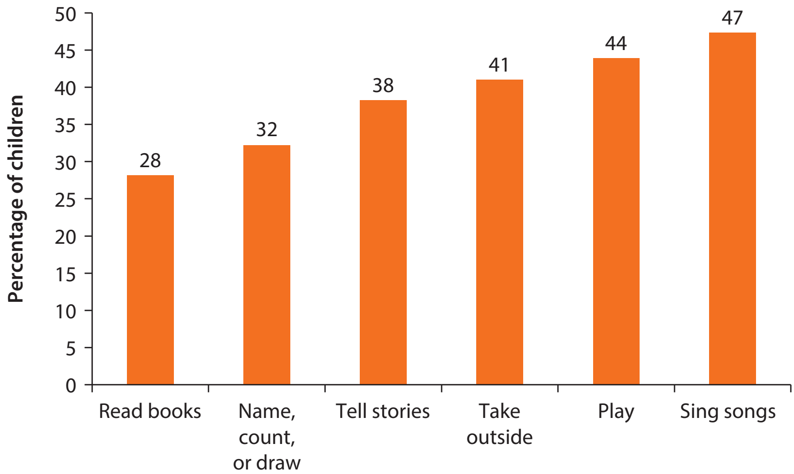
A major risk to children's cognitive development in Djibouti is lack of adequately iodized salt in their households. Micronutrients such as iron, vitamin A, zinc, and iodine play an important role in healthy physical and cognitive development. Iodized salt is the primary means for delivering iodine to children. In Djibouti, almost 100 percent of children under the age of five live in a household that does not have sufficiently iodized salt.[10]

Social, Emotional, and Cognitive Development

Although it has been proven that play and interaction are important components of ECD, children in Djibouti are missing out on important opportunities for psychosocial growth. In the Djibouti 2012 PAPFAM survey, caretakers of children ages 0–4 were asked whether adults in the household had engaged in any of six different activities that support child development.[11] Only a third of children (37 percent) experienced four or more development activities. While all the activities are important to social and emotional development, reading and naming, counting, and drawing have important educational and cognitive components. However, the activities of singing songs, playing, and being taken outside were most commonly observed (figure 5.4), with 41–47 percent of children having experienced each of these activities. The least frequently observed activity was reading books (or picture books)—28 percent of children. Additionally, only 32 percent of children were engaged in naming, counting, or drawing.

Evidence has shown that ECCE improves cognition and socioemotional development, with benefits that can last a lifetime. In Djibouti as of 2006, only 14 percent of children ages three and four attend an early childhood education program. The MENA region generally has low early childhood attendance rates, with gross enrollment in pre-primary education at 27 percent (World Development Indicators),[12] and Djibouti lags behind the regional average. There are more young children ages three to four attending some form of ECCE than older children attending pre-primary. For children ages five to six, rates of pre-primary school attendance are around 6 percent. This suggests that many children attending ECCE at three to four are attending programs other than pre-primary. In Djibouti, in 2006 the primary entry rate was 64 percent (Ministry of Health and League of Arab States 2007). Around a tenth (9 percent) of children in the first year of primary were previously in pre-primary school—some children may be entering school late, but are still attending pre-primary.

Figure 5.4 Percentage of Children Experiencing Different Development Activities, by Activity



Source: World Bank calculations based on Djibouti PAPFAM 2012.

Other challenges that risk hindering the healthy development of children in Djibouti are violent discipline[13] and early child labor. Over a third (36 percent) of children ages two to five in Djibouti have experienced some form of violent child discipline as of 2012. Disciplining children is an important part of child rearing. However, research has found that violent discipline negatively impacts the physical, psychological, and social development of children (UNICEF 2010). Additionally, as of 2006, 19 percent of five-year-old children in Djibouti engaged in some type of child labor in the week preceding the survey—working for someone not a member of the household, doing household chores or other family work.[14] Child labor, engaging in work or chores, can be particularly dangerous for young children. It also may hamper their ability to successfully transition to school. The majority of children were engaged in chores (12 percent of five-year-olds) but some were engaged in family work (2 percent of five-year-olds) or work for others (8 percent of five-year-olds). Most of the work for others was unpaid, with 7 percent of five-year-olds doing unpaid work and only 1 percent doing paid work.

Key Factors Affecting Early Childhood Development

Health and Nutrition

A number of background characteristics at the child, family, and community levels affect ECD outcomes: gender, parents' education, household socioeconomic status (wealth),[15] geographic location (region or governorate), and residence (urban/rural). Understanding these relationships can help identify why some children have poor ECD outcomes and which children to target with policy or programmatic interventions.

The chances that children die in the first month or year of life have complex relationships with children's background. Male children are more likely to die early than female children, but this is a pattern that is common globally due to genetic factors (Hill and Upchurch 1995). The relationship of early mortality with wealth and education does not follow a clear systematic pattern, and there are also no differences by region or urban versus rural. When accounting for multiple characteristics, the relationship between characteristics and early mortality was not significant.[16]

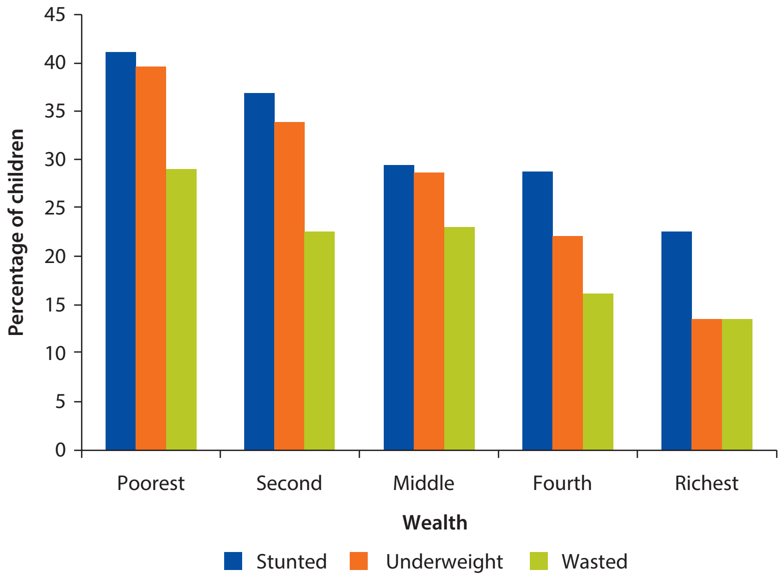
Although there were no associations with early mortality, the use of prenatal care is associated with wealth and education. For instance, while 68 percent of births in the poorest fifth of households received prenatal care, 98 percent of births from the fourth and richest wealth levels did so. Mothers with no education had an 84 percent chance of prenatal care, while mothers with basic education had a 97 percent chance, and mothers with a secondary or higher education a 98 percent chance. There are also large differences based on residence in the use of prenatal care, which likely represent differences in access to health infrastructure. While 96 percent of births in urban areas received prenatal care, just two-thirds (67 percent) of births in rural areas received prenatal care. Access to prenatal care is also lower in other districts (74 percent) than Djibouti proper (95 percent).

After accounting for other characteristics, living in a rural area significantly decreased the chance of receiving prenatal care. A mother having primary as compared to no education significantly increased the probability of prenatal care, as did a father having primary or secondary education. As compared to the lowest wealth level, some of the other, higher wealth levels had significantly higher chances of prenatal care.

There is an even stronger wealth gradient in accessing skilled birth attendants than for prenatal care, with 58 percent of births from the poorest households having skilled attendants, compared to almost 100 percent of births from the richest households. Similar patterns occurred by parents' education. Rural births were also less likely to have skilled birth attendants (55 percent) than urban births (98 percent). Taking into consideration other characteristics, there were no significant differences based on mother's education in the chances for delivery with a skilled attendant, but there were significant differences for father's education, with more educated fathers increasing the chances of skilled delivery. There were also substantial wealth and geographic differences. Births in the second through richest 20 percent of households in terms of wealth were more likely to have skilled delivery attendants. Births in rural areas were significantly less likely to have a trained attendant.

Access to immunization varies substantially by wealth, with rates of 17–26 percent for the three lowest wealth levels compared to 43–45 percent for the top two wealth levels. Immunization—which should be a widely available public health service—instead shows large disparities based on families' wealth.[17] There are some differences by education, with more educated parents generally more likely to immunize their children. There are only small differences in immunization based on place of residence or region, with slightly higher rates of immunization in other districts (36 percent) than in Djibouti proper (28 percent). After accounting for other characteristics, children in Djibouti were significantly less

Figure 5.5 Percentage of Children Aged 0–4 Years Stunted, Underweight, or Wasted, by Wealth Level



Source: World Bank calculations based on Djibouti MICS 2006.

likely to be immunized than children in other districts. Children with more educated fathers and from the top two wealth levels were also significantly more likely to be immunized.

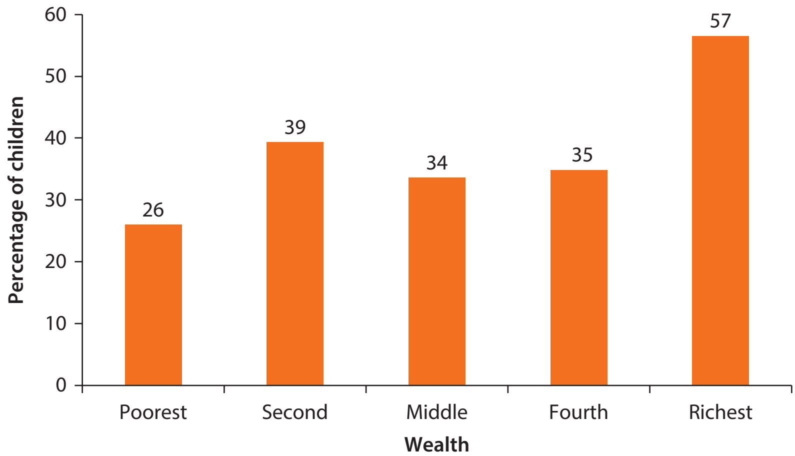
While malnutrition threatens all children, poorer children and those living in rural areas are more likely to be malnourished. In Djibouti, 41 percent of children from the poorest fifth of households compared to 23 percent from the richest fifth of households are stunted (figure 5.5). Being underweight or wasted likewise decreases with wealth. Rates of stunting are higher in rural areas (42 percent) than urban areas (30 percent), and higher in other districts (39 percent) than Djibouti proper (30 percent). Similar patterns are observed for being underweight or wasted. Having a secondary educated mother or father decreases the chances of malnutrition.

Even after accounting for other background characteristics, wealth shows a strong relationship with malnutrition. The chances of being stunted significantly decreased at the highest wealth level. The chances of being underweight, as well as being wasted, are lower in the fourth and richest levels compared to the poorest 20 percent of households.

Social, Emotional, and Cognitive Development

Social, emotional, and cognitive development are related to the wealth level of the child's household, parents' education, and the location of the household. Poorer children, from the lower four wealth levels, are less likely to experience at least four development activities than children from the richest fifth of

Figure 5.6 Percentage of Children Experiencing at Least Four Development Activities, by Wealth Level



Source: World Bank calculations based on Djibouti MICS 2012.

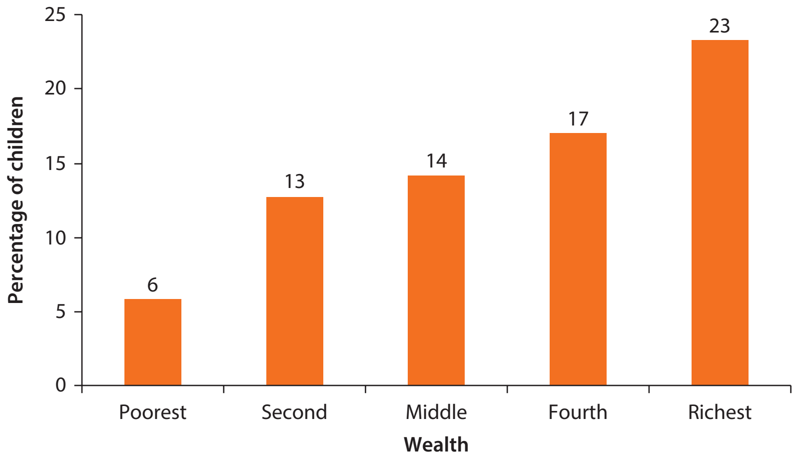
households (figure 5.6). Children in rural areas and other districts are also less likely to experience development activities than children in urban areas and Djibouti proper. Children with uneducated mothers have only a 33 percent chance of experiencing development activities, compared to a 51 percent chance for children with mothers with a secondary or higher education; similar patterns are observed for fathers. Taking into consideration multiple characteristics, children living in Djibouti proper as compared to other districts, and children in the richest as compared to poorest wealth level were significantly more likely to experience development activities.

Among three-to-four-year-olds, only 6 percent attend ECCE among the poorest fifth of households, while 23 percent attend among the richest fifth of households (figure 5.7). The greatest benefits from ECCE are likely to be for the poorest and most vulnerable children, yet they have the least access. This situation further compounds differences in young children's early cognitive and socioeconomic experiences. Taking into account other characteristics, only being in Djibouti proper as compared to other districts significantly increases the chance of attending ECCE.

Violent discipline shows a complex relationship with background characteristics. The rate of violent discipline is slightly lower for children in the poorest household, but varies across the second through richest wealth levels, with similar fluctuations observed by education. It is higher among children from urban households (42 percent) than in rural areas (20 percent).[18] Taking into consideration multiple characteristics, only rural children have significantly lower chances of violent discipline.

Child labor is highest among children from the second poorest (31 percent) and poorest fifth of households (23 percent), and lowest for children from the

Figure 5.7 Percentage of Children Aged 3–4 Years Attending ECCE, by Wealth Level



Source: World Bank calculations based on Djibouti MICS 2006.

richest fifth of households (7 percent). Children also engage in labor in both urban and rural settings, although rates are higher for rural children. The lower rate of child labor in Djibouti proper as compared to other districts is statistically significant, even after accounting for other factors. After accounting for other factors, children from the richest fifth of households are less likely to be engaged in child labor than children from the poorest fifth of households. However, children with mothers with secondary education are more likely to be engaged in child labor.

Children Face Unequal Opportunities for Healthy Development

Children in Djibouti face unequal opportunities for healthy development, based on factors beyond their control. To measure the extent of inequality, the analysis calculates (a) the percentage of opportunities that needed to have been distributed differently for equality of opportunity to have occurred for each of the ECD indicators, and (b) the chance of whether these differences might have occurred by random variation (table 5.1).

For prenatal and delivery care, 6–10 percent of opportunities for early health care would have to be distributed differently for equality of opportunity to have prevailed. There is also substantial inequality in immunizations and stunting, but this could be due to chance. There is inequality in terms of early cognitive and socioemotional development; inequality is particularly high for ECCE, but differences could be due to chance. Differences in development activities are high, with 13.9 percent of opportunities needing to be redistributed, and this is not due to chance. Violent discipline and child labor also show substantial inequality.

Table 5.1 Percentage of Opportunities to Be Redistributed

	Dissimilarity index
Prenatal care	6.4**
Skilled delivery	9.6***
Fully immunized	22.2
Stunted	9.6
Development activities	13.9*
Violent discipline	11.6
ECCE	34.6
Child labor	23.2

Source: World Bank calculations based on Djibouti PAPFAM 2012 and Djibouti MICS 2006.
Note: Neonatal and infant mortality not modeled given statistical insignificance of overall regression models. Significance level: * = chance < 5%, ** = chance < 1%, *** = chance < 0.1%. ECCE = early childhood care and education.

Table 5.2 Contributions of Background Characteristics to Inequality
Percentage

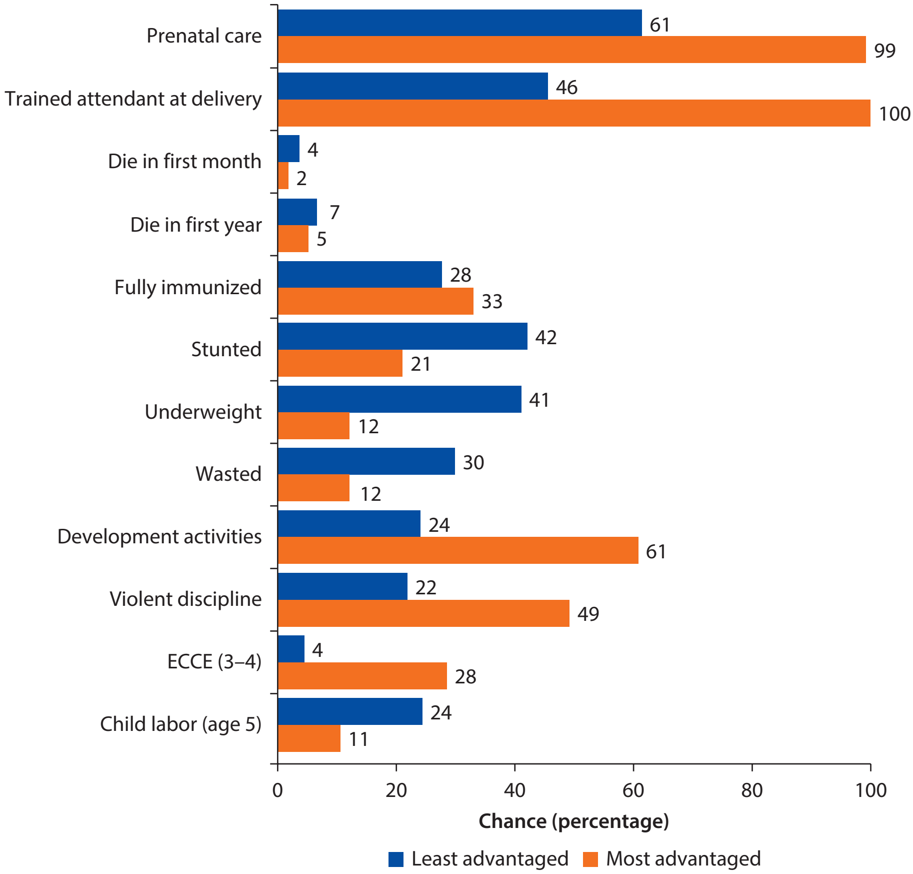
	Wealth	*Mother's education*	*Father's education*	*Rural*	*Region*	*Child's sex*
Prenatal care	28.8	6.3	10.2	32.4	22.2	n.a.
Skilled delivery	30.2	4.4	9.2	37.5	18.7	n.a.
Fully immunized	40.6	2.9	28.1	3.9	22.0	2.6
Stunted	52.9	2.7	12.0	21.4	10.7	0.2
Development activities	13.4	8.9	3.5	8.7	64.2	1.2
Violent discipline	36.7	11.7	13.8	10.6	27.0	0.3
ECCE	21.3	21.3	32.4	3.5	20.9	0.5
Child labor	35.3	6.1	22.4	0.7	31.7	3.8

Source: World Bank calculations based on Djibouti PAPFAM 2012 and Djibouti MICS 2006.
Note: Shapley decompositions of the dissimilarity index. n.a. = not applicable.

Wealth, parents' education, and geographic differences all contribute to children's unequal chances. Table 5.2 shows the different contributions of circumstances to inequality for different outcomes as percentages. Wealth plays a particularly large role in early health and nutrition, contributing approximately a third to a half of inequality for each of these measures. Parents' education is particularly important for inequality in ECCE. Rural versus urban differences make a particularly large (around a third) of the contributions to inequality in prenatal and delivery care. Regional differences matter for almost all outcomes, but especially for inequality in development activities. A child's sex contributes very little to inequality.

Children tend to be consistently advantaged or disadvantaged across a variety of different dimensions of ECD, and can face very different life chances based on just a few characteristics. Early childhood is when cycles of poverty and inequality are transmitted across generations. If we observe a child who lives in rural other districts, in the poorest 20 percent of households, and with uneducated parents (a least advantaged child) and compare that child to one

Figure 5.8 Most Advantaged and Least Advantaged Simulations



Source: World Bank calculations based on Djibouti MICS 2006.
Note: ECCE = early childhood care and education.

who has parents with higher education, is from the richest 20 percent of households, and lives in urban Djibouti proper (a most advantaged child), we find that they have very different chances of healthy ECD. Figure 5.8 presents the chances of different ECD indicators for these "least advantaged" and "most advantaged" individuals.

On almost every indicator, the least advantaged child faces a poorer chance for healthy development. Comparing the least and most advantaged, the gap in prenatal care is 38 percentage points, and the gap in having a trained attendant at delivery is 54 percentage points. The least advantaged child is more likely to die in the first month or year of life. The least advantaged child is 5 percentage points less likely to be immunized, 21 percentage points more likely to be stunted, 29 percentage points more likely to be underweight, and 18 percentage points more likely to be wasted. There is a 37 percentage point gap in development activities, with the most advantaged child being more than twice as likely to experience these activities. The largest relative difference is in ECCE attendance, where the most advantaged child is seven times more likely to attend ECCE than the least advantaged child. The least advantaged child is also more than twice as likely to be engaged in child labor, and slightly less likely to be violently disciplined.

Conclusions

Children in Djibouti face a number of obstacles to achieving their full potential for early development. Although prenatal care and skilled delivery care show only moderate gaps in coverage, neonatal and infant mortality are high. The low rate of immunization coverage, with less than a third of children fully immunized, presents a substantial threat to children's health. Malnutrition is common in Djibouti, with a third of children stunted. Children are at great risk for impaired cognitive development due to the near-zero rate of iodized salt. Children have similar chances of experiencing development activities as being violently disciplined, and more likely to engage in child labor at age five than attend ECCE. As well as substantial threats to their early development, children face unequal chances of attaining their full potential based on the circumstances into which they are born. Substantial inequality was observed across all the dimensions of ECD, with a variety of characteristics contributing to inequality. More must be done to ensure children have equal chances to develop to their full potential.

Annex 5A: The Data

The Data Set

The analysis utilizes cross-sectional data on the well-being of women and children collected in the 2006 MICS for Djibouti and the 2012 PAPFAM. The surveys are nationally representative, and include data that allows for an analysis of the relationship between early childhood development (ECD) and child and household indicators. See Ministry of Health and League of Arab States (2007) for additional information in the final report on the 2006 MICS survey. See Ministry of Health, Institute of Statistics and Demographic Studies and League of Arab States (2012) for additional information in the final report on the 2012 PAPFAM survey.

The Sample

The 2006 MICS dataset for Djibouti sampled 4,888 households, 6,020 ever-married women ages 15–49, and 2,565 children younger than 5 (questioning their mothers or caretakers). The 2012 PAPFAM dataset for Djibouti sampled 5,563 households, 3,304 ever-married women ages 15–49, and 3,205 children younger than 5 (questioning their mothers or caretakers). The analysis in this note is weighted in order to be representative at the national level. The sample sizes reported (N) in each of the tables are based on the unweighted number of observations in the data.

Annex 5B: Indicators by Background Characteristics

Table 5B.1 Indicators by Background Characteristics

	Prenatal care	*Trained attendant at birth*	*Neonatal mortality*	*Infant mortality*	*Fully immunized at age 1*	*Stunted*	*Height-for-age (SD)*	*Underweight*	*Weight-for-age (SD)*	*Wasted*	*Weight-for-height (SD)*	*Four development activities*	*Violent discipline (2–5)*	*ECCE (3–4)*	*Child labor (age 5)*	*Percent of children (0–4)*	*Percent of children (0–4)*
Year	*2012*	*2012*	*2012*	*2012*	*2012*	*2012*	*2012*	*2012*	*2012*	*2012*	*2012*	*2012*	*2012*	*2006*	*2006*	*2006*	*2012*
Gender																	
Male			4.0	6.8	31.7	33.7	−1.05	31.1	−1.19	23.6	−0.81	38.2	38.2	12.4	18.1	53.3	50.9
Female			3.2	5.1	29.7	33.3	−1.11	28.6	−1.08	21.0	−0.60	35.0	33.7	16.0	19.1	46.7	49.1
Wealth																	
Poorest	68.4	58.2	3.5	5.1	25.9	41.1	−1.36	39.7	−1.50	29.0	−0.93	26.0	24.5	5.8	22.6	26.1	31.2
Second	91.3	95.2	3.4	6.6	24.4	36.9	−1.24	33.8	−1.35	22.6	−0.93	39.4	42.9	12.8	30.6	21.6	20.5
Middle	94.7	98.9	4.0	5.1	16.9	29.4	−0.99	28.6	−1.10	23.0	−0.66	33.7	37.2	14.2	14.8	17.5	18.0
Fourth	97.9	99.7	4.2	8.1	42.7	28.8	−0.93	22.0	−0.84	16.1	−0.46	34.9	39.2	17.0	15.5	17.2	16.1
Richest	97.6	99.6	2.9	5.4	44.8	22.5	−0.54	13.4	−0.43	13.4	−0.23	56.6	47.2	23.3	7.4	17.1	14.1
Mother's education																	
None	84.3	83.5	3.9	6.4	28.7	34.3	−1.14	31.5	−1.22	23.1	−0.81	32.9	36.1	10.3		61.1	65.2
Basic	97.3	96.6	3.0	4.2	39.4	31.5	−0.93	24.0	−1.06	19.9	−0.65	41.9	51.8	12.9		18.7	11.2
Secondary+	97.9	98.9	2.0	4.9	32.0	26.9	−0.76	18.6	−0.49	14.5	−0.07	51.0	39.6	27.8		17.9	8.7
Missing/DK						35.8	−1.13	33.9	−1.22	25.1	−0.64		22.6				14.9
Nonstandard														13.9		2.3	
Father's education																	
None	82.1	80.2	3.6	5.8	21.5	35.4	−1.18	32.5	−1.29	24.2	−0.86	34.5	35.0	7.7		36.5	51.9
Basic	95.9	95.9	4.6	7.1	45.8	36.3	−1.18	30.1	−1.17	21.5	−0.58	39.7	35.2	13.7		16.7	10.1
Secondary+	98.4	99.5	3.7	6.4	34.7	24.2	−0.70	18.7	−0.67	15.9	−0.42	40.2	50.5	21.9		32.3	18.3
Missing/DK	88.0	94.6	1.1	3.4	63.1	35.8	−1.14	33.4	−1.17	23.8	−0.63	37.6	26.9	11.2		1.9	19.7
Father not in household														14.0		10.8	
Nonstandard														14.0		1.8	

table continues next page

Table 5B.1 Indicators by Background Characteristics *(continued)*

	Prenatal care	*Trained attendant at birth*	*Neonatal mortality*	*Infant mortality*	*Fully immunized at age 1*	*Stunted*	*Height-for-age (SD)*	*Underweight*	*Weight-for-age (SD)*	*Wasted*	*Weight-for-height (SD)*	*Four development activities*	*Violent discipline (2–5)*	*ECCE (3–4)*	*Child labor (age 5)*	*Percent of children (0–4)*	*Percent of children (0–4)*
Year	*2012*	*2012*	*2012*	*2012*	*2012*	*2012*	*2012*	*2012*	*2012*	*2012*	*2012*	*2012*	*2012*	*2006*	*2006*	*2006*	*2012*
Women's education																	
No school															18.4		
Some basic															13.6		
6–9 years															19.6		
Some or complete secondary															45.7		
Above secondary																	
Partner's education																	
No school															21.0		
Some basic															20.4		
6–9 years															11.8		
Some or complete secondary															26.5		
Above secondary															25.2		
Missing															18.3		

table continues next page

Table 5B.1 Indicators by Background Characteristics *(continued)*

	Prenatal care	*Trained attendant at birth*	*Neonatal mortality*	*Infant mortality*	*Fully immunized at age 1*	*Stunted*	*Height-for-age (SD)*	*Underweight*	*Weight-for-age (SD)*	*Wasted*	*Weight-for-height (SD)*	*Four development activities*	*Violent discipline (2–5)*	*ECCE (3–4)*	*Child labor (age 5)*	*Percent of children (0–4)*	*Percent of children (0–4)*
Year	*2012*	*2012*	*2012*	*2012*	*2012*	*2012*	*2012*	*2012*	*2012*	*2012*	*2012*	*2012*	*2012*	*2006*	*2006*	*2006*	*2012*
Residence																	
Urban	95.2	98.4	3.5	6.3	30.4	30.0	−0.96	26.0	−1.01	20.2	−0.63	41.1	42.9	14.4	18.1	98.8	71.5
Rural	66.6	54.9	3.9	5.1	31.7	42.3	−1.38	39.7	−1.46	27.5	−0.90	23.4	19.5	7.6	27.5	4.2	28.5
Region																	
Djibouti	95.8	98.8	3.4	6.3	28.0	29.8	−0.97	25.4	−0.98	19.5	−0.59	43.6	43.3	15.6	16.3	85.5	60.3
Other districts	74.2	67.4	3.9	5.4	35.9	39.2	−1.25	36.8	−1.38	26.5	−0.88	24.4	25.3	7.1	28.0	14.5	39.7
Governorate																	
Djibouti	95.8	98.8	3.4	6.3	28.0	29.8	−0.97	25.4	−0.98	19.5	−0.59	43.6	43.3				60.3
Ali Sabieh	62.4	75.6	2.2	3.3	56.4	35.6	−1.10	28.9	−1.10	23.4	−0.82	13.6	34.0				9.3
Dikhil	93.7	78.1	5.2	5.9	36.4	36.2	−1.25	35.1	−1.36	24.8	−0.78	18.5	36.3				9.0
Tadjourah	70.4	57.7	4.1	5.5	19.0	45.1	−1.61	41.9	−1.54	23.8	−0.77	31.9	19.5				10.7
Obock	64.2	59.1	5.5	7.9	51.2	44.6	−1.37	44.9	−1.69	31.6	−1.22	37.4	18.9				4.7
Arta	73.9	63.3	2.5	5.0	32.3	34.2	−0.75	35.9	−1.29	35.2	−1.07	25.1	14.3				6.0
Total	87.9	87.4	3.6	6.0	30.7	33.5	−1.08	29.9	−1.14	22.3	−0.70	36.6	36.2	14.1	18.6	100.0	100.0
N (observations)	1,944	1,943	3,394	3,394	398	3,361	3,361	3,438	3,438	3,346	3,346	1,808	1,051	903	606		

Source: World Bank calculations based on Djibouti PAPFAM 2012 and Djibouti MICS 2006.
Note: Blank cells indicate not applicable or not available. ECCE = early childhood care and education; SD = standard deviations.

Annex 5C: Relationship between ECD Indicators and Background, When Accounting for Multiple Characteristics

Table 5C.1 Relationship between ECD Indicators and Multiple Background Characteristics

	Neonatal mortality	*Infant mortality*	*Prenatal*	*Delivery*	*Fully immunized*	*Stunted*	*Underweight*	*Wasted*	*Development indicators*	*Violent discipline*	*ECCE*	*Child labor*
Rural			–	–						–		
Djibouti proper—compared to other districts					–				+		+	–
Wealth—20% of households—compared to poorest												
Second			+	+								
Third				+								
Fourth			+	+	+		–	–				
Richest				+	+	–	–	–	+			–
Female												
Mother's education—compared to illiterate												
Basic education		–	+									
Secondary +												+
Missing/Don't know												
Father's education—compared to illiterate												
Basic education			+	+	+							
Secondary +			+	+								
Missing/DK			–		+							
Observations (N)			1,944	1,943	398	3,361	3,438	3,346	1,808	1,005	900	603
Pseudo R-squared			0.225	0.455	0.120	0.020	0.037	0.020	0.051	0.061	0.069	0.082
P-value (model)			0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.001

Source: World Bank calculations based on Djibouti PAPFAM 2012 and Djibouti MICS 2006.
Note: Blank cells indicate no statistically significant relationship. Other education categories (not in household, nonstandard curriculum) were included for ECCE and child labor models, but were not significant.
+ = chance <5% and positive; – = chance <5% and negative; ECCE = early childhood care and education; ECD = early childhood development.

Notes

1. Both infant and neonatal mortality rates are calculated based on deaths one to five years (from 2010–2006) preceding the PAPFAM survey.
2. A doctor, nurse, or midwife.
3. The survey asks women about prenatal care for live births in the past two years only. Since live births are likely to be associated with prenatal care, the percentage of births not receiving prenatal care is likely to be an underestimate of the percentage of pregnancies not receiving prenatal care.
4. Either a doctor or a nurse/midwife.
5. As was true for prenatal care, delivery questions are asked about live births only. Since live births are likely to be associated with care by a health professional, the percentage of live births with a health professional is likely to overestimate the number of deliveries with a health professional.
6. The DPT vaccine is a combination vaccine that covers diphtheria, whooping cough (pertussis), and tetanus. Children must receive three doses to be fully immunized.
7. Children must receive three doses to be fully immunized against polio.
8. Herd immunity occurs when even unvaccinated individuals in the population (the "herd") are protected against illness because the disease can no longer spread. This is achieved when around 90–95 percent of infants are vaccinated.
9. The units for height-for-age, weight-for-age, and weight-for-height are how much Djiboutian children are, on average, different from the reference population in terms of standard deviations (SD).
10. More than 15 ppm of iodine in the salt.
11. The six activities are: (1) read books or look at picture books with the child; (2) tell stories to the child; (3) sing songs with the child; (4) take the child outside the home, compound, yard, or enclosure; (5) play with the child; and (6) spend time with the child naming, counting, and/or drawing things.
12. Rate is based on 2011 data.
13. Per the MICS definitions, violent child discipline is based on discipline by anyone in the household within the last month and includes: psychological aggression (shouted, yelled, or screamed at the child; called the child dumb, lazy, or another name like that); physical punishment (shook the child; spanked, hit, or slapped the child on the bottom with a bare hand; hit the child on the bottom or elsewhere on the body with something like a belt, hairbrush, stick, or other hard object; hit or slapped the child on the hand, arm, or leg); and severe physical punishment (hit or slapped the child on the face, head, or ears; beat the child with an implement; hit over and over as hard as one could).
14. The questions were: (1) During the past week, did (child) do any kind of work for someone who is not a member of this household?; (2) During the past week, did (child) help with household chores such as shopping, collecting firewood, cleaning, fetching water, or caring for children?; (3) During the past week did (child) do any other family work (on the farm or in a business or selling goods in the street)?
15. Wealth is defined in terms of which 20 percent of households a child falls into, based on an asset (wealth) index of durable goods.
16. A 5 percent level of statistical significance is used throughout.

17. In the regression model, no differences were statistically significant, likely due to a relatively small sample of one-year-olds.
18. In the regression models, there were not any statistically significant predictors of development activities or violent discipline except for the father being missing, increasing the chance of violent discipline.

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CHAPTER 6

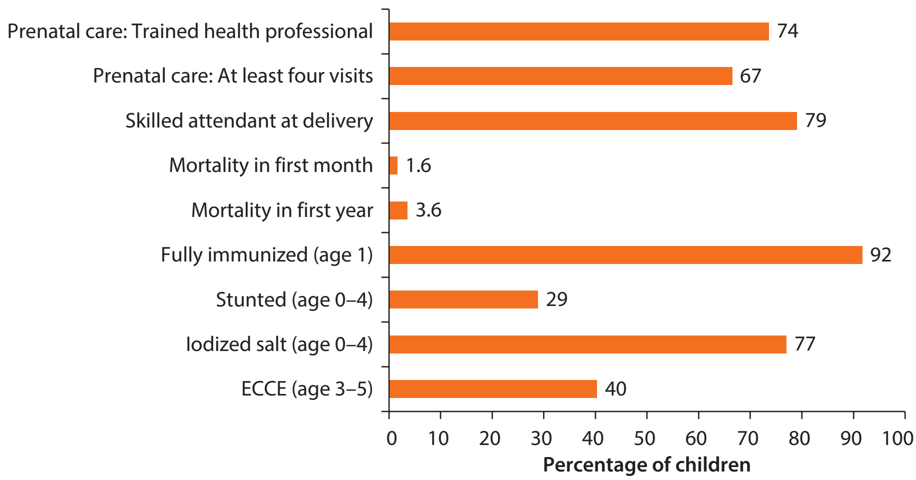
The Arab Republic of Egypt

The State of Early Childhood Development in the Arab Republic of Egypt

Children in Egypt are falling short of their full potential for early development. Figure 6.1 summarizes the status of early childhood development in Egypt using a number of indicators. Only 74 percent of births receive prenatal care, 67 percent regular prenatal care (at least four visits), and 79 percent have a skilled attendant at delivery. In the first month of life, 1.6 percent of children die, and 3.6 percent die in the first year of life. While Egypt has good immunization rates, with 92 percent of children age one fully immunized, malnutrition is a serious problem, with 29 percent of children stunted. Just 77 percent of children have access to adequately iodized salt, which is critical for brain development. Moreover, Egyptian children have limited access to early learning and cognitive development; only 40 percent of children aged three to five have ever attended early childhood care and education (ECCE).

This chapter presents the status of early childhood development (ECD) in Egypt. The health status of children is examined through indicators (see box 6.1) of early mortality, prenatal care, having a skilled attendant at birth, and immunizations. Children's nutritional status is measured by stunting (height-for-age). To assess cognitive and social or emotional development, the analysis looks at attendance in ECCE. To better understand the context and conditions that influence ECD outcomes, the chapter also examines background factors that may be associated with ECD outcomes at the individual, household, and community levels, as well as their relationships (see annexes 6A, 6B, and 6C for additional information on the data and these relationships). For the overall country context, see box 6.2. Finally, the chapter offers an analysis of the extent of inequality in ECD outcomes and the factors that contribute the most to this inequality. The analysis is based on the latest available data: the Demographic and Health Survey (DHS) from 2008. The data cover the various dimensions of early childhood from before a child is born up until the age of school entry (six years old, in Egypt). If more indicators were available and examined, they could provide an even richer picture of ECD in Egypt. While under normal circumstances ECD indicators change

Figure 6.1 ECD Summary Indicators



Source: World Bank calculations based on Egypt DHS 2008.
Note: ECCE = early childhood care and education; ECD = early childhood development.

Box 6.1 ECD Indicators Examined in the Arab Republic of Egypt

Prenatal care
Skilled attendant at delivery
Neonatal mortality (dying in the first month)
Infant mortality (dying in the first year)
Fully immunized
Stunting/Height-for-age
Salt iodization
Early childhood care and education

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relatively slowly, on the ground today, in light of the Arab Spring, there may be substantial changes. Children may face additional challenges, but there may also be opportunities to promote ECD.

Survival, Health Care, and Nutrition

The first step in healthy ECD is simply surviving early childhood. Reducing under-five mortality rates by two-thirds is one of the Millennium Development Goals (MDGs), and a vital goal in Egypt's effort to promote ECD. In Egypt, 1 in every 42 children born dies by age one. That is, 121 children under the age of one die every day.[1] Infant mortality, which refers to children dying before their first birthday, was 24 deaths per thousand births.[2] This is the same as the 2012 average rate for the MENA region (UNICEF 2014). Most infant mortality in Egypt is composed of neonatal mortality—children dying within the first month of life; 16 children out of every thousand die during their first month of life, which is similar to

Box 6.2 Summary of Development Indicators in the Arab Republic of Egypt

The Arab Republic of Egypt is a lower-middle-income country with a gross domestic product per capita in 2012 of about $3,256 (in current US dollars, table B6.2.1). Egypt has an estimated population of 81 million, of which a third are under the age of 15. The average life expectancy at birth is 71 years, which compares well with other countries at this level of development. The primary gross enrollment rate in Egypt was 113 percent in 2012. Overall, Egypt ranks 112 out of 186 countries with comparable data in the 2012 Human Development Index.

Table B6.2.1 The Arab Republic of Egypt's Socioeconomic Indicators

	1990	*2012*
Total population (millions)	56.3	80.7
% of population under 15	40	31
GDP per capita (current US dollars)	$766	$3,256
Life expectancy at birth (years)	65	71
School enrollment, primary (% gross)	92	113

Sources: UNDP 2014; World Development Indicators.
Note: GDP = gross domestic product.

the regional average of 15 deaths per thousand births (UNICEF 2014). While infant mortality has been falling rapidly in Egypt—down from around 74 children per thousand in 1988—neonatal mortality has been a more persistent problem and has shown a smaller and slower decline (World Development Indicators).

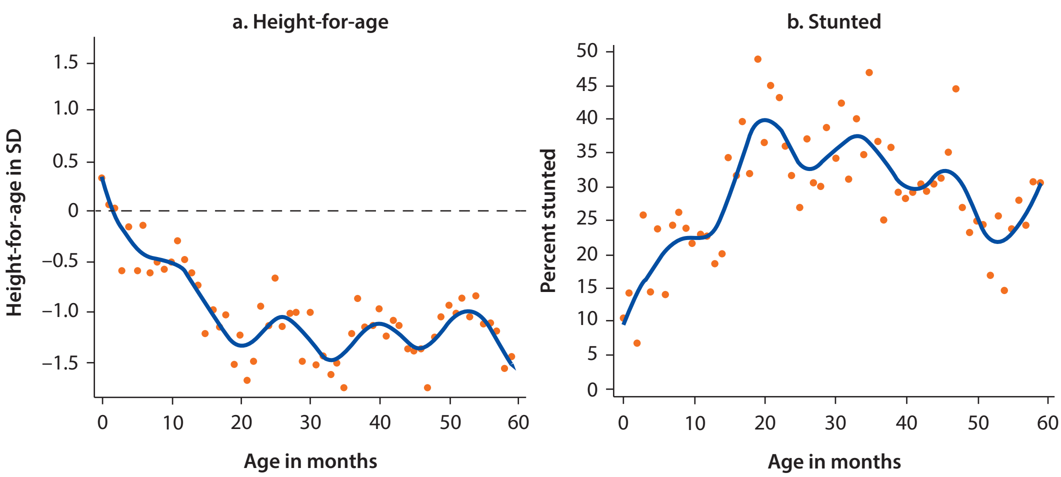
Addressing both early mortality and ECD begins during pregnancy because children can be at risk for poor development even before birth. In Egypt, 74 percent of live births[3] received prenatal care from a health professional.[4] Two-thirds (67 percent) of births received prenatal care "regularly," with four or more visits. But more than a quarter (26 percent) of live births did not receive any prenatal care from a health professional. Every year around half a million children are born to mothers who do not receive prenatal care, putting children (and mothers) at great risk. Over the past decades, use of prenatal care has expanded from around 50 percent in the 1980s and 1990s to 69 percent in 2003 and has reached 74 percent in 2008 (World Development Indicators). The current rate is below the MENA region average of 83 percent (UNICEF 2014). A key concern is that a quarter of births in Egypt did not receive prenatal care at all.

Delivery with a skilled attendant is also an important component of reducing newborn mortality and illness. Skilled attendants aid in safe delivery, and can identify health issues and provide postnatal care (World Health Organization 2004). Ensuring that skilled health personnel attend more births is an important part of attaining the MDGs. In Egypt, 79 percent of births[5] were attended by a health professional, 20 percent were attended by Dayas—traditional birth attendants—and less than 1 percent of births occurred with no assistance. Egypt has steadily increased the proportion of births attended by skilled personnel over the past several decades. Just 35 percent of births were attended by skilled attendants in 1988; in 1998 the rate increased to 55 percent of births, and reached 79 percent in 2008—a steady expansion rate of 10 percentage points every five years (World Development Indicators). There has been a greater increase in delivery care compared with prenatal care. Egypt is at the regional average for delivery care of 79 percent (UNICEF 2014).

The immunization of children also plays an important role in preventing illnesses and reducing child mortality (Molina 2012). Children are considered fully immunized if they have received immunizations for all six major preventable childhood diseases: tuberculosis, diphtheria, whooping cough, tetanus,[6] polio,[7] and measles. They should be fully immunized by 12 months of age. Egypt has achieved good immunization coverage; 92 percent of children ages 12–23 months[8] are fully immunized. The third polio vaccine needs greater attention during Egypt's immunization campaigns, as 5 percent of 12–23-month-old children have not received it.

In terms of nutrition, children in Egypt start their lives on fairly healthy footing; however, over the first two years of life, they experience a substantial falling off from healthy growth measured by height-for-age. A child's height, relative to the height of the median healthy child of the same age (in months) and sex, is a powerful indicator of accumulated nutrition, or accumulated nutritional deficiencies. As figure 6.2 shows, at birth, children are, on average, no different than the reference population.[9] More than a quarter (29 percent) of children under the age of five are stunted. However, within the first few months of life, their growth falters. The drop-off is particularly steep in the second year of life—from around 12 months to 23 months—at which point children average around 1.5 standard deviations below the healthy reference population. There is also a substantial cyclical component to malnutrition and stunting in Egypt. Over the

Figure 6.2 Average Height-for-Age Compared to Healthy Reference Population, in Standard Deviations, and Percentage Stunted, by Age in Months, Ages 0–59 Months



Source: World Bank calculations from the Egypt DHS 2008.
Note: SD = standard deviations.

course of a year of life, there is notable variation in height-for-age (almost 0.5 SD in variation), which is particularly visible at ages two through four. There are drops in height-for-age around 21 months, 33 months, and 45 months. Targeting nutritional supplementation to this "lean" period will be an important and high-impact component of addressing malnutrition.

Micronutrients, such as iron, vitamin A, zinc, and iodine, play an important role in both physical and cognitive development. Iodized salt is the primary means for delivering iodine to children. In Egypt, 77 percent of children live in a household with adequately iodized salt,[10] which means that one in four children under the age of five are at high risk for decreased cognitive development. Egyptian children and mothers face shortages of other important micronutrients. Iron deficiency slows cognitive development and increases the risk of illness or death, and Vitamin A is essential for eyesight, growth, and development, and also helps protect against some diseases. In Egypt, 28 percent of children under three were not consuming iron-rich foods, and 64 percent of children under age three and around half of their mothers are not consuming foods rich in vitamin A on a daily basis. While Egypt has a program of vitamin A supplementation for new mothers and babies, around 88 percent of children ages 6–59 months had not received a vitamin A capsule in the six months preceding the survey. Those children getting vitamin A were primarily those receiving immunizations, which is a cost-effective method for providing vitamin A. However, once fully immunized at 24 months and older, children are no longer receiving vitamin A (El-Zanaty and Way 2009).

Cognitive, Social, and Emotional Development

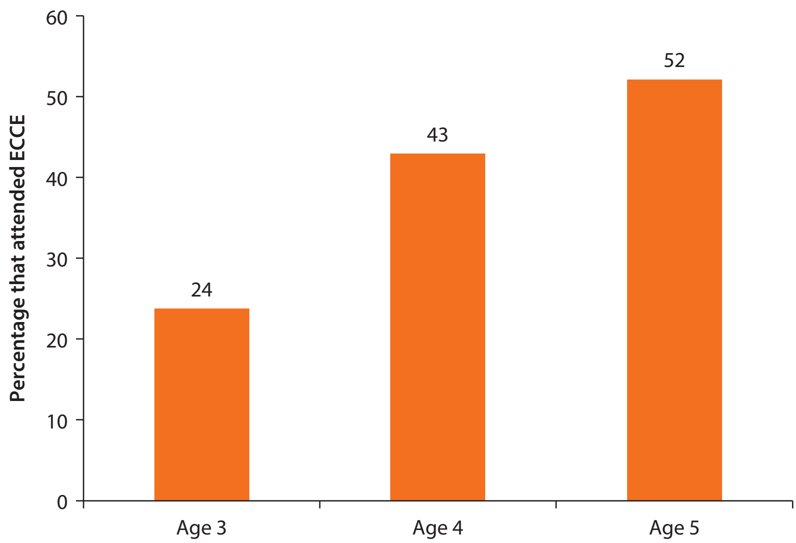
One of the Education for All goals is to expand ECCE, especially for the most disadvantaged and vulnerable children. Early childhood education and early learning play an important role in school success. Evidence has shown that ECCE improves cognition and socioemotional development, with benefits that can last a lifetime. Yet in Egypt, less than half (40 percent) of children ages three to five have ever attended kindergarten, private nursery, or other ECCE programs to prepare for primary school. A recent study in Egypt showed that ECCE improves test scores, decreases grade repetition, decreases dropout rates, and increases educational attainment by an entire year (see box 6.3). ECCE can also be expected to raise wages later in life (UNESCO 2006). Figure 6.3 presents the percent of children, by age, who have ever attended ECCE. Only a quarter (24 percent) of three-year-olds have ever attended ECCE programs, and half (52 percent) of five-year-olds have attended some type of ECCE.

ECCE in Egypt is mainly composed of kindergartens and nurseries. Kindergartens are formal programs with educational curricula designed to prepare children for school; nurseries are primarily designed for child care for younger children, and are widely varying in quality (UNDP and Institute of National Planning 2008). Half (53 percent) of the children in Egypt who had attended ECCE attended a private nursery (see figure 6.4); however, programs have varying quality and weak educational components. The government of Egypt has plans to expand access to kindergarten. Since a high percentage of

Box 6.3 The Impact of Early Childhood Care and Education in the Arab Republic of Egypt

Early childhood care and education improves educational outcomes, decreases dropout and repetition, and increases educational attainment and test scores**.** A recent study by Krafft (2011) showed that ECCE decreased dropout to such an extent that youth who attended attained more than an additional year of schooling. Children were also less likely to repeat a year, half as likely in primary, and only two-thirds as likely in preparatory. Students who attended ECCE had two point higher test scores (out of 100) on their primary and preparatory exams. Students could expect increased adult wages as a result of their additional education, such that the benefits of extending ECCE to additional children exceed their costs; expanding ECCE would be a good investment for the Arab Republic of Egypt.

Figure 6.3 Percentage of Children Aged 3–5 Who Ever Attended ECCE, by Age



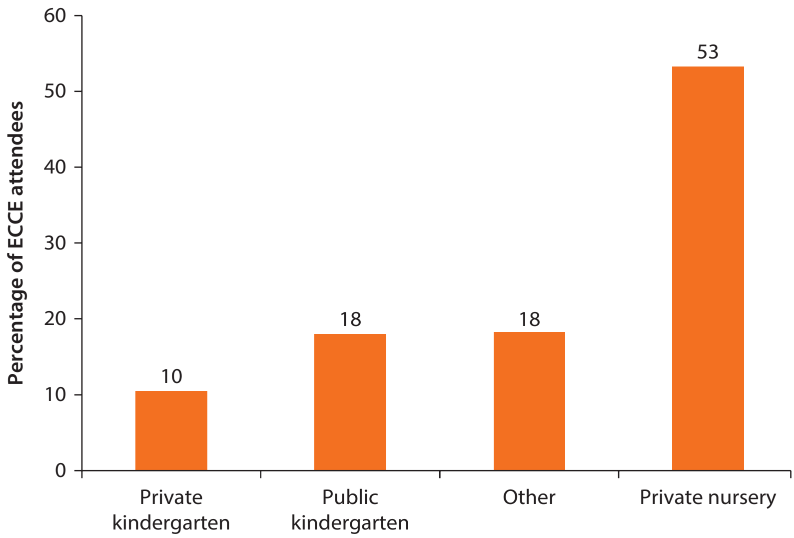
Source: World Bank calculation based on Egypt DHS 2008.
Note: ECCE = early childhood care and education.

children are in the nursery system, increasing the quality and educational content of this system will be an important part of improving ECCE (UNDP and Institute of National Planning 2008). Children attending formal kindergartens were more likely to attend public kindergartens (18 percent) than private kindergartens (10 percent), and 18 percent attended "other" forms of kindergartens.

Key Factors Affecting Early Childhood Development

A number of background characteristics relating to the child, family, and community affect ECD outcomes, such as gender, parents' education, household socioeconomic status (wealth),[11] geographic location (region or governorate),

Figure 6.4 Type of ECCE Attended, Children Who Ever Attended ECCE, Ages 3–5



Source: World Bank calculations based on Egypt DHS 2008.
Note: ECCE = early childhood care and education.

and residence (urban/rural). Understanding these relationships can help identify why some children have poor ECD outcomes and which children to target with policy or programmatic interventions.

Survival, Health, and Nutrition

Background characteristics have a complex relationship with infant mortality in Egypt. Boys have a higher chance of dying in the first year of life than girls, but this is a common pattern globally due to genetic factors (Hill and Upchurch 1995). Children in the poorest 40 percent of households are twice as likely as children in the richest 20 percent of households to die before their first birthday. Moreover, children from households in urban areas, especially the urban governorates and urban Upper Egypt, are more likely to die in their first year than children elsewhere in the country.[12] The relationship between infant mortality and parents' education is not clear.

Taking into account other background characteristics, where children are born has a significant[13] impact on their chance of survival in the first year; children in Lower Egypt and rural Upper Egypt are less likely to die in the first year of life. Children from richer households, especially the richest 20 percent of households, are significantly less likely to die in their first year as compared to the poorest 20 percent of households.

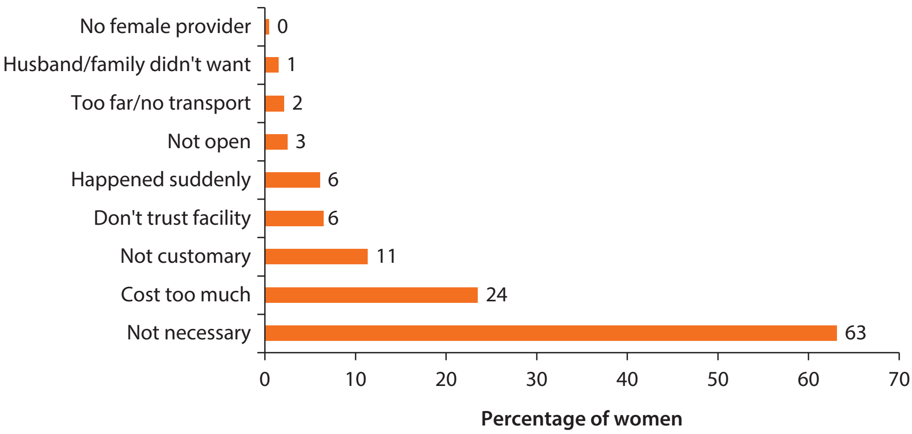
Use of prenatal care services is closely associated with the wealth, residence, and geographical location of the household and with parents' education. While 93 percent of births among the richest fifth of Egyptian households received prenatal care, only 54 percent of births in the poorest fifth of households received prenatal care. The relationship between prenatal care and mother's education is very similar to that of wealth, with prenatal care increasing with higher levels of education. Urban births are much more likely (85 percent) to receive prenatal care than rural births (67 percent). The difference when comparing regions is particularly acute, where the urban governorates (89 percent) have higher rates of prenatal care than rural Upper Egypt (60 percent). In several governorates—Menoufia, Fayoum, and Qena—rates are below 60 percent.

When taking into account all identified background characteristics together, the region where a woman lives, her household's wealth, her education, and her husband's education are significant in determining her chances of using prenatal care. Births in every other region have a lower chance of receiving prenatal care than in the urban governorates. Use of prenatal care is significantly higher and increasing in the second through highest wealth levels as compared to the poorest 20 percent of households. Mothers and fathers with more education, especially mothers with higher education, are significantly more likely to use prenatal care. Women who report that distance to health care is a problem are also significantly less likely to have prenatal care.

As with prenatal care, rates of having a birth attended by a skilled medical professional vary substantially by wealth and education, and differences based on geographic residence are even greater. While 79 percent of all births were attended by a skilled health worker, 90 percent of births in urban areas but only 72 percent of births in rural areas had skilled delivery attendants. Differences by governorates are sizable; in Menya, Fayoum, Assuit, and Souhag, fewer than 60 percent of births occur with skilled attendants. Taking into account other characteristics, women from Upper Egypt and the frontier governorates have significantly lower rates of delivery with a skilled attendant. The chance of a delivery occurring with a skilled attendant increases with wealth and mother's education; there are fewer significant differences based on father's education.

Distance to health care is not a significant factor that determines use of delivery care, but perceptions of the need for care and the cost are substantial barriers. Women who did not deliver at a medical facility for their last birth were asked why they did not do so. Figure 6.5 presents their reported reasons—possibly multiple reasons—for not delivering at a health facility. The most frequently reported reason was that it was not necessary (63 percent). The second most common reason was that it cost too much (24 percent). That it was not customary (11 percent) to deliver in a health care facility, that the facility was not trustworthy or high quality (6 percent), or that the birth happened suddenly (6 percent) were also common reasons given. While the reasons given may indicate that there are, generally, facilities available, there are substantial geographic differences in the supply of health care facilities in Egypt. For instance, urban areas average 6.7 health units per 100,000 population, while rural areas average only 1.6 units per 100,000 population. Likewise, Menia, Fayoum, Assuit, and Souhag, all of which had low rates of use of skilled attendants, have fewer health units per 100,000 population than the national average. Upper Egypt in general has fewer Ministry of Health nurses and doctors per 10,000 people—an unequal supply of public health services (UNDP and Institute of National Planning 2008).

Figure 6.5 Reasons for Not Delivering at a Health Facility, Reported by Women Who Did Not Deliver at a Health Facility



Source: World Bank calculations based on Egypt DHS 2008.

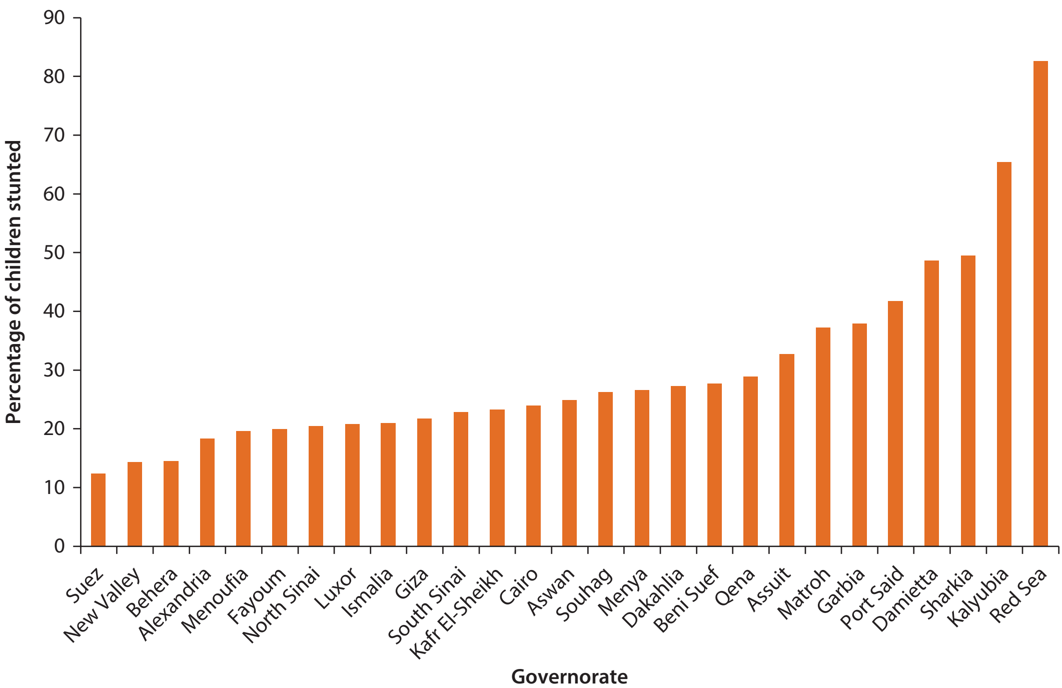
While around 92 percent of children in Egypt are immunized, with some variation by certain background characteristics, some subpopulations fall below the level of full immunization that confers herd immunity.[14] For instance, only 88 percent of children ages 12–23 months in rural Upper Egypt and 87 percent of children ages 12–23 months in the frontier governorates are fully immunized. Suez, Menoufia, Giza, Fayoum, Menia, Qena, Red Sea, North Sinai, and South Sinai all have full immunization rates below 90 percent for 12–23-month-olds. However, Egypt overall is fully immunizing children of all backgrounds. Taking into account other characteristics, geography appears to be the only significant factor that determines whether a child is fully immunized or not. Children in rural Upper Egypt and the frontier governorates are slightly less likely to be immunized than children in urban governorates. There are no statistically significant differences in immunization rates based on wealth or parents' education, indicating that, aside from geographic differences, immunizations have been implemented in a successful public health campaign that crosses wealth and educational gaps.

In terms of nutrition, stunting and height-for-age have a complex relationship with children's background characteristics in Egypt (see box 6.4 for a discussion of other health behaviors that may impact nutrition). Male children are more likely to be stunted (31 percent) than female children (27 percent). The rates of stunting fluctuate with wealth, also without a very clear pattern. The richest 20 percent of households have only slightly lower stunting than the poorest. There is a very weak improvement in nutrition with higher parental education, and only slightly better nutrition in urban areas compared with rural areas.

There are large differences in rates of stunting based on geographic location. About a fifth (22 percent) of children in urban governorates are stunted, while a third (33 percent) of children in rural Lower Egypt and two-fifths (39 percent) of children in urban Lower Egypt are stunted. The rate in urban Upper Egypt is also quite low (23 percent). Some governorates have extremely high rates of stunting (figure 6.6), with more than half of children stunted. These areas should receive particular attention. In Port Said, 42 percent of children under 5 are stunted, in Damietta and Sharkia almost half (49 percent) of children under 5 are stunted, and in Kalyubia almost two-thirds (65 percent) of children under 5 are stunted. Some of this geographic variation may be due to differences in exposure to parasites; differences in the prevalence of parasites by geographic area have been found previously (Curtale et al. 2003).

Taking into account other characteristics, geography continues to be the main circumstance related to stunting. Children are significantly more likely to be stunted if they are in Lower Egypt, especially urban Lower Egypt, as compared to the urban governorates. Interestingly, while statistically there is a significantly higher rate of stunting in the frontier governorates, the difference in height-for-age is not significant, suggesting a minority with acute malnutrition rather than widespread malnutrition. The opposite occurs in rural Upper Egypt: while stunting is not significantly different from urban governorates, average height-for-age is, suggesting a widespread but moderate degree of malnutrition. A child's sex also makes a difference after accounting for other characteristics, with female children being significantly less likely to be stunted and having higher height-for-age.

Figure 6.6 Percentage of Children Aged 0–4 Stunted, by Governorate



Source: World Bank calculations based on Egypt DHS 2008.

Box 6.4 Nutrition and Health Behaviors

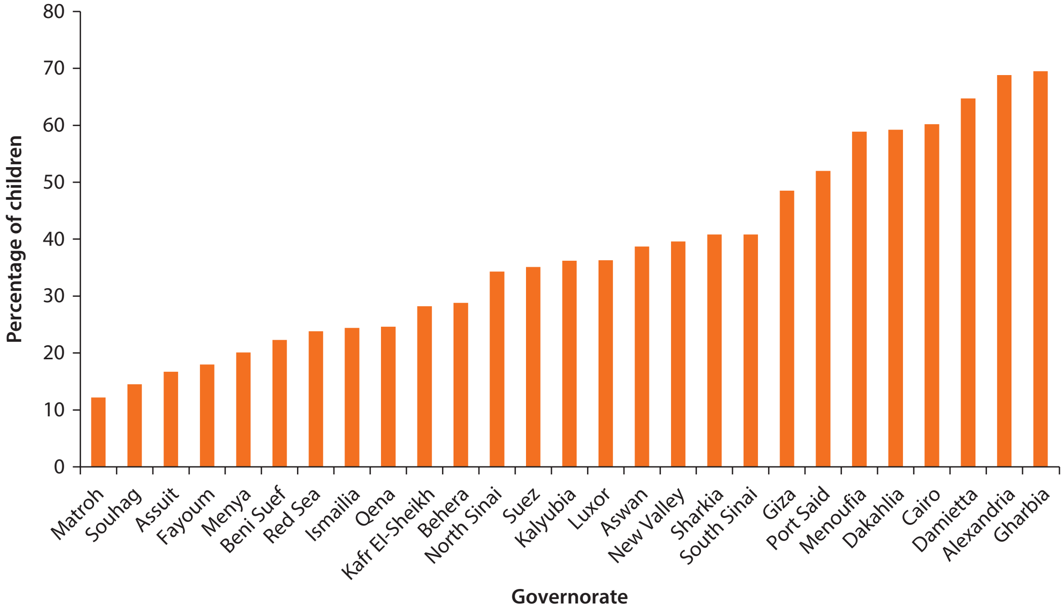
Although Egypt has struggled to decrease stunting, some health behaviors that are important components of early nutrition have improved over time. For instance, in 2003 only 30 percent of children under six months were exclusively breastfed, and as of 2008 this had increased to 53 percent (World Development Indicators). There is still substantial room for improvement in early nutritional practices. Best practice is for exclusive and universal breastfeeding in the first six months, and while 79 percent of infants under two months are exclusively breastfed, too many infants from three to six months are receiving supplemental foods or liquids. This early introduction of other foods or liquids increases the exposure of infants to germs that may cause diarrhea, and increases the risk of malnutrition (El-Zanaty and Way 2009).

Cognitive, Social, and Emotional Development

Wealth, parents' education, and geographic location are strongly associated with opportunities for healthy brain development. Iodine plays an important role in brain development, and poorer children are less likely to have access to iodized salt. Almost half (44 percent) of children in the poorest fifth of Egyptian households and about a quarter (28 percent) of children in the next poorest fifth of households do not have access to adequately iodized salt, compared to 10 percent of children among the richest fifth of households. A similar gradient is seen with parents' education, where the mother's and father's education is positively associated with the chance of a child having access to iodized salt. There is notable variation in access to iodized salt based on geographic location, with 90 percent of children in urban Lower Egypt having adequately iodized salt but only 64 percent in rural Upper Egypt. The effects of geography and wealth hold, even when taking into account other characteristics, making them significant determining factors of a child's chances for healthy brain development.

Similarly, it is children from the most advantaged backgrounds who are attending ECCE, despite the fact that early childhood education has the greatest benefits for disadvantaged and vulnerable children. A child from the richest 20 percent of households is four times more likely (65 percent) to attend ECCE than a child from the poorest 20 percent of households (16 percent). Moreover, children with more-educated parents have a higher chance of attending ECCE than those whose parents have no education or even basic education. Where a child lives geographically is also associated with his or her chance of attending ECCE; more than half (53 percent) of urban children but less than a third (33 percent) of rural children attend ECCE. Children living in the urban governorates have particularly high rates of attendance (61 percent), especially when compared with children living in rural Upper Egypt (20 percent). Examining the data by governorate (figure 6.7), it is clear that children have very different chances of attending ECCE based on their governorate of residence. Fayoum, Assuit, Souhag, and Matroh have attendance rates below 20 percent, while Cairo, Damietta, Alexandria, and Gharbia have attendance rates above

Figure 6.7 Percentage of Children Aged 3–5 Who Ever Attended ECCE, by Governorate



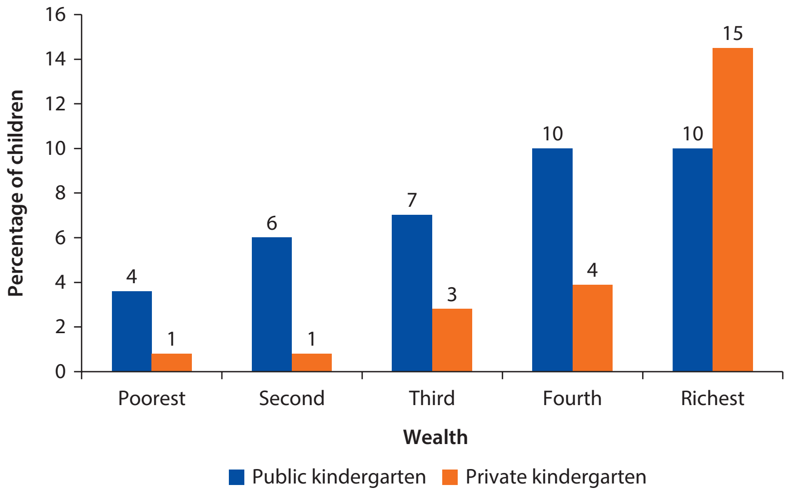
Source: World Bank calculations based on Egypt DHS 2008.
Note: ECCE = early childhood care and education.

60 percent. There is a slight gender gap in ECCE, favoring boys (42 percent) over girls (39 percent).

Taking into consideration multiple background characteristics, geographic location, wealth, and parents' education have significant effects on ECCE attendance. Children in urban Lower Egypt, Upper Egypt and the frontier governorates are significantly less likely to attend ECCE than children in urban governorates. ECCE attendance increases significantly with wealth and with both mother's and father's education. However, while there are gender differences in attendance rate, gender is not significant when controlling for other factors.

The richest households as compared to the poorest are benefiting from public kindergartens by a ratio of 2.5:1. Public and private kindergartens provide the most educational setting. There are large differences in both public and private kindergarten attendance based on wealth (figure 6.8). Public kindergartens—which, as a government-funded service, ought to be equally available regardless of background—are attended by just 4 percent of children from the poorest fifth of households, while 10 percent of children from the fourth and richest fifths of households attend public kindergartens. Wealth differences in attending public kindergartens persist, even taking into account other characteristics. The richest fifth of households also have a much higher rate of attendance for private kindergartens—15 percent—compared to 4 percent of the fourth 20 percent of households and 1 percent of the poorest fifth of households. Also, children in rural areas are less likely to go to public kindergarten (7 percent) than urban children (9 percent), much less likely to attend private kindergarten (2 percent

Figure 6.8 Percentage of Children Aged 3–5 Who Attended Public and Private Kindergartens, by Wealth



Source: World Bank calculations based on Egypt DHS 2008.

rural vs. 9 percent urban), less likely to attend private nursery (19 percent rural vs. 25 percent urban), and less likely to attend other types[15] of ECCE (5 percent rural vs. 11 percent urban). This substantial inequality in early childhood experiences places children on an unequal footing before they even enter the primary school system.

The structure of the education system in Egypt contributes to greater inequality of opportunity for children. While primary through university schooling is free of charge, even public kindergartens have fees (UNESCO International Bureau of Education 2006). Although fees may be a barrier for poorer families, it is primarily lack of availability of ECCE, especially public kindergartens, that limits attendance. For instance, there are many children ages four to five in poor areas of rural Upper and Lower Egypt who are in nursery programs targeted for younger ages because of the demand for ECCE (UNESCO International Bureau of Education 2006). Additionally, there is an oversupply of ECCE teachers in urban areas and a shortage in rural areas (UNDP and Institute of National Planning 2008), which may contribute to unmet demand in rural areas. Targeting and training women from poor and rural areas to become ECCE teachers will be an important step to increasing access. It would also provide employment opportunities for women in these areas.

Children Face Unequal Opportunities for Healthy Development

The previous analysis shows that children in Egypt face unequal opportunities for healthy development, based on factors beyond their control. The extent of inequality can be measured by (a) the percentage of opportunities that needed to have been distributed differently for equality of opportunity to have occurred for each of the ECD indicators, and (b) the chance of whether these differences might have occurred by random variation (table 6.1). In Egypt, there is no inequality in the opportunity for children to get immunized, regardless of their circumstances. However, 9.0 percent of opportunities would have to be distributed differently for there to have been equal opportunity for children to receive prenatal care and be delivered by a skilled attendant. Also 9.0 percent of opportunities would have to be distributed differently to remove the inequality in the chance of a child being stunted and 7.2 percent have to be redistributed to remove inequality in terms of access to iodized salt and hence healthy brain development. While there are unequal chances to die early in life, since this is a rare occurrence, it is not possible to indicate whether or not these differences are due to chance. The greatest inequality is in terms of ECCE, where 21.8 percent of chances to attend ECCE would need to have been distributed differently in order for children to have equality of opportunity.

Wealth, mother's education, and geography make the largest contributions to children's unequal chances. Table 6.2 shows the different contributions of circumstances to inequality for different outcomes as percentages. Wealth plays a particularly large role in prenatal care, skilled delivery, iodized salt, and ECCE, contributing over a third to inequality for each of these measures.

Table 6.1 Percentage of Opportunities to Be Redistributed

	Dissimilarity Index
Prenatal care	9.0***
Skilled delivery	9.0***
Fully immunized	1.7
Neonatal mortality	24.9
Infant mortality	20.3
Stunted	9.0**
Iodized salt	7.2***
ECCE	21.8***

Source: World Bank calculations based on Egypt DHS 2008.
Note: Significance level: * = chance < 5%; ** = chance < 1%; *** = chance < 0.1%. ECCE = early childhood care and education.

Table 6.2 Contributions of Background Characteristics to Inequality
Percentage

	Wealth	*Mother's education*	*Father's education*	*Region*	*Child's sex*	*Distance to health care*
Prenatal care	35.2	28.5	15.2	17.6	n.a.	3.6
Skilled delivery	36.1	23.6	10.2	28.8	n.a.	1.3
Fully immunized	22.5	11.5	8.5	53.0	3.3	1.2
Neonatal mortality	15.8	28.8	3.2	25.0	27.2	n.a.
Infant mortality	29.7	18.9	7.2	37.0	7.2	n.a.
Stunted	4.8	4.5	7.2	72.5	8.6	2.6
Iodized salt	43.6	17.4	9.2	19.3	0.1	10.3
ECCE	36.8	26.0	13.2	23.3	0.8	n.a.

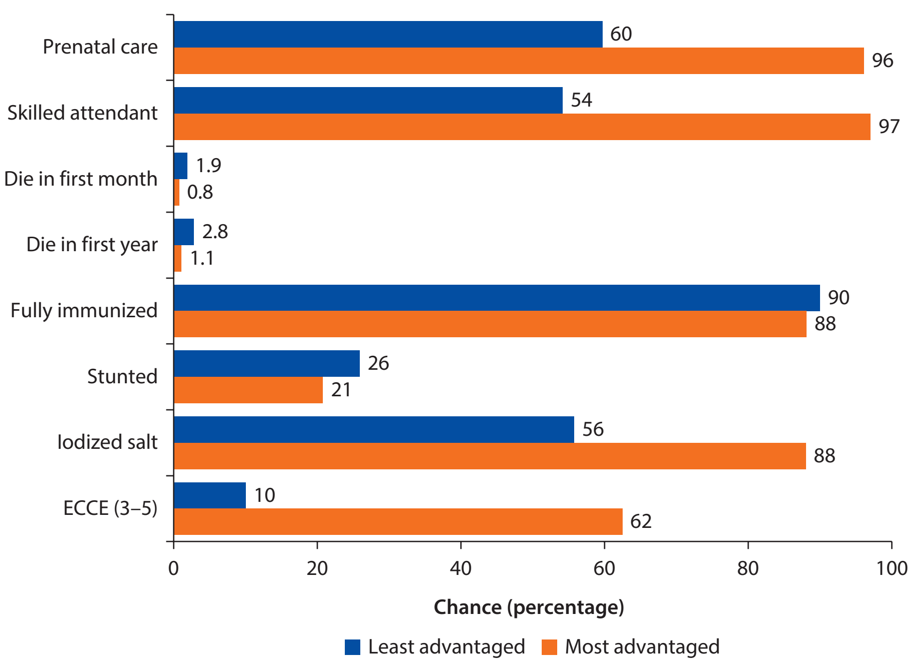
Source: World Bank calculations based on Egypt DHS 2008.
Note: Shapley decompositions of the dissimilarity index. n.a. = not applicable or not available.

Mother's education is particularly important for prenatal care, skilled delivery, and ECCE, contributing around a quarter to inequality on these indicators. Father's education plays a small but important role in inequality for these outcomes as well. Residence in different regions matters for all outcomes, but especially for inequality in stunting, salt iodization, and ECCE. A child's sex contributes very little to inequality, as does distance to health care.

Children tend to be consistently advantaged or disadvantaged across a variety of different dimensions of ECD, and can face very different life chances based on just a few characteristics. Early childhood is when cycles of poverty and inequality are transmitted across generations. If we observe a child who lives in rural Upper Egypt, in the poorest fifth of households, and with uneducated parents (a least advantaged child) and compare that child to one who has parents with higher education, is from the richest fifth of households, and lives in the urban governorates (a most advantaged child), we find that they have very different chances of healthy ECD. Figure 6.9 presents the chances (predicted chance) of different ECD indicators (based on the regressions) for these "least advantaged" and "most advantaged" individuals.

On almost every indicator, the least advantaged child faces poorer chances for ECD. Only in terms of being fully immunized is the least advantaged profile better than the most advantaged profile. Otherwise, the least advantaged child is less likely to receive prenatal care or have a trained attendant at delivery, with differences of nearly 40 percentage points. The least advantaged child is also

Figure 6.9 Most Advantaged and Least Advantaged Simulations



Source: World Bank calculations based on Egypt DHS 2008.

more likely to die in the first month of life, or die in the first year of life. Moreover, the least advantaged child is more likely to be stunted by 5 percentage points, and less likely to have access to iodized salt by more than 30 percentage points. Finally, the least advantaged child has only a 10 percent chance to attend ECCE, compared to a 62 percent chance for a most advantaged child.

Conclusions

Children in Egypt have gaps in developing to their full potential. Children also face unequal chances for healthy development based on their circumstances. While progress has been made in reducing mortality, still too many children unnecessarily lose their lives in the first months and years of life. There are substantial gaps in prenatal care and skilled delivery care. Egypt is doing well in providing immunizations broadly and regardless of children's circumstances, but falling short in providing access to adequately iodized salt for healthy brain development, as well as struggling with malnutrition. Although ECCE is available to some children in Egypt, there is enormous inequality in children's chances of attending ECCE. Where children are born, the wealth of their families, and their parents' education all contribute substantially to unequal chances for healthy ECD. More needs to be done to ensure that children thrive in their early years and have equal chances to grow and develop, with special focus on the least advantaged.

Annex 6A: The Data

The Data Set

The analysis utilizes cross-sectional data on the well-being of women and children collected in the Demographic and Health Survey (DHS) for 2008 in Egypt. The DHS survey, administered by the United States Agency for International Development has a household questionnaire that includes important background characteristics of individuals and families. It also has a questionnaire for ever-married women ages 15–49, which captures information on important components of early childhood development (ECD) such as prenatal care, skilled assistance with the delivery of children, and children's immunizations. Weight and height data are collected for children zero to five years of age. The survey is nationally representative, and includes data that allows for an analysis of the relationship between ECD and child and household indicators within Egypt. See El-Zanaty and Way (2009) for additional information in the final report on the survey.

The Sample

The 2008 DHS dataset for Egypt sampled 18,968 households, 16,571 ever-married women ages 15–49, and 10,361 children younger than 5 (anthropometric measures). The analysis in this note is weighted in order to be representative at the national level. The sample sizes reported (N) in each of the tables are based on the unweighted number of observations in the data.

Annex 6B: Indicators by Background Characteristics

Table 6B.1 Indicators by Background Characteristics

	Prenatal care	*Skilled attendant at birth*	*Died in first month*	*Died before first birthday*	*Fully immunized (age 1)*	*Stunted*	*Height-for-age (SD)*	*Iodized salt*	*ECCE (3–5)*	*Percent of children (0–4)*
Gender										
Male	73.8	80.0	2.2	2.8	91.0	30.8	–1.10	76.6	41.6	50.7
Female	73.4	78.0	1.1	2.0	92.4	27.0	–0.92	76.7	38.8	49.3
Wealth										
Poorest	53.5	55.3	1.7	2.9	89.3	29.5	–1.01	55.6	15.7	20.1
Second	64.5	70.4	2.1	3.0	89.7	30.6	–1.09	71.8	28.1	19.9
Third	73.8	82.9	1.6	2.3	92.9	27.2	–0.97	79.2	42.8	21.3
Fourth	85.7	91.0	1.7	2.2	92.4	29.9	–1.09	88.0	55.4	20.0
Richest	92.5	97.0	1.2	1.5	94.1	27.0	–0.88	89.8	65.2	18.6
Mother's education										
No education	54.6	59.9	1.4	2.2	91.5	30.1	–1.03	65.9	19.7	25.8
Incomplete primary	68.4	73.6	2.3	3.4	87.7	28.5	–1.04	65.2	34.5	6.7
Complete primary	71.9	78.4	2.5	3.6	86.4	29.9	–1.14	81.4	37.8	3.5
Incomplete secondary	74.9	79.5	2.3	3.2	91.4	30.0	–1.06	78.6	39.3	11.7
Complete secondary	80.8	86.8	1.6	2.2	92.9	27.7	–0.97	80.8	51.3	39.2
Higher education	92.2	96.3	1.2	1.7	92.1	28.9	–0.99	89.2	65.4	12.9
Missing	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	42.8	n.a.
Father's education										
No education	52.8	62.0	1.9	2.7	89.7	30.9	–1.06	65.3	17.1	15.8
Incomplete primary	68.8	71.5	1.5	3.2	92.0	28.7	–1.09	69.8	34.9	10.7
Complete primary	73.7	78.8	1.1	1.9	89.4	33.2	–1.19	74.2	38.7	5.1
Incomplete secondary	72.7	78.0	2.1	2.8	90.5	27.3	–0.91	76.1	35.7	12.7

table continues next page

Table 6B.1 Indicators by Background Characteristics *(continued)*

	Prenatal care	*Skilled attendant at birth*	*Died in first month*	*Died before first birthday*	*Fully immunized (age 1)*	*Stunted*	*Height-for-age (SD)*	*Iodized salt*	*ECCE (3–5)*	*Percent of children (0–4)*
Complete secondary	77.7	83.1	1.5	2.2	92.9	28.6	−1.00	79.7	46.9	39.5
Higher education	88.1	91.8	1.7	1.9	91.8	27.4	−0.94	86.2	58.4	16.1
Missing	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	40.6	n.a.
Residence										
Urban	85.1	90.2	2.1	2.7	93.4	27.0	−0.90	85.0	53.2	37.0
Rural	66.9	72.4	1.4	2.2	90.6	29.9	−1.07	71.8	32.8	63.0
Region										
Urban governorates	89.3	92.4	2.6	3.3	93.8	22.1	−0.62	85.3	61.2	15.7
Lower Egypt urban	82.8	92.1	1.2	1.2	96.5	39.3	−1.41	89.7	51.6	9.7
Lower Egypt rural	72.8	83.6	1.1	1.8	93.2	32.6	−1.13	78.7	44.2	34.0
Upper Egypt urban	81.8	85.6	2.5	3.3	90.3	22.6	−0.81	81.5	43.8	10.7
Upper Egypt rural	59.9	59.3	1.6	2.7	87.6	27.0	−1.02	63.8	20.2	28.5
Frontier governorates	71.0	79.4	1.4	2.0	86.8	28.4	−0.93	70.0	28.1	1.4
Governorate										
Cairo	90.8	92.4			95.2	23.9	−0.51	90.8	60.2	8.8
Alexandria	87.8	90.9			94.0	18.3	−0.69	76.9	68.8	5.4
Port Said	93.5	99.1			100.0	41.7	−1.57	77.7	52.0	0.7
Suez	78.2	96.0			68.6	12.4	−0.46	86.3	35.1	0.8
Damietta	95.2	96.7			94.4	48.6	−1.68	81.0	64.7	1.4
Dakahlia	91.2	95.0			94.7	27.2	−1.22	80.2	59.2	6.7
Sharkia	69.6	73.3			97.7	49.4	−2.11	85.0	40.8	8.0
Kalyubia	69.8	87.2			92.2	65.4	−2.63	90.8	36.2	5.3

table continues next page

Table 6B.1 Indicators by Background Characteristics *(continued)*

	Prenatal care	*Skilled attendant at birth*	*Died in first month*	*Died before first birthday*	*Fully immunized (age 1)*	*Stunted*	*Height-for-age (SD)*	*Iodized salt*	*ECCE (3–5)*	*Percent of children (0–4)*
Kafr El-Sheikh	84.4	92.3			95.7	23.3	−0.26	59.3	28.2	3.8
Gharbia	80.3	84.9			93.9	37.9	−1.56	88.5	69.5	5.4
Menoufia	47.6	81.9			82.4	19.6	−0.83	70.9	58.9	5.2
Behera	74.1	85.0			98.2	14.5	0.48	90.7	28.8	6.5
Ismailia	90.0	92.8			96.2	20.9	−0.49	47.7	24.4	1.3
Giza	76.5	83.4			88.8	21.7	−0.95	86.7	48.5	8.3
Beni Suef	63.4	67.2			92.0	27.7	−1.13	23.8	22.3	3.8
Fayoum	52.1	52.4			84.8	19.9	−0.66	64.7	18.0	3.6
Menya	60.9	58.1			86.2	26.5	−1.03	60.2	20.1	6.7
Assuit	72.0	56.4			92.3	32.7	−1.02	64.3	16.7	5.4
Souhag	63.0	56.1			93.9	26.2	−0.96	73.2	14.5	5.5
Qena	56.5	74.6			72.2	28.9	−1.06	82.4	24.6	3.9
Aswan	76.9	89.1			95.3	24.8	−0.61	83.1	38.7	1.5
Luxor	86.1	93.2			91.2	20.8	−0.97	80.8	36.3	0.5
Red Sea	69.3	88.0			87.5	82.6	−3.14	97.1	23.8	0.2
New Valley	90.7	87.2			100.0	14.3	−0.13	81.5	39.6	0.3
Matroh	62.3	75.4			91.7	37.2	−1.19	56.6	12.2	0.5
North Sinai	63.5	69.1			71.8	20.4	−0.79	57.1	34.3	0.4
South Sinai	83.3	91.7			80.0	22.8	−0.87	89.1	40.8	0.1
Total	73.6	79.0	1.6	2.4	91.7	28.9	−1.01	76.7	40.2	100.0
N (observations)	10,868	10,844	8,367	8,367	2,188	9,478	9,478	10,119	6,203	10,595

Source: World Bank calculations based on Egypt DHS 2008.
Note: ECCE = early childhood care and education; SD = standard deviations. Blank cells indicate that governorate-level data for neonatal and infant mortality were omitted due to small sample size.

Annex 6C: Relationship between ECD Indicators and Background, When Accounting for Multiple Characteristics

Table 6C.1 Relationship between ECD Indicators and Multiple Background Characteristics

	Prenatal	*Delivery*	*Neonatal mortality*	*Infant mortality*	*Fully immunized*	*Iodized salt*	*Stunted*	*Height-for-age (SD)*	*ECCE*
Region—compared to urban governorates									
Lower urban	–		–	–		+	+	–	–
Lower rural	–		–	–			+	–	
Upper urban	–	–							–
Upper rural	–	–	–	–	–	–		–	–
Frontier	–	–			–		+		–
Wealth—20% of households—compared to poorest									
Second	+	+				+			+
Middle	+	+				+	–		+
Fourth	+	+		–		+			+
Richest	+	+	–	–		+			+
Mother's education—compared to illiterate									
Incomplete primary	+	+				–			+
Complete primary	+	+				+			
Incomplete secondary	+	+							+
Complete secondary	+	+		+			–		+
Higher education	+	+							+
Missing	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	+
Father's education—compared to illiterate									
Incomplete primary	+								+
Complete primary	+								+
Incomplete secondary	+								+
Complete secondary	+	+				+			+
Higher education	+								+
Missing	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	+
Distance problem	–		n.a.	n.a.		–	–		n.a.
Female	n.a.	n.a.	–				–	+	
P-value (model)	0.000	0.000	0.001	0.000	0.003	0.000	0.000	0.000	0.000
Observations (N)	10,836	10,812	8,366	8,366	2,185	10,087	9,452	9,452	6,203
R-squared								0.018	
Pseudo R-squared	0.116	0.168	0.040	0.029	0.034	0.089	0.016		0.133

Source: World Bank calculations based on Egypt DHS 2008.
Note: Blank cells indicate no statistically significant relationship. Significance level: + = chance <5% and positive; – = chance <5% and negative; ECD = early childhood development; ECCE = early childhood care and education; n.a. = not applicable; SD = standard deviations.

Notes

1. Based on 2007 annual number of births (UNICEF 2008) and the infant mortality rate calculated from the Demographic and Health Survey (DHS).
2. Both infant and neonatal mortality rates are calculated based on deaths in the 12–59 months preceding the DHS survey.

3. The Egypt 2008 DHS asks about prenatal care for live births only. Since live births are likely to be associated with prenatal care, the percentage of births not receiving prenatal care is likely to be an underestimate of the percentage of pregnancies not receiving prenatal care.
4. Either a doctor or a nurse/midwife
5. As was true for prenatal care, delivery questions are asked about live births only. Since live births are likely to be associated with care by a health professional, the percentage of live births with a health professional is likely to overestimate the number of deliveries with a health professional.
6. The DPT vaccine is a combination vaccine that covers diphtheria, whooping cough (pertussis), and tetanus. Children must receive three doses to be fully immunized.
7. Children must receive three doses to be fully immunized against polio.
8. This analysis focuses on children 12–23 months to allow for optimal parental recall.
9. The units show how Egyptian children are, on average, different from the reference population in terms of standard deviations (SD).
10. More than 15 ppm of iodine in the salt.
11. Wealth is defined in terms of which 20 percent of households a child falls into, based on an asset (wealth) index of durable goods.
12. For further details on higher mortality in the urban governorates and Upper Egypt, see El-Zanaty and Way (2009).
13. Throughout we use a 5 percent level of significance.
14. Herd immunity occurs when even unvaccinated individuals in the population (the "herd") are protected against illness because the disease can no longer spread. This is achieved once around 90–95 percent of infants are vaccinated.
15. "Other" was a category from the survey.

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CHAPTER 7

Iraq

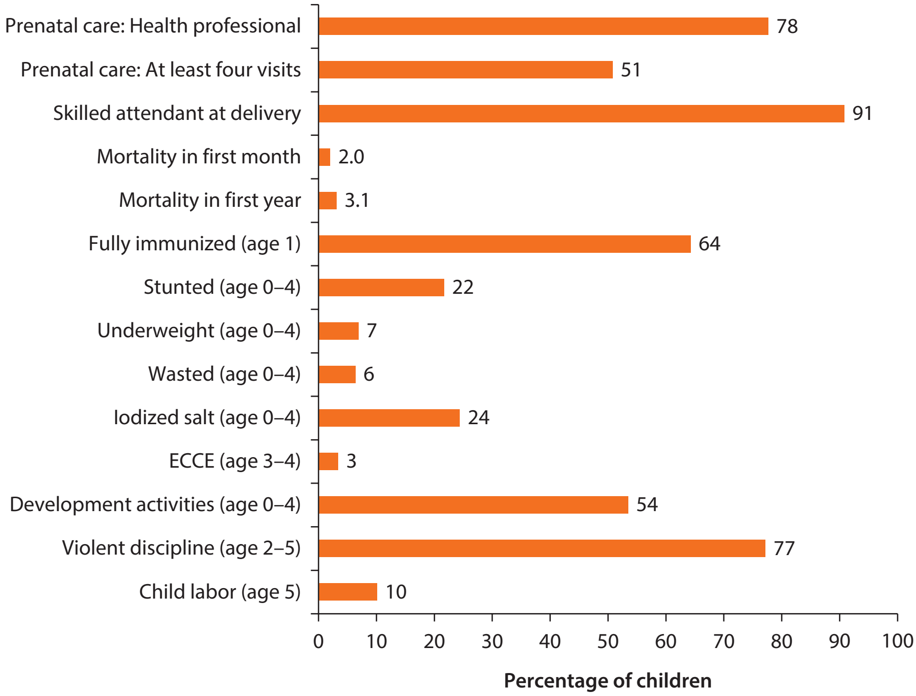
The State of Early Childhood Development in Iraq

Early childhood development (ECD) in Iraq has a number of gaps that prevent children from reaching their full potential for early development. Figure 7.1 shows summary indicators for ECD in Iraq. In terms of prenatal and delivery care, Iraq still has room for improvement; 78 percent of births receive prenatal care, but only 51 percent receive it regularly. However, around 91 percent of births had a skilled attendant at delivery. In the first month of life, 2.0 percent of children die, and in the first year of life, 3.1 percent of children die. A major gap in ECD in Iraq is the low rate of immunization, with only 64 percent of children age one fully immunized. Also, malnutrition is a problem, as 22 percent of children are stunted, 7 percent are underweight, and 6 percent are wasted. With only 24 percent of children having access to adequately iodized salt, three-quarters of children in Iraq are at risk of poor cognitive development. In terms of their social and emotional development, only 54 percent of children experience development activities and 77 percent have been violently disciplined. Just 3 percent of children aged three to four attend early childhood care and education. Moreover, 10 percent of children age five are engaged in child labor.

This chapter presents the status of ECD in Iraq. The health status of children is examined through indicators (see box 7.1) of early mortality, prenatal care, and having a trained attendant at birth. Children's nutritional status is measured by stunting (height-for-age), underweight (weight-for-age), and wasting (weight-for-height), as well as the availability of micronutrients, specifically iodine. To assess cognitive and social or emotional development, the analysis looks at the extent to which children are engaged in developmental learning activities and whether children are violently disciplined. Early learning and early work are examined in terms of attendance in early childhood care and education, and whether children engage in child labor at age five.

To better understand the context and conditions that influence ECD outcomes, the analysis also examines background factors that may be associated with ECD outcomes at the individual, household, and community levels, and their relationships (see annexes 7A, 7B, and 7C for additional information on the data

Figure 7.1 ECD Summary Indicators



Source: World Bank calculations based on Iraq MICS 2011.
Note: ECCE = early childhood care and education; ECD = early childhood development.

Box 7.1 ECD Indicators Examined in Iraq

Prenatal care
Trained attendant at delivery
Neonatal mortality (dying in the first month)
Infant mortality (dying in the first year)
Fully immunized
Stunting/Height-for-age
Underweight/Weight-for-age
Wasting/Weight-for-height
Salt iodization
Development activities
Violent child discipline
Early childhood care and education
Child labor

Box 7.2 Summary of Development Indicators in Iraq

Iraq is an upper-middle-income country with a gross domestic product per capita in 2012 of about $6,625 (in current US Dollars, table B7.2.1). Iraq has an estimated population of 33 million, of which 41 percent are under the age of 15. The average life expectancy at birth is 69 years. Overall, Iraq ranks 131 out of 186 countries with comparable data in the 2012 Human Development Index.

Table B7.2.1 Iraq's Socioeconomic Indicators

	1990	*2012*
Total population (millions)	17.5	32.6
% of population under 15	46	41
GDP per capita (current US dollars)	—	$6,625
Life expectancy at birth (years)	68	69
School enrollment, primary (% gross)	—	—

Sources: UNDP 2014; World Development Indicators.
Note: GDP = gross domestic product; — = not available.

and these relationships). For the overall country context, see box 7.2. Finally, the analysis measures the gaps and extent of inequality in ECD outcomes. The analysis is based on the latest available data: the Multiple Indicator Cluster Survey (MICS) from 2011. We also compare findings in 2011 to the 2006 MICS to assess whether ECD is improving or deteriorating. The data cover the various dimensions of early childhood from before a child is born up until the age of school entry (six years in Iraq). If more indicators were available and examined, they could provide an even richer picture of ECD in Iraq. While under normal circumstances ECD indicators change relatively slowly, on the ground today, in light of events in the country, there may be substantial changes. Children may face additional challenges, but there may also be opportunities to promote ECD.

Survival, Health Care, and Nutrition

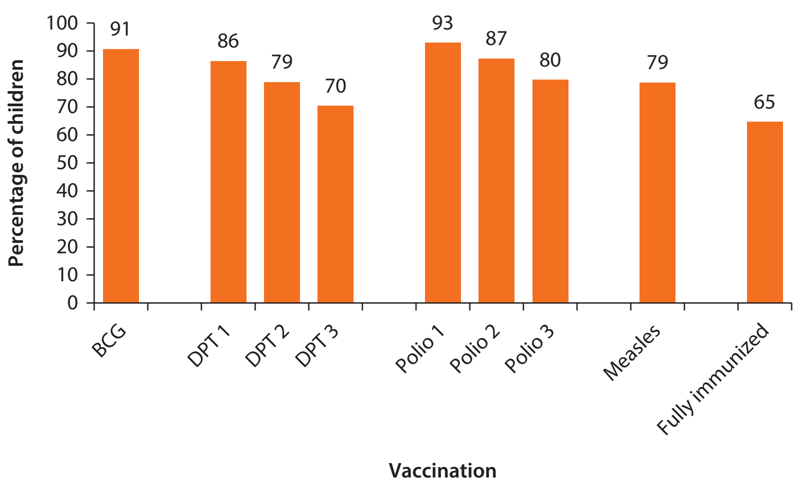
The first step in healthy ECD is simply surviving early childhood. In 2011, in Iraq, infant mortality, which refers to children dying before their first birthday, was 31 deaths per thousand births.[1] This infant mortality rate was above the average rate for the MENA region (24 per thousand) (UNICEF 2014). Most of infant mortality is composed of neonatal mortality—children dying within the first month of life. As of 2011 in Iraq, 20 children out of every thousand born died during their first month of life, which is above the regional average of 15 in every thousand (UNICEF 2014). There has been little progress in reducing infant mortality since 1990, when the rate was 37 deaths per thousand births, and in neonatal mortality, which was 23 per thousand in 1990 (World Development Indicators). In 2006, neonatal mortality was 21 deaths per thousand births, so 2011 rates are only one per thousand lower than 2006, and infant mortality in 2006 was 33 per thousand, so 2012 rates represent a decrease of only two per thousand.

In Iraq as of 2011, 78 percent of live births[2] received prenatal care from a health professional[3] and only half (51 percent) of births received prenatal care regularly, with four or more visits. Prenatal care and regular prenatal care rates have decreased from 2006 to 2011, when the prenatal care rate was 81 percent and the regular prenatal care rate was 54 percent. The 2011 rate was below the MENA region average of 83 percent (UNICEF 2014).

Iraq has made substantial strides in skilled delivery care over the past several decades; in 1989, 54 percent of births were attended by a trained health professional, which had risen to 72 percent by 2000, and reached 89 percent in 2006 (World Development Indicators). In 2011, 91 percent of births in Iraq were attended by a trained health professional, above the regional average for delivery care of 79 percent (UNICEF 2014).

The full immunization of children plays an important role in reducing child mortality. Immunization also prevents illnesses that can hamper healthy physical growth (Molina 2012). Children are considered fully immunized if they have received immunizations for all six major preventable childhood diseases: tuberculosis, diphtheria, whooping cough, tetanus,[4] polio,[5] and measles. They should be fully immunized by 12 months of age; this analysis focuses on children 12–23 months to allow for optimal parental recall. Iraq has not achieved the necessary level of immunization coverage; only 64 percent of children 12–23 months are fully immunized.[6] While BCG (Bacillus Calmette-Guérin) coverage is relatively high (91 percent), the third DPT (diphtheria, pertussis, tetanus) dose has only 70 percent coverage, the third polio dose only 80 percent, and the measles vaccine has only 79 percent coverage (figure 7.2). The gap between current immunization

Figure 7.2 Percentage of Children Aged 12–23 Months Immunized, by Vaccination



Source: World Bank calculations based on Iraq MICS 2011.
Note: BCG = Bacillus Calmette-Guérin (tuberculosis vaccine); DPT = diphtheria, pertussis, tetanus.

rates and full immunization of all children leaves children at risk for serious childhood illnesses and increased mortality. The rates of immunization have improved between 2006 and 2012, particularly for measles and three-dose vaccines, but children remain at risk.

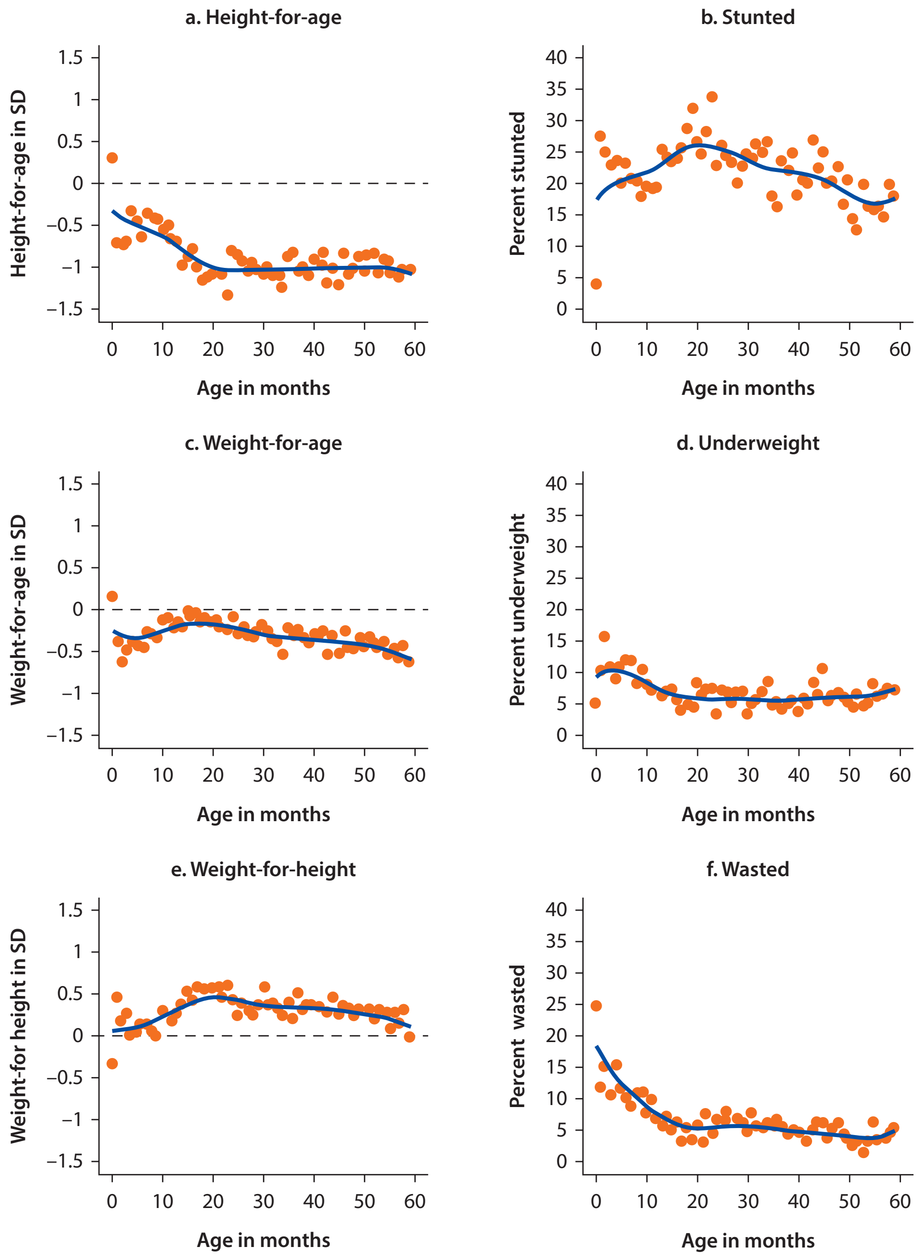
There are substantial deficits in children's nutritional status in Iraq. In 2011, 21 percent of children were stunted, 7 percent were underweight, and 6 percent were wasted. Figure 7.3 shows how children in Iraq fare in terms of growth compared to a healthy reference population.[7] Iraqi children fall behind very early, with height-for-age that is below the healthy reference population (figure 7.3). Over the first two years of life, children experience a substantial falling off from healthy growth. At birth, children are already below the height of the healthy reference population. Height-for-age is particularly low for the population from 20 months onwards, averaging almost a full standard deviation below the healthy reference population.

Within the first few months of life, children's weight-for-age falters. Weight-for-age trends towards about 1/2 SD below the reference median starting after age one. Correspondingly, between 5 and 10 percent of children are underweight between ages one and five. Weight-for-height, graphed against age, shows that children are actually, on average, slightly heavier than the healthy reference population. This is because, while children are slightly below healthy weight-for-age on average, they are falling further below height-for-age. Wasting, being far below a healthy weight-for-height, is most acute in the first year of life and falls thereafter. From 2006 to 2011, children's nutritional status in Iraq has seen little change. In 2006, 24 percent of children were stunted, 8 percent were underweight, and 6 percent were wasted.

Micronutrients such as iron, vitamin A, zinc, and iodine play an important role in both physical and cognitive development. Iodized salt is the primary means for delivering iodine to children. Only 24 percent of children in Iraq have access to adequately iodized salt. As a result, the three-quarters of children in Iraq who do not have sufficiently iodized salt[8] are at great risk for impaired cognitive development. A substantial barrier to sustainable and universal salt iodization is the security situation in Iraq. While UNICEF provides materials to ensure a sustainable salt iodization program, the ability of the Ministry of Health to enforce regulations on salt iodization is limited (Central Organization for Statistics & Information Technology and Kurdistan Regional Statistics Office 2007).

Iraqi children and mothers face shortages of other important micronutrients. Vitamin A is essential for eyesight, growth, and development, and also helps protect against some diseases. In Iraq in 2006, only 2 percent of children aged 6–59 months had received a vitamin A capsule in the six months preceding the survey. This was in part due to supply issues, namely a theft of the entire vitamin A shipment (Central Organization for Statistics & Information Technology and Kurdistan Regional Statistics Office 2007). Although the situation has improved since 2006, in 2011 only 28 percent of children under age five had received vitamin A supplements (The Central Statistics Organization and the Kurdistan Regional Statistics Office 2012).

Figure 7.3 Average Height-for-Age, Weight-for-Age, and Weight-for-Height Compared to Healthy Reference Population in Standard Deviations, and Percentage Stunted, Underweight, and Wasted, by Age in Months, Ages 0–4 Years



Source: World Bank calculations based on Iraq MICS 2011.
Note: SD = standard deviations.

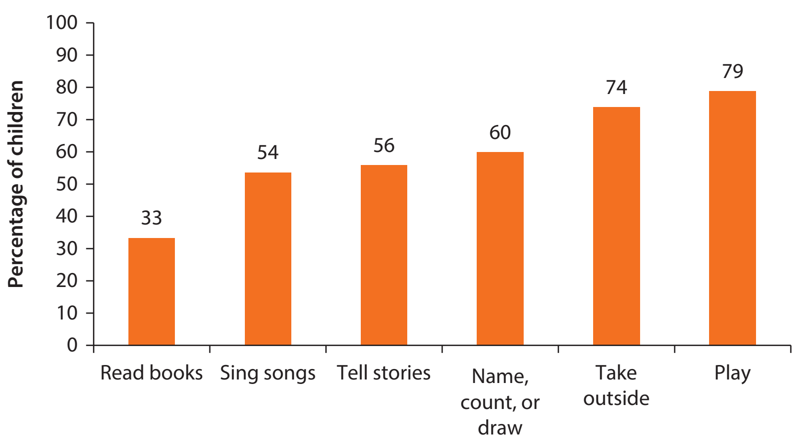
Social, Emotional, and Cognitive Development

Although it has been proven that play and interaction are important components of ECD, children in Iraq are missing out on these important opportunities for psychosocial growth. Whether an adult engages in multiple activities that promote learning is an important support of cognitive development and an important indicator of parenting practices and the social-emotional engagement of parents with their children. In the survey, caretakers of children ages zero to four were asked whether adults in the household had engaged in any of six different activities that support child development.[9] The results showed that while 54 percent of children experienced four or more development activities, almost half (46 percent) did not and 10 percent experienced none. The rate in 2011 is an improvement from 2006, when only 44 percent of children experienced these activities.

Children are more likely to engage in play than in activities that directly support their cognitive and educational development. The most common activities are playing (79 percent), being taken outside (74 percent), and naming, counting, or drawing (60 percent) (figure 7.4). The least frequently observed activity was reading books, with only 33 percent of children having books (or picture books) read to them. While families are generally engaged socially and emotionally with their children, there is room for improvement in the cognitive development of children, especially in terms of reading.[10]

Evidence has shown that early childhood care and education (ECCE) improves cognition and socioemotional development, with benefits that can last a lifetime. In Iraq, only 3 percent of three-to-four-year-old children attend ECCE. Moreover, only 7 percent of children ages five to six are currently in preschool or were in preschool last year; likewise, only 8 percent of children currently in first

Figure 7.4 Percentage of Children Experiencing Development Activities, by Activity



Source: World Bank calculations based on Iraq MICS 2011.

grade attended preschool in the previous school year (The Central Statistics Organization and the Kurdistan Regional Statistics Office 2012).

Other challenges that hinder the healthy development of children in Iraq are violent discipline[11] and early child labor. Violent child discipline is common in Iraq, with 77 percent of children ages two to five having experienced violent child discipline. Disciplining children is an important part of child rearing. However, research has found that violent discipline negatively impacts the physical, psychological, and social development of children (UNICEF 2010). Although beating with an implement was relatively uncommon (8 percent), hitting, slapping, and spanking were common, as were shaking (45 percent) and shouting/yelling/screaming (70 percent). Moreover, 10 percent of Iraqi children age five engaged in some type of child labor in the week preceding the survey—working for someone not a member of the household, doing household chores, or doing other family work.[12] Child labor, engaging in work or chores, can be particularly dangerous for young children. It also may hamper their ability to successfully transition to school. Children engaged in child labor in Iraq were almost entirely doing household chores.

Key Factors Affecting Early Childhood Development

A number of background characteristics at the child, family, and community levels affect ECD outcomes: gender, parents' education, household socioeconomic status (wealth),[13] geographic location (region or governorate), and residence (urban/rural). Understanding these relationships can help identify why some children have poor ECD outcomes and which children to target with policy or programmatic interventions.

Survival, Health, and Nutrition

Background characteristics have a complex relationship with infant mortality in Iraq. Boys have a higher chance of dying in the first year of life than girls, but this is a common pattern globally due to genetic factors (Hill and Upchurch 1995). Children in the poorest and richest fifth of households actually have quite similar chances of mortality. There are no substantial differences in mortality related to parent education, urban/rural residence, or regional location. Taking into consideration multiple characteristics, the only statistically significant[14] difference is a lower infant mortality rate for females as compared to males.

Use of prenatal care, especially regular prenatal care, is closely associated with wealth, education, and geography. Use of prenatal care is 78 percent on average nationally, and regular prenatal care is 51 percent. While 92 percent of births in the richest fifth of households received prenatal care, only 61 percent of births in the poorest fifth of households did so. The gap is similar for regular care—66 percent versus 36 percent. The differences in prenatal care between a mother or father with no education and a mother or father with higher education are very similar to those observed by wealth. Births in the Kurdistan region are slightly more likely to receive prenatal care, especially regular prenatal care, and urban children are more likely to receive prenatal care than rural children. In several governorates—Ninewa, Kirkuk, Erbil, Al-Anbar, Wasit, Salahaddin, and Missan—rates of prenatal care are below 75 percent.

Taking into consideration other characteristics, use of prenatal care is significantly higher in all the other wealth levels as compared to the poorest fifth of households. Mothers and fathers with more education are significantly more likely to use prenatal care. Being in a rural area as opposed to an urban area significantly decreases the chance of prenatal care. Being in Kurdistan significantly increases the chance of prenatal care compared to the South/Central region.

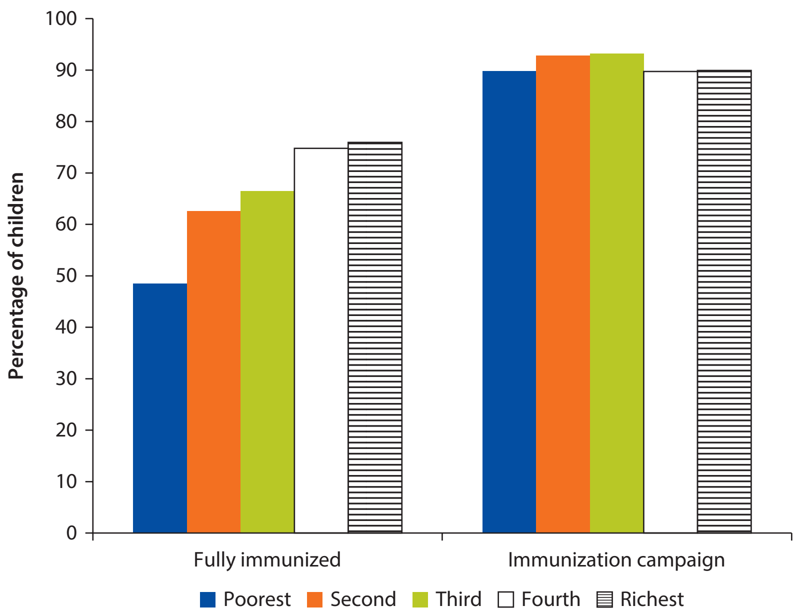
Differences in deliveries with skilled birth attendants associated with wealth, education, and geography do exist but at a smaller scale than in prenatal care. Births in the poorest fifth of households have an 82 percent chance of being attended by a skilled health professional, compared to a 96 percent chance in the richest fifth of households. Similar differences are observed in delivery care based on women's and partners' education levels. The urban rate of delivery care is 94 percent, while the rural rate is 85 percent. Kurdistan and the South/Central region have similar rates (91–92 percent). However, Ninewa, Kirkuk, Al-Anbar, Wasit, Salahaddin, and Al-Muthanna governorates all have rates below 90 percent.

After accounting for other characteristics, use of delivery care increases significantly with every other wealth level as compared to the poorest fifth of households. There are significant differences in use of delivery care based on the woman's education but only sometimes significant differences based on the partner's education. Rural areas have significantly lower chances of deliveries attended by skilled health professionals, and Kurdistan has higher rates than the South/Central region.

As with prenatal care and skilled delivery, the chance of being fully immunized is closely tied to wealth, education, and geography. As shown above, the population in general falls below the level of immunizations that will confer herd immunity,[15] with only 64 percent of children fully immunized. Immunization rates increase with parents' education in a similar pattern to wealth. For instance, while a child with an uneducated mother has a 51 percent chance of being fully immunized, a child with a secondary- or higher-educated mother has a 76 percent chance of being fully immunized. Urban children are more likely to be fully immunized than rural children (70 percent versus 52 percent), and children living in Kurdistan are more likely to be immunized than children living in South/Central Iraq (77 percent versus 63 percent). A number of governorates have full immunization rates below 60 percent, with Ninewa having only 58 percent of children fully immunized, Al-Anbar 54 percent, Wasit 48 percent, Salahaladin 44 percent, Al-Najaf 54 percent, and Thi-Qar 45 percent.

Across a variety of early health indicators there is a clear and consistent pattern of improvement with greater wealth. This holds true for prenatal care, delivery care, and whether or not children are fully immunized. However, as figure 7.5 shows, while early health care improves with wealth, strong public immunization campaigns can be equally effective across all wealth levels. Figure 7.5 compares the relationship of wealth with full immunization and participation in a national immunization day. There are substantial differences in rates of full immunization,

Figure 7.5 Rates of Full Immunization and Participation in Immunization Campaigns, by Wealth, Ages 12–23 Months



Source: World Bank calculations based on Iraq MICS 2011.

with 48 percent of children aged 12–23 months in the poorest fifth of households fully immunized compared to 76 percent in the richest fifth of households. In contrast, participation in national immunization campaigns actually is equitable. Around 90 percent of all children 12–23 months participated in one of the national immunization campaigns, regardless of wealth. National immunization campaigns are therefore a very effective and equitable method of enhancing ECD.

Taking into consideration other characteristics, rural children have a significantly lower chance of being immunized, while children in Kurdistan have a significantly higher chance of being fully immunized. Children from every other wealth level have a significantly higher chance of being immunized compared to the poorest fifth of households. Having a mother with secondary education or above or a father with secondary or higher education significantly increases the chances of being fully immunized, compared to a parent with no education. There are no statistically significant differences based on a child's gender.

In Iraq, stunting shows moderate differences based on wealth, suggesting that both poverty and public health and nutrition quality problems are driving stunting. For instance, a child from the poorest fifth of households has a 24 percent chance of being stunted, while a child from the richest fifth of households has a 21 percent chance. Similar differences are seen with parents' education. There are notable differences based on geography: children in the Kurdistan region have a 14 percent stunting rate, while children in the South/Central region have a 23 percent stunting rate. While an urban child has a 21 percent chance of being stunted, a rural child has a 23 percent chance. There is a wide variety of stunting rates based on governorate, with Sulimania at just 9 percent while Al-Anbar and Baghdad are above 30 percent.

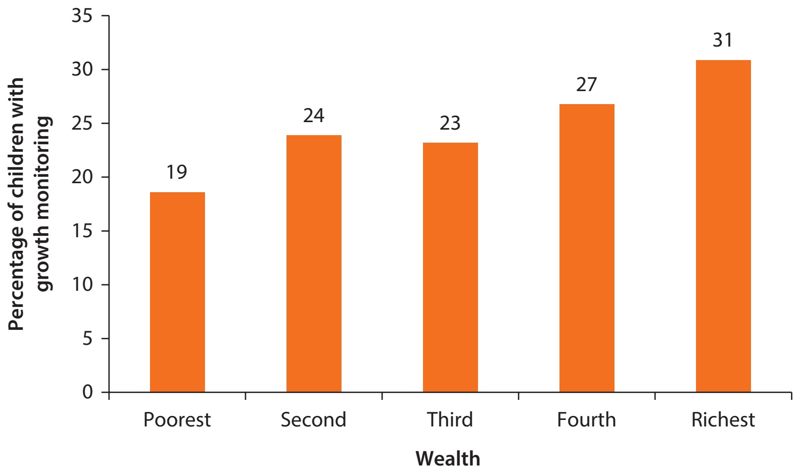
Taking into consideration other characteristics, children are significantly more likely to be stunted if they are living in Kurdistan as compared to the South/Central region. After accounting for other characteristics, there are no significant differences in stunting based on wealth, although children with secondary- or higher-educated mothers and primary or higher educated fathers are less likely to be stunted. Female children are also less likely to be stunted than male children.

Rates of being underweight or wasted based on background characteristics show only small differences. There are no appreciable differences in rates of being underweight based on rural versus urban; however, there is a lower chance of being underweight or wasted in Kurdistan. After accounting for other characteristics, children in Kurdistan are less likely to be underweight or wasted. Females and children with primary-educated mothers or fathers children are less likely to be underweight. Weight-for-age and weight-for-height increase with wealth, and weight-for-age is significantly higher for females and children whose parents have more education.

Only 24 percent of children ages zero to four have their growth monitored in Iraq, as of 2011.[16] Stunting, underweight, and wasting are not inevitable; steps can be taken to prevent malnutrition as well as to monitor for and correct nutritional deficiencies. Growth monitoring is a particularly important component of identifying nutritional deficiencies and knowing when children are falling off a healthy growth trajectory. Children at risk for poor growth outcomes are also less likely to have their growth monitored. For instance, children from the poorest fifth of households have a 19 percent chance of having their growth monitored, while children from the richest fifth of households have a 31 percent chance (figure 7.6).

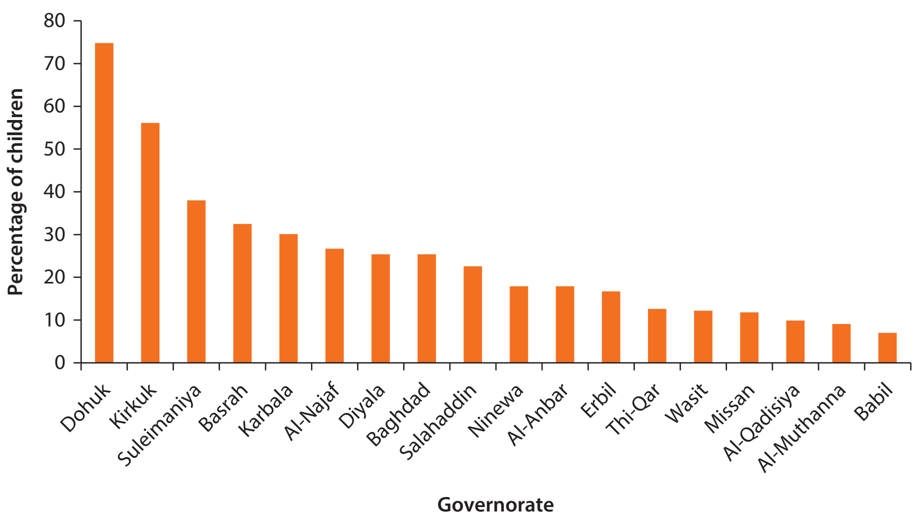
Use of iodized salt, and therefore the opportunity for healthier brain development, is closely tied to a number of background characteristics. While 24 percent of children nationally have adequately iodized salt, poorer children are less likely to have iodized salt. Children in the poorest fifth of households in particular have the lowest rates of salt iodization, 13 percent, while children in the richest fifth of households have a 41 percent chance of having adequately iodized salt. A similar pattern is seen with parents' education. Differences based on geography are quite large. While urban areas show 30 percent salt iodization, rural areas show only 14 percent. Kurdistan has a much higher rate of salt iodization (41 percent) than the South/Central region (22 percent). The largest differences are at the governorate level (figure 7.7). For instance, Duhuk has a rate of 75 percent, while half of the governorates have rates below 20 percent; in Babil only 7 percent of children have adequately iodized salt. Taking into consideration other characteristics, children in rural areas are less likely to have iodized salt, and children in the Kurdistan region are much more likely to have iodized salt. After accounting for other characteristics, iodized salt use is significantly higher with higher wealth levels as compared to the poorest fifth of households. Use of iodized salt increases significantly if a mother has secondary or higher education.

Figure 7.6 Growth Monitoring, by Wealth, Ages 0–3



Source: World Bank calculations based on Iraq MICS 2011.

Figure 7.7 Percentage of Children with Adequately Iodized Salt, by Governorate, Ages 0–4

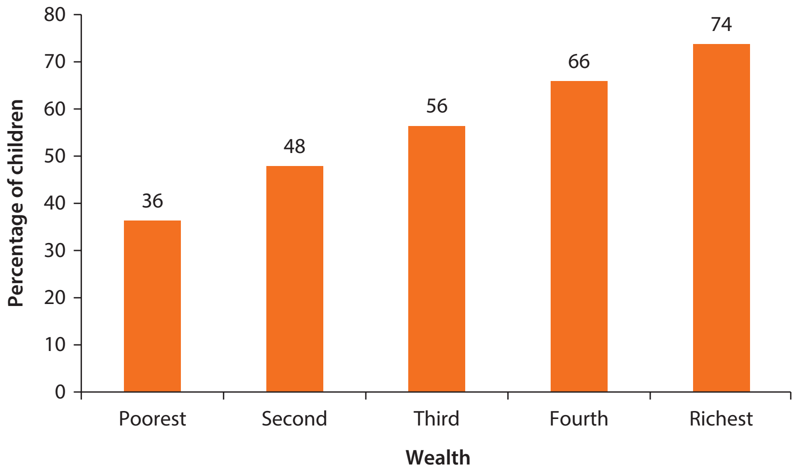


Source: World Bank calculations based on Iraq MICS 2011.

Social and Emotional Development

The children who are already at the greatest risk of poor outcomes—because of poverty, low parental education, and other factors—are also those who experience the fewest developmentally supportive activities, further compounding the likelihood of poor cognitive and social-emotional development. While 36 percent of children from the poorest fifth of households experienced at least four development activities, 74 percent of children from the richest fifth of households did so (figure 7.8). The largest difference is from the poorest to second wealth level

Figure 7.8 Percentage of Children Experiencing at Least Four Development Activities, by Wealth Level, Ages 0–4



Source: World Bank calculations based on Iraq MICS 2011.

(12 percentage points). Similar differences are observed with parents' education. Urban children were more likely to experience four development activities (60 percent) than rural children (41 percent). Moderate variation by governorate exists, with Babil, Wasit, Al-Muthanna, Thi-Qar, Missan, and Basrah having rates below 50 percent. After accounting for other characteristics, children in rural areas were less likely to experience at least four development activities compared to those in urban areas. Children in Kurdistan were more likely to experience development activities compared to the South/Central region. The chance of experiencing four development activities increased significantly with increasing wealth, as well as with parents with more education.

Early childhood education has the greatest benefits for disadvantaged and vulnerable children. However, in Iraq, it is only a few privileged children from the most advantaged backgrounds who are attending ECCE. While a three-to-four-year-old child from the poorest fifth of households has a 1 percent chance of attending ECCE, a child from the richest fifth of households has a 10 percent chance of doing so. Similar or smaller differences are observed with parental education. Some differences in ECCE attendance based on geography also occur, with a 5 percent ECCE attendance rate in urban areas compared to 1 percent in rural areas. After accounting for other characteristics, children from the Kurdistan region are more likely to attend ECCE than children from the South/Central region. Rural children are less likely to attend ECCE than urban children. ECCE attendance increases significantly with wealth, starting from the fourth wealth level, and is higher if the mother has secondary or higher education or the father has primary or higher education.

Violent child discipline is widespread, without large differences across background characteristics. The chance of being violently disciplined does not vary strongly with wealth, parents' education, or rural/urban residence. Children are less likely to be violently disciplined if living in Kurdistan (71 percent) versus South/Central (78 percent). After accounting for other characteristics, violent discipline is lower in the Kurdistan region than the South/Central region, significantly lower for female children, and significantly lower for children in the richest wealth level.

There are only small differences in child labor by background characteristics. While 10 percent of all children age five engage in child labor, female children are more likely to do so. Children in urban areas are more likely to engage in child labor (12 percent) than children in rural areas (7 percent). Children in Kurdistan are also less likely to be engaged in child labor (3 percent) than children in South/Central (11 percent). After accounting for other characteristics, rural children are less likely to be engaged in child labor, and children in Kurdistan are less likely.

Children Face Unequal Opportunities for Healthy Development

Children in Iraq face unequal opportunities for healthy development, based on factors beyond their control. Table 7.1 presents the percentage of opportunities that would need to have been distributed differently for equality of opportunity to have occurred, based on the same circumstances as discussed in previous sections. It also presents the chances of whether these differences might have occurred by random variation. For skilled delivery, around 3 percent of opportunities would have to have been distributed differently for there to have been equality of opportunity. There is relatively high inequality in children becoming fully immunized, with around 8.6 percent of opportunities that would need to have been distributed differently for equality of opportunity to have occurred. While there are unequal chances to die early in life, since this is a rare occurrence,

Table 7.1 Percentage of Opportunities to Be Redistributed

	Dissimilarity Index
Prenatal care	20.9
Skilled delivery	2.9***
Fully immunized	8.6***
Neonatal mortality	9.7
Infant mortality	6.1
Stunted	7.1**
Iodized salt	20.3***
Development activities	12.6***
Violent discipline	2.6
Child labor	17.0***
ECCE	43.5***

Source: World Bank calculations based on Iraq MICS 2011.
Note: Significance level: * = chance < 5%, ** = chance < 1%, *** = chance < 0.1%. ECCE = early childhood care and education.

we cannot definitively say whether or not these differences are due to chance. Children face unequal opportunities for healthy physical and brain development in terms of stunting and especially use of iodized salt. Children also face unequal opportunities to be engaged in development activities or child labor. The greatest inequality is in terms of ECCE: 43.5 percent of chances to attend ECCE would need to have been distributed differently in order for children to have equality of opportunity.

Wealth, mother's education, and geography make the largest contributions to children's unequal chances. Table 7.2 shows the different contributions of circumstances to inequality for different outcomes as percentages. Wealth plays a particularly large role in use of prenatal care, skilled delivery, iodized salt, development activities, and ECCE, contributing around 20–40 percent to inequality for each of these measures. Mother's education is particularly important for prenatal care, skilled delivery, immunizations, development activities, and ECCE, contributing around 20–25 percent to inequality for these indicators. Father's education plays a small but important role in inequality for these outcomes as well. Region of residence matters for only some outcomes, specifically immunizations, stunting, iodized salt, violent discipline, and child labor. Urban/rural differences are large for most outcomes, especially prenatal and delivery care, immunizations, and ECCE. A child's gender contributes very little to inequality.

Children tend to be consistently advantaged or disadvantaged across a variety of different dimensions of ECD, and can face very different life chances based on just a few characteristics. Early childhood is when cycles of poverty and inequality are transmitted across generations. If we observe a child who lives in rural South/Central, in the poorest 20 percent of households, with uneducated parents (a least advantaged child) and compare that child to one who has parents with higher education, is from the richest 20 percent of households, and lives in urban Kurdistan (a most advantaged child), we find that they have very different

Table 7.2 Contributions of Background Characteristics to Inequality
Percentage

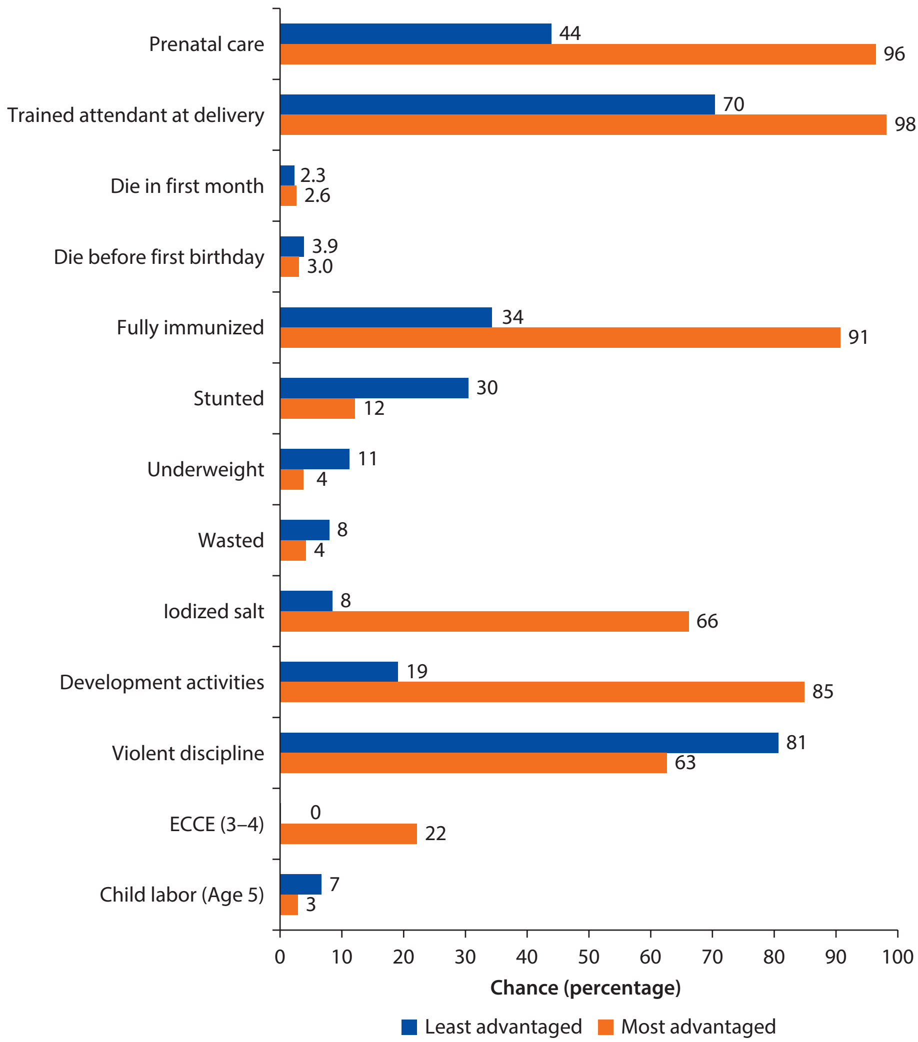
	Wealth	*Mother's education*	*Father's education*	*Rural*	*Region*	*Child's sex*
Prenatal care	30.6	23.6	16.7	23.7	5.4	n.a.
Skilled delivery	37.4	18.1	15.2	25.6	3.6	n.a.
Fully immunized	23.8	17.2	12.9	23.2	22.5	0.5
Neonatal mortality	3.7	11.7	n.a.	6.9	3.3	74.4
Infant mortality	15.6	28.7	n.a.	2.5	7.0	46.1
Stunted	10.6	10.8	15.5	7.8	49.9	5.4
Iodized salt	22.5	9.7	4.0	16.0	47.8	0.1
Development activities	37.2	24.2	20.9	15.3	1.7	0.8
Violent discipline	22.9	8.9	20.3	4.2	28.9	14.9
Child labor	8.4	15.5	2.0	3.5	54.0	16.6
ECCE	33.5	21.1	17.0	25.5	2.7	0.3

Source: World Bank calculations based on Iraq MICS 2011.
Note: Shapley decompositions of the dissimilarity index. n.a. = not applicable or not available; ECCE = early childhood care and education.

chances of healthy ECD. Figure 7.9 presents the chances (predicted chance) of different ECD indicators (based on the regressions) for these "least advantaged" and "most advantaged" individuals.

The least advantaged child faces a systematically poorer chance for healthy early development. Comparing the least and most advantaged, the gap in prenatal care is 52 percentage points, and the gap in skilled delivery care is 28 percentage points. The least advantaged child is 57 percentage points less likely to be immunized—34 percent versus 91 percent—than the most advantaged child. In terms of nutrition, the least advantaged child has a 30 percent chance of being stunted compared to 12 percent for the most advantaged child. The gap

Figure 7.9 Most Advantaged and Least Advantaged Simulations



Source: World Bank calculations based on Iraq MICS 2011.
Note: ECCE = early childhood care and education.

in being underweight is 7 percentage points and the gap in being wasted is 4 percentage points. There is a 58 percentage point gap in salt iodization, and a 66 percentage point gap in the chance of engaging in at least four development activities. The largest relative difference is in ECCE attendance, where the least advantaged child has less than a 1 percent chance of attending ECCE, and the most advantaged has a 22 percent chance. The least advantaged child is 18 percentage points more likely to be violently disciplined and 4 percentage points more likely to be engaged in child labor.

Conclusions

Iraq has a large population of young people who are missing out on important developmental opportunities. Although Iraq has made some improvements in skilled delivery care, there is a sizeable and increasing deficit in prenatal care. Little progress has been made in reducing early mortality. Many children miss out on important immunizations that would protect them from illness or even death. A large share of children are stunted, and far too many lack access to crucial micronutrients. Only about half of children experience development activities, but violent child discipline is common. Very few children attend ECCE. Children are more likely to be engaged in child labor than attend ECCE. In addition to these numerous challenges to their development, children face very unequal chances to develop in terms of their health, nutrition, cognition, and socioemotional development. Iraq is a young country, but more needs to be done to ensure that all the potential of children is not squandered.

Annex 7A: The Data

The Data Set

The analysis utilizes cross-sectional data on the well-being of women and children collected in Iraq in the MICS from 2011. This survey has a household questionnaire that includes important background characteristics of individuals and families. It also includes a questionnaire for ever-married women ages 15–49, which captures information on important components of ECD such as prenatal care, skilled assistance with the delivery of children, and children's immunizations. Weight and height data are collected for children under five years of age. The survey is nationally representative and includes data that allow for an analysis of the relationship between ECD and child and household indicators within Iraq.

The Sample

The 2011 MICS dataset for Iraq sampled 35,701 households, 55,194 women ages 15–49, and 36,307 children younger than 5. The analysis in this note is weighted in order to be representative at the national level. The sample sizes reported (N) in each of the tables are based on the unweighted number of observations in the data.

Annex 7B: Indicators by Background Characteristics

Table 7B.1 Indicators by Background Characteristics

	Prenatal care—trained health professional	*Prenatal care: at least four visits*	*Trained attendant at delivery*	*Die in first month*	*Die before first birthday*	*Fully immunized*	*Stunted*	*Height-for-age (SD)*	*Underweight*	*Weight-for-age (SD)*	*Wasted*	*Weight-for-height (SD)*
Gender												
Male				2.4	3.4	64.7	22.3	−0.95	7.4	−0.34	6.5	0.29
Female				1.6	2.8	63.8	21.1	−0.85	6.4	−0.30	6.3	0.28
Wealth quintile												
Poorest	61.0	35.9	82.1	1.9	3.3	48.4	24.0	−1.06	7.7	−0.49	6.5	0.18
Second	75.3	46.3	89.6	2.2	3.2	62.6	22.5	−0.95	7.3	−0.35	6.5	0.28
Third	82.1	55.1	93.7	1.7	2.8	66.5	19.6	−0.85	6.3	−0.27	6.0	0.31
Fourth	84.4	56.4	95.5	2.0	2.8	74.8	20.9	−0.82	6.4	−0.24	6.5	0.33
Richest	91.3	66.4	95.9	2.3	3.4	76.0	20.6	−0.72	6.4	−0.14	6.6	0.40
Woman's education												
Never attended	61.6	36.1	82.3									
Some primary	74.6	48.0	90.1									
Complete primary	76.3	50.4	90.1									
Secondary	88.1	59.5	95.9									
Higher education	92.3	64.9	97.4									
Partner's education												
Never attended	59.7	36.0	81.4									
Some primary	74.1	47.2	89.7									
Complete primary	73.7	44.2	88.4									

table continues next page

Table 7B.1 Indicators by Background Characteristics *(continued)*

	Prenatal care—trained health professional	*Prenatal care: at least four visits*	*Trained attendant at delivery*	*Die in first month*	*Die before first birthday*	*Fully immunized*	*Stunted*	*Height-for-age (SD)*	*Underweight*	*Weight-for-age (SD)*	*Wasted*	*Weight-for-height (SD)*
Secondary	82.7	56.1	93.6									
Higher education	86.2	59.8	94.1									
DK/missing	67.5	43.0	87.6									
Mother's education												
None				2.1	3.3	51.3	23.8	−1.03	8.1	−0.47	6.3	0.19
Primary				1.9	3.1	61.2	22.4	−0.95	6.6	−0.33	6.0	0.31
Secondary +				2.1	2.9	75.9	19.6	−0.74	6.8	−0.22	7.1	0.31
Father's education												
None						50.3	25.9	−1.07	8.7	−0.51	7.1	0.15
Primary						59.8	23.3	−0.98	6.7	−0.34	6.1	0.32
Secondary +						70.5	20.0	−0.81	6.8	−0.27	6.6	0.28
Residence												
Urban	83.2	55.6	93.9			70.4	20.9	−0.85	6.7	−0.28	6.5	0.30
Rural	66.1	41.0	84.5			51.6	23.4	−0.99	7.2	−0.39	6.2	0.27
Region												
Kurdistan (North)	81.1	60.0	92.4	2.0	2.6	76.8	14.0	−0.67	3.8	−0.14	3.8	0.36
South/Central	77.2	49.6	90.6	2.0	3.2	62.6	22.8	−0.93	7.3	−0.34	6.8	0.28
Governorates												
Dohuk	84.6	67.7	90.2	2.5	3.2	83.4	17.7	−0.85	3.4	−0.12	3.3	0.53
Ninewa	71.1	50.1	82.6	2.2	3.9	57.8	23.0	−1.01	5.3	−0.22	3.8	0.51

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Table 7B.1 Indicators by Background Characteristics *(continued)*

	Prenatal care—trained health professional	*Prenatal care: at least four visits*	*Trained attendant at delivery*	*Die in first month*	*Die before first birthday*	*Fully immunized*	*Stunted*	*Height-for-age (SD)*	*Underweight*	*Weight-for-age (SD)*	*Wasted*	*Weight-for-height (SD)*
Suleimaniya	88.6	71.5	95.3	1.8	2.3	76.6	9.3	−0.44	2.6	−0.01	2.8	0.35
Kirkuk	74.8	37.1	86.8	3.3	4.4	78.9	10.9	−0.58	3.4	−0.01	1.8	0.44
Erbil	72.0	43.8	91.7	1.8	2.4	71.2	15.4	−0.74	5.4	−0.27	5.2	0.22
Diyala	79.6	54.0	91.0	2.5	4.4	63.4	29.4	−1.04	5.9	−0.14	5.7	0.67
Al-Anbar	70.2	42.1	83.3	1.7	2.9	54.1	33.6	−1.37	10.6	−0.36	7.9	0.62
Baghdad	78.5	45.3	92.2	1.6	2.5	63.7	31.1	−1.04	9.2	−0.34	10.4	0.40
Babil	76.9	47.4	93.4	2.4	3.8	74.8	12.0	−0.68	4.5	−0.26	3.7	0.18
Karbala	86.5	71.1	99.9	2.4	2.9	76.0	16.1	−0.86	6.6	−0.34	5.2	0.20
Wasit	74.6	39.9	85.4	1.9	2.7	48.0	22.7	−0.97	8.0	−0.38	7.1	0.24
Salahaddin	63.9	41.2	84.9	2.0	3.3	44.3	23.6	−0.86	7.5	−0.23	6.2	0.41
Al–Najaf	86.4	65.4	96.2	1.8	2.6	53.7	27.6	−1.12	8.4	−0.41	5.5	0.33
Al–Qadisiya	80.9	56.9	93.6	2.3	3.5	60.1	18.2	−0.83	5.9	−0.39	6.1	0.13
Al–Muthanna	84.4	55.9	89.1	1.9	2.7	65.3	18.5	−0.53	8.2	−0.57	14.7	−0.37
Thi-Qar	80.5	56.2	93.8	1.9	2.9	44.5	17.9	−0.85	8.1	−0.62	7.4	−0.19
Missan	70.6	42.3	94.1	1.2	2.5	83.1	16.7	−0.80	7.3	−0.48	6.1	−0.04
Basrah	82.1	52.9	93.9	2.0	3.0	71.4	19.9	−0.92	7.8	−0.48	6.5	0.07
Total	77.7	50.8	90.8	2.0	3.1	64.3	21.7	−0.90	6.9	−0.32	6.4	0.29
N (observations)	13,994	13,668	13,994	37,584	37,584	7,254	35,036	35,036	35,036	35,036	35,034	35,034

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Table 7B.1 Indicators by Background Characteristics *(continued)*

	Iodized salt	*ECCE (3–4)*	*Development activities*	*Violent discipline*	*Child labor (Age 5)*	*Percent of children (0–4)*
Gender						
Male	24.2	4.1	52.8	79.0	9.5	51.3
Female	24.6	3.6	54.1	75.3	10.7	48.7
Wealth quintile						
Poorest	13.0	1.1	36.3	77.4	8.9	24.3
Second	21.1	1.1	47.8	77.2	8.0	22.3
Third	24.1	2.8	56.3	80.8	12.1	20.5
Fourth	30.1	7.4	65.9	80.0	12.4	18
Richest	41.4	9.9	73.6	68.3	9.3	14.9
Mother's education						
None	17.4	0.9	35.0	76.0	7.4	17.8
Primary	21.1	2.2	50.8	78.6	10.0	49.9
Secondary +	33.3	8.1	68.6	75.8	11.8	32.1
Father's education						
None	18.9	0.4	31.5	78.3	7.4	8.2
Primary	19.6	2.1	46.3	78.7	10.2	39
Secondary +	29.0	5.6	62.6	76.3	10.8	50.8
Residence						
Urban	29.8	5.3	59.9	76.8	11.5	66.5
Rural	13.7	1.1	41.2	78.1	7.3	33.5
Region						
Kurdistan (North)	41.0	5.6	58.3	71.2	3.1	12.5
South/Central	22.0	3.6	52.7	78.2	11.2	87.5
Governorate						
Dohuk	74.8	1.1	57.4	82.5	7.4	3.7
Ninewa	17.9	3.3	58.9	81.2	11.3	9.7
Suleimaniya	38.0	7.8	57.7	74.9	1.8	4.1
Kirkuk	56.1	3.2	65.1	83.9	18.3	4.2
Erbil	16.7	6.9	59.7	59.7	1.1	4.6
Diyala	25.4	5.8	57.8	77.9	4.2	3.9
Al-Anbar	17.9	3.8	56.4	67.9	6.2	4.5
Baghdad	25.4	5.5	65.8	76.2	14.2	18.1
Babil	7.0	3.6	39.4	73.3	5.6	6.1
Karbala	30.1	6.0	54.6	89.4	8.4	3.4
Wasit	12.2	2.0	43.2	68.6	4.0	3.6
Salahaddin	22.6	2.5	58.9	75.5	10.9	4.7
Al-Najaf	26.7	3.1	53.2	87.2	26.0	4.2
Al-Qadisiya	9.9	2.8	52.5	80.1	17.0	3.8
Al-Muthanna	9.1	0.9	48.2	78.1	8.1	2.5
Thi-Qar	12.6	0.8	28.6	82.2	2.7	6.3
Missan	11.8	2.1	43.4	52.4	6.0	3.6
Basrah	32.5	3.6	43.3	87.5	13.6	8.8
Total	24.4	3.8	53.5	77.2	10.1	100.0
N (observations)	36,468	13,951	13,962	10,378	7,244	36,307

Source: World Bank calculations based on Iraq MICS 2011.
Note: Blank cells indicate not applicable or not available. ECCE = early childhood care and education.

Annex 7C: Relationship between ECD Indicators and Background, When Accounting for Multiple Characteristics

Table 7C.1 Relationship between ECD Indicators and Multiple Background Characteristics

	Prenatal	*Delivery*	*Fully immunized*	*Neonatal mortality*	*Infant mortality*	*Stunting*	*Height-for-age (SD)*	*Underweight*	*Weight-for-age (SD)*	*Wasted*	*Weight-for-height (SD)*
Rural	–	–	–								
Kurdistan	+	+	+			–	+	–	+	–	+
Wealth—20% of households—compared to poorest											
Second	+	+	+						+		+
Third	+	+	+				+		+		+
Fourth	+	+	+				+		+		+
Highest	+	+	+				+		+		+
Woman's education—compared to no education											
Some primary	+	+	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Complete primary	+	+	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Secondary	+	+	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Higher education	+	+	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Partner's education—compared to no education											
Some primary	+	+	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Complete primary	+		n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Secondary	+	+	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Higher education	+		n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Absent or missing			n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

table continues next page

Table 7C.1 Relationship between ECD Indicators and Multiple Background Characteristics *(continued)*

	Prenatal	*Delivery*	*Fully immunized*	*Neonatal mortality*	*Infant mortality*	*Stunting*	*Height-for-age (SD)*	*Underweight*	*Weight-for-age (SD)*	*Wasted*	*Weight-for-height (SD)*
Mother's education—compared to no education											
Primary	n.a.	n.a.						−	+		+
Secondary +	n.a.	n.a.	+			−	+		+		
Nonstandard curriculum	n.a.	n.a.								−	
Father's education—compared to no education											
Primary	n.a.	n.a.		n.a.	n.a.	−		−	+		+
Secondary +	n.a.	n.a.	+	n.a.	n.a.	−	+		+		
Not in HH	n.a.	n.a.		n.a.	n.a.						−
Female				−	−	−	+	−	+		
P-value (model)	0.000	0.000	0.000	0.029	0.114	0.000	0.000	0.000	0.000	0.000	0.000
Observations (N)	13,994	13,994	7,153	37,582	37,582	34,394	34,394	34,394	34,394	34,392	34,392
R-squared							0.011		0.015		0.004
Pseudo R-squared	0.087	0.079	0.061	0.005	0.003	0.010		0.008		0.006	

table continues next page

Table 7C.1 Relationship between ECD Indicators and Multiple Background Characteristics *(continued)*

	Iodized salt	*ECCE*	*Development activities*	*Violent discipline*	*Child labor*
Rural	–	–	–		–
Kurdistan	+	+	+	–	–
Wealth, 20% of households					
Second	+		+		
Third	+		+		
Fourth	+	+	+		
Highest	+	+	+	–	
Woman's education					
Some primary	n.a.	n.a.	n.a.	n.a.	n.a.
Complete primary	n.a.	n.a.	n.a.	n.a.	n.a.
Secondary	n.a.	n.a.	n.a.	n.a.	n.a.
Higher education	n.a.	n.a.	n.a.	n.a.	n.a.
Partner's education					
Some primary	n.a.	n.a.	n.a.	n.a.	n.a.
Complete primary	n.a.	n.a.	n.a.	n.a.	n.a.
Secondary	n.a.	n.a.	n.a.	n.a.	n.a.
Higher education	n.a.	n.a.	n.a.	n.a.	n.a.
Absent or missing	n.a.	n.a.	n.a.	n.a.	n.a.
Mother's education					
Primary			+		
Secondary +	+	+	+		
Nonstandard curriculum					
Father's education					
Primary		+	+		
Secondary +		+	+		
Not in HH		+			–
Female				–	
P-value (model)	0.000	0.000	0.000	0.000	0.000
Observations (N)	35,804	13,551	13,610	10,082	6,975
R-squared					
Pseudo R-squared	0.073	0.132	0.077	0.014	0.032

Source: World Bank calculations based on Iraq MICS 2011.
Note: Blank cells indicate no statistically significant relationship. + = chance <5% and positive, – = chance <5% and negative; ECD = early childhood development; HH = household; n.a. = not applicable; SD = standard deviations.

Notes

1. Both infant and neonatal mortality rates are calculated based on deaths in the one to five years preceding the MICS survey.
2. The Iraq 2011 MICS asks about prenatal care for the most recent live birth in the past two years only. Since live births are likely to be associated with prenatal care, the percentage of births not receiving prenatal care is likely to be an underestimate of the percentage of pregnancies not receiving prenatal care.

3. A doctor, a nurse, or a licensed midwife
4. The DPT vaccine is a combination vaccine that covers diphtheria, whooping cough (pertussis), and tetanus. Children must receive three doses to be fully immunized.
5. Children must receive three doses to be fully immunized against polio.
6. As with prenatal and delivery care, these questions were asked of the most recent live birth in the past five years.
7. The units for height-for-age, weight-for-age, and weight-for-height show how much Iraqi children are, on average, different from the reference population in terms of standard deviations.
8. More than 15 ppm of iodine in the salt.
9. The six activities are: (1) read books or look at picture books with the child; (2) tell stories to the child; (3) sing songs with the child; (4) take the child outside the home, compound, yard, or enclosure; (5) play with the child; and (6) spend time with the child, naming, counting, and/or drawing things.
10. 2011 data was on children aged 36–59 months, of whom 58 percent experienced four or more development activities. In 2006, 58 percent of the same age group experienced four or more development activities.
11. Per the MICS definitions, violent child discipline is based on discipline by anyone in the household within the last month and includes psychological aggression (shouted, yelled, or screamed at the child; called the child dumb, lazy, or another name like that); physical punishment (shook the child; spanked, hit, or slapped the child on the bottom with a bare hand; hit the child on the bottom or elsewhere on the body with something like a belt, hairbrush, stick, or other hard object; hit or slapped the child on the hand, arm, or leg); and severe physical punishment (hit or slapped the child on the face, head, or ears; beat the child with an implement; hit over and over as hard as one could).
12. The questions were: (1) During the past week, did (child) do any kind of work for someone who is not a member of this household? (2) During the past week, did (child) help with household chores such as shopping, collecting firewood, cleaning, fetching water, or caring for children? (3) During the past week did (child) do any other family work (on the farm or in a business or selling goods in the street)?
13. Wealth is defined in terms of which 20 percent of households a child falls into, based on an asset (wealth) index of durable goods.
14. Throughout, we use a 5 percent level of significance.
15. Herd immunity occurs when even unvaccinated individuals in the population (the "herd") are protected against illness because the disease can no longer spread. This is achieved once around 90–95 percent of infants are vaccinated.
16. Includes both children with growth charts seen by interviewers and mother's report of growth monitoring.

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CHAPTER 8

Jordan

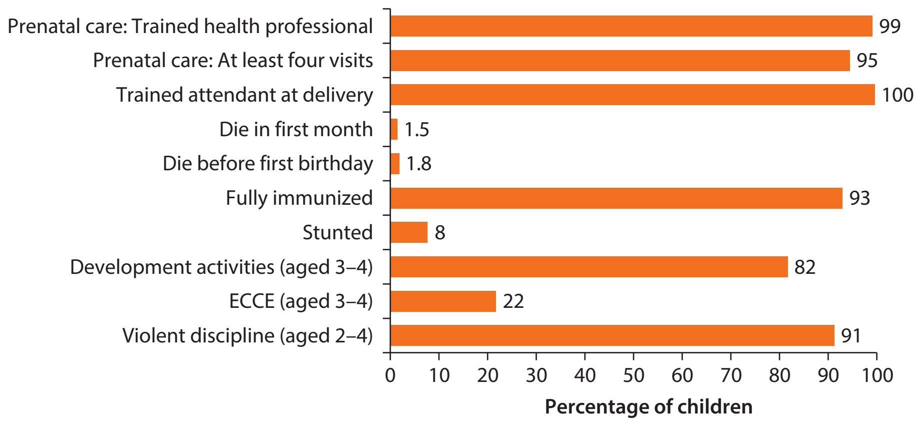
The State of Early Childhood Development in Jordan

Jordan is one of the Middle East and North Africa (MENA) countries with some notable successes in early childhood development (ECD), but areas for improvement remain. Figure 8.1 shows summary indicators of early childhood development in Jordan. In terms of prenatal and delivery care, Jordan is doing well; 99 percent of births received prenatal care, 95 percent received regular prenatal care (at least four visits) and 99 percent had a skilled attendant at delivery. In the first month of life, 1.5 percent of children die, and in the first year of life, 1.8 percent of children die. Jordan has good immunization coverage, with 93 percent of children age 1 fully immunized. Malnutrition is a moderate problem in Jordan, with 8 percent of children stunted. There are some deficits in terms of children's social and emotional development: 82 percent of children have experienced development activities, only 22 percent of three- to four-year-olds are attending early childhood care and education (ECCE), and violent child discipline is nearly universal (91 percent of children).

This chapter presents the status of early childhood development in Jordan. The health status of children is examined through indicators (see box 8.1) of early mortality, prenatal care, having a skilled attendant at birth, and immunizations. Children's nutritional status is measured by stunting (height-for-age). To assess cognitive and social or emotional development, the analysis looks at the extent to which children are engaged in developmental learning activities, attendance in ECCE, and whether children are violently disciplined.

To better understand the context and conditions that influence ECD outcomes, the analysis also examines background factors that may be associated with ECD outcomes at the individual, household, and community levels and their relationships (see annexes 8A, 8B, and 8C for additional information on the data and these relationships). For the overall country context, see box 8.2. Finally, the analysis measures the gaps and extent of inequality in ECD outcomes. The analysis is based on the latest available data: the Demographic and Health Survey (DHS) from 2012. The data cover the various dimensions of early childhood from before a child is born until the age of school entry (six years in Jordan).

Figure 8.1 ECD Summary Indicators



Source: World Bank calculations based on Jordan Demographic and Health Survey (DHS) 2012.
Note: ECCE = early childhood care and education; ECD = early childhood development.

Box 8.1 ECD Indicators Examined in Jordan

Prenatal care
Skilled attendant at delivery
Neonatal mortality (dying in the first month)
Infant mortality (dying in the first year)
Fully immunized
Stunting/Height-for-age
Parental development activities
ECCE
Violent discipline

If more indicators were available and examined, they could provide an even richer picture of ECD in Jordan. While under normal circumstances ECD indicators change relatively slowly, on the ground today, in light of the conflicts in neighboring countries and the large number of refugees in Jordan, there may have been more rapid and substantial changes, providing both new challenges and new opportunities to improve ECD in Jordan.

Survival, Health Care, and Nutrition

The first step in healthy early childhood development is simply surviving early childhood. Infant mortality, which refers to children dying before their first birthday, is 18 deaths per thousand births in Jordan.[1] This is below the average rate for the MENA region (24 per thousand) (UNICEF 2014). Most of infant mortality is composed of neonatal mortality—children dying within the first month of life. In Jordan, 15 children out of every thousand die during their first

Box 8.2 Summary of Development Indicators in Jordan

Jordan is an upper-middle-income country with a gross domestic product per capita in 2012 of about $4,909 (in current US Dollars, table B8.2.1). Jordan has an estimated population of 6 million, of which a third are under the age of 15. The average life expectancy at birth is 74 years, which compares well with other countries at this level of development. The primary gross enrollment rate in Jordan was 98 percent in 2012. Overall, Jordan ranks 100 out of 186 countries with comparable data in the 2012 Human Development Index.

Table B8.2.1 Jordan's Socioeconomic Indicators

	1990	*2012*
Total population (millions)	3.2	6.3
% of population under 15	46	34
GDP per capita (current US dollars)	$1,312	$4,909
Life expectancy at birth (years)	70	74
School enrollment, primary (% gross)	102	98

Sources: UNDP 2014; World Development Indicators.
Note: Primary gross enrollment rate for 2012 is 2011 data; GDP = gross domestic product.

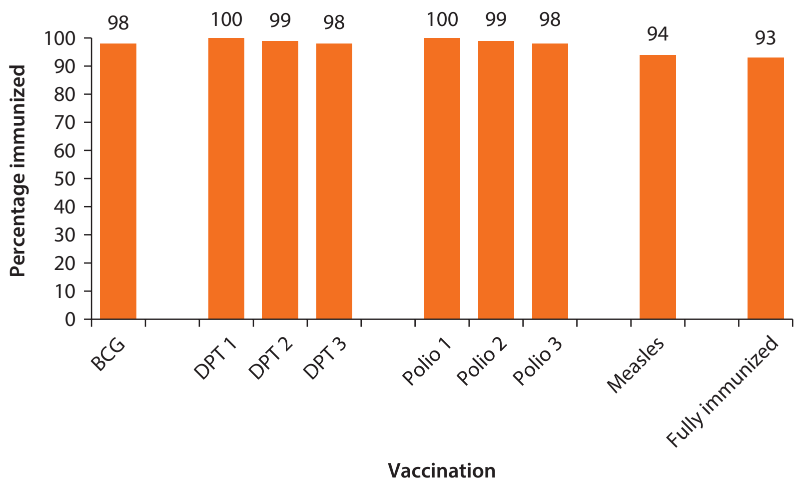
month of life, which is the same as the regional average (UNICEF 2014). Reducing under-five mortality rates by two-thirds is one of the Millennium Development Goals. Although infant and under-five mortality are below regional averages, they have shown no improvement over the past decade. Rates of infant and under-five mortality in the five years preceding the 2012 DHS survey are essentially identical to those in the five to nine years prior to the survey (Department of Statistics (Jordan) and ICF International 2013).

Addressing both early mortality and early childhood development begins during pregnancy and delivery. In Jordan, almost all births[2] (99 percent) received prenatal care and were attended by a skilled health professional.[3] Most (95 percent) of those who received prenatal care did so "regularly," with four or more visits. Jordan has had high prenatal care coverage throughout the 2000s and much of the 1990s; the rate was also 99 percent in 2002, 96 percent in 1997, and 80 percent in 1990 (World Development Indicators). The current rate is well above the MENA region average of 83 percent (UNICEF 2014). As with prenatal care, rates of skilled delivery attendants have been high throughout the 1990s and 2000s (World Development Indicators).

The immunization of children plays an important role in preventing illnesses and reducing child mortality (Molina 2012). Jordan has good immunization coverage, with 93 percent of children ages 12–23 months fully immunized. Children are considered fully immunized if they have received immunizations for all six major preventable childhood diseases: tuberculosis, diphtheria, whooping cough, tetanus,[4] polio,[5] and measles. They should be fully immunized by 12 months of age; this analysis focuses on children 12–23 months to allow for optimal parental recall. The measles vaccine is a definitive weakness of Jordan's immunization campaigns (figure 8.2); only 94 percent of 12–23-month-olds have received it. Jordan does a very good job of ensuring that children receive the third of three doses, which is a weakness in other countries. Ninety-eight percent of children 12–23 months had received the third DPT (diphtheria, pertussis, tetanus) dose, and 98 percent of children 12–23 months had received the third polio dose.

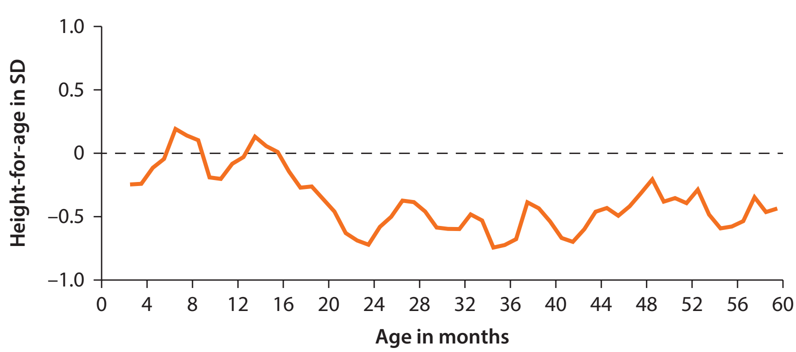
Children in Jordan start their lives on fairly healthy footing, in terms of nutrition; however, after the first year of life, they experience a slight falling off from healthy growth. In Jordan, 8 percent of children age zero to four are stunted. Figure 8.3 shows how Jordanian children fare compared to a healthy reference population.[6] During their first year of life, Jordanian children tend to have similar

Figure 8.2 Percentage of Children Aged 12–23 Months Immunized, by Vaccination



Source: World Bank calculations based on Jordan DHS 2012.
Note: BCG = Bacillus Calmette–Guérin (tuberculosis vaccine); DPT = diphtheria, pertussis, tetanus.

Figure 8.3 Average Height-for-Age Compared to Healthy Reference Population, in Standard Deviations, by Age in Months, 3 Month Moving Average



Source: World Bank calculations based on Jordan DHS 2012.

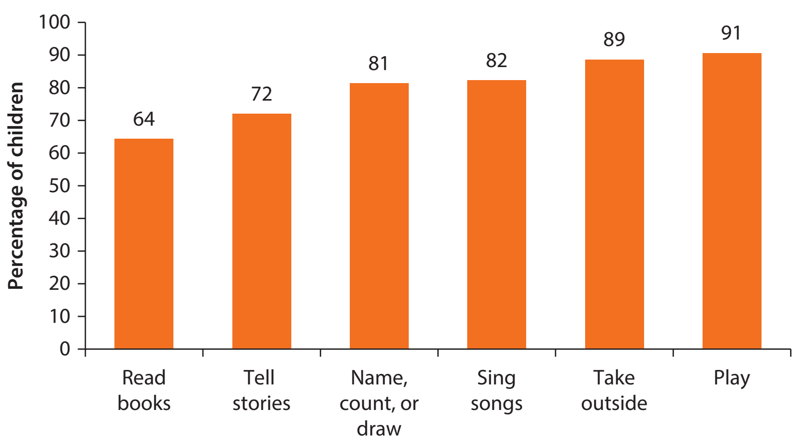
height-for-age to the healthy reference population. However, during the second year of life there is a general falling off; children fluctuate around half a standard deviation below the average, up through age five.

Cognitive, Social, and Emotional Development

Although it has been proven that play and interaction are important components of early childhood development, children in Jordan are missing out on important opportunities for psychosocial growth. In the survey, caretakers of children ages three and four were asked whether adults in the household had engaged in any of six different activities that support child development.[7] In Jordan, the majority of children (82 percent) experienced at least four development activities. However, a fifth (18 percent) experienced fewer than four activities. While all the activities are important to social and emotional development, reading and naming, counting, and drawing have an important educational and cognitive component. However, as activities, being taken outside and playing were most commonly observed (figure 8.4), with around 90 percent of children having experienced each of these activities. The least frequently observed activity was reading books, with only 64 percent of children having books (or picture books) read to them.

Evidence has shown that ECCE improves cognition and socioemotional development, with benefits that can last a lifetime. Early childhood education and early learning play an important role in school success. In Jordan, just 22 percent of children aged three and four attend an early childhood care or education program; that means more than three-quarters (78 percent) of three- to four-year-old children are missing out on this important opportunity to develop and prepare for school.

Figure 8.4 Percentage of Children Experiencing Different Development Activities, Ages 3–4



Source: World Bank Calculations based on Jordan DHS 2012.

Another challenge that risks hindering the healthy development of children in Jordan is violent discipline.[8] Violent child discipline is common in Jordan, with 91 percent of children ages two to four having experienced violent child discipline in some form. Disciplining children is an important part of child rearing. However, research has found that violent discipline negatively impacts the physical, psychological, and social development of children (UNICEF 2010).

Key Factors Affecting Early Childhood Development

A number of background characteristics at the child, family, and community levels affect ECD outcomes: gender, parents' education, household socioeconomic status (wealth),[9] geographic location (region or governorate), and residence (urban/rural). Understanding these relationships can help identify why some children have poor ECD outcomes and which children to target with policy or programmatic interventions.

Survival, Health Care, and Nutrition

Background characteristics have a complex relationship with infant mortality in Jordan. The wealth of a child's household is strongly associated with a child's survival chances. Children in the poorest 20 percent of households are more than twice as likely to die before their first birthday as children in the richest 20 percent of households. However, children with mothers with no education have approximately the same odds of dying before their first birthday as children with mothers who have an incomplete or complete secondary education. Several governorates have infant mortality rates above 20 per thousand, including Madaba, Mafraq, Karak and Ma'an.

Use of prenatal care and deliveries attended by skilled professionals are nearly universal; there are only small differences by background. The largest differences in prenatal care use are associated with education. While almost 100 percent of women with higher education use prenatal care, only 85 percent of women with no education use prenatal care. Use of prenatal care shows small differences by wealth, with 97 percent of births in the poorest fifth of households receiving prenatal care, compared to almost 100 percent in the richest fifth of households. After taking into account other characteristics, births in the second wealth level are significantly[10] more likely to receive prenatal care than births in the poorest 20 percent of households. Mothers with complete secondary and fathers with higher education are significantly more likely to use prenatal care.

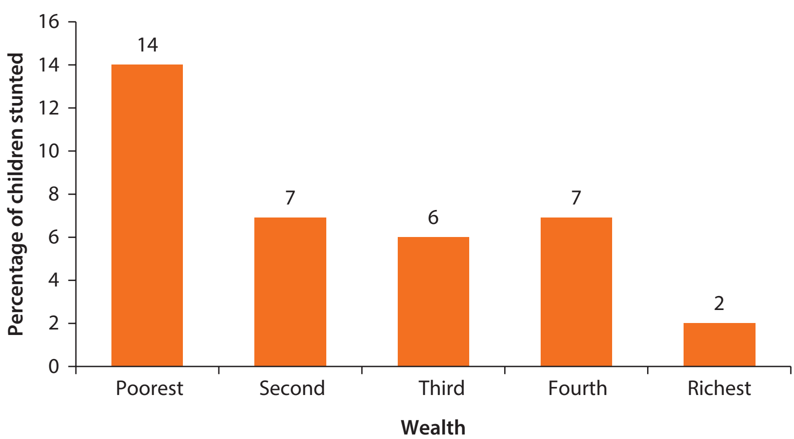
Although prenatal care rates are high and there are only small differences by background, regular prenatal care shows stronger gradients by background; while 88 percent of births to women in the poorest quintile receive regular prenatal care, 99 percent of the richest receive regular prenatal care. Similar differences are seen by education, but there are only small urban/rural or regional differences. In observing rates based on wealth, the differences in having skilled birth attendants are similar to those for prenatal care—after accounting for other characteristics, both the second and middle wealth quintile have significantly higher rates than the poorest quintile, and births to fathers with incomplete secondary have a higher chance than those with no education as well.

Some sub-populations fall below the level of full immunization that confers herd immunity.[11] There are also some differences in immunization rates based on wealth, with 89 percent of children 12–23 months fully immunized in the poorest fifth of households, a high of 97 percent in the middle wealth level, and 91 percent immunized in the richest wealth level. Only 70 percent of children 12–23 months with uneducated mothers are fully immunized, compared to 80–87 percent of children of mothers with incomplete or complete primary education and 94–98 percent of children of mothers with incomplete secondary education through higher education.

Immunization campaigns are warranted in governorates with rates of immunization below 90 percent; Tafiela and Ma'an have full immunization rates below 90 percent for 12–23-month-olds. Taking into consideration other characteristics, children in the middle wealth level are more likely to be immunized than the poorest. Children with more educated mothers and fathers are more likely to be immunized.

In Jordan, stunting and height-for-age are closely related to children's background characteristics. The rates of stunting are strongly associated with gender, wealth, mother's education, residence, and region. Male children are more likely to be stunted (9 percent) than female children (6 percent). While a child from the poorest fifth of households has a 14 percent chance of being stunted, a child from the wealthiest fifth of households has a 2 percent chance. Even the difference between the third and fourth wealth levels (6–7 percent stunted) and the richest 20 percent of households (2 percent stunted) is quite dramatic (figure 8.5). While a child with an uneducated mother has almost a 12 percent chance of being stunted, a child with a mother with higher education has only a 5 percent chance of being stunted. Rural children (9 percent) are more

Figure 8.5 Percentage of Children Aged 0–4 Stunted, by Wealth



Source: World Bank calculations based on Jordan DHS 2012.

likely to be stunted than urban children (7 percent), and children in the South are more likely to be stunted (12 percent) than children in the Central (8 percent) or North (7 percent) regions. A number of governorates have stunting rates above 10 percent, including Mafraq, Karak, Ma'an, and Aqaba.

Taking into consideration other characteristics, children in the South are significantly more likely to be stunted compared to those in the Central region. Wealthier children have significantly lower rates of stunting than children from the poorest 20 percent of households. There are no significant differences by mother's and father's education. Female children are significantly less likely to be stunted than male children.

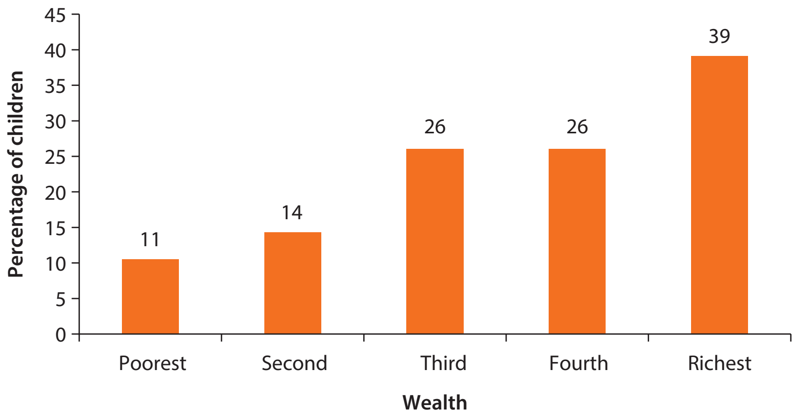
Social, Emotional, and Cognitive Development

Social, emotional, and cognitive development are also strongly associated with the wealth level of the child's household and the location of the household. Poorer children are less likely to experience four development activities than richer children. For instance, while children from the poorest fifth of households have a 75 percent chance of experiencing four or more development activities, children from the richest fifth of households have a 87 percent chance. The chances of development activities also increase with parents' education. While a child whose mother has no education has only a 58 percent chance of development activities, a child whose mother has secondary or higher education has an 86–87 percent chance. Children growing up in rural areas have a slightly lower chance of development activities (78 percent) than children living in urban areas (82 percent). Taking into account other characteristics, children in the South are significantly more likely to experience development activities than children in the Central region, and children with more educated mothers and fathers are significantly more likely to experience development activities.

Only 11 percent of children three to four years old are attending some form of ECCE among the poorest fifth of households, while 39 percent attend among the richest fifth of households (figure 8.6). The greatest benefits from ECCE are likely to be for the poorest and most vulnerable children, yet they have the least access. ECCE access also increases with parents' education. There are geographic differences in attending ECCE. Rural areas have lower attendance (19 percent) than urban areas (22 percent), and the Central region has lower attendance (20 percent) than the North (26 percent) or South (24 percent) regions. After accounting for other characteristics, children in the North and South are significantly more likely to attend ECCE than children in the Central region. ECCE attendance increases with wealth, and also if a mother has a higher education.

Other aspects of children's social and emotional development such as violent child discipline also vary by wealth level and parents' education. Violent child discipline is lower for children in the richest households (76 percent) than the poorest households (96 percent). Rates of violent discipline are lower with more educated parents, especially parents with higher education. After taking into account other characteristics, being in

Figure 8.6 Percentage of Children Aged 3–4 Years Attending ECCE, by Wealth



Source: World Bank calculations based on Jordan DHS 2012.
Note: ECCE = early childhood care and education.

the North as compared to Central region increases the chances of violent discipline, while being from the richest fifth of households significantly decreases the chance of violent discipline.

Children Face Unequal Opportunities for Healthy Development

Children in Jordan often face different opportunities for healthy development based on factors beyond their control. To measure the extent of inequality, the analysis calculates (a) the percentage of opportunities that needed to have been distributed differently for equality of opportunity to have occurred for each of the ECD indicators, and (b) the chance of whether these differences might have occurred by random variation (table 8.1). For prenatal care, skilled delivery, and being fully immunized, there is little inequality. There are equal opportunities for children to access early health services, regardless of their circumstances. While there are unequal chances to die early in life, since this is a rare occurrence, we cannot definitively say whether or not these differences are due to chance. Children face unequal opportunities for healthy physical growth, in terms of stunting. Children face relatively equal chances of development activities and violent child discipline. There is substantial inequality in terms of ECCE; 24.4 percent of chances to attend ECCE would need to have been distributed differently for children to have equality of opportunity.

Wealth, parents' education, and geographic differences make the largest contributions to children's unequal chances. Table 8.2 shows the different contributions of circumstances to inequality for different outcomes as percentages. Wealth plays a particularly large role in all the outcomes. Mother's education is important for a variety of outcomes, and tends to be more important than father's education, although father's education plays a small but important role

Table 8.1 Percentage of Opportunities to Be Redistributed

	Dissimilarity index
Prenatal care	0.5
Skilled delivery	0.2
Neonatal mortality	19.7
Infant mortality	20.3
Fully immunized	2.3
Stunted	24.1*
Development activities	3.4
ECCE	24.4***
Violent discipline	4.5

Source: World Bank calculations based on Jordan DHS 2012.
Note: Significance level: * = chance < 5%, ** = chance < 1%, *** = chance < 0.1%; ECCE = early childhood care and education.

Table 8.2 Contributions of Background Characteristics to Inequality
Percentage

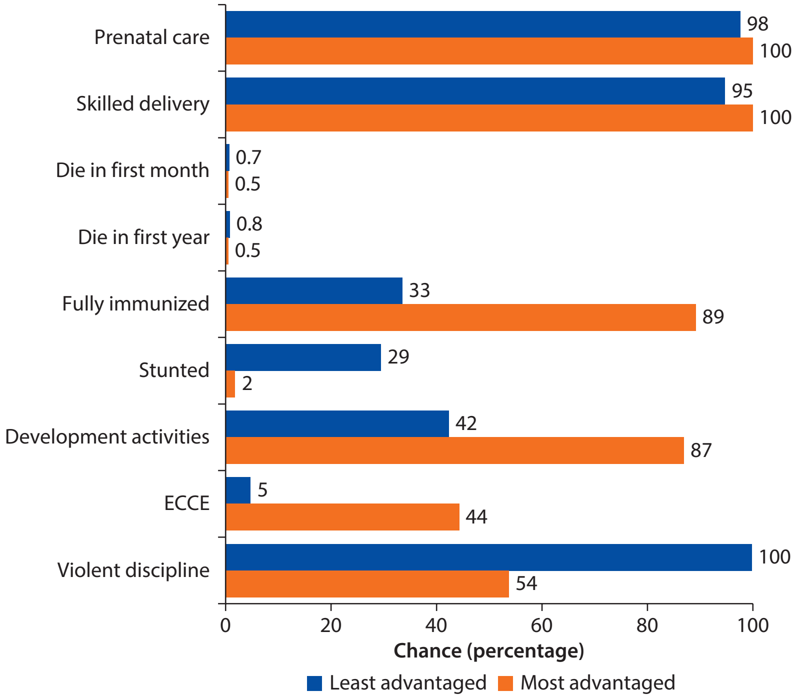
	Wealth	*Mother's education*	*Father's education*	*Region*	*Rural*	*Child's sex*	*Distance problem*
Prenatal care	45.6	23.6	22.0	0.6	2.2	n.a.	5.9
Skilled delivery	46.7	21.8	27.1	1.9	0.6	n.a.	2.0
Fully immunized	28.5	29.7	9.7	17.1	2.4	1.1	11.6
Neonatal mortality	41.5	15.5	20.0	0.4	0.7	21.1	0.8
Infant mortality	31.2	20.3	32.2	1.6	0.7	12.3	1.7
Stunted	28.9	24.3	13.1	17.7	2.0	13.2	0.8
Development activities	22.9	37.5	22.2	13.0	3.6	0.8	n.a.
ECCE	38.2	39.6	14.5	7.3	0.4	0.0	n.a.
Violent discipline	25.0	13.2	26.8	11.9	18.6	4.5	n.a.

Source: World Bank calculations based on Jordan DHS 2012.
Note: Shapley decompositions of the dissimilarity index. ECCE = early childhood care and education; n.a. = not applicable or not available.

in inequality for these outcomes as well. Regional differences are relatively small, and there are few urban/rural differences. A child's sex contributes very little to inequality except for early mortality. Distance to health care contributes very little to inequality of opportunity.

Children tend to be consistently advantaged or disadvantaged across a variety of different dimensions of ECD, and can face very different life chances based on just a few characteristics. Early childhood is when cycles of poverty and inequality are transmitted across generations. If we observe a child who lives in the rural South, in the poorest 20 percent of households, with uneducated parents (a least advantaged child) and compare that child to one that has parents with higher education, from the richest 20 percent of households, who lives in an urban part of the Central region (a most advantaged child), we find that they have very different chances of early childhood development. Figure 8.7 presents the chance

Figure 8.7 Most Advantaged and Least Advantaged Simulations



Source: World Bank calculations based on Jordan DHS 2012.
Note: ECCE = early childhood care and education.

of different ECD indicators, based on the regressions, for a "least advantaged" and "most advantaged" individual.

On every single indicator, the least advantaged child faces a poorer chance for early development. Gaps in prenatal and delivery care are relatively small, with the most advantaged child 2 percentage points more likely to get prenatal care (98 percent vs. 100 percent), and 5 percentage points more likely to get delivery care (95 percent vs. 100 percent). There are only small gaps in early mortality but large gaps in being fully immunized, with the most advantaged child having an 89 percent chance of being immunized but a least advantaged child having only a 33 percent chance. The least advantaged child is 29 percentage points and 17 times more likely to be stunted. Additionally, the least advantaged child is 45 percentage points less likely to experience development activities. While the most advantaged child has a 44 percent chance of attending ECCE, the least advantaged child has only a 5 percent chance. The least advantaged child is almost certain to be violently disciplined, compared to a 54 percent chance for the most advantaged child. Across every dimension of health, social, emotional, and cognitive development, the least advantaged and most advantaged children face very different chances of development.

Conclusions

Jordan does well on early health, but malnutrition is still a problem for some children. A number of children are missing out on development activities, and only a minority attend ECCE. Violent child discipline is a pervasive problem in Jordan. There is substantial inequality in malnutrition, and children have very unequal chances to attend ECCE. Where children are born, the wealth of their families, and their parents' education all contribute substantially to unequal chances for healthy ECD. More needs to be done to ensure that children thrive in their early years and have equal chances to grow and develop. Additionally, children in Jordan are facing substantial challenges due to the conflicts in neighboring countries and the influx of refugees. The additional strain of refugees on Jordan's resources, and especially on its health and education systems, will present substantial challenges for Jordan going forward.

Annex 8A: The Data

The Data Sets

The analysis utilizes cross-sectional data on the well-being of women and children collected in the Demographic and Health Survey (DHS) for 2012 in Jordan. The DHS in Jordan is administered as the Jordan Population and Family Healthy Survey (JPFHS). The surveys are nationally representative and include data that allow for an analysis of the relationship between early childhood development and child and household indicators. See Department of Statistics (Jordan) and ICF International (2013) for additional information in the final report on the 2012 survey.

The Sample

The 2012 DHS for Jordan sampled 15,190 households, 11,352 ever-married women ages 15–49, and 6,368 children younger than age five (anthropometric measures). The analysis in this note is weighted in order to be representative at the national level. The sample sizes reported (N) in each of the tables are based on the unweighted number of observations in the data.

Annex 8B: Indicators by Background Characteristics

Table 8B.1 Indicators by Background Characteristics

	Prenatal care	*Prenatal care: four visits*	*Skilled attendant at birth*	*Died in first month*	*Died before first birthday*	*Fully immunized (age 1)*	*Stunted*	*Height-for-age, SD away from normal healthy*	*Development activities*	*ECCE*	*Violent discipline*	*Percent of children (0–4)*
Gender												
Male				1.4	1.8	92.7	9.1	−0.40	80.5	20.9	91.8	52.1
Female				1.5	1.9	93.3	6.1	−0.39	82.8	22.6	91.1	47.9
Wealth quintile												
Poorest	97.4	88.3	98.9	2.2	2.9	89.3	13.9	−0.76	74.6	10.5	95.7	23.1
Second	99.5	94.1	100.0	1.2	1.6	93.7	6.9	−0.42	80.8	14.3	92.3	22.2
Third	99.6	95.1	100.0	1.2	1.6	97.1	6.2	−0.38	82.7	25.8	94.0	21.5
Fourth	99.4	97.5	99.5	1.3	1.5	94.3	6.7	−0.22	86.3	26.4	92.9	19.4
Richest	100.0	98.7	100.0	1.2	1.2	91.1	1.8	0.03	86.5	39.1	76.2	13.8
Mother's education												
No education	98.0	84.7	98.1	0.9	0.9	69.5	11.8	−0.97	57.5	7.6	94.7	2.1
Incomplete primary	95.6	85.7	99.4	1.5	2.1	86.8	14.4	−0.98	73.1	13.0	96.1	3.1
Complete primary	96.5	88.5	99.7	2.0	2.1	79.9	10.1	−0.43	63.7	4.7	100.0	3.2
Incomplete secondary	98.9	93.2	99.6	1.8	2.4	93.6	9.5	−0.53	80.6	15.4	93.4	45.1
Complete secondary	99.9	97.4	99.3	1.9	2.1	97.9	5.6	−0.20	86.0	24.4	88.4	14.8
Higher education	99.7	97.0	99.9	0.7	0.9	93.5	4.6	−0.17	86.5	34.6	88.9	31.7
Father's education												
No education	96.5	82.7	96.9	1.2	1.5	57.4	19.0	−1.00	46.8	7.9	97.7	1.0
Incomplete primary	96.7	86.5	99.4	1.4	2.5	95.4	10.6	−0.74	68.5	12.0	81.0	6.3
Complete primary	98.7	88.9	99.7	1.9	2.0	92.3	7.2	−0.53	77.3	5.3	87.1	4.8
Incomplete secondary	98.9	94.8	99.8	1.6	2.0	93.8	8.7	−0.49	81.4	18.9	95.4	48.8

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Table 8B.1 Indicators by Background Characteristics *(continued)*

	Prenatal care	Prenatal care: four visits	Skilled attendant at birth	Died in first month	Died before first birthday	Fully immunized (age 1)	Stunted	Height-for-age, SD away from normal healthy	Development activities	ECCE	Violent discipline	Percent of children (0–4)
Complete secondary	99.6	94.7	99.3	1.5	2.3	97.6	7.0	–0.24	83.9	20.9	93.7	14.1
Higher education	100.0	97.0	99.6	1.1	1.2	90.7	4.7	–0.13	86.6	34.2	84.7	25.0
Residence												
Urban	99.1	94.7	99.6	1.5	1.8	93.0	7.4	–0.36	82.4	22.3	91.0	81.5
Rural	99.2	93.5	99.7	1.5	2.0	92.8	9.0	–0.51	78.0	19.3	93.8	18.5
Region												
Central	99.1	94.3	99.6	1.3	1.7	93.0	7.5	–0.37	81.5	19.5	89.1	61.2
North	99.2	95.3	99.7	1.7	2.1	94.5	6.6	–0.37	80.3	25.9	96.0	29.2
South	99.1	93.5	99.5	1.6	2.2	88.6	12.2	–0.57	86.2	24.1	93.0	9.6
Governorate												
Amman	98.8	93.6	99.4	1.3	1.7	91.5	7.2	–0.32	83.6	20.5	86.4	36.8
Balqa	99.6	95.9	99.8	1.3	1.8	94.8	5.5	–0.39	72.1	19.1	93.1	7.2
Zarqa	99.5	94.9	100.0	1.2	1.4	96.3	9.7	–0.53	80.1	17.3	93.0	14.4
Madaba	99.2	96.2	99.5	2.6	3.0	91.6	4.3	–0.22	85.9	19.0	97.8	2.8
Irbid	99.1	96.4	99.8	1.7	1.9	95.6	5.0	–0.23	80.0	29.1	96.2	17.6
Mafraq	99.3	91.7	99.3	2.2	2.8	90.0	10.4	–0.71	78.7	17.3	94.7	5.8
Jarash	99.2	95.3	99.9	1.8	1.9	96.3	9.0	–0.53	81.5	26.5	96.7	3.4
Aljun	99.6	95.4	100.0	0.8	1.3	94.6	4.7	–0.38	85.5	22.6	96.1	2.4
Karak	99.3	93.9	99.5	2.0	2.4	90.4	11.2	–0.54	86.3	26.1	94.5	4.1
Tafiela	99.3	94.8	99.3	1.0	1.6	88.0	9.9	–0.43	85.3	22.4	94.3	1.6
Ma'an	97.5	87.9	98.9	1.2	2.3	78.8	18.6	–0.86	84.0	26.0	93.6	1.7
Aqaba	99.9	95.9	100.0	1.5	1.9	93.7	10.4	–0.50	88.5	19.6	89.3	2.2
Total	99.1	94.5	99.6	1.5	1.8	93.0	7.6	–0.39	81.6	21.7	91.3	100.0
N (observations)	6,811	6,810	10,360	8,462	8,462	2,030	6,267	6,267	3,904	3,826	1,654	10,128

Source: World Bank calculations based on Jordan DHS 2012.
Note: Blank cells indicate not applicable or not available. ECCE = early childhood care and education; SD = standard deviation.

Annex 8C: Relationship between ECD Indicators and Background, When Accounting for Multiple Characteristics

Table 8C.1 Relationship between ECD Indicators and Multiple Background Characteristics

	Prenatal	*Delivery*	*Neonatal mortality*	*Infant mortality*	*Fully immunized*	*Stunted*	*Height-for-age*	*Development indicators*	*ECCE*	*Violent discipline*
Rural										
Region—compared to central										
North									+	+
South						+		+	+	
Wealth—20% of households—compared to poorest										
Second	+	+		–		–	+			
Middle		+			+	–	+		+	
Fourth						–	+		+	
Richest						–	+		+	–
Mother's education—compared to no education										
Incomplete primary										
Complete primary							+			
Incomplete secondary				+	+			+		
Complete secondary	+				+		+	+		
Higher education					+		+	+	+	
Father's education—compared to no education										
Incomplete primary					+					
Complete primary					+			+		
Incomplete secondary		+			+			+		
Complete secondary					+			+		
Higher education	+							+		

table continues next page

Table 8C.1 Relationship between ECD Indicators and Multiple Background Characteristics *(continued)*

	Prenatal	*Delivery*	*Neonatal mortality*	*Infant mortality*	*Fully immunized*	*Stunted*	*Height-for-age*	*Development indicators*	*ECCE*	*Violent discipline*
Distance problem								n.a.	n.a.	n.a.
Female						–				
Model significance	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005
N (observations)	6,248	9,584	8,462	8,462	2,030	6,267	6,267	3,827	3,826	1,605
R-squared							0.063			
Pseudo R-squared	0.126	0.160	0.026	0.027	0.103	0.058		0.040	0.094	0.126

Source: World Bank calculations based on Jordan DHS 2012.
Note: Blank cells indicate no statistically significant relationship. + = chance < 5% and positive, – = chance < 5% and negative; ECCE = early childhood care and education; ECD = early childhood development; n.a. = not applicable.

Notes

1. Both infant and neonatal mortality rates are calculated based on deaths in the 12–59 months preceding the DHS survey.
2. The Jordan 2012 DHS asks about prenatal care for the most recent live birth and about delivery care for all births in the past five years (since 2007).
3. Either a doctor or a nurse.
4. The DPT vaccine is a combination vaccine that covers diphtheria, whooping cough (pertussis), and tetanus. Children must receive three doses to be fully immunized.
5. Children must receive three doses to be fully immunized against polio.
6. The units show how Jordanian children are, on average, different from the reference population in terms of standard deviations.
7. The six activities are: (1) read books or look at picture books with the child; (2) tell stories to the child; (3) sing songs with the child; (4) take the child outside the home, compound, yard, or enclosure; (5) play with the child; and (6) spend time with the child naming, counting, and/or drawing things.
8. Per the MICS definitions, violent child discipline is based on discipline by anyone in the household within the last month, and includes psychological aggression (shouted, yelled, or screamed at the child; called the child dumb, lazy, or another name like that); physical punishment (shook the child; spanked, hit or slapped the child on the bottom with a bare hand; hit the child on the bottom or elsewhere on the body with something like a belt, hairbrush, stick, or other hard object; hit or slapped the child on the hand, arm, or leg); and severe physical punishment (hit or slapped the child on the face, head, or ears; beat the child with an implement (hit over and over as hard as one could).
9. Wealth is defined in terms of which 20 percent of households a child falls into, based on an asset (wealth) index of durable goods.
10. Throughout, we use a 5 percent level of significance.
11. Herd immunity occurs when even unvaccinated individuals in the population (the "herd") are protected against illness because the disease can no longer spread. This is achieved once around 90–95 percent of infants are vaccinated.

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CHAPTER 9

Lebanon

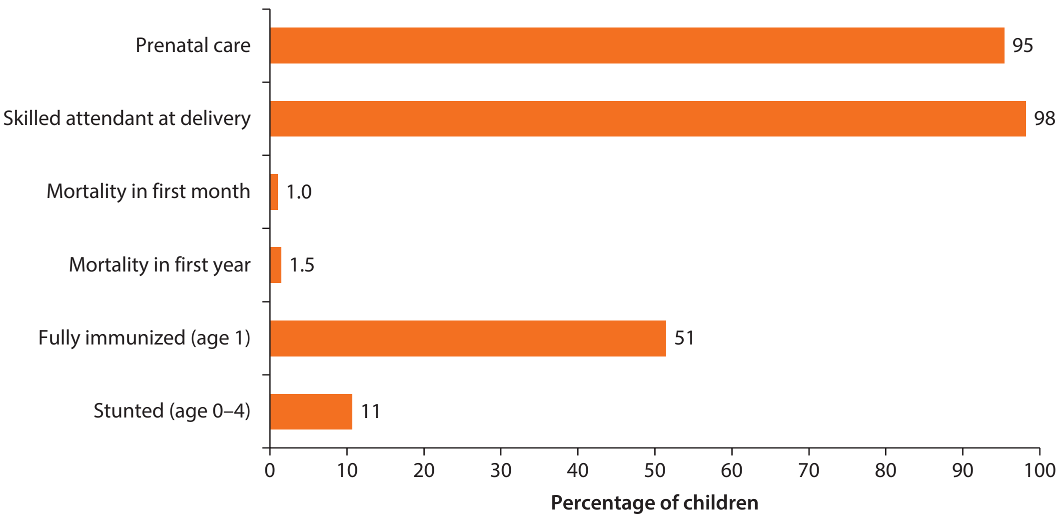
The State of Early Childhood Development in Lebanon

Despite successes in some areas, in Lebanon there are still some gaps in early childhood development (ECD). Lebanon does well on early health and has low mortality rates, but problems with immunizations and stunting threaten many children's development. Figure 9.1 shows summary indicators of ECD in Lebanon. In terms of prenatal and delivery care, 95 percent of births received prenatal care and 98 percent had a skilled attendant at delivery. In the first month of life, 1.0 percent of children die, and in the first year of life, 1.5 percent die. Lebanon is falling short in terms of immunizations, with just 51 percent of children age one fully immunized. Malnutrition is a problem in Lebanon, where 11 percent of children are stunted.

This chapter presents the status of ECD in Lebanon. The health status of children is examined through indicators (see box 9.1) of early mortality, prenatal care, having a trained attendant at birth, and immunizations. Children's nutritional status is measured by stunting (height-for-age). To better understand the context and conditions that influence ECD outcomes, the analysis also examines background factors that may be associated with ECD outcomes at the individual, household, and community levels and their relationships (see annexes 9A, 9B, and 9C for additional information on the data and these relationships). For the overall country context, see box 9.2. Finally, the analysis measures the gaps and extent of inequality in ECD outcomes.

The analysis is based on the latest available data: the Pan Arab Project for Family Health survey (PAPFAM) from 2004. The data cover primarily the health dimension of early childhood from before a child is born up through age four. If more indicators were available and examined, they could provide an even richer picture of ECD in Lebanon. While under normal circumstances ECD indicators change relatively slowly, on the ground today, in light of the crisis in the Syrian Arab Republic and the resulting refugee crisis in Lebanon, there may be substantial changes. Children may face additional challenges, but there may also be opportunities to promote ECD.

Figure 9.1 ECD Summary Indicators



Source: World Bank calculations based on Lebanon Pan Arab Project for Family Health (PAPFAM) 2004.
Note: ECD = early childhood development.

Box 9.1 ECD Indicators Examined in Lebanon

Prenatal care
Trained attendant at delivery
Neonatal mortality (dying in the first month)
Infant mortality (dying in the first year)
Fully immunized
Stunting/Height-for-age

Survival, Health Care, and Nutrition

The first step in healthy ECD is simply surviving early childhood. The rate of infant mortality in Lebanon is lower than other countries in the region. Reducing under-five mortality rates by two-thirds is one of the Millennium Development Goals and a vital goal in Lebanon's effort to promote ECD. In 2004, infant mortality, which refers to children dying before their first birthday, was 15 deaths per thousand births.[1] Lebanon's rate is well below the 2012 average rate for the Middle East and North Africa (MENA) region (24 per thousand) (UNICEF 2014). Most of infant mortality is composed of neonatal mortality—children dying within the first month of life. In 2004 in Lebanon, 10 children out of every thousand died during their first month of life, which is below the 2012 regional average of 15 in every thousand (UNICEF 2014). Infant mortality has been falling over time in Lebanon—down from around 31 children per thousand in 1990; however, compared to other countries in the region, Lebanon has made substantially less progress on infant mortality (World Development Indicators).

Box 9.2 Summary of Development Indicators in Lebanon

Lebanon is an upper-middle-income country with a gross domestic product per capita in 2012 of about $9,705 (in current US Dollars, table B9.2.1). Lebanon has an estimated population of 4.4 million, of which 22 percent are under the age of 15. The average life expectancy at birth in 2012 was 80 years, which was a substantial improvement over 1990's life expectancy of 70 years. The primary gross enrollment rate in Lebanon was 107 percent in 2012. Overall, Lebanon ranks 72 out of 186 countries with comparable data in the 2012 Human Development Index.

Table B9.2.1 Lebanon's Socioeconomic Indicators

	1990	*2012*
Total population (millions)	2.7	4.4
% of population under 15	34	22
GDP per capita (current US dollars)	$1,050	$9,705
Life expectancy at birth (years)	70	80
School enrollment, primary (% gross)	—	107

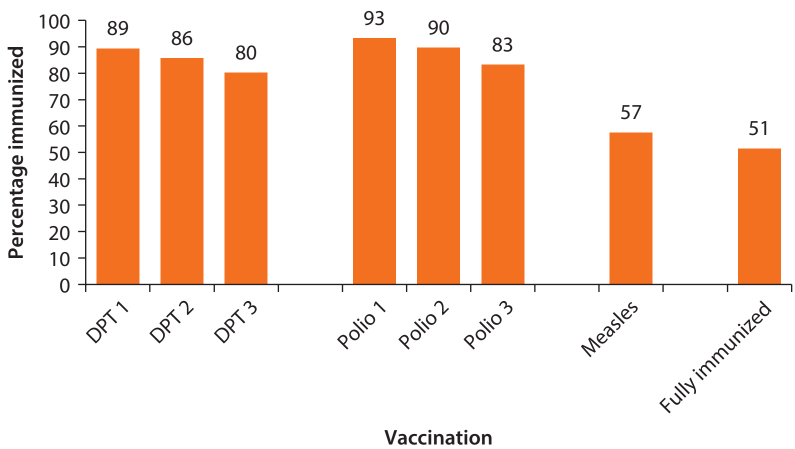
Sources: UNDP 2014; World Development Indicators.
Note: GDP = gross domestic product; — = not available.

In Lebanon, almost all births received prenatal care and were attended by a skilled health professional.[2] Addressing both early mortality and ECD begins during pregnancy. Around 95 percent of births received prenatal care from a health professional,[3] and 98 percent of births were attended by a health professional.[4] Lebanon has been doing well on delivery care for decades; in 1995, the rate was already at 98 percent (World Development Indicators). Lebanon is well above the current regional average for delivery care of 79 percent (UNICEF 2014).

The immunization of children plays an important role in preventing illnesses and reducing mortality (Molina 2012). Yet Lebanon is far from full immunization coverage. Children are considered fully immunized if they have received immunizations for all six major preventable childhood diseases: tuberculosis, diphtheria, whooping cough, tetanus,[5] polio,[6] and measles. Data were not available in the PAPFAM survey on tuberculosis vaccine coverage, so the rate of full immunization is calculated based on the other immunizations. Children should be fully immunized by 12 months of age; this analysis focuses on children 12–23 months to allow for optimal parental recall. In Lebanon only 51 percent of children 12–23 months are fully immunized.[7] As figure 9.2 shows, measles in particular has a low coverage rate at only 51 percent. Additionally, 80 percent of children 12–23 months have received the third DPT (diphtheria, pertussis, tetanus) dose, and 83 percent have received the third polio dose. Looking at more recent (2010) data, vaccination rates have, if anything, deteriorated: only 74 percent of children received the third polio or DPT doses, and 53 percent received the measles vaccine (World Development Indicators).

Nutrition plays an important role in children's healthy development. In Lebanon, 11 percent of children are stunted. As a result of their stunting, these

Figure 9.2 Percentage of Children Aged 12–23 Months Immunized, by Vaccination



Source: World Bank calculations based on Lebanon PAPFAM 2004.
Note: DPT = diphtheria, pertussis, tetanus.

children will accumulate less health and human capital and face lower wages later in life. This is one-tenth of the future workforce that will be less productive in their working years because of almost entirely preventable malnutrition. In terms of weight-for-age, 4 percent of children in Lebanon are underweight (–2 standard deviations [SD] or lower). In terms of weight-for-height, 6 percent of children are wasted (–2 SD or lower).

Ninety-two percent of children under the age of five live in a household with sufficiently iodized salt (World Development Indicators).[8] Micronutrients such as iron, vitamin A, zinc, and iodine play an important role in both physical and cognitive development. Reaching the remaining 8 percent of children can save them from the risk of impaired cognitive development due to the absence of iodine in their diets.

Cognitive, Social, and Emotional Development

While the 2004 PAPFAM does not collect data on early childhood education, other sources indicate that Lebanon has an 81 percent enrollment rate in pre-primary (World Development Indicators). In Lebanon, early childhood care and education (ECCE) is provided by a mix of public and private nurseries and kindergartens. Nurseries are primarily private, while pre-primary school is a mix of public and private (Kaloustian 2012).

Key Factors Affecting Early Childhood Development

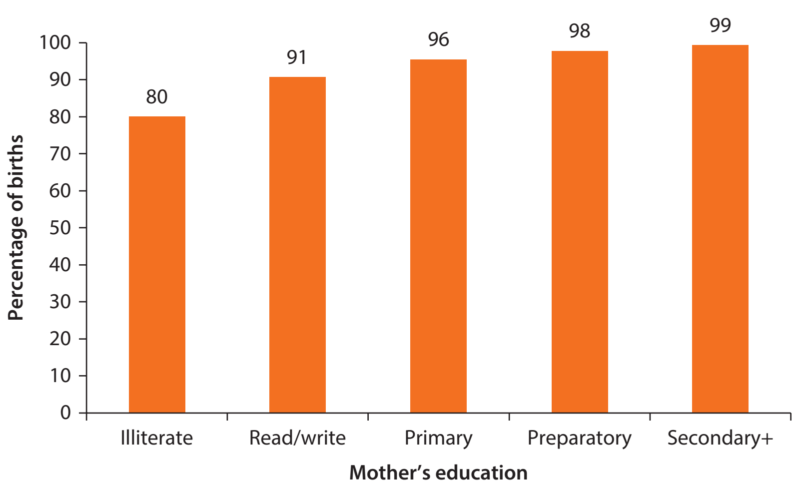
A number of background characteristics at the child, family, and community levels affect ECD outcomes: gender, parents' education, household socioeconomic status (wealth),[9] geographic location (region or governorate), and residence (urban/rural). Understanding these relationships can help identify why some children have poor ECD outcomes and which children to target with policy or programmatic interventions.

Survival, Health Care, and Nutrition

Given the relatively small sample size of the survey and the low mortality rates observed in Lebanon, it is not possible to identify risk factors specific to Lebanon for infant mortality and neonatal mortality. However, despite the fact that prenatal care rates are high (95 percent), there are substantial differences in use of prenatal care based on certain background characteristics. Household wealth and mother's and father's education are strongly associated with births having prenatal care. Births in the poorest fifth of households have an 89 percent chance of prenatal care, while births in the richest fifth of households have a 100 percent chance. There are large differences based on mother's education (figure 9.3). While a birth to a mother who is illiterate has an 80 percent chance of receiving prenatal care, a mother even just being able to read and write increases the chance to 91 percent, and secondary or higher educated mothers have a 99 percent chance of receiving prenatal care. There are similar differences based on the father's education as well. After accounting for multiple characteristics, births in the third through richest fifth of households are more likely to receive prenatal care than births in the poorest fifth of households. Having a mother with primary or greater education increases the chance of a birth receiving prenatal care, as does having a father who can read or write or who has preparatory or greater education. Given the nearly universal prevalence of skilled attendants at delivery, it is neither necessary nor possible to identify factors affecting access to these services.

Lebanon had a low level of full immunizations (51 percent) in 2004 and also has an unequal distribution. There are large disparities in rates of immunization

Figure 9.3 Percentage of Births Receiving Prenatal Care, by Mother's Education

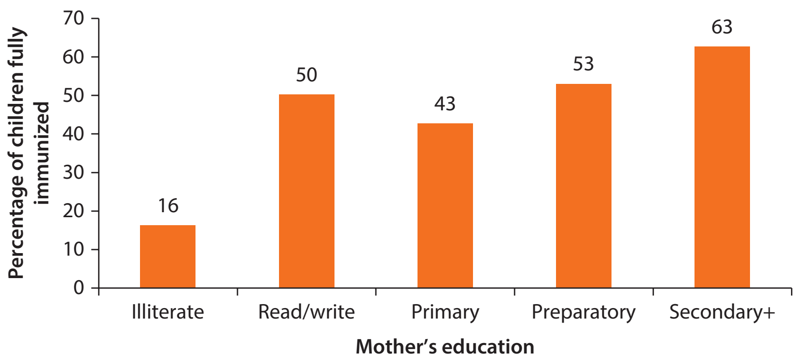


Source: World Bank calculations based on Lebanon PAPFAM 2004.

coverage based on wealth and parents' education. For instance, while only 33 percent of children 12–23 months from the poorest fifth of households have been fully immunized, 78 percent of children from the richest fifth of households have been fully immunized. Differences are also large based on mother's education, as figure 9.4 shows. There is a particularly large gap between illiterate mothers, only 16 percent of whose children are immunized, and educated mothers. After accounting for other characteristics, children in the fourth and richest fifth of households are significantly[10] more likely to be immunized than children in the poorest fifth of households. There are no significant differences based on parents' education.

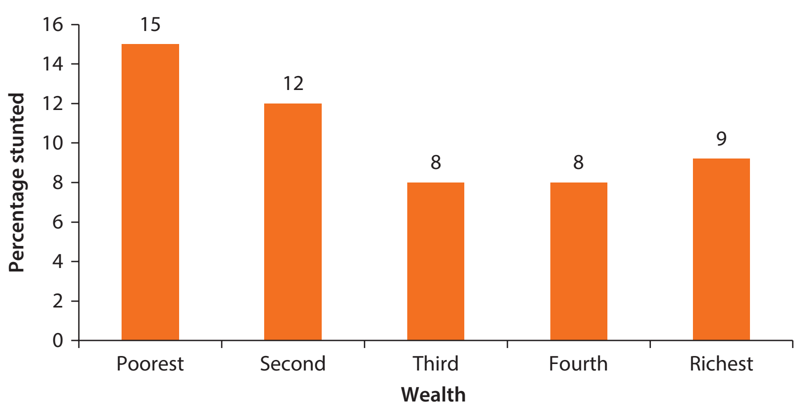
In terms of nutrition, there are also differences based on certain background characteristics. Female and male children have similar chances of being stunted. However, stunting is higher in the poorest (15 percent) and second poorest wealth quintiles of households (12 percent) than in the third, fourth, and richest wealth quintiles (8–9 percent) (figure 9.5). Although information is not available

Figure 9.4 Immunization Coverage of Children Aged 12–23 Months, by Mother's Education



Source: World Bank calculations based on Lebanon PAPFAM 2004.

Figure 9.5 Stunting by Wealth Level, Ages 0–4



Source: World Bank calculations based on Lebanon PAPFAM 2004.

on parents' education in the anthropometric data, information on household head's education is (and the head is likely to be one of the parents). Stunting decreases consistently with increasing household head education, dropping from 22 percent for children with illiterate household heads to 7 percent for children with secondary- or highly educated parents.

After accounting for other characteristics, children are significantly less likely to be stunted if they are from the third wealth level of households, as compared to the poorest households. In terms of height-for-age, children from the third, fourth, and richest fifths of households all have significantly higher height-for-age than children from the poorest fifth of households. The contrast between height-for-age and stunting suggests that while children in the higher levels of wealth do better on average, there is still a minority of children that faces a high chance of stunting. The chance of being stunted decreases and height-for-age increases with the household head's education. Having a preparatory-educated household head significantly decreases the chance of stunting, while having a secondary- or highly educated head significantly decreases stunting and increases height-for-age.

Cognitive, Social, and Emotional Development

Early childhood education has the greatest benefits for disadvantaged and vulnerable children. However, in Lebanon, it is children from the most advantaged backgrounds who are attending ECCE. Total net kindergarten enrollment rates for three-to six-year-olds are 96 percent in Mount Lebanon, 85 percent in Beirut, and 83 percent in Bekaa; however, they are 71 percent in the North, 73 percent in Nabatieh, and 61 percent in the South (Kaloustian 2012). This generally coincides with rates of poverty and income; the South and North have the highest poverty rates (Laithy, Abu-Ismail, and Hamdan 2008).

Children Face Unequal Opportunities for Healthy Development

Children in Lebanon face unequal opportunities for healthy development based on factors beyond their control. To measure the extent of inequality, the analysis calculates (a) the percentage of opportunities that needed to have been distributed differently for equality of opportunity to have occurred for each of the ECD indicators; and (b) the chance of whether these differences might have occurred by random variation (table 9.1). In Lebanon, all

Table 9.1 Percentage of Opportunities to Be Redistributed

	Dissimilarity index
Prenatal care	2.6
Fully immunized	18.4
Stunted	16.4

Source: World Bank calculations based on Lebanon Pan Arab Project for Family Health (PAPFAM) 2004.
Note: Given the very small sample sizes for mortality and the near-universal coverage of delivery care, these outcomes could not be modeled.

of the inequality observed might be due to chance, but the lack of statistical significance might also be due to relatively small sample sizes as well. Immunizations and stunting in particular show substantial inequality of opportunity.

Wealth and education make the largest contributions to children's unequal chances. Table 9.2 shows the different contributions of circumstances to inequality for different outcomes as percentages out of 100 percent. Wealth plays a particularly large role in immunizations and stunting, although differences may be random. Mother's education is particularly important for prenatal care. Father's education plays a particularly important role in immunizations. Household head's education contributes substantially to stunting. A child's gender contributes very little to inequality.

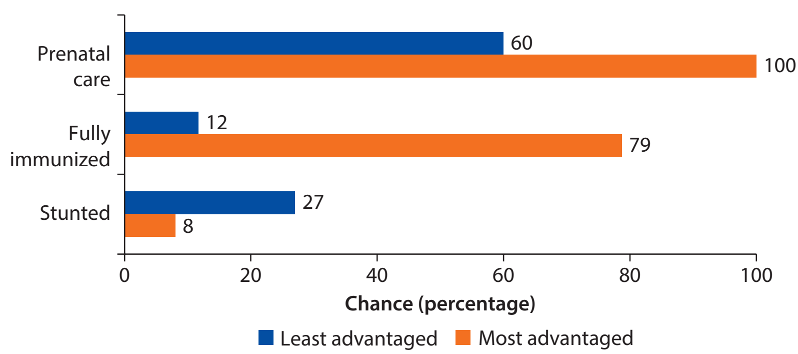
Children tend to be consistently advantaged or disadvantaged across a variety of dimensions of ECD and can face different life chances based on just a few characteristics. Early childhood is when cycles of poverty and inequality are transmitted across generations. If we observe a child who is from the poorest 20 percent of households and with uneducated parents (a least advantaged child) and compare that child to one who has parents with higher education and is from the richest 20 percent of households (a most advantaged child), we find that they have different chances of healthy ECD. Figure 9.6 presents the chances

Table 9.2 Contributions of Background Characteristics to Inequality
Percentage

	Wealth	*Woman's education*	*Partner's education*	*Head's education*	*Child's sex*
Prenatal care	24.0	46.3	29.7	n.a.	n.a.
Fully immunized	50.4	14.8	34.8	n.a.	n.a.
Stunted	45.5	n.a.	n.a.	54.4	0.1

Source: World Bank calculations based on Lebanon PAPFAM 2004
Note: Shapley decompositions of the dissimilarity index. n.a. = not applicable or not available.

Figure 9.6 Most Advantaged and Least Advantaged Simulations



Source: World Bank calculations based on Lebanon PAPFAM 2004.
Note: Given the very small sample sizes for mortality and the nearly universal coverage of delivery care, these outcomes could not be modeled.

(predicted chance) of different ECD indicators (based on the regressions) for these “least advantaged” and “most advantaged” individuals.

Children in Lebanon face very different opportunities for healthy development based on just a few background characteristics. Lebanon has universally high rates of use of skilled birth attendants, and infant and neonatal mortality cannot be modeled given the sample size and low rates. However, in terms of prenatal care, immunizations, and stunting, there are substantial differences in the opportunities children face to accumulate human capital and develop healthily. A least advantaged child has a 60 percent chance of receiving prenatal care, while a most advantaged child has a 100 percent chance—a 40 percentage point difference. While a least advantaged child has a 12 percent chance of being fully immunized, a most advantaged child has a 79 percent chance. In terms of stunting, a least advantaged child has a 27 percent chance of being stunted, while a most advantaged child has an 8 percent chance. Based on differences in these few characteristics, the most advantaged child is 6 times more likely to be fully immunized and a third as likely to be stunted.

Conclusions

Children in Lebanon have high chances of early health care (prenatal and delivery care) and low chances of dying in the first month or year of life. However, as they grow older, children face a number of threats to their development, including low immunization rates and a substantial chance of being stunted. Additionally, children face unequal chances of healthy early development based on their circumstances, with the poorest children and those with the least educated mothers particularly at risk. Children are also likely to face unequal chances to be school-ready, given differences in access to ECCE. More needs to be done to ensure that children can develop successfully and equitably throughout their early years. Additional and more frequent data on children’s development in Lebanon could also play a crucial role in assessing other areas where children’s development is threatened and tracking progress in addressing these gaps.

Annex 9A: The Data

The Data Set

The analysis utilizes cross-sectional data on the well-being of women and children collected in the Pan Arab Project for Family Health survey (PAPFAM) for 2004 in Lebanon. The PAPFAM survey has a household questionnaire that includes important background characteristics of individuals and families. It also has a questionnaire for ever-married women aged 15–49, which captures information on important components of ECD such as prenatal care, skilled assistance with the delivery of children, and children’s immunizations. Weight and height data are collected for children under five years of age. The survey is nationally representative and includes data that allow for an analysis of the relationship between ECD and child and household indicators within Lebanon.

The Sample

The 2004 PAPFAM dataset for Lebanon sampled 5,532 households, 3,032 ever-married women aged 15–49, and 940 children younger than age five (anthropometric measures). The analysis in this note is weighted in order to be representative at the national level. The sample sizes reported (N) in each of the tables are based on the unweighted number of observations in the data.

Annex 9B: Indicators by Background Characteristics

Table 9B.1 Indicators by Background Characteristics

	Prenatal care	*Skilled attendant*	*Fully immunized*	*Died in first month*	*Died in first year*	*Stunted*	*Height-for-age (SD)*	*Percent of children*
Gender								
Male						10.7	0.14	50.4
Female						10.6	0.13	49.6
Wealth quintile								
Poorest	89.2	98.4	33.8			15.0	–0.34	21.7
Second	95.3	97.8	45.7			12.0	0.06	21.6
Third	95.9	97.6	29.5			8.2	0.30	23.0
Fourth	98.9	98.7	72.4			7.6	0.43	17.7
Richest	100.0	98.7	78.1			9.2	0.38	16.0
Woman's education								
Illiterate	80.1	98.0	16.2					5.1
Read/write	90.6	95.2	50.2					19.0
Primary	95.5	98.0	42.7					18.7
Preparatory	97.8	98.9	53.0					22.7
Secondary+	99.3	99.6	62.6					34.5
Partner's education								
Illiterate	82.3	96.6	51.5					5.4
Read and/or write	93.2	96.1	34.1					26.0
Primary	94.0	98.8	46.6					19.6
Preparatory	97.3	98.9	64.5					16.2
Secondary+	99.6	99.4	58.9					32.0
Head's education								
Illiterate						21.9	–0.39	5.9
Read and/or write						13.9	–0.16	4.8
Primary						12.7	0.00	33.6
Preparatory						9.5	0.13	21.9
Secondary						7.1	0.38	18.4
Higher education						6.9	0.45	15.0
Total	95.4	98.2	51.5	1.0	1.5	10.7	0.13	100.0
N (observations)	1,224	1,174	229	3,594	3,594	940	940	

Source: World Bank calculations based on Lebanon PAPFAM 2004.
Note: Indicators by background characteristics for neonatal and infant mortality are omitted due to small sample size and infrequency of deaths. Other blank cells indicate not applicable or not available. SD = standard deviation.

Annex 9C: Relationship between ECD Indicators and Background, When Accounting for Multiple Characteristics

Table 9C.1 Relationship between ECD Indicators and Multiple Background Characteristics

	Prenatal care	*Fully immunized*	*Stunted*	*Height-for-age*
Wealth—20% of households—compared to poorest				
Second				
Third	+		–	+
Fourth	+	+		+
Highest	+	+		+
Woman's education—compared to no education				
Read/write			n.a.	n.a.
Primary	+		n.a.	n.a.
Preparatory	+		n.a.	n.a.
Secondary+	+		n.a.	n.a.
Partner's education—compared to no education				
Read/write	+		n.a.	n.a.
Primary			n.a.	n.a.
Preparatory	+		n.a.	n.a.
Secondary+	+		n.a.	n.a.
Head's education—compared to no education				
Read/write	n.a.	n.a.		
Primary	n.a.	n.a.		
Preparatory	n.a.	n.a.	–	
Secondary	n.a.	n.a.	–	+
Higher education	n.a.	n.a.	–	+
Female	n.a.	n.a.		
P-value (model)	0.000	0.000	0.064	0.002
Observations (N)	1,053	229	940	940
R-squared				0.036
Pseudo R-squared	0.175	0.144	0.028	

Source: World Bank calculations based on Lebanon PAPFAM 2004.
Note: Given the very small sample sizes for mortality and the near-universal coverage of delivery care, these outcomes could not be modeled; ECD = early childhood development; n.a. = not applicable or not available.

Notes

1. Mortality rates are for children born 1–10 years prior to the survey.
2. Either a doctor or a nurse/midwife.
3. Either a doctor or a nurse/midwife.
4. As was true for prenatal care, delivery questions are asked about most recent live births in the last five years only. Since live births are likely to be associated with care by a health professional, the percentage of live births with a health professional is likely to overestimate the number of deliveries with a health professional.

5. The DPT vaccine is a combination vaccine that covers diphtheria, whooping cough (pertussis), and tetanus. Children must receive three doses to be fully immunized.
6. Children must receive three doses to be fully immunized against polio.
7. As with prenatal and delivery care, these questions were asked of the most recent live birth in the past five years.
8. More than 15 ppm of iodine in the salt.
9. Wealth is defined in terms of which 20 percent of households a child falls into, based on an asset (wealth) index of durable goods.
10. Throughout, we use a 5 percent level of significance.

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CHAPTER 10

Libya

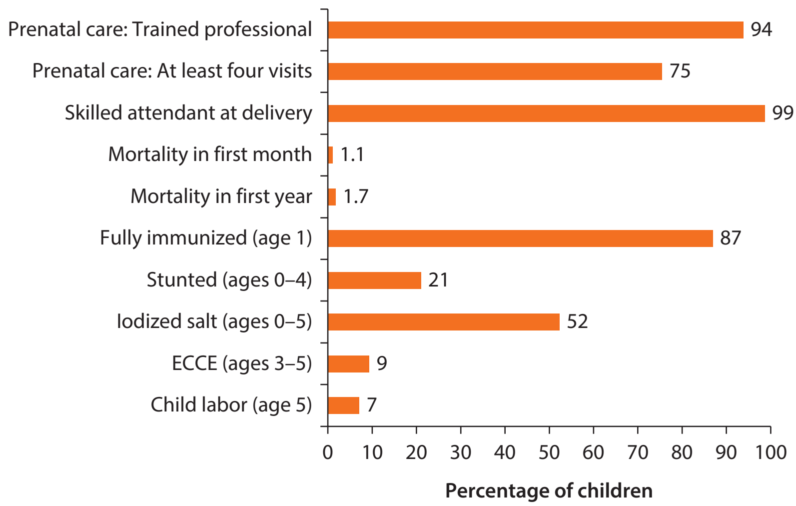
The State of Early Childhood Development in Libya

Early childhood development (ECD) in Libya has a number of gaps that need to be addressed in order for children to attain their full potential for early development. Figure 10.1 presents summary indicators for ECD in Libya. In terms of prenatal and delivery care, although 99 percent of births had a skilled attendant at delivery, 94 percent of births received prenatal care, and only 75 percent received regular prenatal care (at least four visits). In the first month of life, 1.1 percent of children die, and in the first year of life, 1.7 percent of children die. With 87 percent of children age one fully immunized, Libya has room for improvement. Malnutrition is a problem in Libya, where 21 percent of children are stunted and only half (51 percent) of children have access to adequately iodized salt. Only 9 percent of three- to five-year-olds attended early childhood care and education (ECCE) and around 7 percent of children engaged in child labor at age 5.

This chapter presents the status of ECD in Libya. The health status of children is examined through indicators (see box 10.1) of early mortality, prenatal care, and having a skilled attendant at birth. Children's nutritional status is measured by stunting (height-for-age), as well as the availability of micronutrients, specifically iodine. To assess early learning and early work, the analysis looks at attendance of ECCE and child labor. To better understand the context and conditions that influence ECD outcomes, the analysis also examines background factors that may be associated with ECD outcomes at the individual, household, and community levels and their relationships (see annexes 10A, 10B, and 10C for additional information on the data and these relationships). For the overall country context, see box 10.2. Finally, the analysis measures the gaps and extent of inequality in ECD outcomes.

The analysis is based on the latest available data: The Pan Arab Project for Family Health survey (PAPFAM) from 2007. The data cover different dimensions of early childhood from before a child is born up until the age of school entry (age six years in Libya). If more indicators were available and examined, they could

Figure 10.1 ECD Summary Indicators



Source: World Bank calculations based on Libya Pan Arab Project for Family Health (PAPFAM) 2007.
Note: ECCE = early childhood care and education; ECD = early childhood development.

Box 10.1 ECD Indicators Examined in Libya

Prenatal care
Skilled attendant at delivery
Neonatal mortality (dying in the first month)
Infant mortality (dying in the first year)
Fully immunized
Stunting/Height-for-age
Salt iodization
Early childhood care and education
Child labor

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provide an even richer picture of ECD in Libya. While under normal circumstances ECD indicators change relatively slowly, on the ground today, in light of the ongoing conflict in Libya, there may have been more rapid and substantial changes, providing both new challenges and new opportunities to improve ECD in Libya.

Survival, Health Care, and Nutrition

The first step in healthy ECD is simply surviving early childhood. In Libya, seven children under the age of one die every day.[1] Infant mortality, which refers to children dying before their first birthday, is 17 deaths per thousand births.[2] This is well below the average rate for the Middle East and North Africa (MENA) region (24 per thousand) (UNICEF 2014). Most of infant mortality is composed of neonatal mortality—children dying within the first month of life. In Libya,

Box 10.2 Summary of Development Indicators in Libya

Libya is an upper-middle-income country with a gross domestic product per capita in 2012 of about $10,456 (in current US dollars, table B10.2.1). Libya has an estimated population of 6.2 million, of which 29 percent are under the age of 15. The average life expectancy at birth is 75 years as of 2012, which is a substantial improvement since 1990, when it was 69 years.

Table B10.2.1 Libya's Socioeconomic Indicators

	1990	*2012*
Total population (millions)	4.3	6.2
% of population under 15	42	29
GDP per capita (current US dollars)	$6,785	$10,456
Life expectancy at birth (years)	69	75

Sources: United Nations Development Programme (UNDP) 2014; World Development Indicators.
Note: Gross domestic product (GDP) per capita is 2009.

11 children out of every thousand born die during their first month of life, below the regional average of 15 in every thousand (UNICEF 2014). Infant mortality has been falling over time in Libya—down from around 33 children per thousand in 1990—and, unlike many other countries in the region, Libya has made substantial progress in reducing neonatal mortality, which has halved from 22 in 1990 (World Development Indicators).

Children are at risk for poor development even before birth. Each year almost ten thousand children in Libya are born without receiving prenatal care, putting children (and mothers) at risk. While 94 percent of live births[3] did receive prenatal care from a health professional, only 75 percent received regular prenatal care, with four or more visits. There are two gaps in prenatal care coverage: the 6 percent of births who are not receiving prenatal care at all, and the 18 percent of births who received some prenatal care, but not regular care. Use of prenatal care, has expanded slowly; in 1995, 81 percent of births received prenatal care, and there has been only a 12 percentage point increase in the 12 years to 2007 (World Development Indicators). However, the current rate is above the MENA region average of 83 percent (UNICEF 2014).

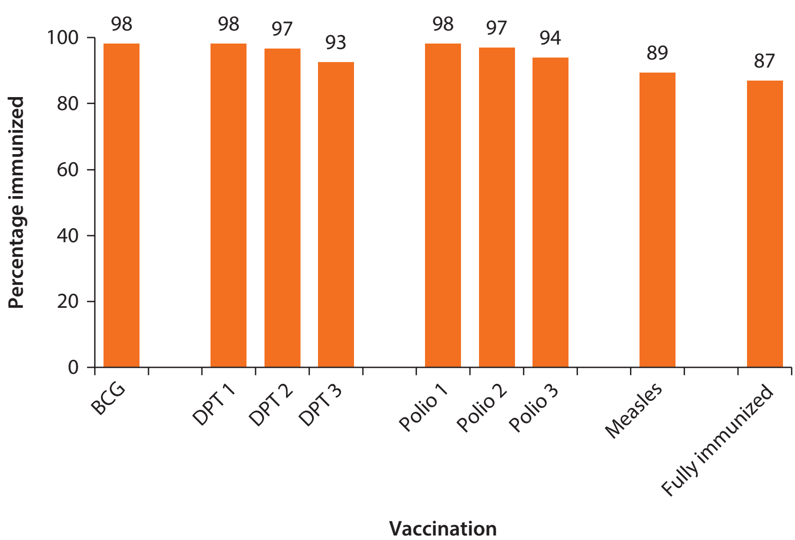
Delivery with a skilled attendant is also an important component of reducing newborn mortality and illness. Almost all (99 percent) of births[4] were attended by a health professional. Libya has been doing well on delivery care for decades; in 1995, the rate was already at 94 percent (World Development Indicators). Libya is well above the regional average for delivery care of 79 percent (UNICEF 2014): however, comparing delivery care and prenatal care, there is clearly greater access to skilled delivery care than prenatal care, especially regular prenatal care. That the same women are receiving delivery care but not prenatal care suggests that staff or facilities for care exist, and are accessible, but are underutilized for prenatal care.

The full immunization of children plays an important role in reducing childhood diseases that can hamper growth or cause death (Molina 2012). In Libya, 87 percent of children age one have been fully immunized,[5] putting the 13 percent of children who are not fully immunized at risk of early illness and death. Children are considered fully immunized if they have received immunizations for all six major preventable childhood diseases: tuberculosis, diphtheria, whooping cough, tetanus,[6] polio,[7] and measles. Children should be fully immunized by 12 months of age; this analysis focuses on children 12–23 months to allow for optimal parental recall. While BCG (Bacillus Calmette-Guérin) coverage is quite high (98 percent), the third polio dose and the third DPT (diphtheria, pertussis, tetanus) dose have 93–94 percent coverage, and the measles vaccine has 89 percent coverage (figure 10.2).

One in every five children in Libya is stunted (21 percent). This is one-fifth of the future workforce that will be less productive in their working years, due to almost entirely preventable malnutrition. Children in Libya start their lives on fairly healthy footing in terms of nutrition, measured by height-for-age; however, they experience a substantial falling off from healthy growth. Figure 10.3 shows how Libyan children fare compared to a healthy reference population.[8] It is during the first two years of life that children experience a substantial falling off from healthy growth. At birth, children are, on average, only 0.2 standard deviations (SDs) below the reference population. Within the first year, their growth falters further, to about 0.5 SD below the reference population by age one. At ages two to four, children fluctuate between 0.8 and 1.0 SD below the reference population.

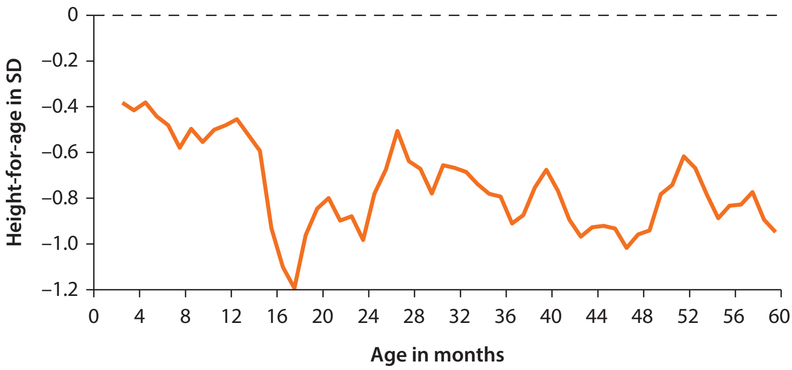
Micronutrients such as iron, vitamin A, zinc, and iodine play an important role in both physical and cognitive development. Iodine plays a vital role in cognitive

Figure 10.2 Percentage of Children Aged 12–23 Months Immunized, by Vaccination



Source: World Bank calculations based on Libya PAPFAM 2007.
Note: BCG = Bacillus Calmette–Guérin (tuberculosis vaccine); DPT = diphtheria, pertussis, tetanus.

Figure 10.3 Average Height-for-Age Compared to Healthy Reference Population, in Standard Deviations by Age in Months



Source: World Bank calculations based on Libya PAPFAM 2007.
Note: SD = standard deviation.

development, and iodine deficiency is the most common cause of preventable mental retardation and brain damage in the world (El-Zanaty and Way 2009). Iodized salt is the primary means for delivering iodine to children. Since only 52 percent of children under the age of five live in a household with sufficiently iodized salt, half of the children in Libya are at great risk for impaired cognitive development.[9]

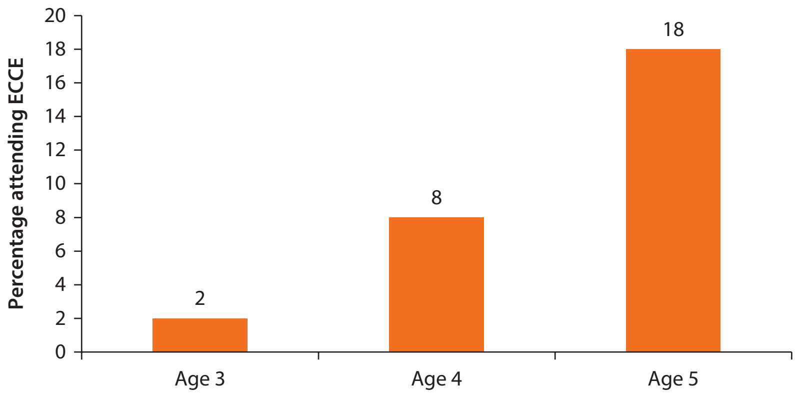
Early Learning and Early Work

Evidence has shown that ECCE improves cognition and socioemotional development, with benefits that can last a lifetime. In Libya, just 9 percent of children ages three to five are attending an ECCE program, with the majority (91 percent) of children missing out on this important opportunity to develop and to prepare for primary school. Figure 10.4 presents the percentage of children who have ever attended ECCE, by age. As the figure shows, only 2 percent of three-year-olds, 8 percent of four-year olds, and 18 percent of five-year-olds are attending some type of ECCE. This pattern means that 82 percent of children in Libya will reach primary school age (age six) without attending ECCE.

ECCE in Libya is mainly composed of kindergartens; some mosques and home education programs also provide ECCE. Kindergartens are more likely to be formal programs with educational curricula designed to prepare children for school. As figure 10.5 shows, most of the children in Libya who are attending ECCE do so in a kindergarten (63 percent), which suggests that while ECCE attendance rates are low, children are primarily attending programs with stronger educational components.

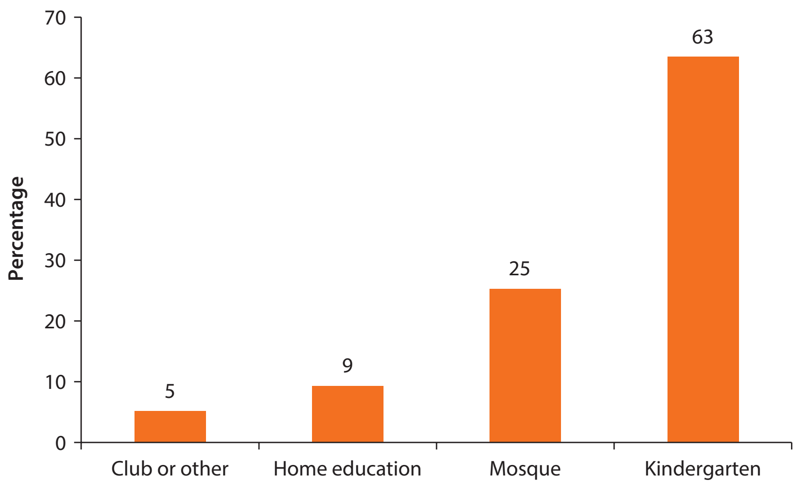
While doing household chores, working in a family business, and working for others[10] may build character and skills, for children at age five, these activities will be dangerous and limit their ability to enter and succeed in school. In Libya, 7 percent of five-year-olds are engaged in child labor, which puts them at risk in terms of their health, safety, and ability to successfully transition into school. Almost all five-year-olds engaged in child labor were doing household chores

Figure 10.4 Percentage of Children Aged 3–5 Currently Attending ECCE



Source: World Bank calculations based on Libya PAPFAM 2007.
Note: ECCE = early childhood care and education.

Figure 10.5 Type of ECCE Attended, Children Who Currently Attend ECCE, Ages 3–5



Source: World Bank calculations based on Libya PAPFAM 2007.
Note: ECCE = early childhood care and education.

(96 percent). Only around 1 percent of those engaged in child labor were working in a job, and 9 percent were working in a family business.[11]

Key Factors Affecting Early Childhood Development

A number of background characteristics at the child, family, and community levels affect ECD outcomes: gender, parents' education, household socioeconomic status (wealth),[12] and geographic location (region or governorate). Understanding these relationships can help identify why some children have poor ECD outcomes and which children to target with policy or programmatic interventions.

Survival, Health, and Nutrition

Background characteristics affect the chances that a child will die in the first year of life in Libya. Boys have a higher chance of dying in the first year of life than girls, but this is a common pattern globally due to genetic factors (Hill and Upchurch 1995). The wealth of a child's household, the level of education of his or her mother, and the region where they reside are strongly associated with a child's survival chances. Children from households in the bottom three quintiles are more likely to die before their first birthday, compared to children in the fourth or richest 20 percent of households. Also, children whose mothers have less than a complete preparatory education are more likely to die before their first birthday than children whose mothers have a complete preparatory education or higher. In terms of region, children in Fezzan are more likely to die before their first birthday than children in other regions.

Taking into account the influence of other characteristics, the gender of the child, household wealth, father's education, and region of residence significantly[13] influence a child's chances of survival. After accounting for other characteristics, female children are significantly less likely to die in their first month and year. Children from the fourth 20 percent of households are also significantly less likely to die in their first month as compared to the poorest 20 percent of households. Moreover, a child with a father who has completed higher education has a significantly lower chance of death in the first year than one who has a father with no education. Finally, children in Fezzan are significantly more likely to die in their first month or first year than children from Tripolitania.

Use of prenatal care, especially regular prenatal care, is closely associated with wealth, education, and geography. While 97 percent of births in the richest fifth of households received prenatal care, 90 percent of births in the poorest fifth of households did so. The gap is larger for regular care—78 percent versus 67 percent. The differences between a mother with no education and a mother with higher education are greater still than the differences between the poorest and richest fifth of households. Births in Fezzan are the least likely to receive any prenatal care (92 percent), while births in Tripolitania are the least likely to receive regular prenatal care (74 percent). In several districts—Gebel Akhdar, El Marj, Al Merqeb, Zawia, and Wadi El Haya—rates of prenatal care are below 90 percent.

After accounting for other characteristics, use of prenatal care is significantly higher and increases in the third through richest fifth of households as compared to the poorest fifth of households. The chance of having regular care is significantly higher in all the other wealth levels compared to the poorest fifth of households. Mothers with more education, especially higher education, are significantly more likely to have prenatal care and regular prenatal care. Having a partner with complete secondary education increases the chance of any prenatal care, while a partner with higher education increases the chance of both any and regular prenatal care.

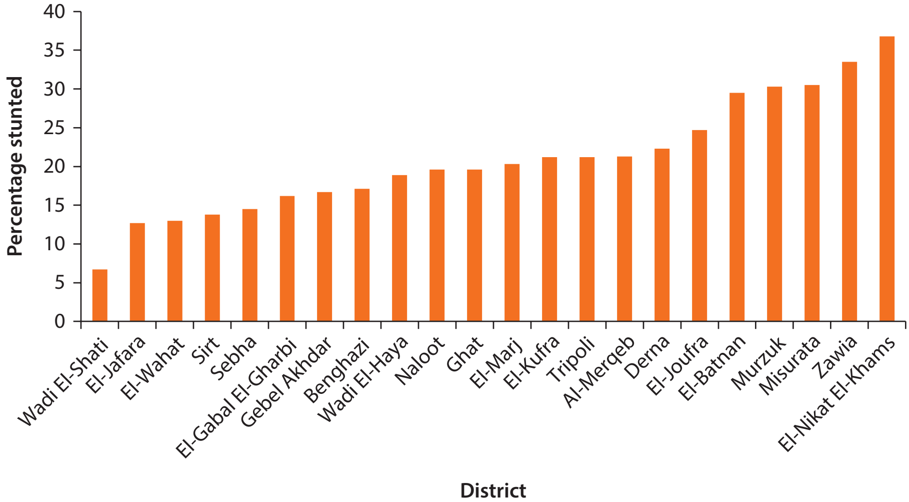
Differences based on wealth and education are relatively small in terms of births attended by a skilled attendant, since coverage is nearly universal (99 percent). Differences based on geography are actually greater for delivery care than prenatal care. While Tripolitania has almost 100 percent coverage of skilled delivery care, and Cirenaica 98 percent, Fezzan has 92 percent coverage. After accounting for other characteristics, Fezzan and Cirenaica have significantly lower rates of delivery with a skilled attendant than Tripolitania. More educated mothers significantly increase the chances of using skilled delivery care, but the effects of father's education are smaller and less often significant. There are no significant differences based on wealth.

Although there are no systematic differences in immunization rates based on wealth or parents' education, there are large differences based on district of residence. Targeting of districts with rates below 90 percent with immunization campaigns is warranted. Only El Marj, Benghazi, El Wahat, El Joufra, and Tripoli have passed the 90 percent mark; all other districts have full immunization rates below 90 percent for 12–23-month-olds. The differences in immunization rates based on wealth are small, with the middle 20 percent of households achieving the highest immunization rate. Libya is struggling to reach mothers with no education with its immunization campaigns; the rate of immunization for children with uneducated mothers is 69 percent. After accounting for other characteristics, children in the middle fifth of households in terms of wealth are more likely to be immunized than the poorest children. Children also have increased chances of being immunized with increased maternal education. Father's education has no significant effect on the chances of immunization. There are no statistically significant differences by gender.

Stunting rates do not show sizable differences by wealth, suggesting that in Libya, public health and nutrition quality problems are driving stunting rather than poverty and the ability to afford food. As with wealth, the relationship between stunting and parental education is unclear, with rates similar across different maternal and paternal education levels. Male children are slightly more likely to be stunted (22 percent) than female children (20 percent). There are some geographic differences; children in Tripolitania have a 22 percent stunting rate, while children in Fezzan and Cirenaica are at 18 percent and 19 percent, respectively. It is particularly interesting to compare with the average height-for-age in standard deviations. While Fezzan and Cirenaica have very similar rates of stunting, the average height-for-age is actually better in Fezzan—suggesting that a particular subpopulation has acute nutritional problems in that region—while Cirenaica has a poorer average height-for-age but similarly acute stunting. There are wide variations in stunting based on governorate (figure 10.6), with Misurata, Zawia, El Nikat El Khams, and Murzuk having stunting levels above 30 percent.

Taking into account other characteristics, geography continues to be the main circumstance related to stunting. Children are significantly less likely to be stunted if they are in Fezzan or Cirenaica, as compared to Tripolitania. Only Fezzan does better on height-for-age. The only wealth level with any differences in stunting or height-for-age is the second fifth of households, which has a

Figure 10.6 Percentage of Children Aged 0–4 Years Stunted, by District



Source: World Bank calculations based on Libya PAPFAM 2007.

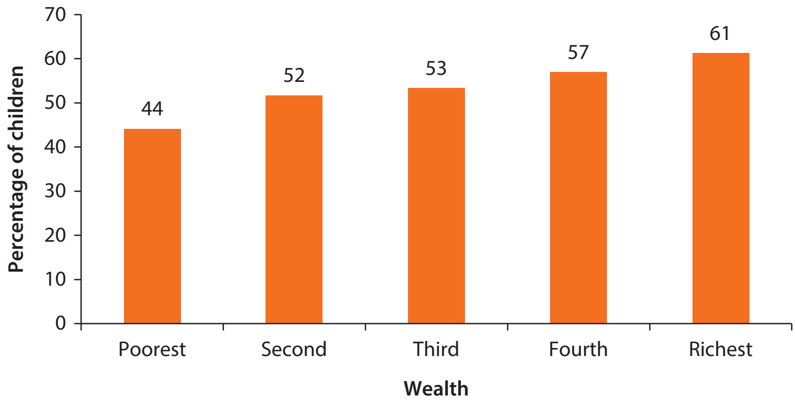
significantly higher height-for-age. Female children are less likely to be stunted and have higher average height-for-age. There are no differences in stunting or height-for-age based on mother's education, but children with a father with a complete secondary or higher education have significantly lower stunting and higher height-for-age. Children with a father with even a basic education have greater height-for-age.

Wealth, parents' education, and geographic location are strongly associated with opportunities for healthy brain development for children in Libya. Iodine plays an important role in brain development, and poorer children are less likely to have access to iodized salt. Children in the poorest fifth of households have the lowest rates of salt iodization, 44 percent, while children in the richest fifth of households have a 61 percent chance of having adequately iodized salt (figure 10.7). A similar gradient is seen with parents' education. Differences in access to iodized salt based on geography are quite large. While Tripolitania and Fezzan have salt iodization between 63 and 69 percent, Cirenaica has only 19 percent salt iodization. The largest differences are at the district level. For instance, Zawia has 91 percent access to iodized salt, while a number of other districts are below 10 percent. After accounting for other characteristics, children in Fezzan are significantly more likely to have iodized salt, while children in Cirenaica are less likely, compared to Tripolitania. Iodized salt prevalence is significantly higher with greater wealth. Use of iodized salt also increases significantly with mother's education, but not father's education.

Early Learning and Early Work

In Libya, it is children from the most advantaged backgrounds who are attending ECCE, despite the fact that early childhood education has the greatest

Figure 10.7 Percentage of Children Aged 0–5 with Adequately Iodized Salt, by Wealth

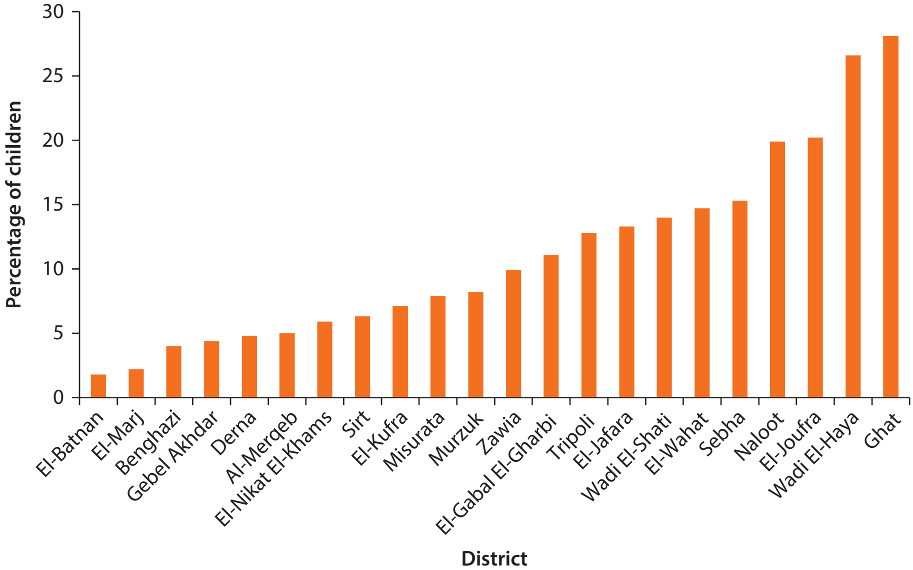


Source: World Bank calculations based on Libya PAPFAM 2007.

benefits for disadvantaged and vulnerable children. While a three- to five-year-old child from the poorest fifth of households has a 5 percent chance of attending ECCE, a child from the richest fifth of households is almost three times more likely to attend ECCE—a 14 percent chance of doing so. Similar differences are observed when comparing parents with no education to those with higher education. Substantial differences in ECCE attendance based on geography also occur, with a 17 percent ECCE attendance rate in Fezzan, 10 percent in Tripolitania, and only 5 percent in Cirenaica. As figure 10.8 shows, there are very different attendance rates by district, ranging from 2 percent in El-Batnan and El-Marj to 28 percent in Ghat. Even after accounting for multiple characteristics, there are significant differences in ECCE attendance across the different background characteristics. Children in Fezzan are more likely, and children in Cirenaica less likely, to attend ECCE, compared with Tripolitania. ECCE attendance increases significantly with wealth and with both mother's and father's education. Interestingly, females are significantly more likely to attend ECCE than males.

Engagement in child labor does not have a strong relationship with children's background characteristics. Child labor may endanger the physical, cognitive, and social-emotional development of young children and act as a barrier to school entry. In Libya, 7 percent of children age five were engaged in some type of work in the week preceding the survey, mostly household chores. There are no clear differences in rates of child labor based on wealth, but children with uneducated parents are more likely to be engaged in child labor. Children in Fezzan are also much more likely to be engaged in child labor. After accounting for other characteristics, children in Fezzan are more likely to be engaged in child labor than children in Tripolitania. Children whose mothers have a basic education are also less likely to be engaged in child labor than children with uneducated mothers, but no other education status was statistically significant.

Figure 10.8 Percentage of Children Aged 3–5 Currently Attending ECCE, by District



Source: World Bank calculations based on Libya PAPFAM 2007.
Note: ECCE = early childhood care and education.

Children Face Unequal Opportunities for Healthy Development

Children in Libya face unequal opportunities for healthy development, based on factors beyond their control. To measure the extent of inequality, the analysis calculates (a) the percentage of opportunities that needed to have been distributed differently for equality of opportunity to have occurred for each of the ECD indicators, and (b) the chance of whether these differences might have occurred by random variation (table 10.1). For prenatal care and skilled delivery care, 2.0 and 0.7 percent of opportunities would have had to be distributed differently for there to have been equality of opportunity. While these numbers are low due to the high rates of coverage, their statistical significance shows that the gaps in coverage are unequally distributed. There are nearly equal opportunities for children to get immunized regardless of their circumstances. While there are unequal chances to die early in life, since this is a rare occurrence, we cannot definitively say whether or not these differences are due to chance. Children face unequal opportunities for healthy brain development, in terms of access to iodized salt. There is substantial inequality in terms of ECCE; 23.7 percent of chances to attend ECCE needed to have been distributed differently in order for children to have equality of opportunity.

Wealth, mother's education, and geography make the largest contributions to children's unequal chances. Table 10.2 shows the different contributions of circumstances to inequality for different outcomes as percentages. Wealth plays a particularly large role in inequality in prenatal care, iodized salt, and ECCE,

Table 10.1 Percentage of Opportunities to Be Redistributed

	Dissimilarity index
Prenatal care	2.0*
Skilled delivery	0.7*
Neonatal mortality	30.7
Infant mortality	25.8
Fully immunized	2.7
Iodized salt	16.9***
Stunted	6.3
ECCE	23.7***
Child labor	25.7

Source: World Bank calculations based on Libya PAPFAM 2007.
Note: Significance level: * = chance < 5%, ** = chance < 1%, *** = chance < 0.1%. ECCE = early childhood care and education.

Table 10.2 Contributions of Background Characteristics to Inequality
Percentage

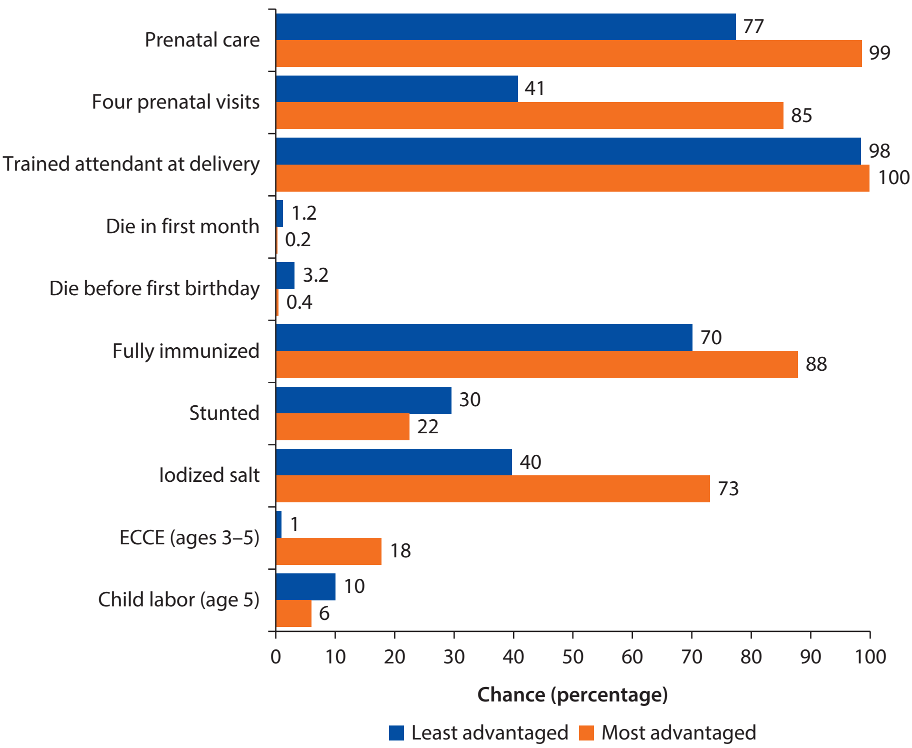
	Wealth	*Mother's education*	*Father's education*	*Region*	*Child's sex*
Prenatal care	21.8	48.5	27.5	2.2	n.a.
Skilled delivery	2.3	17.7	12.6	67.3	n.a.
Neonatal mortality	15.6	11.7	17.6	31.9	23.2
Infant mortality	15.2	14.9	21.2	33.4	15.2
Fully immunized	26.4	20.7	21.7	1.3	1.9
Iodized salt	6.7	5.1	4.7	83.4	0.1
Stunted	20.9	35.0	16.9	12.6	14.6
ECCE	23.1	20.2	15.6	37.2	4.0
Child labor	7.8	12.7	11.5	67.9	0.1

Source: World Bank calculations based on Libya PAPFAM 2007.
Note: Shapley decompositions of the dissimilarity index. n.a. = not applicable; ECCE = early childhood care and education.

contributing around a fifth to a quarter to inequality for each of these measures. Mother's education is particularly important in the inequality for prenatal care, stunting, and ECCE. Father's education plays a small but important role in inequality for these outcomes as well. Residence in different regions matters for all outcomes except prenatal care and immunizations, and especially for inequality in access to iodized salt and ECCE. A child's gender contributes very little to inequality.

Children in Libya face very different opportunities for healthy development based on just a few characteristics. Early childhood is when cycles of poverty and inequality are transmitted across generations. If we observe a child from the poorest 20 percent of households and with uneducated parents (a least advantaged child) and compare that child to one who has parents with higher education and is from the richest 20 percent of households (a most advantaged child), we find that they have very different chances of healthy ECD. Figure 10.9 presents the chances of different ECD indicators for these "least advantaged" and "most advantaged" individuals.

Figure 10.9 Most Advantaged and Least Advantaged Simulations



Source: World Bank calculations based on Libya PAPFAM 2007.
Note: Shapley decompositions of the dissimilarity index. ECCE = early childhood care and education.

On every indicator, the least advantaged child faces a poorer chance of healthy development. Comparing the least and most advantaged, the gap in prenatal care is 22 percentage points, and the gap in regular prenatal care is 43 percentage points. The least advantaged child is five times more likely to die in the first month, and seven times more likely to die in the first year of life. The least advantaged child is 18 percentage points less likely to be immunized and 8 percentage points more likely to be stunted. There is a 33 percentage point gap in salt iodization. The largest difference is in ECCE attendance, where the most advantaged child is 17 times more likely to attend ECCE than the least advantaged child. The least advantaged child is also almost twice as likely to be engaged in child labor.

Conclusions

Children in Libya are falling short of their full potential for healthy development. Although skilled delivery care rates are high and mortality is low, prenatal care and immunizations show important gaps. Stunting rates are high in Libya, leading to substantial deficits in children's human development that will have lifetime impacts. Only half of children have access to adequately iodized salt, putting the remaining half of children at risk for impaired cognitive development. ECCE attendance rates are quite low. In addition to facing challenges to their development, children face unequal chances for healthy development based on circumstances beyond their control. Wealth, geographic differences, and parents' education all contribute to inequality, which is substantial for all outcomes, but particularly acute for ECCE.

Annex 10A: The Data

The Data Set

The analysis utilizes cross-sectional data on the well-being of women and children collected in the Pan Arab Project for Family Health survey (PAPFAM) for 2007 in Libya. The PAPFAM survey has a household questionnaire that includes important background characteristics of individuals and families. It also has a questionnaire for ever-married women ages 15–49, which captures information on important components of ECD, such as prenatal care, skilled assistance with the delivery of children, and children's immunizations. Weight and height data are collected for children under five years of age. The survey is nationally representative and includes data that allow for an analysis of the relationship between ECD and child and household indicators within Libya. See League of Arab States (2009) for additional information in the final report on the survey.

The Sample

The 2007 PAPFAM dataset for Libya sampled 18,629 households, 12,234 ever-married women ages 15–49, and 12,550 children younger than age five (anthropometric measures). The analysis in this chapter is weighted in order to be representative at the national level. The sample sizes reported (N) in each of the tables are based on the unweighted number of observations in the data.

Annex 10B: Indicators by Background Characteristics

Table 10B.1 Indicators by Background Characteristics

	Prenatal care—trained professional	*Prenatal care: at least four visits*	*Skilled attendant at delivery*	*Die in first month*	*Die before first birthday*	*Fully immunized*	*Stunted*	*Height-for-age (SD)*	*Iodized salt*	*ECCE (aged 3–5)*	*Child labor (age 5)*	*Percent of children (aged 0–4)*
Gender												
Male				1.4	2.2	86.8	22.1	–0.81	52.7	8.0	6.8	51.6
Female				0.6	1.2	87.1	19.8	–0.70	52.3	10.6	7.3	48.4
Wealth quintile												
Poorest	89.7	66.9	98.2	1.1	1.9	83.5	21.9	–0.85	44.1	4.6	7.9	23.7
Second	93.3	74.8	98.7	1.3	1.9	88.4	21.8	–0.67	51.7	7.9	5.2	21.7
Third	95.4	79.2	98.8	1.5	2.4	91.4	20.3	–0.76	53.3	10.6	6.7	22.2
Fourth	95.5	80.5	98.8	0.4	1.0	83.9	21.0	–0.78	57.0	10.9	6.8	18.5
Richest	96.5	78.0	98.8	0.8	1.2	86.8	19.2	–0.71	61.2	14.3	8.5	13.9
Woman's education												
Never attended	82.9	51.5	95.4	1.3	2.4	68.8						
Some primary	86.6	64.6	98.0	1.3	2.0	90.8						
Complete primary	92.0	72.6	98.4	1.5	2.3	87.0						
Complete preparatory	95.1	77.1	98.8	0.7	1.5	90.6						
Complete secondary	96.2	79.1	99.2	1.1	1.6	86.9						
University+	97.4	84.0	99.3	0.8	1.4	88.0						
Partner's education												
Never attended	85.0	60.5	93.1	1.4	2.8	84.7						
Some primary	84.9	62.4	97.8	0.9	1.8	85.1						
Complete primary	92.8	72.1	98.5	0.8	1.4	90.4						
Complete preparatory	92.8	74.8	98.7	1.2	1.7	88.8						

table continues next page

Table 10B.1 Indicators by Background Characteristics *(continued)*

	Prenatal care—trained professional	*Prenatal care: at least four visits*	*Skilled attendant at delivery*	*Die in first month*	*Die before first birthday*	*Fully immunized*	*Stunted*	*Height-for-age (SD)*	*Iodized salt*	*ECCE (aged 3–5)*	*Child labor (age 5)*	*Percent of children (aged 0–4)*
Complete secondary	95.5	77.0	99.1	1.4	2.2	84.5						
University+	96.8	83.1	99.2	0.3	0.5	88.9						
Don't know	85.1	62.9	93.9	1.2	2.3	74.2						
Mother's education												
None							22.2	−0.74	38.6	3.2	11.2	7.7
Read							16.7	−0.67	52.6	7.9	6.5	1.9
Read and write							21.5	−0.80	51.7	7.6	8.4	15.5
Basic							22.2	−0.84	49.6	8.3	2.9	19.6
Secondary or equivalent							19.0	−0.68	54.3	10.6	7.7	36.3
University+							22.9	−0.80	57.8	14.0	6.6	18.5
Missing or don't know							22.6	−0.54	51.4	0.0	18.4	0.5
Father's education												0.0
None							24.6	−0.97	41.5	3.6	17.4	3.2
Read							19.0	−0.94	35.7	9.5	4.7	1.4
Read and write							21.2	−0.84	49.3	5.1	8.6	12.6
Basic							21.9	−0.81	48.5	6.6	5.1	23.7
Secondary or equivalent							20.8	−0.75	54.4	10.5	6.5	37.8
University+							19.6	−0.60	59.0	13.5	7.2	19.3
Missing or don't know							21.9	−0.94	48.2	14.2	7.9	2.0
Region												
Tripolitania	93.8	73.4	99.7	1.0	1.7	86.0	22.3	−0.78	63.2	9.9	5.3	66.1
Fezzan	91.7	75.0	91.5	2.4	3.4	85.7	18.4	−0.60	68.6	17.2	26.9	7.8
Cirenaica	94.3	80.9	98.0	0.9	1.3	89.6	18.6	−0.76	19.0	5.3	5.1	26.1
Districts												
El-Batnan	93.0	74.2	96.9			67.9	29.5	−1.28	23.3	1.8	1.2	2.6
Derna	96.5	81.6	99.7			85.5	22.3	−0.84	22.6	4.8	9.9	2.5

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Table 10B.1 Indicators by Background Characteristics *(continued)*

	Prenatal care—trained professional	*Prenatal care: at least four visits*	*Skilled attendant at delivery*	*Die in first month*	*Die before first birthday*	*Fully immunized*	*Stunted*	*Height-for-age (SD)*	*Iodized salt*	*ECCE (aged 3–5)*	*Child labor (age 5)*	*Percent of children (aged 0–4)*
Gebel Akhdar	85.4	66.1	91.2			88.6	16.7	−0.53	4.7	4.4	5.6	3.4
El-Marj	88.7	64.3	99.1			95.2	20.3	−0.74	3.1	2.2	10.8	3.1
Benghazi	98.1	92.7	99.7			92.9	17.1	−0.81	28.2	4.0	4.4	9.9
El-Wahat	96.5	83.7	98.6			92.4	13.0	−0.54	11.9	14.7	1.6	3.6
El-Kufra	93.8	73.6	97.6			84.4	21.2	−0.54	8.1	7.1	8.0	0.9
Sirt	97.6	90.1	97.8			66.7	13.8	−0.47	63.0	6.3	17.9	2.7
El-Joufra	95.7	82.3	96.9			92.0	24.7	−0.98	73.7	20.2	0.0	0.8
Misurata	93.5	74.5	99.8			82.5	30.5	−0.88	59.3	7.9	2.6	10.9
Al-Merqeb	81.2	64.8	99.8			78.4	21.3	−0.73	64.2	5.0	3.7	8.9
Tripoli	98.8	87.2	100.0			97.1	21.2	−0.79	69.4	12.8	4.1	17.0
El-Jafara	99.1	80.1	99.6			83.9	12.7	−0.40	61.5	13.3	14.0	9.8
Zawia	89.1	64.4	100.0			81.0	33.5	−1.24	90.5	9.9	0.0	5.6
El-Nikat El-Khams	93.5	44.6	100.0			85.9	36.8	−1.28	23.6	5.9	0.0	5.0
El-Gabal El-Gharbi	93.0	57.0	99.2			87.7	16.2	−0.81	62.5	11.1	0.9	5.0
Naloot	93.7	63.3	98.8			89.8	19.6	−0.69	59.8	19.9	24.2	1.3
Sebha	96.3	82.3	96.9			83.4	14.5	−0.55	89.6	15.3	43.9	2.2
Wadi El-Shati	92.3	72.9	91.2			86.1	6.7	0.49	71.0	14.0	7.7	1.5
Wadi El-Haya	79.2	59.6	87.8			79.9	18.9	−0.79	42.5	26.6	11.4	1.5
Murzuk	95.3	79.2	87.2			88.5	30.3	−1.20	61.6	8.2	56.2	1.4
Ghat	90.3	64.3	79.0			87.4	19.6	−0.86	62.1	28.1	28.6	0.4
Total	93.8	75.5	98.7	1.1	1.7	86.9	21.0	−0.76	52.5	9.3	7.0	100.0
N (observations)	7,771	7,238	7,769	9,735	9,735	1,888	10,281	10,281	13,308	6,897	2,136	9,809

Source: World Bank calculations based on Libya PAPFAM 2007.

Note: Governorate-level data for neonatal and infant mortality is omitted due to small sample size. Other blank cells indicate not applicable or not available. ECCE = early childhood care and education; SD = standard deviation.

Annex 10C: Relationship between ECD Indicators and Background, When Accounting for Multiple Characteristics

Table 10C.1 Relationship between ECD Indicators and Multiple Background Characteristics

	Prenatal	*Prenatal four visits*	*Delivery*	*Neonatal mortality*	*Infant mortality*	*Fully immunized*	*Iodized salt*	*Stunting*	*Height-for-age (SD)*	*ECCE*	*Child labor*
Region—compared to Tripolitania											
Fezzan			–	+	+		+	–	+	+	+
Cirenaica		+	–				–	–		–	
Wealth—20% of households—compared to poorest											
Second		+					+		+	+	
Third	+	+				+	+			+	
Fourth	+	+		–			+			+	
Highest	+	+					+			+	
Woman's education—compared to no education											
Some primary		+				+					
Complete primary	+	+	+			+					
Complete preparatory	+	+	+			+					
Complete secondary	+	+	+			+					
Higher education	+	+	+			+					
Partner's education—compared to no education											
Some primary											
Complete primary			+								
Complete preparatory											
Complete secondary	+		+								
Higher education	+	+			–						
Don't know/missing											
Mother's education—compared to no education											
Read							+				
Read and write							+			+	
Basic							+			+	–

table continues next page

Table 10C.1 Relationship between ECD Indicators and Multiple Background Characteristics *(continued)*

	Prenatal	*Prenatal four visits*	*Delivery*	*Neonatal mortality*	*Infant mortality*	*Fully immunized*	*Iodized salt*	*Stunting*	*Height-for-age (SD)*	*ECCE*	*Child labor*
Complete secondary							+			+	
Higher education							+			+	
Don't know/missing										–	
Father's education—compared to no education											
Read							–				
Read and write											
Basic									+		
Complete secondary								–	+	+	
Higher education								–	+	+	
Don't know/missing										+	
Female				–	–			–	+	+	
P-value (model)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.000	0.000	0.000
Observations (N)	7,762	7,229	7,760	9,726	9,726	1,885	13,308	10,444	10,444	6,844	2,136
R-squared									0.007		
Pseudo R-squared	0.077	0.048	0.197	0.055	0.044	0.043	0.129	0.006		0.058	0.093

Source: World Bank calculations based on Libya PAPFAM 2007.
Note: Blank cells indicate no statistically significant relationship. Woman's education and partner's education only applicable for prenatal care (and four visits), delivery, mortality, and immunizations. Mother's education and father's education only applicable for iodized salt, stunting, height-for-age, ECCE, and child labor. + = chance < 5% and positive, – = chance < 5% and negative; ECCE = early childhood care and education; ECD = early childhood development; SD = standard deviation.

Notes

1. Based on 2007 annual number of births (UNICEF 2008) and the infant mortality rate calculated from PAPFAM.
2. Both infant and neonatal mortality rates are calculated based on deaths in the 12–59 months preceding the survey.
3. The Libya 2007 PAPFAM asks about prenatal care for the most recent live birth in the past five years only. Since live births are likely to be associated with prenatal care, the percentage of births not receiving prenatal care is likely to be an underestimate of the percentage of pregnancies not receiving prenatal care.
4. As was true for prenatal care, delivery questions are asked about live births in the last five years only. Since live births are likely to be associated with care by a health professional, the percentage of live births with a health professional is likely to overestimate the number of deliveries with a health professional.
5. As with prenatal and delivery care, these questions were asked of the most recent live birth in the past five years.
6. The DPT vaccine is a combination vaccine that covers diphtheria, whooping cough (pertussis), and tetanus. Children must receive three doses to be fully immunized.
7. Children must receive three doses to be fully immunized against polio.
8. The units show how Libyan children are, on average, different from the reference population in terms of standard deviations.
9. More than 15 ppm of iodine in the salt.
10. The survey asked about working for the family, working in a job in the past year, and doing household chores in the past week. All are considered child labor.
11. Note that percentages add up to more than 100 percent because children could be engaged in multiple types of labor.
12. Wealth is defined in terms of which 20 percent of households a child falls into, based on an asset (wealth) index of durable goods.
13. Throughout, we use a 5 percent level of significance.

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CHAPTER 11

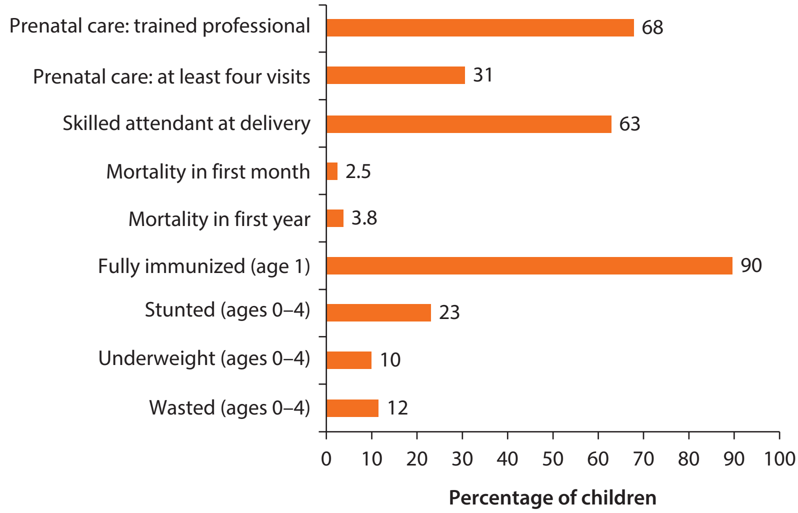
Morocco

The State of Early Childhood Development in Morocco

Despite progress over the years, there are considerable deficits in early childhood development (ECD) in Morocco. These deficits need to be addressed in order for children to have the opportunity to develop to their full potential. Figure 11.1 shows summary indicators of ECD in Morocco. In terms of prenatal and delivery care, Morocco has substantial gaps; just 68 percent of births received prenatal care and only 31 percent regular prenatal care (at least four visits). Only two-thirds (63 percent) of births had a skilled attendant at delivery. In the first month of life, 2.5 percent of children die, and in the first year of life, 3.8 percent of children die. Morocco is doing fairly well in terms of immunization rates, with 90 percent of children age 1 fully immunized. Malnutrition is a problem in Morocco, where 23 percent of children are stunted, 10 percent are underweight, and 12 percent are wasted.

This report presents the status of ECD in Morocco. The health status of children is examined through indicators (see box 11.1) of early mortality, prenatal care, having a skilled attendant at birth, and immunizations. Children's nutritional status is measured by stunting (height-for-age), underweight (weight-for-age), and wasting (weight-for-height). To better understand the context and conditions that influence ECD outcomes, the analysis also examines background factors that may be associated with ECD outcomes at the individual, household, and community levels, and their relationships (see annexes 11A, 11B, and 11C for additional information on the data and these relationships). For the overall country context, see box 11.2. Finally, the analysis measures the gaps and extent of inequality in ECD outcomes. The analysis is based on the latest available data: the Demographic and Health Survey (DHS) from 2004. The data cover the various dimensions of early childhood from before a child is born up until the age of school entry (age six in Morocco). If more indicators were available and examined, they could provide an even richer picture of ECD in Morocco.

Figure 11.1 ECD Summary Indicators



Source: World Bank calculations based on Morocco Demographic and Health Survey (DHS) 2004.
Note: ECD = early childhood development.

Box 11.1 ECD Indicators Examined in Morocco

Prenatal care
Trained attendant at delivery
Neonatal mortality (dying in the first month)
Infant mortality (dying in the first year)
Fully immunized
Stunting/Height-for-age
Underweight/Weight-for-age
Wasting/Weight-for-height

Survival, Health Care, and Nutrition

The first step in healthy ECD is simply surviving early childhood. In Morocco, 66 children under the age of one die every day.[1] In 2004, infant mortality, which refers to children dying before their first birthday, was 38 deaths per thousand births.[2] This is above the 2012 average rate for the Middle East and North Africa (MENA) region (24 per thousand) (UNICEF 2014). Most infant mortality is composed of neonatal mortality—children dying within the first month of life. In Morocco, 25 children out of every thousand die during their first month of life, which is above the 2012 regional average of 15 in every thousand (UNICEF 2014). While infant mortality has been falling in Morocco—down from around 67 children per thousand in 1990—neonatal mortality has been a more persistent problem and has shown a smaller and slower decline from 36 per thousand in 1990 (World Development Indicators).

Box 11.2 Summary of Development Indicators in Morocco

Morocco is a lower-middle-income country with a gross domestic product per capita in 2012 of about $2,902 (in current US dollars, table B11.2.1). Morocco has an estimated population of 33 million, of which 28 percent are under the age of 15. The average life expectancy at birth is 65 years. The primary gross enrollment rate in Morocco was 116 percent in 2012, a substantial increase since 1990, when primary gross enrollment was 67 percent. Overall, Morocco ranks 130 out of 186 countries with comparable data on the 2012 Human Development Index.

Table B11.2.1 Morocco's Socioeconomic Indicators

	1990	*2012*
Total population (millions)	24.7	32.5
% of population under 15	40	28
GDP per capita (current US dollars)	$1,037	$2,902
Life expectancy at birth (years)	65	71
School enrollment, primary (% gross)	67	116

Sources: UNDP 2014; World Development Indicators.
Note: GDP = gross domestic product.

Addressing both early mortality and ECD begins during pregnancy and delivery, with prenatal care and skilled delivery attendants. While 68 percent of live births[3] received prenatal care from a health professional,[4] less than half of those who received prenatal care did so regularly, with four or more visits. Therefore, there are two important gaps in prenatal care in Morocco: first, a third (32 percent) of live births did not receive prenatal care from a health professional, and secondly, a third of births did not receive regular prenatal care. Use of prenatal care has expanded recently. As of 1992, only 32 percent of births received prenatal care (World Development Indicators); by 2004, twelve years later, the rate had more than doubled to 68 percent. The 2004 rate was below the 2012 MENA regional average of 83 percent (UNICEF 2014). Despite these improvements, each year around 200,000 children are born without receiving prenatal care, putting children (and mothers) at risk.

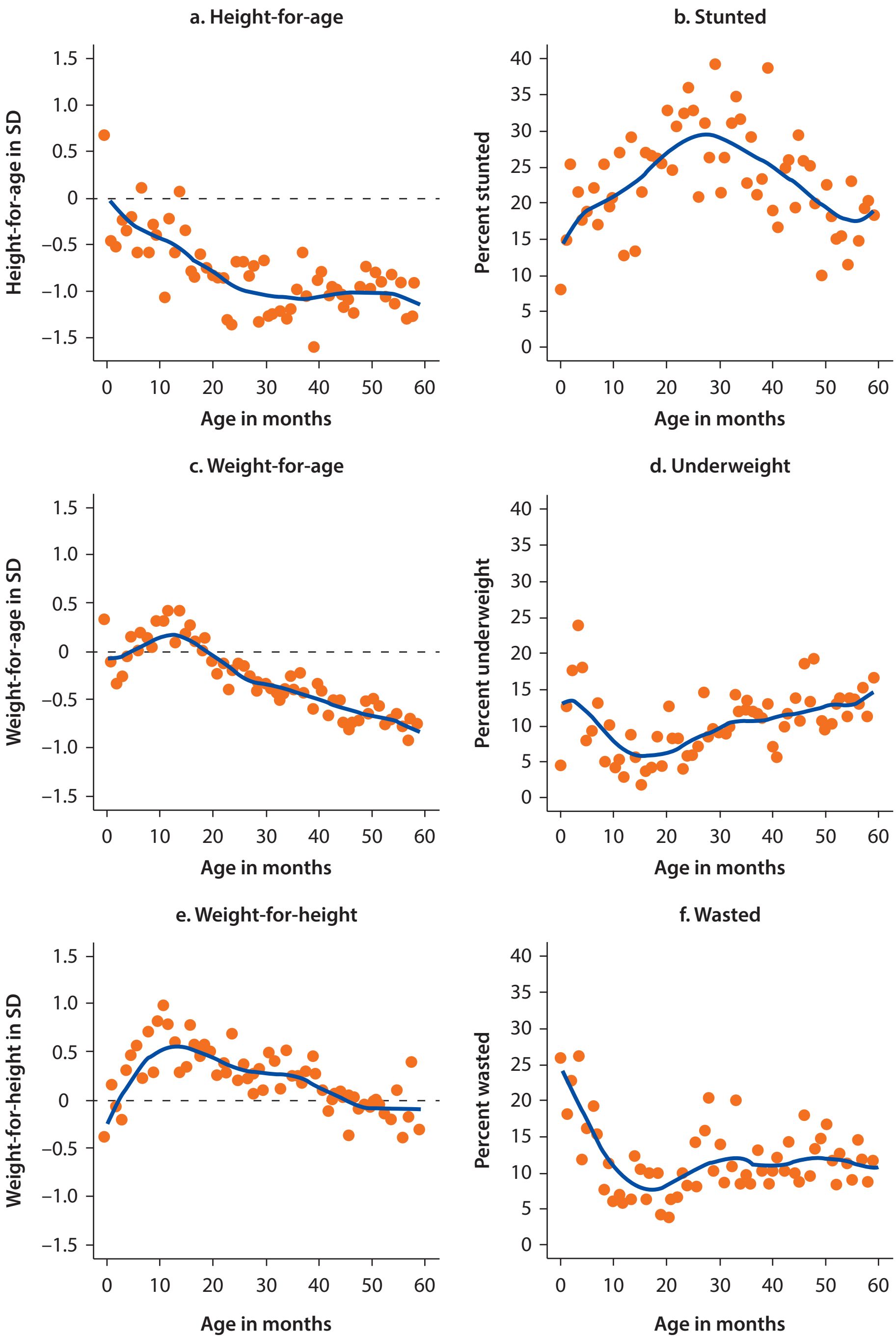
Delivery with a skilled attendant is an important part of reducing newborn mortality and illness. While 63 percent of births[5] were attended by a health professional, more than a third of births did not have professional care during delivery. However, less than 1 percent of births occurred with no assistance at all. Morocco has steadily increased the proportion of births attended by skilled personnel over the past several decades; the rate doubled in 12 years, from just 31 percent in 1992 (World Development Indicators) to 63 percent in 2004. However, Morocco is below the 2012 regional average of 79 percent for skilled delivery care (UNICEF 2014). Use of delivery care and prenatal care have shown similar rates of expansion as well as extensive overlap in the use of both services; 79 percent of those who used prenatal care also had skilled delivery care, while only 37 percent of those who did not receive prenatal care had skilled delivery care.

Morocco has good immunization coverage: 90 percent of children aged 12–23 months have been fully immunized. The immunization of children plays an important role in preventing illnesses and reducing child mortality (Molina 2012). Children are considered fully immunized if they have received immunizations for all six major preventable childhood diseases: tuberculosis, diphtheria, whooping cough, tetanus,[6] polio,[7] and measles. They should be fully immunized by 12 months of age; this analysis focuses on children 12–23 months to allow for optimal parental recall. The measles vaccine has the lowest coverage; only 91 percent of 12–23-month-olds have received it.

In terms of nutrition, children in Morocco start their lives on fairly healthy footing; however, within the first year of life, they experience a substantial falling off from healthy growth. In 2004, 23 percent of children under five were stunted, 10 percent were underweight, and 12 percent were wasted. Figure 11.2 shows how Moroccan children fare compared to a healthy reference population.[8] At birth, children are, on average, no different than the reference population. However, within the first few months of life, their growth falters. Correspondingly, more than 20 percent of children are stunted by age 1. Height-for-age is quite low for the population, averaging a full standard deviation below the healthy reference population from 30 months onwards. Interestingly, although the average height-for-age remains low, the rate of stunting peaks around 30 months, when almost 30 percent of children are stunted, and then falls thereafter. That the average height-for-age remains low while stunting drops off indicates that, after 30 months, a greater number of children have less than healthy height, but fewer children have acutely lower (stunted) height. While height-for-age drops rapidly, weight-for-age remains relatively near the reference median through the first few years of life; it then drops and is consistently below the average for the healthy population after age two (24 months). The percentage of children underweight starts a bit above 10 percent at birth, drops to around 5 percent by age one (12 months), and then climbs slowly but steadily thereafter. Weight-for-height, graphed against age, shows that children are, on average, slightly heavier than the average for the healthy reference population of the same height. This is because, while children are accumulating healthy weight-for-age on average, they are falling below height-for-age. By four years of age, their average is quite close to the healthy reference population. Wasting—being far below a healthy weight-for-height—is most acute in the first year of life, improves substantially by age two, and is moderate thereafter.

In Morocco, only 59 percent of households have adequately iodized salt. In the 41 percent of households lacking adequately iodized salt, children are at risk for impaired cognitive development (UNICEF 2007). Iodized salt is the primary means for delivering iodine, an important micronutrient for brain development, to children. Moroccan children and mothers face shortages of

Figure 11.2 Average Height-for-Age, Weight-for-Age, and Weight-for-Height Compared to Healthy Reference Population in Standard Deviations, and Stunting, Underweight, and Wasting, by Age in Months, Ages 0–59 Months



Source: World Bank calculations based on Morocco DHS 2004.
Note: SD = standard deviation.

other important micronutrients. Vitamin A is essential for eyesight, growth, and development and also helps protect against some diseases. Iron deficiency slows cognitive development and increases the risk of illness or death. Almost two-thirds (62 percent) of children consumed fruits and vegetables rich in Vitamin A in the seven days preceding the survey. While Morocco has a program of vitamin A supplementation for new mothers and babies, only 26 percent of children aged 6–59 months had received a Vitamin A capsule in the six months preceding the survey. Children getting vitamin A were primarily those of immunization age, which is a cost-effective method for providing vitamin A. However, once fully immunized, at 24 months and older, children are less likely to receive vitamin A (Ministry of Health, ORC Morocco, and League of Arab States 2005). Iron deficiency, folic acid deficiency, and vitamin D deficiency are also common (M'jid and Benhassine 2012).

Social, Emotional, and Cognitive Development

As of 2009, around half of children (53 percent) attended preschool (M'jid and Benhassine 2012). Early childhood care and education (ECCE) in Morocco is mainly composed of private programs—primarily traditional religious preschools (M'jid and Benhassine 2012). Attending ECCE improves cognition and socio-emotional development, with benefits that can last a lifetime.

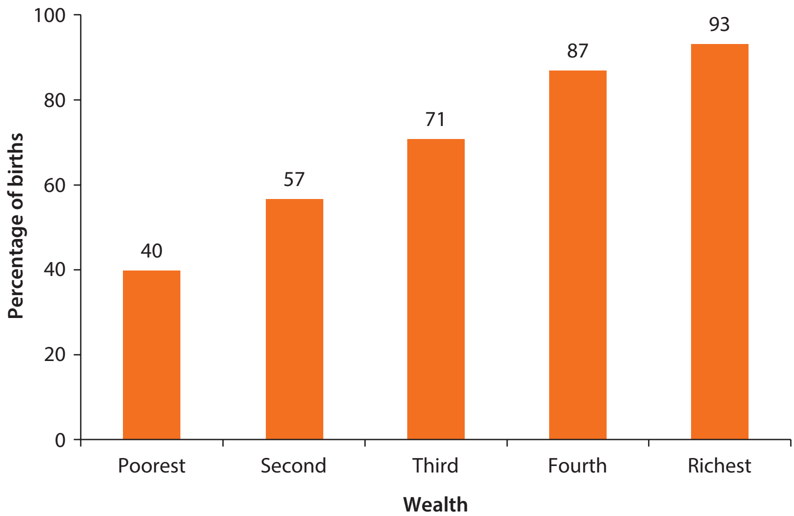
Key Factors Affecting Early Childhood Development

A number of background characteristics at the child, family, and community levels affect ECD outcomes: gender, parents' education, household socioeconomic status (wealth),[9] geographic location (region or governorate), and residence (urban/rural). Understanding these relationships can help identify why some children have poor ECD outcomes and which children to target with policy or programmatic interventions.

Background characteristics shape the chances a child will die early in Morocco. Children in the poorest 40 percent of households are twice as likely to die before their first birthday as children in the richest 40 percent of households. A similar pattern exists with mother's education; children with uneducated mothers are twice as likely to die in the first year as children with secondary-educated mothers and three times as likely to die as children whose mothers have higher education. Children in urban areas are half as likely to die in the first year of life as children in rural areas. Boys have a higher chance of dying in the first year of life than girls—but this is a common pattern globally due to genetic factors (Hill and Upchurch 1995). Taking into account other characteristics, female children are significantly[10] less likely to die in the first year of life, and rural children are more likely to die. Children living in the Tensift and Central North regions are less likely to die in the first month of life than children in the Central region.

Use of prenatal care is closely associated with wealth, education, and geography. There are large gaps in use of prenatal care based on wealth (figure 11.3).

Figure 11.3 Use of Prenatal Care, by Wealth Level



Source: World Bank calculations based on Morocco DHS 2004.

While 93 percent of births in the richest fifth of households received prenatal care, only 40 percent of births in the poorest fifth of households did so. The gaps based on mother's education are also substantial: a child whose mother has no education has a 56 percent chance of prenatal care, while one with a secondary-educated mother has a 92 percent chance and one with a highly educated mother a 99 percent chance. Urban births are much more likely (85 percent) to receive prenatal care than rural births (48 percent). Distance is also a substantial problem for receiving prenatal care. While 81 percent of mothers who report distance as only a small problem in obtaining health care received prenatal care, only 60 percent of women who report distance as a big problem received prenatal care. Differences based on region of residence are relatively small, especially compared to differences based on wealth and urban/rural residence.

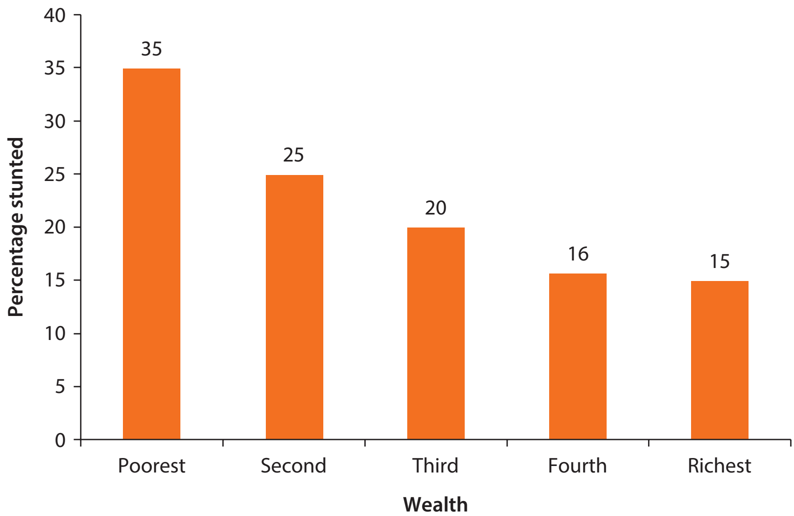
Even after taking into account other characteristics, wealth, parents' education, rural/urban residence, and physical access to health services all have significant relationships with use of prenatal care. Births in rural areas are significantly less likely to receive prenatal care than births in urban areas. Use of prenatal care is higher and increasing in the second through richest fifth of households as compared to the poorest fifth of households. Births to mothers and fathers with more education, especially mothers with secondary or higher education, are significantly more likely to receive prenatal care. Women who report that distance to health care is a problem are also significantly less likely to use prenatal care.

Differences in deliveries by skilled birth attendants, based on wealth and education, are large and are similar to those for prenatal care, further compounding risks to early health. While 30 percent of births from the poorest fifth of households were delivered with a skilled attendant, 96 percent of births from the richest fifth of households were. Moreover, 86 percent of births in urban areas had skilled delivery attendants, compared to 40 percent of births in rural areas. Region of residence is also an issue; while 77 percent of births in the Central region were delivered with a skilled attendant, only 53 percent of those in Tensift and 54 percent of those in the Central North region were. Taking into consideration other characteristics, rural areas have significantly lower rates of delivery with a skilled attendant. Compared to the Central region, the Central North, Northwest, Central South, and South regions all have significantly lower rates of skilled delivery care. The chance of a delivery handled by a skilled attendant is higher, and increases for every other wealth level as compared to the poorest 20 percent of households. Every level of mother's education significantly increases the chance of using skilled delivery care as compared to no education, and there are also smaller but still significant differences based on father's education. Health care distance being a big problem does significantly decrease use of delivery care.

Some subpopulations fall below the level of full immunization that confers herd immunity.[11] For instance, only 81 percent of children aged 12–23 months in the Eastern region are fully immunized. While urban rates are 94 percent, rural rates are 85 percent. Targeting geographic areas with rates below 90 percent with immunization campaigns is warranted. Differences based on wealth are larger than those based on geography. Children from the poorest fifth of households are less likely to be fully immunized (82 percent) than children from the wealthiest fifth of households (98 percent). Morocco struggles in reaching mothers with no education with its immunization campaigns; the rate of immunization for children with uneducated mothers is 87 percent—nine percentage points below the rate for children of mothers with secondary education. Differences by father's education are similar. Taking into consideration other characteristics, children in Tensift are more likely to be immunized than children in the Central region. Statistically there are significantly higher rates of immunization in the fourth and richest 20 percent of households compared to the poorest 20 percent of households. Female children are also significantly more likely to be fully immunized.

In Morocco, malnutrition is closely tied to certain background characteristics. Male children are slightly more likely to be stunted (25 percent) than female children (22 percent), and similar patterns are observed in underweight and wasting. There is a close relationship between nutritional status and wealth (figure 11.4). While children in the poorest fifth of households have a 35 percent rate of stunting, children in the second fifth of households have a 25 percent rate, and the wealthiest fifth of households have a 15 percent rate. The differences in rates of being underweight are even larger: a child from the poorest fifth of households is four times more likely to be underweight than one from the wealthiest fifth of households (17 percent vs. 4 percent). Differences in nutritional status based on mother's education are similar to, but slightly less than, those based on wealth. Urban-rural differences are large: while rural children have a 29 percent chance of being stunted, urban children

Figure 11.4 Stunting by Wealth Level, Ages 0–4

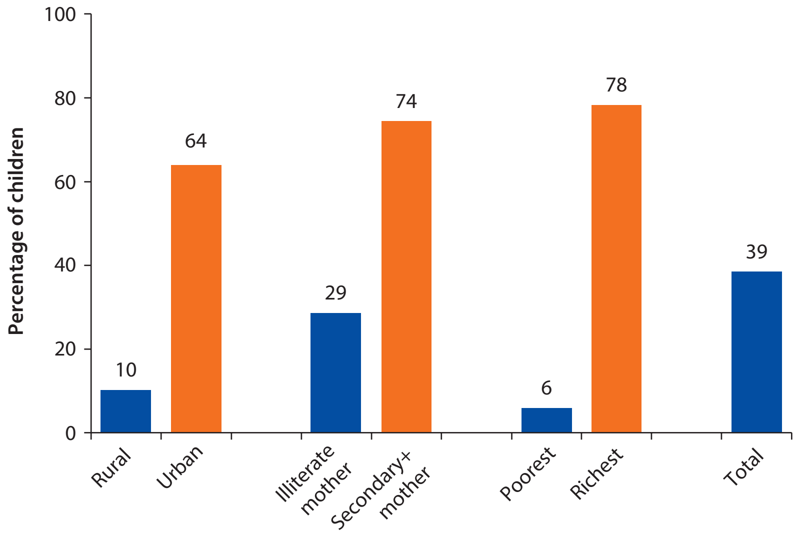


Source: World Bank calculations based on Morocco DHS 2004.

have an 18 percent chance; there are similar differences in rates of being underweight. Stunting rates are worst in the South (31 percent), while wasting is worst in the Tensift region. Taking into consideration other characteristics, children are significantly more likely to be stunted if they are in the South as compared to the Central region. The South and Tensift have significantly higher rates of underweight and wasting (and lower weight-for-age and -height). Stunting is significantly lower, and height-for-age higher, in all the other wealth levels when compared to the poorest 20 percent of households. Differences in weight-for-age are also significant by wealth, but not for weight-for-height. There are no significant differences by gender for any nutritional indicators.

In Morocco, it is children from the most advantaged backgrounds who are attending ECCE (figure 11.5), despite the fact that early childhood education has the greatest benefits for disadvantaged and vulnerable children. A survey in 2006–7 (Kingdom of Morocco Ministry of Health 2008) found that while 39 percent of children aged three to five were attending preschool, 10 percent of children in rural areas and 64 percent in urban areas were doing so. Preschool attendance is also associated with mother's education. While 29 percent of children with illiterate mothers attend preschool, 74 percent of children with secondary- or higher-educated mothers attend preschool. The differences by wealth are strongest: while a child from the poorest fifth of households has a 6 percent chance of attending preschool, a child from the wealthiest fifth of households has a 78 percent chance—thirteen times more likely. Although background characteristics matter a great deal for access to ECCE, gender does not; the small differences in fact favor females (Kingdom of Morocco Ministry of Health 2008).

Figure 11.5 Percentage of Children Aged 3–5 Attending ECCE, by Certain Background Characteristics



Source: National Multiple Indicator Cluster and Youth Health Survey 2006–7 (Kingdom of Morocco Ministry of Health 2008).
Note: ECCE = early childhood care and education.

Children Face Unequal Opportunities for Healthy Development

Children in Morocco face very different opportunities for healthy development, based on factors beyond their control. Table 11.1 presents the percentage of opportunities that needed to have been distributed differently for equality of opportunity to have occurred, based on the same circumstances as discussed in previous sections. It also presents the chance of whether these differences might have occurred by random variation. For prenatal care, 14.3 percent of opportunities would need to have been distributed differently for there to have been equality of opportunity; for skilled delivery care, 19.6 percent of opportunities would need to have been distributed differently for there to have been equality of opportunity. There are nearly equal opportunities for children to get immunized regardless of their circumstances. While there are unequal chances to die early in life, since this is a rare occurrence, we cannot definitively say whether or not these differences are due to chance. In terms of stunting, children face unequal opportunities for healthy physical and cognitive development.

Wealth, mother's education, and geography make the largest contributions to children's unequal chances. Table 11.2 shows the contributions of certain circumstances to inequality for different outcomes as percentages. Wealth plays a large role in all outcomes, but particularly in stunting, contributing 38 percent to inequality in stunting. Mother's education is particularly important in prenatal care and skilled delivery care and plays a role in inequality for all outcomes, as does father's education. Differences based on region of residence are

Table 11.1 Percentage of Opportunities to Be Redistributed

	Dissimilarity index
Prenatal care	14.3***
Skilled delivery	19.6***
Neonatal mortality	19.5
Infant mortality	19.8
Fully immunized	3.6
Stunted	16.1***

Source: World Bank calculations based on Morocco DHS 2004.
Note: Significance level: * = chance < 5%, ** = chance < 1%, *** = chance < 0.1%

Table 11.2 Contributions of Background Characteristics to Inequality
Percentage

	Wealth	*Mother's education*	*Father's education*	*Region*	*Rural*	*Distance problem*	*Child's sex*
Prenatal care	26.3	18.8	10.3	2.7	35.2	6.8	n.a.
Skilled delivery	28.1	16.4	12.4	3.5	32.6	7.1	n.a.
Neonatal mortality	20.9	14.6	11.2	28.9	18.7	n.a.	5.7
Infant mortality	29.7	18.8	5.2	7.5	29.7	n.a.	9.0
Fully immunized	28.8	11.0	11.7	25.0	13.0	6.7	3.9
Stunted	38.1	8.3	9.5	16.1	17.3	8.5	2.2

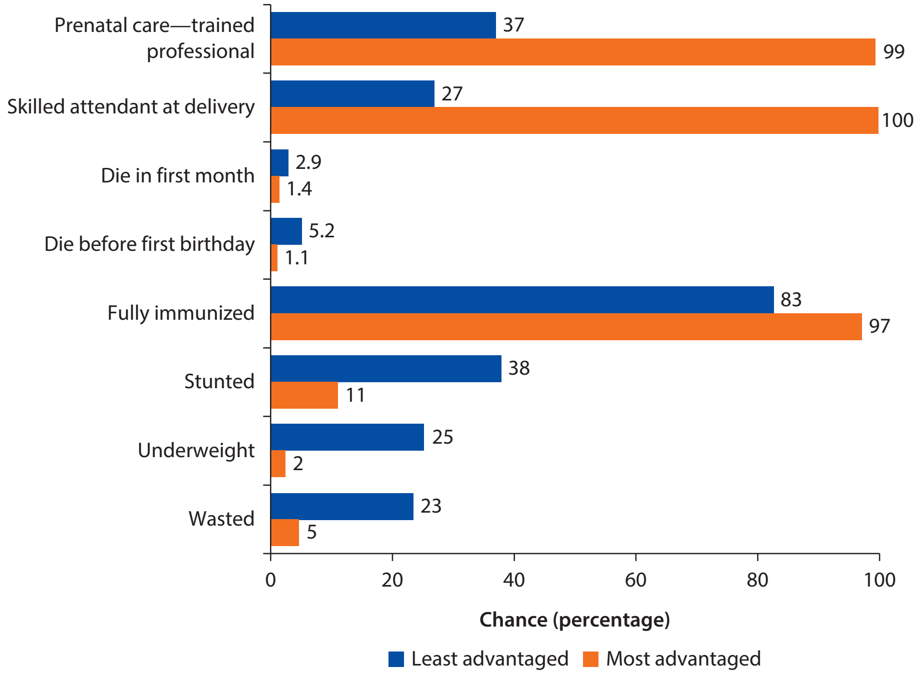
Source: World Bank calculations based on Morocco DHS 2004.
Note: Shapley decompositions of the dissimilarity index; n.a. = not applicable or not available.

particularly large for neonatal mortality, full immunization, and stunting. Urban/rural differences are large for every outcome, but account for around a third of inequality in prenatal and skilled delivery care. A child's gender contributes very little to inequality. Distance to health care does make a small contribution to early health inequality.

Children tend to be consistently advantaged or disadvantaged across a variety of dimensions of ECD and can face very different life chances based on just a few characteristics. Early childhood is when cycles of poverty and inequality are transmitted across generations. If we observe a child who has illiterate parents, is from the poorest fifth of households, whose mother has a big problem accessing health care, and who lives in rural Tensift (a least advantaged child) and compare that child to one who has parents with higher education, is from the richest fifth of households, whose mother has little trouble accessing health care, and who lives in urban Central Morocco (a most advantaged child), we find that they have very different chances of healthy ECD. Figure 11.6 presents the chances of different ECD indicators (based on the regressions) for these "least advantaged" and "most advantaged" individuals.

On every indicator, the least advantaged child faces poorer ECD. The most advantaged child is almost three times more likely to receive prenatal care (99 percent vs. 37 percent) and more than three times as likely to have a trained attendant at delivery (100 percent vs. 27 percent). The least advantaged child is more than twice as likely to die in the first month of life, and more than four

Figure 11.6 Most Advantaged and Least Advantaged Simulations



Source: World Bank calculations based on Morocco DHS 2004.

times as likely to die in the first year of life. There is a 14 percentage point gap in immunization coverage between the least and most advantaged child. Some of the largest gaps are in terms of nutritional indicators. While the most advantaged child has an 11 percent chance of being stunted, the least advantaged child has a 38 percent chance. Gaps in weight are even larger: the chance of a most advantaged child being underweight is just 2 percent, but the chance of a least advantaged child being underweight is 25 percent. Gaps are slightly smaller for being wasted, but a least advantaged child is still more than four times as likely to be wasted.

Conclusions

In Morocco, children are falling short of their full potential for healthy development. There are substantial gaps in early health care, including prenatal care, regular prenatal care, and skilled delivery care. Morocco does well in terms of immunization coverage but has a substantial loss of human potential in terms of early mortality. Malnutrition is a serious problem in Morocco, and it impedes the development of too many children. As well as facing a number of obstacles to healthy development, children in Morocco face very unequal chances to develop based on circumstances beyond their control. Urban/rural differences and differences by wealth are particularly acute. More must be done to protect and enhance children's development and ensure children have equal chances to develop regardless of their circumstances.

Annex 11A: The Data

The Data Set

The analysis utilizes cross-sectional data on the well-being of women and children collected in the Demographic and Health Survey (DHS) for 2004 in Morocco. The DHS survey, administered by USAID, has a household questionnaire that includes important background characteristics of individuals and families. It also has a questionnaire for ever-married women aged 15–49, which captures information on important components of ECD, such as prenatal care, skilled assistance with the delivery of children, and children's immunizations. Weight and height data are collected for children under five years of age. The survey is nationally representative and includes data that allow for an analysis of the relationship between ECD and child and household indicators within Morocco. See Ministry of Health, ORC Morocco, and League of Arab States (2005) for additional information in the final report on the survey.

The Sample

The 2004 DHS dataset for Morocco sampled 11,513 households, 16,798 ever-married women aged 15–49, and 6,180 children younger than age five (anthropometric measures). The analysis in this note is weighted in order to be representative at the national level. The sample sizes reported (N) in each of the tables are based on the unweighted number of observations in the data.

Annex 11B: Indicators by Background Characteristics

Table 11B.1 Indicators by Background Characteristics

	Prenatal care by trained professional	*Prenatal care: at least four visits*	*Skilled attendant at birth*	*Died before first birthday*	*Died in first month*	*Fully immunized (age 1)*	*Stunted*	*Height-for-age (SD)*	*Underweight*	*Weight-for-age (SD)*	*Wasted*	*Weight-for-height (SD)*	*Percent of children*
Gender													
Male				2.8	4.5	87.3	24.5	–0.88	10.7	–0.32	12.0	0.25	49.9
Female				2.2	3.1	91.8	21.8	–0.77	9.2	–0.28	11.2	0.20	50.1
Wealth quintile													
Poorest	39.8	10.6	29.6	3.6	5.5	81.5	34.9	–1.25	16.6	–0.70	15.4	0.01	23.3
Second	56.6	19.7	49.7	2.9	4.9	85.8	24.9	–0.99	10.7	–0.49	11.3	0.14	22.7
Third	70.7	28.1	70.6	2.2	3.0	90.6	20.4	–0.73	7.7	–0.24	11.6	0.21	20.4
Fourth	86.8	40.9	86.4	1.7	2.5	95.6	15.6	–0.53	7.9	–0.03	9.6	0.34	16.8
Richest	93.1	60.7	95.7	1.8	2.2	98.1	14.9	–0.39	4.2	0.21	8.6	0.56	16.7
Mother's education													
No education	55.7	19.7	49.0	3.0	4.6	86.5	27.0	–1.00	12.1	–0.47	12.7	0.13	62.1
Primary	78.6	34.6	77.0	2.2	3.0	92.8	19.0	–0.59	7.5	–0.15	11.3	0.24	18.1
Secondary	92.1	53.4	93.6	1.4	2.0	96.4	15.2	–0.51	5.6	0.09	8.7	0.50	16.1
Higher education	98.7	80.3	99.0	1.3	1.3	94.6	11.7	–0.29	3.6	0.24	6.9	0.53	3.7
Father's education													
No education	53.6	18.7	45.6	2.6	4.4	85.3	26.9	–1.05	12.5	–0.53	13.0	0.09	44.0
Primary	71.4	30.4	66.3	2.8	3.8	90.6	24.2	–0.81	9.0	–0.27	11.1	0.25	29.3

table continues next page

Table 11B.1 Indicators by Background Characteristics *(continued)*

	Prenatal care by trained professional	*Prenatal care: at least four visits*	*Skilled attendant at birth*	*Died before first birthday*	*Died in first month*	*Fully immunized (age 1)*	*Stunted*	*Height-for-age (SD)*	*Underweight*	*Weight-for-age (SD)*	*Wasted*	*Weight-for-height (SD)*	*Percent of children*
Secondary	83.9	43.0	86.7	2.4	3.4	94.4	16.2	–0.50	6.7	0.05	9.9	0.42	19.5
Higher education	92.8	67.0	94.1	1.0	1.3	97.8	13.0	–0.35	5.8	0.10	10.1	0.42	7.2
Distance a problem for woman's health care													
Small problem	81.0	44.1	80.2			93.8	18.0	–0.59	7.7	–0.07	10.6	0.33	36.1
Big problem	59.9	22.5	53.2			87.3	26.0	–0.95	11.2	–0.42	12.2	0.17	63.9
Residence													
Urban	85.0	44.2	85.6	1.8	2.5	93.9	17.5	–0.58	6.4	–0.04	10.0	0.37	51.0
Rural	48.1	14.9	39.7	3.3	5.2	84.7	28.9	–1.07	13.5	–0.56	13.2	0.08	49.0
Region													
Central	75.3	39.4	77.1	3.1	3.5	87.1	19.9	–0.76	6.0	–0.08	6.5	0.45	21.1
Tensift	60.0	24.0	52.5	2.0	3.5	92.0	27.6	–0.85	18.2	–0.67	20.7	–0.30	18.6
Central North	65.1	26.5	54.4	1.7	4.0	89.2	23.1	–0.76	8.2	–0.14	10.4	0.40	12.1
Northwest	70.9	32.7	65.0	2.6	4.1	89.8	21.1	–0.88	6.8	–0.11	5.4	0.55	22.1
Central South	68.8	23.3	58.7	3.9	5.1	95.3	17.5	–0.67	7.8	–0.26	8.6	0.17	6.6
East	68.8	35.4	69.5	2.5	3.7	80.7	17.6	–0.59	4.8	–0.01	8.3	0.43	6.4
South	62.7	26.9	57.8	2.1	3.5	91.3	31.1	–1.05	14.6	–0.73	21.1	–0.16	13.0
Total	67.9	30.6	62.9	2.5	3.8	89.6	23.1	–0.82	9.9	–0.30	11.6	0.23	100.0
N (observations)	4,754	4,742	6,150	4,977	4,977	1,143	5,573	5,573	5,675	5,675	5,575	5,575	6,180

Source: World Bank calculations based on Morocco DHS 2004.
Note: Blank cells indicate not applicable or not available. SD = standard deviation.

Annex 11C: Relationship between ECD Indicators and Background, When Accounting for Multiple Characteristics

Table 11C.1 Relationship between ECD Indicators and Multiple Background Characteristics

	Prenatal	*Delivery*	*Neonatal mortality*	*Infant mortality*	*Fully immunized*	*Stunted*	*Height-for-age (SD)*	*Underweight*	*Weight-for-age (SD)*	*Wasted*	*Weight-for-height (SD)*
Rural	–	–		+							
Region—compared to Central											
Tensift			–		+			+	–	+	–
Central North		–	–								
Northwest		–									
Central South		–			+						–
East											
South		–				+		+	–	+	–
Wealth—20% of households—compared to poorest											
Second	+	+				–	+	–	+	–	
Middle	+	+				–	+	–	+		
Fourth	+	+			+	–	+		+		
Richest	+	+			+	–	+	–	+		+
Mother's education—compared to no education											
Primary	+	+					+				
Secondary	+	+									
Higher education	+	+									

table continues next page

Table 11C.1 Relationship between ECD Indicators and Multiple Background Characteristics *(continued)*

	Prenatal	*Delivery*	*Neonatal mortality*	*Infant mortality*	*Fully immunized*	*Stunted*	*Height-for-age (SD)*	*Underweight*	*Weight-for-age (SD)*	*Wasted*	*Weight-for-height (SD)*
Father's education–compared to no education											
Primary	+	+									
Secondary	+	+					+		+		
Higher education		+									
Distance a problem	–	–	n.a.	n.a.							
Female	n.a.	n.a.		–	+						
P-value (Model)	0.000	0.000	0.021	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observations (N)	4,706	6,091	4,925	4,925	1,133	5,517	5,517	5,619	5,619	5,520	5,520
Pseudo R-squared	0.190	0.275	0.027	0.029	0.105	0.041		0.061		0.059	
R-squared							0.041		0.089		0.037

Source: World Bank calculations based on Morocco DHS 2004.
Note: Blank cells indicate no statistically significant relationship. + = chance < 5% and positive, – = chance < 5% and negative; ECD = early childhood development; SD = standard deviation.

Notes

1. Based on 2006 annual number of births (UNICEF 2007) and the infant mortality rate calculated from DHS.
2. Both infant and neonatal mortality rates are calculated based on deaths in the 12–59 months preceding the survey.
3. The Morocco 2004 DHS asks about prenatal care for live births only. Since live births are likely to be associated with prenatal care, the percentage of births not receiving prenatal care is likely to be an underestimate of the percentage of pregnancies not receiving prenatal care.
4. Either a doctor or a nurse/midwife.
5. As was true for prenatal care, delivery questions are asked about live births only. Since live births are likely to be associated with care by a health professional, the percentage of live births with a health professional is likely to overestimate the number of deliveries with a health professional.
6. The DPT vaccine is a combination vaccine that covers diphtheria, whooping cough (pertussis), and tetanus. Children must receive three doses to be fully immunized.
7. Children must receive three doses to be fully immunized against polio.
8. The units show how different Moroccan children are, on average, compared to the reference population in terms of standard deviations.
9. Wealth is defined in terms of which 20 percent of households a child falls into, based on an asset (wealth) index of durable goods.
10. Throughout, we use a 5 percent level of significance.
11. Herd immunity occurs when even unvaccinated individuals in the population (the "herd") are protected against illness because the disease can no longer spread. This is achieved once around 90–95 percent of infants are vaccinated.

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CHAPTER 12

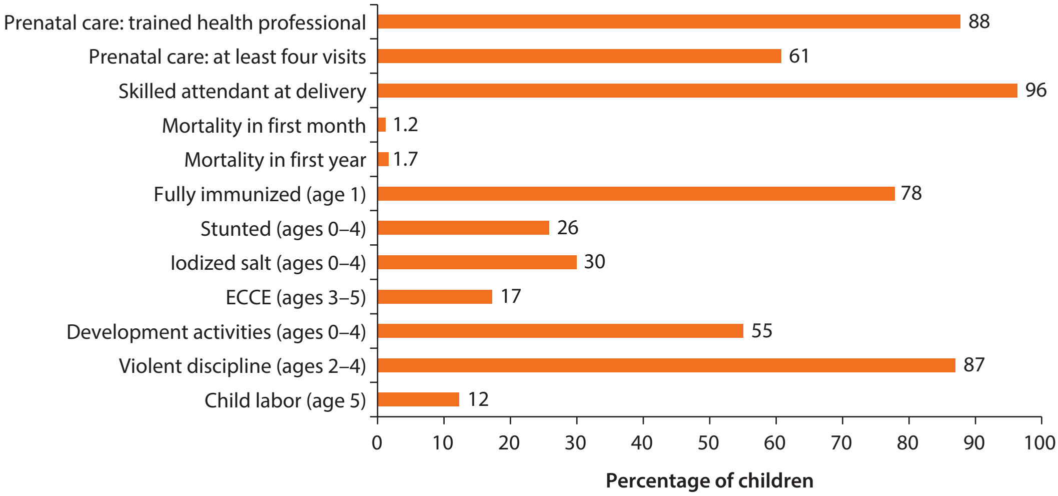
The Syrian Arab Republic

The State of Early Childhood Development in the Syrian Arab Republic

Children in the Syrian Arab Republic were falling short of their full potential for early childhood development (ECD) even before the onset of the Arab Spring and the ensuing civil conflict. Figure 12.1 shows summary indicators of ECD in Syria from before the recent conflict. In terms of prenatal and delivery care, 88 percent of births received prenatal care, with only 61 percent receiving regular prenatal care, and 96 percent of births had a skilled attendant at delivery. In the first month of life, 1.2 percent of children died, and in the first year of life, 1.7 percent of children died. In terms of immunization rates, only 78 percent of children age one were fully immunized. Malnutrition is a problem in Syria, where 26 percent of children were stunted. Just a third (30 percent) of children in Syria had access to adequately iodized salt. In terms of their social and emotional development, only 55 percent of children experienced development activities, and 87 percent of children had been violently disciplined. Children were almost as likely to be engaged in child labor at age five (12 percent) as to attend early childhood care and education (ECCE) at ages three to five years (17 percent).

This chapter presents the status of ECD in Syria prior to the Arab Spring and the ensuing civil conflict. The health status of children is examined through indicators (see box 12.1) of early mortality, prenatal care, having a trained attendant at birth, and immunizations. Children's nutritional status is measured by stunting (height-for-age), as well as the availability of micronutrients, specifically iodine. To assess cognitive and social or emotional development, the analysis looks at the extent to which children are engaged in developmental learning activities, attendance in early childhood care and education, and whether children are violently disciplined. Child labor at age five is also examined. To better understand the context and conditions that influence ECD outcomes, the analysis also examines background factors that may be associated with ECD outcomes at the individual, household, and community levels and their relationships (see annexes 12A, 12B, and 12C for additional information on the data and these relationships). For the overall country context, see box 12.2. Finally, the analysis measures the gaps and extent of inequality in ECD outcomes.

Figure 12.1 ECD Summary Indicators



Source: World Bank calculations based on Syria Multiple Indicator Cluster Survey (MICS) 2006 and Syria Pan Arab Project for Family Health (PAPFAM) 2009.
Note: ECCE = early childhood care and education; ECD = early childhood development.

Box 12.1 ECD Indicators Examined in the Syrian Arab Republic

Prenatal care
Trained attendant at delivery
Neonatal mortality (dying in the first month)
Infant mortality (dying in the first year)
Fully immunized
Stunting/Height-for-age
Salt iodization
Early childhood care and education
Parental development activities
Violent child discipline
Child labor

The analysis is based on the latest available data: the Pan Arab Project for Family Health survey (PAPFAM) from 2009 and the most recent Multiple Indicator Cluster Survey (MICS) from 2006. When an indicator is available in the more recent of the two surveys, the PAPFAM is used. However, several indicators are only available in the MICS. Together, the data cover the various dimensions of early childhood from before a child is born up until the age of school entry (age six years in Syria). If more indicators were available and examined, they could provide an even richer picture of ECD in Syria. While we do not have data on the status of early childhood in Syria today, there is no doubt that it has changed substantially from the time of the latest data in 2009. Nonetheless, this analysis will help serve as a baseline for the status of ECD prior to the conflict.

Box 12.2 Summary of Development Indicators in the Syrian Arab Republic

Preconflict, the Syrian Arab Republic was a lower-middle-income country with fairly good human development indicators (table B12.2.1). Syria had an estimated population of 22.4 million in 2012, of which 35 percent were under the age of 15. The average life expectancy at birth was 75 years. The primary gross enrollment rate in Syria was 122 percent in 2012. According to the latest United Nations Development Programme rating, Syria ranks 116 out of 186 countries with comparable data in the 2012 Human Development Index.

Table B12.2.1 Syrian Arab Republic's Socioeconomic Indicators

	1990	*2012*
Total population (millions)	12.4	22.4
% of population under 15	47	35
GDP per capita (current US dollars)	$989	—
Life expectancy at birth (years)	70	75
School enrollment, primary (% gross)	106	122

Sources: UNDP 2014; World Development Indicators.
Note: GDP = gross domestic product; — = not available.

Survival, Health Care, and Nutrition

The first step in healthy ECD is simply surviving early childhood. In Syria in 2009, 1 in every 59 children died in the first year of life. Reducing under-five mortality rates by two-thirds is one of the Millennium Development Goals and a vital goal in Syria's effort to promote ECD. Infant mortality, which refers to children dying before their first birthday,[1] was 17 children per thousand in 2009. This was well below the average rate for the Middle East and North Africa (MENA) region in 2012 (24 per thousand) (UNICEF 2014). Although Syria was doing well in terms of infant mortality prior to the recent conflict, the security and health situation has substantially deteriorated, which will definitely have a negative impact on children's survival and health. Most health-related infant mortality is composed of neonatal mortality—children dying within the first month of life. As of 2009 in Syria, 12 children out of every thousand died during their first month of life, which was below the 2012 MENA regional average of 15 in every thousand (UNICEF 2014). The infant mortality rate had been falling over time in Syria—down from around 35 children per thousand in 1998—but like many other countries in the region, Syria has not made as much progress in reducing neonatal mortality, which was 18 per thousand in 1990 (World Development Indicators).

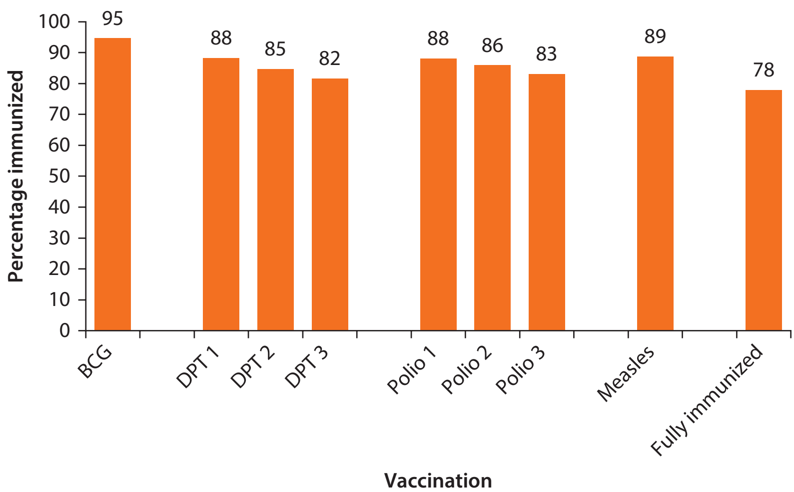
In Syria as of 2009, 88 percent of live births[2] received prenatal care from a health professional,[3] and most (61 percent) had regular care, with four or more visits. However, there are two gaps in prenatal care coverage: 12 percent of births did not receive prenatal care at all, and 27 percent of births received some prenatal care but not regular care. Expansion of prenatal care has slowed recently, especially between 2006 and 2009. In 1993, only 51 percent of births received prenatal care (World Development Indicators); seven years later, in 2000, this had risen to 71 percent, a 20 percentage point increase. Six years after that, in 2006, prenatal care was at 84 percent, but three years later, in 2009, it stood at 88 percent. However, despite the slowdown in expansion, the 2009 rate of prenatal care in Syria was above the 2012 MENA region average of 83 percent (UNICEF 2014).

Delivery with a skilled attendant is also an important component of reducing newborn mortality and illness. Most births (96 percent)[4] in Syria were attended by a health professional as of 2009. Syria has been doing well on delivery care for decades; in 1993, the rate was already at 77 percent (World Development Indicators). Syria is well above the 2012 regional average for delivery care of 79 percent (UNICEF 2014). However, comparing delivery care and prenatal care, there is clearly greater access to skilled delivery care than prenatal care, especially regular prenatal care. That the same births are receiving delivery care but not prenatal care indicates that staff or facilities for care exist, and are accessible, but are underutilized for prenatal care.

The full immunization of children plays an important role in reducing childhood diseases that can hamper growth or cause death. Even before the conflict, Syria had not achieved the necessary level of immunization coverage; only 78 percent of children aged 12–23 months were fully immunized in 2009.[5] Children are considered fully immunized if they have received immunizations for all six major preventable child diseases: tuberculosis, diphtheria, whooping cough, tetanus,[6] polio,[7] and measles. They should be fully immunized by 12 months of age; this analysis focuses on children 12–23 months to allow for optimal parental recall. While Bacillus Calmette-Guérin (BCG) coverage is relatively high (95 percent), the third polio dose has only 83 percent coverage, the third diptheria, pertussis, and tetanus (DPT) dose only 82 percent, and the measles vaccine has only 89 percent coverage (figure 12.2). The gap between current immunization rates and full immunization of all children leaves children at risk for serious childhood illnesses and increased mortality. This situation is likely only to worsen under conflict conditions, as immunization programs are disrupted and health conditions deteriorate.

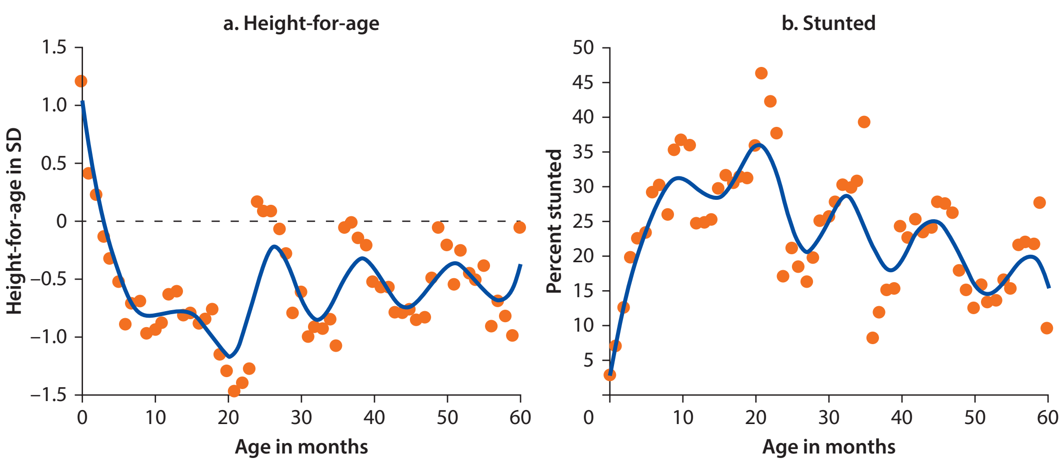
Children in Syria started their lives on fairly healthy footing, in terms of nutrition measured by height-for-age; however, over the first two years of life they experience a substantial falling off from healthy growth. More than a quarter (26 percent) of Syrian children under the age of five were stunted in 2009. As a result of their stunting, these children will accumulate less health and human capital and face lower wages later in life. This is one-quarter of the future workforce that will be less productive in their working years, due to almost entirely preventable malnutrition. Figure 12.3 shows how Syrian children fare compared to a healthy reference population.[8] Children in Syria start life with healthy height-for-age. However, by the age of six months they experience a substantial falling off and within the first year of life their growth falters further, to about 0.75 standard deviation (SD) below the reference population by age one. At ages

Figure 12.2 Percentage of Children Aged 12–23 Months Immunized, by Vaccination



Source: World Bank calculations based on Syria PAPFAM 2009.
Note: BCG = Bacillus Calmette-Guérin (tuberculosis vaccine); DPT = diphtheria, pertussis, tetanus.

Figure 12.3 Average Height-for-Age Compared to Healthy Reference Children, in Standard Deviations and Percentage Stunted, by Age in Months



Source: World Bank calculations based on Syria Pan Arab Project for Family Health (PAPFAM) 2009.
Note: SD = standard deviation.

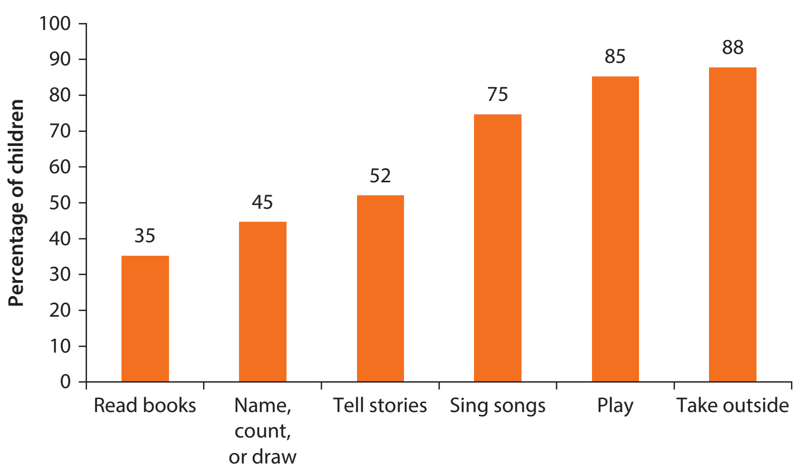
two to four, children fluctuate between 0 and 1.0 SD below the reference population. There is also a substantial cyclical component to malnutrition and stunting in Syria, as figure 12.3 shows. Over the course of a year of age, there is almost an entire standard deviation in variation, which is particularly visible at ages two through four. This suggests that there is a persistent seasonal component to stunting and malnutrition in Syria. Targeting nutritional supplementation to this "lean" period will be an important and high-impact component of addressing malnutrition.

Micronutrients such as iron, vitamin A, zinc, and iodine, play an important role in both physical and cognitive development. Iodized salt is the primary means for delivering iodine to children. The shortage of iodized salt puts children at high risk for decreased cognitive development. Less than a third (30 percent) of children in Syria in 2009 had access to adequately iodized salt. This means that seventy percent of children under the age of five are at great risk for impaired cognitive development because of insufficient access to iodized salt in their households.[9]

Cognitive, Social, and Emotional Development

Adults' engagement in multiple activities that promote learning is an important support of cognitive development and an important indicator of parenting practices and the social-emotional engagement of parents with their children. Although it has been proven that play and interaction are important components of ECD, children in Syria were missing out on important opportunities for psychosocial growth even before the conflict. In the MICS survey of 2006, caretakers of children aged zero to four were asked whether adults in the household had engaged in any of six different activities that support child development.[10] Only half (55 percent) of children had experienced four or more development activities, and around 6 percent experienced no such activities. While all the activities are important to social and emotional development, reading and naming, counting, and drawing have an important educational and cognitive component. As activities, singing songs, being taken outside, and playing were particularly common (figure 12.4), with 75–88 percent of children experiencing each of these activities in the three days preceding the survey. The least frequently

Figure 12.4 Percentage of Children Aged 0–4 Experiencing Development Activities, by Activity



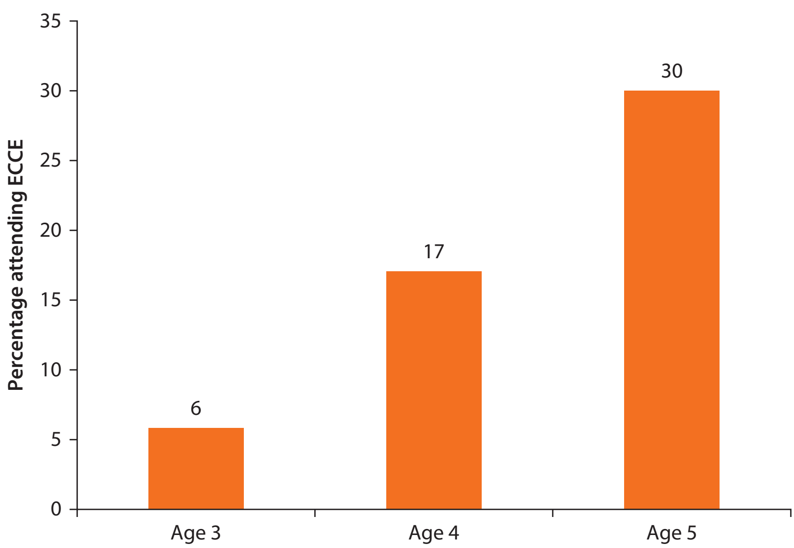
Source: World Bank calculations based on Syria MICS 2006.

observed activity was reading books—with only 35 percent of children having books (or picture books) read—followed by naming, counting, and drawing (45 percent). While families are generally engaged socially and emotionally with their children, there is room for improvement in the cognitive development of children, especially in terms of reading, naming, counting, and drawing.

Evidence has shown that early childhood care and education improves cognition and socioemotional development, with benefits that can last a lifetime. Yet only 17 percent of Syrian children aged three to five were attending an ECCE program in 2009. One of the Education for All goals is to expand early childhood care and education, especially for the most disadvantaged and vulnerable children. Early childhood education and early learning play an important role in school success. Although the MENA region generally has low early childhood attendance rates, with gross enrollment in pre-primary education at 27 percent (World Bank Development Indicators),[11] Syria lagged behind the regional average even before the conflict. Figure 12.5 presents the percentage of children aged three to five who were attending ECCE in 2009. While only 6 percent of three-year-olds were attending ECCE, 30 percent of five-year-olds were attending some type of ECCE, gaining important pre-primary skills. In Syria, ECCE is mainly composed of kindergartens. Kindergartens are more likely to be formal programs with educational curricula designed to prepare children for school. Ninety percent of ECCE students attend kindergartens, with some mosques and home education programs also providing ECCE.

Other challenges that have a negative impact on the healthy development of children in Syria are violent discipline[12] and child labor. Violent child discipline was

Figure 12.5 Percentage of Children Aged 3–5 Currently Attending ECCE, by Age



Source: World Bank calculations based on Syria PAPFAM 2009.
Note: ECCE = early childhood care and education.

common in Syria in 2006, with 85 percent of children aged two though five having experienced violent discipline. Disciplining children is an important part of child rearing; however, research has found that violent discipline negatively impacts the physical, psychological, and social development of children (UNICEF 2010). Although beating with an implement was relatively uncommon (5 percent), hitting, slapping, and spanking were common, as were shaking (60 percent) and shouting/yelling/screaming (78 percent). Moreover, at age five, 12 percent of children in Syria engaged in some type of child labor—working for someone not a member of the household, doing household chores, or doing other family work.[13] Children mostly were engaged in chores. Child labor, engaging in work or chores, can be particularly dangerous for young children. It also may hamper their ability to successfully transition to school.

Key Factors Affecting Early Childhood Development

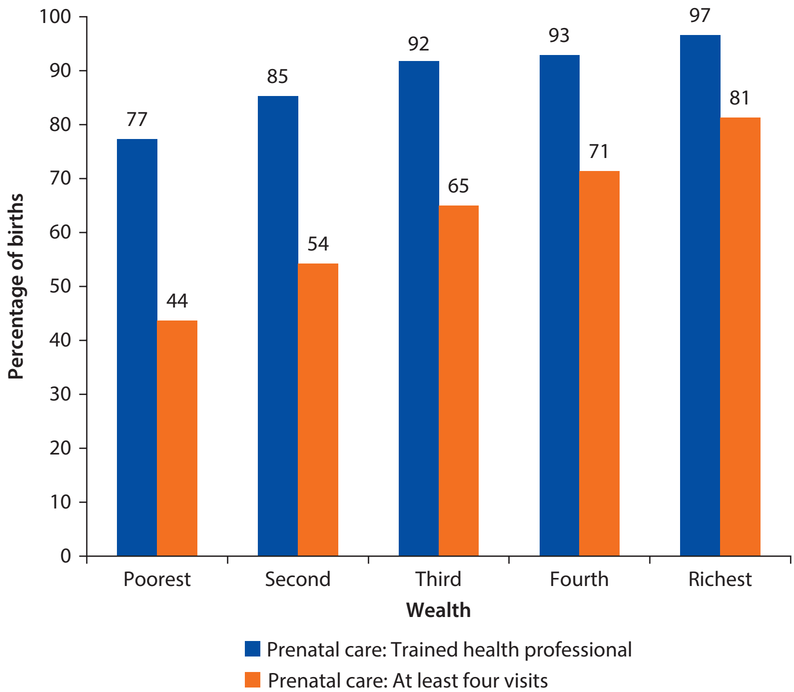
A number of background characteristics at the child, family, and community levels affect ECD outcomes: gender, parents' education, household socioeconomic status (wealth),[14] geographic location (region or governorate), and residence (urban/rural). Understanding these relationships can help identify why some children have poor ECD outcomes and which children to target with policy or programmatic interventions.

Survival, Health, and Nutrition

Background characteristics have a complex relationship with infant mortality in Syria. As of 2009, children from the poorest and richest wealth levels actually had quite similar probabilities of infant mortality. Children whose mothers had less than a complete preparatory education were more likely to die before their first birthday than children whose mothers have a complete preparatory education or higher. Children in the Middle region were more likely to die before their first birthday than children in other regions, while children in the Coastal region were less likely to die in the first year of life. Taking into consideration multiple characteristics, there are no substantial differences in the chance of infant or neonatal mortality across background characteristics.

Use of prenatal care, especially regular prenatal care, is closely associated with wealth, education, and geography. There are particularly large gaps across wealth levels, with births in poorer families less likely to receive prenatal care or regular prenatal care (figure 12.6). While 97 percent of births in the richest fifth of households received prenatal care, 77 percent of births in the poorest fifth of households did so. The gap is larger for regular care—81 percent of the richest fifth of households received regular prenatal care versus 44 percent of the poorest fifth. The differences between a mother with no education and a mother with higher education were even larger than the differences between the poorest and richest fifth of households. Births in the Northern region were the least likely to receive prenatal care at all (78 percent), while births in the Northern and Eastern regions were the least likely to receive regular prenatal care (48 percent).

Figure 12.6 Use of Prenatal Care and Regular Prenatal Care, by Wealth Level



Source: World Bank calculations based on Syria PAPFAM 2009.

In several governorates—Aleppo, Idleb, and Deir Ezzor—rates of prenatal care use were below 80 percent.

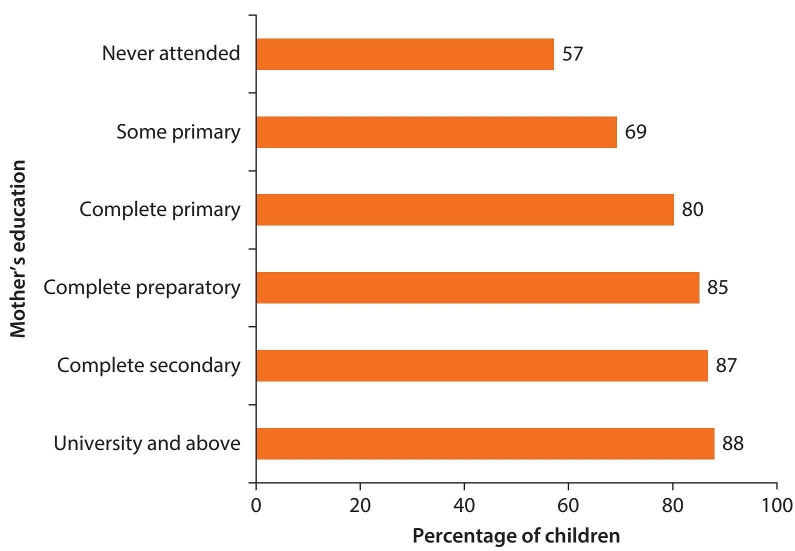
Taking into consideration other characteristics, use of prenatal care and regular visits were significantly[15] higher in all the other wealth levels as compared to the poorest fifth of households. Mothers with more education, especially mothers with higher education, were significantly more likely to have prenatal care and regular prenatal care. Mothers having a partner with higher education significantly increased the chances of receiving any and regular prenatal care. Being in a rural as opposed to urban area, and in the Northern, Eastern, and Middle regions as compared to the Southern region, significantly decreased the chances of both prenatal care and regular prenatal care; residence in the Coastal region showed higher chances of prenatal care and regular prenatal care than any other region, after accounting for other characteristics.

Use of skilled birth attendants showed only small differences based on wealth and education but showed some differences based on geography. While the Middle, Southern, and Coastal regions had 99 percent skilled delivery care coverage, the Northern region had 96 percent and Eastern region only 89 percent. Hassake and Deir Ezzor in particular had rates below 90 percent. After accounting for other characteristics, rural areas did not show a significantly different chance of having skilled attendants, but the Northern, Eastern, and

Middle regions had significantly lower rates of delivery with a skilled attendant than the Southern region; the Coastal region had a higher rate. There are some small but significant differences in the chance of using skilled attendants based on wealth, but the differences did not have a clear pattern. Greater mother's education significantly increased the chance of using skilled attendants as compared to mothers with no education, but the effects of father's education were not significant.

In general, Syria's rate of full immunization prior to the conflict fell below the level of immunizations that confers herd immunity,[16] and some areas had particularly low rates of immunization. The Northern and Eastern regions in particular had low rates—with around 70 percent of 12–23-month-olds fully immunized. The differences based on wealth were substantial, with a 70 percent rate for the poorest fifth of households and an 86 percent rate for the richest fifth of households. Syria was particularly struggling to reach mothers with no or little education with its immunization campaigns (figure 12.7); the rate of full immunization of children with uneducated mothers was only 57 percent and 69 percent for mothers with some primary education. Similar differences were evident based on partner's education. Taking into consideration other characteristics, only children in the Northern region had a significantly different (lower) chance of being fully immunized compared to the Southern region. There were no statistically significant differences based on wealth. Children had increasing chances of being immunized with increasing maternal education as well as increasing partner's education. There were no statistically significant differences based on child gender.

Figure 12.7 Percentage of Children Aged 12–23 Months Fully Immunized, by Mother's Education



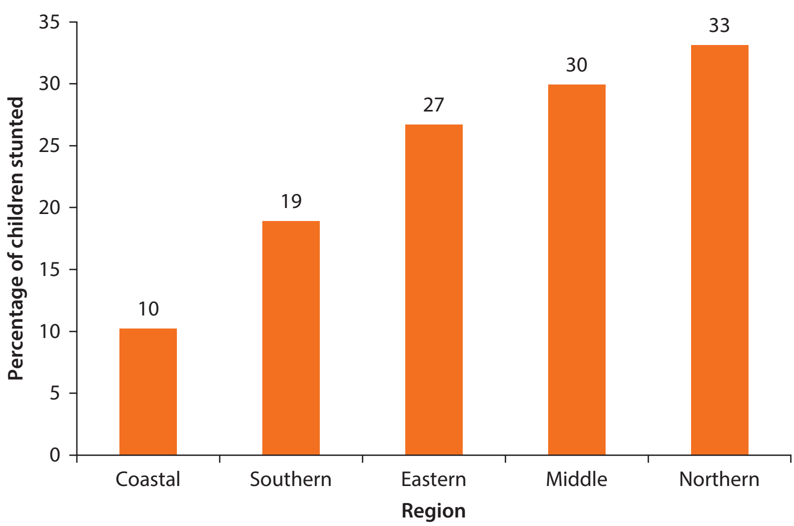
Source: World Bank calculations based on Syria PAPFAM 2009.

In preconflict Syria, rates of stunting showed moderate differences by wealth level, suggesting that both poverty and problems in public health and nutrition quality were driving stunting. For instance, while children from both the poorest and richest wealth levels had a high chance of being stunted, there was a clear difference based on wealth: a child from the poorest fifth of households had a 31 percent chance of being stunted, while a child from the richest fifth of households had a 21 percent chance. Similar and slightly stronger gradients were seen based on parents' education. There were notable differences based on geography (figure 12.8): children in the Northern region had a 33 percent stunting rate, in the Middle region a 30 percent stunting rate, in the Eastern region a 27 percent stunting rate, in the Southern region a 19 percent stunting rate, and in the Coastal region a 10 percent stunting rate. There were no urban-rural differences, but there were wide variations in stunting rates at the governorate level, with Aleppo and Homs having had stunting rates above 30 percent.

Taking into consideration other characteristics, children in Syria prior to the conflict were significantly less likely to be stunted if they were living in a rural area. They were more likely to be stunted if living in the North, East, or Middle regions, and less likely to be stunted if living in the Coastal region. There were small but significant differences by wealth after accounting for other characteristics, with wealthier children less likely to be stunted. Female children had higher average height-for-age, but not a significant difference in stunting compared to males. There were large differences in height-for-age and stunting based on mother's education but not father's education.

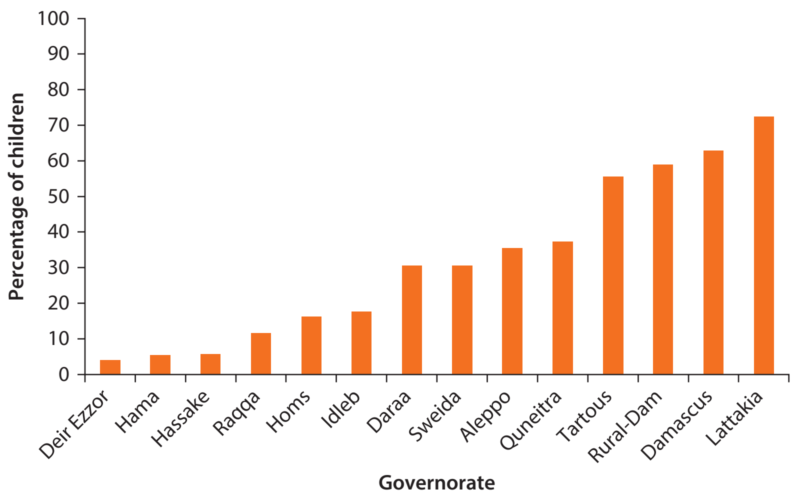
Access to iodized salt, and therefore the opportunity for healthy brain development, was associated with numerous background characteristics. Poorer children

Figure 12.8 Percentage of Children Aged 0–4 Stunted, by Region



Source: World Bank calculations based on Syria PAPFAM 2009.

Figure 12.9 Percentage of Children with Access to Adequately Iodized Salt, by Governorate



Source: World Bank calculations based on Syria PAPFAM 2009.

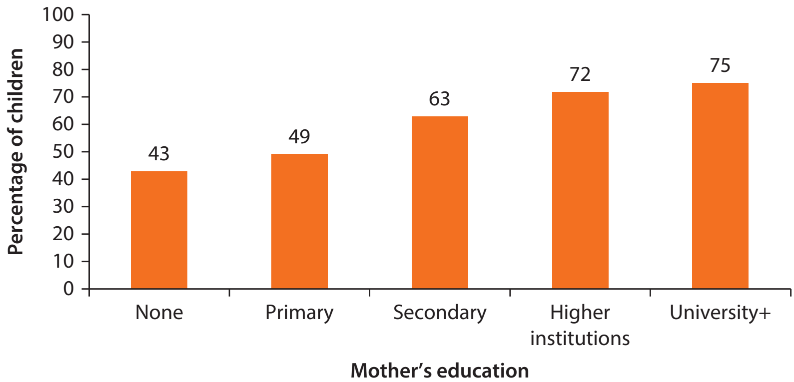
were less likely to have access to iodized salt. The poorest fifth of households in particular had the lowest rates of salt iodization, 13 percent, while children in the richest fifth of households had a 57 percent chance of having adequately iodized salt. A similar gradient was seen with parents' education. Geographic differences were quite large before the conflict in Syria. While urban areas had 41 percent salt iodization, rural areas had only 20 percent. The Eastern and Middle regions in particular had salt iodization rates below 10 percent, while the Southern and Coastal regions were above 50 percent. The largest differences were at the governorate level (figure 12.9). For instance, Latakia's salt iodization rate was 72 percent, but a number of other governorates were below 10 percent.

Taking into consideration other characteristics, children in rural areas were less likely to have access to iodized salt—as were children in the Northern, Eastern, and Middle regions—while children from the Coastal region were more likely to have iodized salt compared to those in the Southern region. After accounting for other characteristics, iodized salt prevalence was significantly higher with higher wealth levels, as compared to the poorest fifth of households. Use of iodized salt increased slightly but significantly if a mother has preparatory or secondary education, but there were no differences based on father's education.

Cognitive, Social, and Emotional Development

Children should have equal opportunities for parental care and development regardless of their background, but in Syria in 2006 there were substantial differences by background in children experiencing at least four development activities. While 41 percent of children from the poorest fifth of households experienced at least four development activities, 68 percent of children from the richest fifth of households did so. Similar differences were observed by parent's education

Figure 12.10 Percentage of Children Experiencing Four or More Development Activities, by Mother's Education



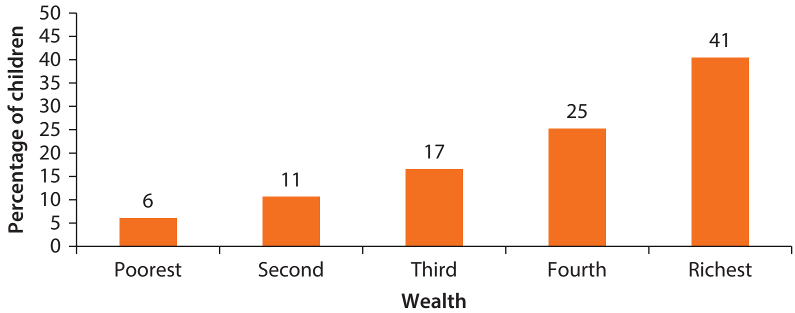
Source: World Bank calculations based on Syria MICS 2006.

(figure 12.10). Urban children were more likely to experience four development activities (60 percent) than rural children (50 percent). Regional differences were also acute, with the Northern and Middle regions below average and the Southern and Coastal regions above average. After accounting for other characteristics, children in the Northern, Middle, and Coastal regions were less likely to experience at least four development activities as compared to the Southern region. The chance of experiencing four development activities increased significantly with increasing wealth, as well as with increasing parental education.

Early childhood education has the greatest benefits for disadvantaged and vulnerable children. However, in preconflict Syria it was children from the most advantaged backgrounds who were attending ECCE. In 2009, a three- to five-year-old child from the poorest fifth of households had a 6 percent chance of attending ECCE, while a child from the richest fifth of households was almost seven times more likely to attend ECCE—a 40 percent chance (figure 12.11). Even larger differences were observed when comparing parents with no education to those with higher education. Substantial differences in rates of ECCE attendance based on geography also occurred, with a 21 percent ECCE attendance rate in urban areas compared to 13 percent in rural areas, and low attendance in the Eastern (5 percent) and Northern (12 percent) regions, especially compared to the Coastal region (44 percent). After accounting for other characteristics, children from the Northern and Eastern regions were less likely to attend ECCE than children from the Southern region, while children from the Coastal region were more likely to attend ECCE. ECCE attendance increased significantly with wealth, starting from the third 20 percent of households, and also increased with mother's and father's education.

Violent child discipline was widespread, with no large differences by background. Male children were slightly more likely to be violently disciplined than female children. The chance of being violently disciplined rose and then fell with wealth. While parents with higher education were slightly less likely to violently

Figure 12.11 Percentage of Children Aged 3–5 Attending ECCE, by Wealth Level



Source: World Bank calculations based on Syria PAPFAM 2009.
Note: ECCE = early childhood care and education.

discipline their children, there was no other clear relationship between parental education and violent discipline. Violent discipline was slightly less common in the Northern and Eastern regions than other regions. After accounting for other characteristics, violent discipline was lower in the Northern region than in the Southern region, but no other significant differences occurred.

Female children were more likely (14 percent) to have engaged in child labor than male children (11 percent); however, there were no clear differences in child labor based on wealth or parents' education. Children in the Eastern and Northern regions were less likely to engage in child labor, while those in the Middle, Southern, and Coastal regions were slightly more likely to do so. After accounting for other characteristics, the only statistically significant difference was with gender—females were slightly more likely to be engaged in child labor.

Children Face Unequal Opportunities for Healthy Development

Prior to the civil conflict, children in Syria faced unequal opportunities for healthy development, based on factors beyond their control. To measure the extent of inequality, the analysis calculates (a) the percentage of opportunities that needed to have been distributed differently for equality of opportunity to have occurred for each of the ECD indicators, and (b) the chance of whether these differences might have occurred by random variation (table 12.1). For prenatal care, 5.1 percent of opportunities would have to be distributed differently for there to have been equality of opportunity, and for skilled delivery 2.1 percent of opportunities. There are also somewhat unequal opportunities for children to get immunized because of their circumstances.

Children faced very unequal opportunities for healthy brain development, in terms of access to iodized salt, with 32.3 percent of opportunities that would have to be distributed differently for there to have been equality of opportunity. There was also a substantial amount of inequality in terms of participation in development activities and stunting. The greatest inequality was in terms of ECCE; 36.2 percent of chances to attend ECCE would need to have been distributed differently in order for children to have equality of opportunity. Overall,

Table 12.1 Percentage of Opportunities to Be Redistributed

	Dissimilarity Index
Prenatal care	5.1***
Skilled delivery	2.1***
Fully immunized	6.2*
Iodized salt	32.3***
Stunted	13.0***
ECCE	36.3***
Child labor	12.1
Violent discipline	1.7
Development activities	10.6***

Source: World Bank calculations based on Syria MICS 2006 and Syria PAPFAM 2009.
Note: Inequality for infant and neonatal mortality not calculated because models are statistically insignificant. Significance level: * = chance < 5%, ** = chance < 1%, *** = chance < 0.1%. ECCE = early childhood care and education.

Table 12.2 Contributions of Background Characteristics to Inequality
Percentage

	Wealth	*Mother's education*	*Father's education*	*Region*	*Rural*	*Child's sex*
Prenatal care	16.5	23.8	6.5	44.4	8.8	n.a.
Skilled delivery	21.4	25.1	7.2	32.1	14.2	n.a.
Fully immunized	10.3	29.1	11.1	46.5	2.2	0.8
Iodized salt	15.1	12.9	2.7	57.7	11.6	0.0
Stunted	12.9	18.1	5.4	60.0	2.6	0.9
ECCE	23.4	31.3	14.4	26.1	4.7	0.1
Child labor	11.2	17.1	9.3	44.8	2.0	15.6
Violent discipline	19.7	8.3	4.8	58.7	0.9	7.5
Development activities	17.5	23.0	12.5	40.6	6.4	0.0

Source: World Bank calculations based on Syria MICS 2006 and Syria PAPFAM 2009.
Note: Shapley decompositions of the dissimilarity index. ECCE = early childhood care and education; n.a. = not applicable.

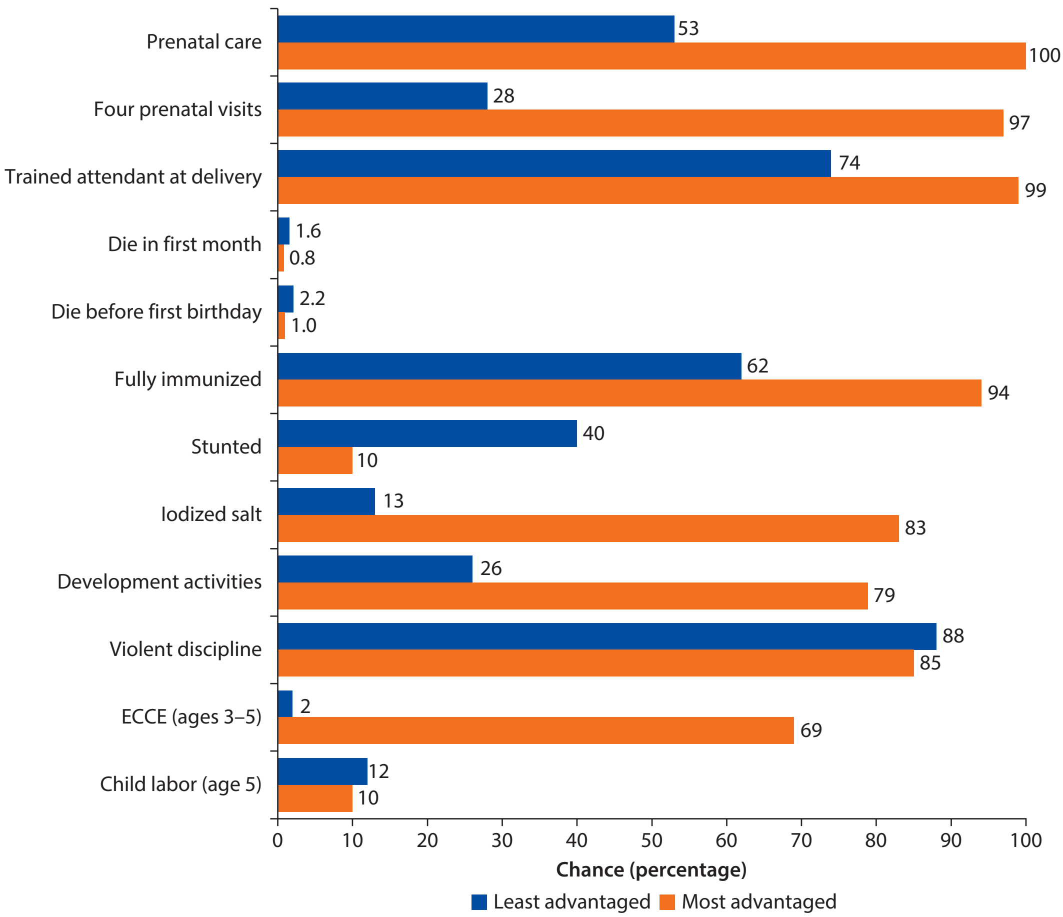
children faced unequal opportunities based on their circumstances—unequal opportunities that would only compound each other over the early life course.

Wealth, mother's education, and geography made the largest contributions to children's unequal chances. Table 12.2 shows the different contributions of circumstances to inequality for different outcomes as percentages. Wealth played a particularly large role in delivery care and ECCE, contributing over a fifth to inequality for each of these measures. Mother's education was particularly important for prenatal care, skilled delivery, immunizations, development activities, and ECCE, contributing around a quarter to inequality on these indicators. Father's education played a relatively small but important role in inequality for these outcomes as well. Residence in different regions mattered for all outcomes, and differences were quite large. Regional differences were particularly large for inequality in prenatal care, immunizations, salt iodization, stunting, and development activities. Rural/urban differences made only small contributions to inequality. A child's gender contributed very little to inequality.

Children tend to be consistently advantaged or disadvantaged across a variety of dimensions of ECD and can face very different life chances based on just a few characteristics. Early childhood is when cycles of poverty and inequality are transmitted across generations. If we observe a child who lived in the rural Northern region, in the poorest fifth of households, and with uneducated parents (a least advantaged child) and compare that child to one who had parents with higher education, was from the richest fifth of households, and lived in the urban Coastal region (a most advantaged child), we find that they have very different chances of healthy ECD. Figure 12.12 presents the chances (predicted chance) of different ECD indicators (based on the regressions) for these "least advantaged" and "most advantaged" individuals.

On every single indicator, the least advantaged child faced poorer ECD. Comparing the least and most advantaged, the gap in prenatal care was 47 percentage points, and the gap in regular prenatal care was 69 percentage points. The least advantaged child was twice as likely to die in the first month and twice as likely to die in the first year of life. The least advantaged child was 32 percentage

Figure 12.12 Most Advantaged and Least Advantaged Simulations



Source: World Bank calculations based on Syria MICS 2006 and Syria PAPFAM 2009.
Note: ECCE = early childhood care and education.

points less likely to be immunized and 30 percentage points more likely to be stunted. There was a 71 percentage point gap in salt iodization and a 53 percentage point gap in the chance of engaging in at least four development activities. The largest relative difference was in ECCE attendance, where the most advantaged child was 32 times more likely to attend ECCE than the least advantaged child. The least advantaged child was also slightly more likely to be engaged in child labor and to be violently disciplined.

Conclusions

This chapter has examined the state of ECD in preconflict Syria. Before the conflict, children's early health had some room for improvement, with gaps in prenatal care, regular prenatal care, and immunizations, but high rates of skilled delivery and low mortality. Even before the conflict, nutrition was an issue, with high rates of stunting and low rates of salt iodization. Children's cognitive, social, and emotional development had substantial gaps, with only moderate rates of development activities, low ECCE, and high violent discipline. There was also substantial inequality, particularly along regional lines. Since the conflict, the situation will have deteriorated further. More needs to be done to protect Syrian children during the conflict and ensure that the potential of a generation is not lost.

Annex 12A: The Data

The Data Sets

The analysis utilizes cross-sectional data on the well-being of women and children collected in the PAPFAM for 2009 in Syria, as well as the MICS from 2006. These surveys both have a household questionnaire that includes important background characteristics of individuals and families. They also have a questionnaire for ever-married women aged 15–49, which captures information on important components of ECD, such as prenatal care, skilled assistance with the delivery of children, and children's immunizations. Weight and height data are collected for children under five years of age. The surveys are nationally representative, and include data that allow for an analysis of the relationship between ECD and child and household indicators within Syria. See League of Arab States & Syrian Arab Republic (2011) and Central Bureau of Statistics, Pan-Arab Project for Family Health/League of Arab States, UNICEF, & United Nations Children's Fund (2008) for additional information in the final report on the surveys.

The Sample

The 2009 PAPFAM dataset for Syria sampled 24,883 households, 17,565 ever-married women aged 15–49, and 16,631 children younger than age five. The 2006 MICS dataset for Syria sampled 19,019 households, 25,026 ever-married women ages 15–49, and 11,104 children younger than age five. The analysis in this note is weighted in order to be representative at the national level. The sample sizes reported (N) in each of the tables are based on the unweighted number of observations in the data.

Annex 12B: Indicators by Background Characteristics

Table 12B.1 Indicators by Background Characteristics

	Prenatal care—trained health professional	*Prenatal care: at least four visits*	*Trained attendant at delivery*	*Die in first month*	*Die before first birthday*	*Fully immunized*	*Stunted*	*Height-for-age (SD)*	*Iodized salt*	*ECCE (ages 3–5)*	*Development activities*	*Violent discipline*	*Child labor (age 5)*	*Percent of children (aged 0–4)*
Year	2009	2009	2009	2009	2009	2009	2009	2009	2009	2009	2006	2006	2006	2009
Gender														
Male				1.4	1.9	77.9	26.4	−0.75	30.7	16.9	55.0	86.1	10.9	51.4
Female				1.0	1.5	77.9	25.2	−0.63	30.1	17.6	55.1	83.6	13.8	48.6
Wealth, 20% of households														
Poorest	77.3	43.6	89.9	1.3	2.0	70.2	30.8	−0.91	13.0	6.1	40.7	82.7	11.2	28.2
Second	85.3	54.2	96.5	1.4	1.7	78.5	26.1	−0.73	26.9	10.6	54.3	87.7	11.8	23.3
Third	91.8	65.0	98.5	0.9	1.3	79.7	24.2	−0.60	35.6	16.5	55.0	86.5	14.6	20.0
Fourth	92.9	71.4	99.5	1.0	1.3	80.9	22.4	−0.55	39.6	25.2	61.3	85.8	11.1	16.3
Richest	96.6	81.3	99.4	1.5	1.9	85.6	20.8	−0.46	56.5	40.5	68.0	81.9	13.0	12.2
Woman's education														
Never attended	69.9	38.1	86.9	1.1	1.7	57.2	34.2	−1.06	12.6	2.6				16.5
Some primary	80.3	48.6	93.4	2.0	2.5	69.3	28.9	−0.85	17.6	5.7				10.9
Complete primary	89.4	59.3	97.7	1.4	1.9	80.2	25.0	−0.65	31.5	13.7				40.9
Complete preparatory	94.0	70.2	99.4	1.0	1.4	85.1	23.6	−0.63	41.0	24.2				14.2
Complete secondary	97.0	78.1	99.7	0.5	0.9	86.7	20.2	−0.42	44.7	41.8				13.7
University+	97.9	88.3	99.7	0.5	0.5	88.0	17.5	−0.27	51.0	55.4				3.8
Partner's education														
Never attended	71.2	40.7	87.7	1.4	2.0	53.5	31.8	−0.97	17.2	3.5				9.1
Some primary	83.2	50.9	94.6	1.5	1.9	75.7	28.1	−0.83	25.4	7.0				9.2

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Table 12B.1 Indicators by Background Characteristics *(continued)*

	Prenatal care—trained health professional	*Prenatal care: at least four visits*	*Trained attendant at delivery*	*Die in first month*	*Die before first birthday*	*Fully immunized*	*Stunted*	*Height-for-age (SD)*	*Iodized salt*	*ECCE (ages 3–5)*	*Development activities*	*Violent discipline*	*Child labor (age 5)*	*Percent of children (aged 0–4)*
Complete primary	87.4	58.2	96.2	1.3	1.9	77.6	26.7	−0.73	29.9	13.3				44.1
Complete preparatory	89.9	64.6	98.1	1.1	1.4	80.4	24.8	−0.64	33.5	18.2				16.0
Complete secondary	93.3	69.9	98.7	1.0	1.4	86.0	22.0	−0.51	36.6	29.9				14.2
University+	96.6	81.3	98.9	0.6	0.8	85.5	20.3	−0.46	40.7	46.5				7.1
DK	88.2	50.3	98.0	4.9	4.9	79.4	23.2	−0.49	22.8	8.9				0.4
Mother's education														
None											42.9	84.1	11.5	
Primary											49.2	84.3	10.7	
Secondary											62.9	86.7	14.3	
Higher institutions											71.9	83.8	14.7	
University+											75.1	80.8	13.4	
Father's education														
None											42.1	87.9	12.0	
Primary											48.7	83.5	11.6	
Secondary											58.4	86.2	12.7	
Higher institutions											65.8	84.9	16.4	
University+											66.4	81.7	10.9	
Residence														
Urban	91.7	68.3	98.8	1.2	1.6	79.6	25.8	−0.69	41.0	21.3	60.1	85.5	12.9	50.8
Rural	83.1	52.3	93.4	1.3	1.8	75.9	25.8	−0.69	19.8	13.0	50.0	84.5	11.7	49.2

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Table 12B.1 Indicators by Background Characteristics *(continued)*

	Prenatal care—trained health professional	*Prenatal care: at least four visits*	*Trained attendant at delivery*	*Die in first month*	*Die before first birthday*	*Fully immunized*	*Stunted*	*Height-for-age (SD)*	*Iodized salt*	*ECCE (ages 3–5)*	*Development activities*	*Violent discipline*	*Child labor (age 5)*	*Percent of children (aged 0–4)*
Region														
Northern	78.2	48.4	95.8	1.4	1.8	67.2	33.1	−1.12	30.2	12.1	43.2	81.9	11.4	29.4
Eastern	83.5	48.2	88.9	1.0	1.6	71.6	26.7	−0.75	5.6	4.6	55.1	82.9	8.4	21.1
Middle	89.7	59.2	99.0	1.7	2.2	86.5	29.9	−0.73	8.2	19.5	49.4	87.5	17.1	14.6
Southern	95.6	72.4	99.2	1.1	1.6	85.6	18.9	−0.34	51.3	23.6	67.5	87.1	13.0	27.6
Coastal	99.0	91.4	99.5	0.7	0.8	88.4	10.2	−0.01	65.5	44.1	63.8	87.5	13.5	7.3
Districts														
Damascus	97.2	84.5	99.1			90.7	26.2	−0.50	62.8	30.9	78.0	87.8		6.8
Aleppo	78.1	46.8	95.5			64.0	37.3	−1.35	35.5	11.4	40.9	80.2		20.9
Rural Damascus	95.2	74.2	99.2			80.3	20.3	−0.34	58.9	21.3	68.1	90.5		12.6
Homs	93.4	59.8	99.4			81.7	39.7	−1.08	16.2	18.0	40.6	85.8		7.4
Hama	85.8	58.7	98.7			92.6	20.7	−0.40	5.4	20.9	60.3	89.9		7.2
Lattakia	99.0	90.9	99.2			94.7	7.7	−0.20	72.4	42.0	58.0	84.5		4.5
Idleb	78.4	52.2	96.9			75.9	23.0	−0.56	17.6	14.0	48.9	85.9		8.5
Hassake	85.8	49.0	87.8			75.1	22.4	−0.40	5.6	5.4	48.2	93.0		7.9
Deir Ezzor	78.1	45.7	87.0			62.9	29.6	−0.84	4.0	4.2	69.8	88.9		7.2
Tartous	99.1	92.4	100.0			76.8	14.0	0.27	55.5	48.0	69.6	90.6		2.8
Raqqa	85.6	49.8	92.6			78.7	28.8	−1.09	11.6	4.2	45.6	59.3		6.0
Daraa	93.3	52.0	99.3			85.3	10.1	−0.07	30.5	16.8	58.2	82.8		6.0
Sweida	98.2	76.6	99.6			96.0	7.4	−0.38	30.5	34.9	66.1	97.9		1.8
Quneitra	94.1	56.5	98.3			82.8	21.3	−0.47	37.3	16.5	73.6	50.8		0.5
Total	87.7	60.8	96.3	1.2	1.7	77.9	25.8	−0.69	30.4	17.2	55.0	85.0	12.3	100.0
N (observations)	10,891	10,208	10,891	13,281	13,281	2,451	14,920	14,920	12,808	9,413	11,017	3,862	3,079	16,522

Source: World Bank calculations based on Syria MICS 2006 and Syria PAPFAM 2009.
Note: Governorate-level data for child labor, neonatal, and infant mortality is omitted due to small sample size. Other blank cells indicate not applicable or not available. DK = do not know; ECCE = early childhood care and education; SD = standard deviation.

Annex 12C: Relationship between ECD Indicators and Background, When Accounting for Multiple Characteristics

Table 12C.1 Relationship between ECD Indicators and Multiple Background Characteristics

	Prenatal	*Prenatal: four visits*	*Delivery*	*Fully immunized*	*Neonatal mortality*	*Infant mortality*	*Iodized salt*	*Stunted*	*Height-for-age (SD)*	*ECCE*	*Child labor*	*Violent discipline*	*Development activities*
Female	n.a.	n.a.	n.a.						+		+		
Rural	–	–	–				–	–	+				
Region—compared to Southern													
Northern	–	–	–	–			–	+	–	–		–	–
Eastern	–	–	–	–			–	+	–	–			
Middle	–	–					–	+	–				–
Coastal	+	+					+	–	+	+			–
Wealth—20% of households—compared to poorest													
Second	+	+	+				+	–	+				+
Third	+	+	+				+	–	+	+			+
Fourth	+	+	+				+	–	+	+			+
Highest	+	+	+				+	–	+	+			+
Woman's education—compared to no education													
Some primary	+	+			+			–	+		n.a.	n.a.	n.a.
Complete primary	+	+	+	+				–	+	+	n.a.	n.a.	n.a.
Complete preparatory	+	+	+	+			+	–	+	+	n.a.	n.a.	n.a.
Complete secondary	+	+	+	+			+	–	+	+	n.a.	n.a.	n.a.
Higher education	+	+		+				–	+	+	n.a.	n.a.	n.a.
Partner's education—compared to no education													
Some primary				+							n.a.	n.a.	n.a.
Complete primary				+							n.a.	n.a.	n.a.
Complete preparatory			+	+							n.a.	n.a.	n.a.

table continues next page

Table 12C.1 Relationship between ECD Indicators and Multiple Background Characteristics *(continued)*

	Prenatal	*Prenatal: four visits*	*Delivery*	*Fully immunized*	*Neonatal mortality*	*Infant mortality*	*Iodized salt*	*Stunted*	*Height-for-age (SD)*	*ECCE*	*Child labor*	*Violent discipline*	*Development activities*
Complete secondary			+	+						+	n.a.	n.a.	n.a.
Higher education	+	+		+						+	n.a.	n.a.	n.a.
DK/missing											n.a.	n.a.	n.a.
Mother's education—compared to no education													
Read	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.			
Read and write	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.			+
Basic	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.			+
Complete secondary	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.			+
Father's education—compared to no education													
Read	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.			
Read and write	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.			+
Basic	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.			+
Complete secondary	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.			+
P-value (model)	0.000	0.000	0.000	0.000	0.112	0.114	0.000	0.000	0.000	0.000	0.032	0.047	0.000
Observations (N)	10887	10204	10887	2449	13276	13276	12653	14796	14796	9220	3079	3861	11014
R-squared									0.033				
Pseudo R-squared	0.150	0.113	0.228	0.075	0.027	0.020	0.210	0.031		0.192	0.017	0.014	0.059

Source: World Bank calculations based on Syria MICS 2006 and Syria PAPFAM 2009.
Note: Blank cells indicate no statistically significant relationship. DK = do not know; ECCE = early childhood care and education; ECD = early childhood development; SD = standard deviation. n.a. = not applicable.

Notes

1. Both infant and neonatal mortality rates are calculated based on deaths in the 12–59 months preceding the survey.
2. The Syria 2009 Pan Arab Project for Family Health (PAPFAM) asks about prenatal care for the most recent live birth in the past five years only. Since live births are likely to be associated with prenatal care, the percentage of births not receiving prenatal care is likely to be an underestimate of the percentage of pregnancies not receiving prenatal care.
3. Either a doctor or a nurse/midwife
4. As was true for prenatal care, delivery questions are asked about most recent live births in the last five years only. Since live births are likely to be associated with care by a health professional, the percentage of live births with a health professional is likely to overestimate the number of deliveries with a health professional.
5. As with prenatal and delivery care, these questions were asked of the most recent live birth in the past five years.
6. The DPT vaccine is a combination vaccine that covers diphtheria, whooping cough (pertussis), and tetanus. Children must receive three doses to be fully immunized.
7. Children must receive three doses to be fully immunized against polio.
8. The units show how Syrian children are, on average, different from the reference population in terms of standard deviations.
9. More than 15 ppm of iodine in the salt
10. The six activities are (1) read books or look at picture books with the child; (2) tell stories to the child; (3) sing songs with the child; (4) take the child outside the home, compound, yard, or enclosure; (5) play with the child; and (6) spend time with the child naming, counting, and/or drawing things.
11. Data are for 2011.
12. Per the MICS definitions, violent child discipline is based on discipline by anyone in the household within the last month, and includes psychological aggression (shouted, yelled, or screamed at the child; called the child dumb, lazy, or another name like that); physical punishment (shook the child; spanked, hit, or slapped the child on the bottom with a bare hand; hit the child on the bottom or elsewhere on the body with something like a belt, hairbrush, stick, or other hard object; hit or slapped the child on the hand, arm, or leg); and severe physical punishment (hit or slapped the child on the face, head, or ears; beat the child with an implement; hit over and over as hard as one could).
13. The questions were: (1) During the past week, did (child) do any kind of work for someone who is not a member of this household? (2) During the past week, did (child) help with household chores, such as shopping, collecting firewood, cleaning, fetching water, or caring for children? (3) During the past week did (child) do any other family work (on the farm or in a business or selling goods in the street)?
14. Wealth is defined in terms of which 20 percent of households a child falls into, based on an asset (wealth) index of durable goods.
15. Throughout, we use a 5 percent level of significance.
16. Herd immunity occurs when even unvaccinated individuals in the population (the "herd") are protected against illness because the disease can no longer spread. This is achieved once around 90–95 percent of infants are vaccinated.

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CHAPTER 13

Tunisia

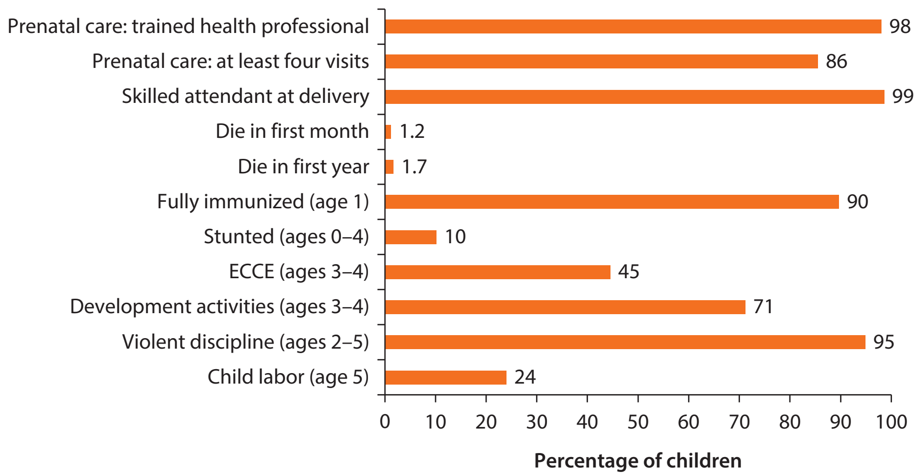
The State of Early Childhood Development in Tunisia

Tunisia is one of the Middle East and North Africa (MENA) countries with notable successes in early childhood development (ECD), particularly in early health, but more needs to be done to ensure children in Tunisia do not fall short of their full potential for early development. Figure 13.1 shows summary indicators of ECD in Tunisia in 2012. In terms of early health care, Tunisia does well. Around 98 percent of births received prenatal care, but only 86 percent did so regularly, and 99 percent had a skilled attendant at delivery. Early mortality is fairly low; 1.2 percent of children died in the first month of life and 1.7 percent of children died in the first year of life. Malnutrition is still a challenge in Tunisia: 10 percent of children are stunted, but only 2 percent are underweight, and 3 percent are wasted. In terms of cognitive, social, and emotional development, less than half (44 percent) of children aged three to four attend early childhood care and education. Children are more likely to experience violent discipline, than development activities; 93 percent of children aged two to five have experienced some form of violent discipline, while 71 percent have experienced development activities. Even as early as age five, some children are engaged in work or chores; 24 percent of five-year-olds engaged in child labor.

This chapter presents the status of ECD in Tunisia. The health status of children is examined through indicators (see box 13.1) of early mortality, prenatal care, having a trained attendant at birth, and immunizations. Children's nutritional status is measured by stunting (height-for-age), underweight (weight-for-age), and wasting (weight-for-height), as well as the availability of micronutrients, specifically iodine. To assess cognitive and social or emotional development, the analysis looks at the extent to which children are engaged in developmental learning activities and whether children are violently disciplined. Early learning and early work are examined in terms of children's attendance in early childhood care and education and whether children engage in child labor at age five.

To better understand the context and conditions that influence ECD outcomes, the analysis also examines background factors that may be associated

Figure 13.1 ECD Summary Indicators



Source: World Bank calculations based on Tunisia Multiple Indicator Cluster Survey (MICS) 2011/2012.
Note: ECCE = early childhood care and education; ECD = early childhood development.

Box 13.1 ECD Indicators Examined in Tunisia

Prenatal care
Trained attendant at delivery
Neonatal mortality (dying in the first month)
Infant mortality (dying in the first year)
Fully immunized
Stunting/Height-for-age
Underweight/Weight-for-age
Wasting/Weight-for-height
Early childhood care and education
Parental development activities
Violent child discipline
Child labor

with ECD outcomes at the individual, household, and community levels and their relationships (see annexes 13A, 13B, and 13C for additional information on the data and these relationships). For the overall country context, see box 13.2. Finally, the analysis measures the gaps and extent of inequality in ECD outcomes. The analysis is based on the latest available data: the 2011/2012 Multiple Indicator Cluster Survey (MICS). The data cover the various different dimensions of early childhood from before a child is born up until the age of school entry (six years in Tunisia). If more indicators were available and examined, they could provide an even richer picture of ECD in Tunisia.

Box 13.2 Summary of Development Indicators in Tunisia

Tunisia is an upper-middle-income country with a gross domestic product per capita in 2012 of about $4,237 (in current US Dollars, table B13.2.1). Tunisia has an estimated population of 11 million, of which a quarter are under the age of 15. The average life expectancy at birth is 75 years. The primary gross enrollment rate in Tunisia was 109 percent in 2012. Overall, Tunisia ranks 94 out of 186 countries with comparable data on the 2012 Human Development Index.

Table B13.2.1 Tunisia's Socioeconomic Indicators

	1990	*2012*
Total population (millions)	8.1	10.8
% of population under 15	38	23
GDP per capita (current US dollars)	$1,507	$4,237
Life expectancy at birth (years)	70	75
School enrollment, primary (% gross)	111	109

Source: UNDP 2014; World Development Indicators
Note: GDP = gross domestic product.

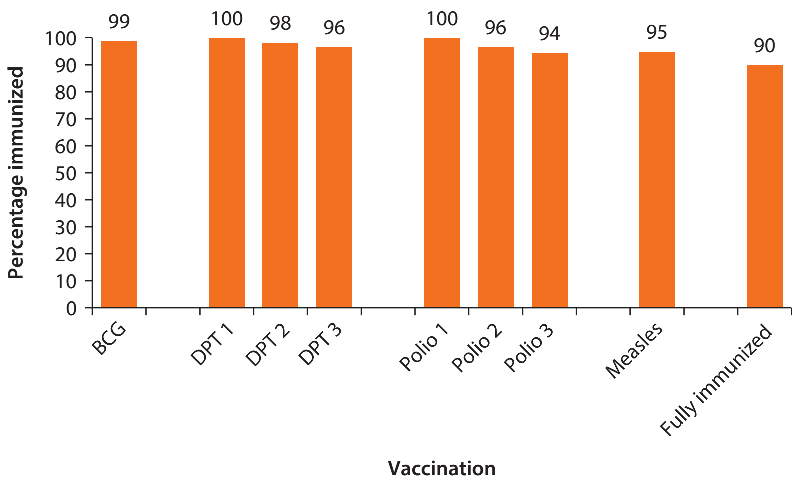
Survival, Health Care, and Nutrition

The first step in healthy ECD is simply surviving early childhood. Tunisia has an infant mortality rate of 17 deaths per thousand births.[1] This rate is less than the 2012 regional average of 24 deaths per thousand births (UNICEF 2014). Most of infant mortality is composed of neonatal mortality—children dying within the first month of life. In Tunisia, neonatal mortality is 12 deaths per thousand births. There has been notable progress in reducing infant mortality in Tunisia. The infant mortality rate in 1990 was 39 deaths per thousand births (World Development Indicators). Neonatal mortality also declined substantially between 1990 and 2012, from a rate of 23 deaths per thousand births (World Development Indicators) to 12 per thousand dying during their first month of life; this is below the 2012 regional average of 15 deaths per thousand births (UNICEF 2014).

Addressing both early mortality and ECD begins during pregnancy and delivery. Tunisia's low mortality rates may be due, in part, to good coverage of early health care. In Tunisia, almost all (98 percent) of live births received prenatal care and almost all (99 percent) had deliveries attended by a health professional.[2] Moreover, 86 percent of women had four or more prenatal visits.

The full immunization of children plays an important role in reducing childhood diseases that can hamper growth or cause death. In Tunisia, immunization coverage is almost universal. More than 90 percent of children aged 18–29 months have been fully immunized against preventable childhood illnesses, preventing loss of life and impaired development. It is important for children to receive immunizations against a number of preventable childhood illnesses, including tuberculosis, diphtheria, whooping cough, tetanus,[3] polio,[4] and measles. As figure 13.2 shows, the measles vaccine has the lowest coverage rates (94 percent),

Figure 13.2 Percentage of Children Aged 18–29 Months Immunized, by Vaccination



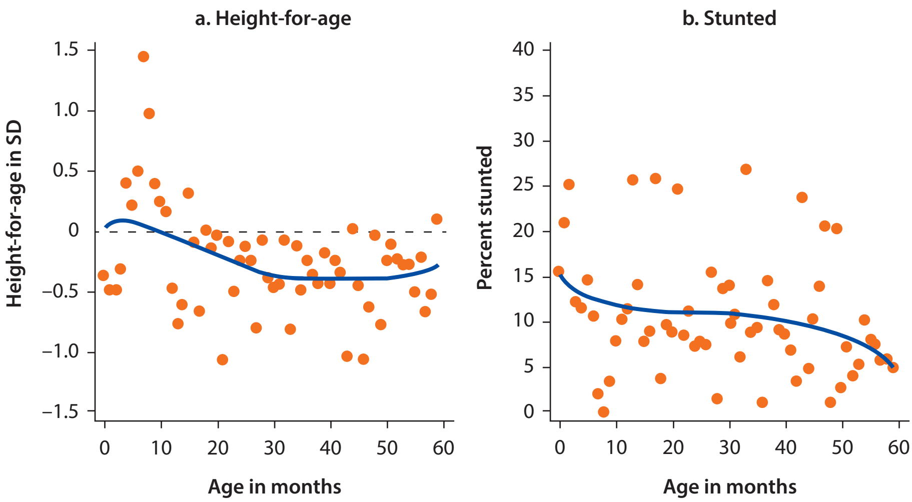
Source: World Bank calculations based on Tunisia MICS 2011/2012.
Note: BCG = Bacillus Calmette–Guérin (tuberculosis vaccine); DPT = diphtheria, pertussis, tetanus.

and there are some gaps in the third diptheria, pertussis, and tetanus (DPT) and third polio doses (96 percent).

In terms of child nutrition in Tunisia, 10 percent of children aged zero to four are stunted, 2 percent are underweight, and 3 percent are wasted. This rate of stunting, although below the average for the region, represents a substantial loss of human potential for 1 in every 10 children. So while weight (underweight, wasted) is not a substantial problem in Tunisia, height accumulation (stunting) is. Children in Tunisia start their lives on a fairly healthy footing; however, over the first two years of life, they experience a substantial falling off from healthy growth. Figure 13.3 shows how Tunisian children fare in terms of growth compared to a healthy reference population.[5] Up through the first year of life, their height-for-age is similar to that of the healthy reference population, although it starts falling behind by age one. Then by age two, children are almost 1/2 standard deviation (SD) below the height of the healthy reference population and remain so up through age four, when there is a slight improvement in height-for-age. At the same time, stunting is highest at birth and falls over time. The patterns of height-for-age and stunting suggest that a general but moderate problem with nutrition is prevalent during ages two to four, while the most acute problems (stunting) occur early in life.

Micronutrients such as iron, vitamin A, zinc, and iodine play an important role in both physical and cognitive development. In Tunisia as of 2000, 97 percent of households had sufficiently iodized salt (World Development Indicators).[6] Iodine plays a vital role in cognitive development, and iodine deficiency is the most common cause of preventable mental retardation and brain damage in the world (El-Zanaty and Way 2009). Iodized salt is the primary means for delivering iodine to children.

Figure 13.3 Average Height-for-Age Compared to Healthy Reference Population, in Standard Deviations, and Percentage Stunted by Age in Months, Ages 0–59 Months



Source: World Bank calculations based on Tunisia MICS 2011/2012.
Note: SD = standard deviation.

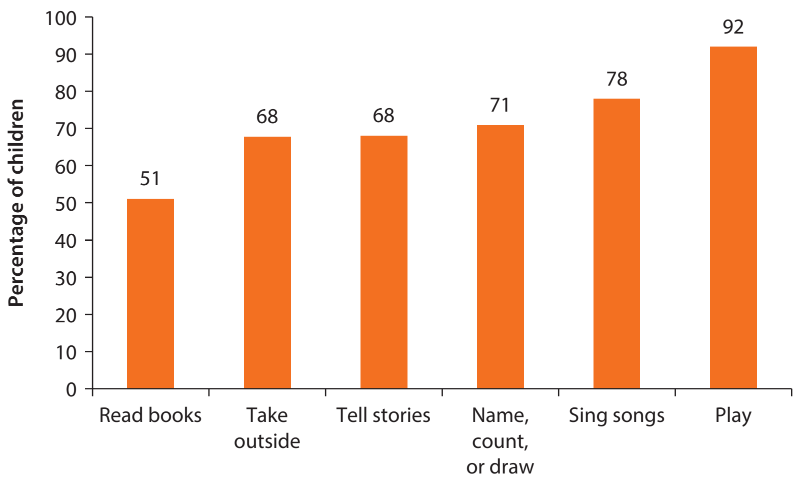
Social, Emotional, and Cognitive Development

Although it has been proven that play and interaction are important components of ECD, children in Tunisia are missing out on important opportunities for psychosocial growth. In the survey, caretakers of children aged 3–4 were asked whether adults in the household had engaged in any of six different activities that support child development.[7] In Tunisia, only 71 percent of children experienced four or more development activities. Notably, almost all (92 percent) of children were engaged in play. While all the activities are important to social and emotional development, being read to has important educational and cognitive components. However, being read to was the activity least commonly observed (figure 13.4), with 51 percent of children experiencing having a book (or picture book) read to them.

Evidence has shown that early childhood care and education (ECCE) improves cognition and socioemotional development, with benefits that can last a lifetime. As of 2012, 44 percent of children aged three to four in Tunisia were in early childhood care and education. ECCE attendance prior to school entry is more common than ECCE attendance among three to four year olds. Among children aged five to six, 89 percent currently or previously attended a preschool. This suggests that many children not attending ECCE at ages three to four may attend pre-primary at older ages. Around 80 percent of children in the first year of primary were previously in pre-primary school.

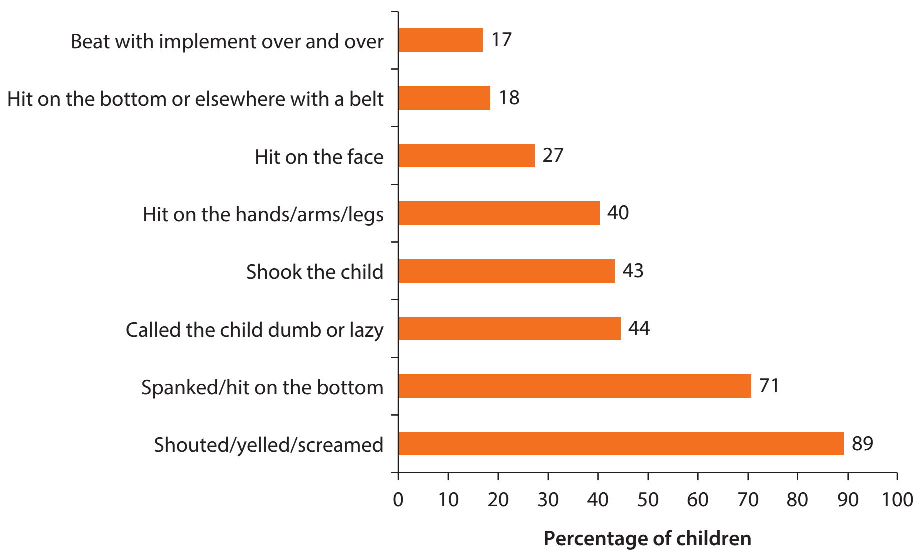
Another challenge that risks hindering the healthy development of children is violent discipline.[8] In Tunisia, 95 percent of children ages two to five have experienced violent child discipline. Disciplining children is an important part of child rearing. However, research has found that violent discipline negatively impacts

Figure 13.4 Percentage of Children Experiencing Development Activities, by Activity, Ages 3–4



Source: World Bank calculations based on Tunisia MICS 2011/2012.

Figure 13.5 Percentage of Children Aged 2–5 Experiencing Violent Discipline, by Type of Discipline



Source: World Bank calculations based on Tunisia MICS 2011/2012.

the physical, psychological, and social development of children (UNICEF 2010). Figure 13.5 displays the percentage of children experiencing different types of violent discipline. The most common method of violent discipline was shouting, yelling, or screaming (89 percent), followed by spanking (71 percent). Calling the child dumb or lazy (44 percent) was also common. The prevalence of shaking children (43 percent), hitting on the extremities (40 percent), and hitting on the face (27 percent) presents a substantial threat to children's development. Although the least common forms of violent discipline were the most severe (beat with an implement, 17 percent, and hit with a belt, 18 percent), they present a major threat to children's development.

In Tunisia, 24 percent of children age five engaged in some type of child labor—working for someone not a member of the household, doing household chores, or doing other family work.[9] Child labor, engaging in work or chores, can be particularly dangerous for young children. It also may hamper their ability to successfully transition to school. The majority of children were engaged in chores (23 percent of five-year-olds), but some were engaged in work for others (1 percent of five-year-olds). Most of the work for others was unpaid.

Key Factors Affecting Early Childhood Development

A number of background characteristics at the child, family, and community levels affect ECD outcomes: gender, parents' education, household socioeconomic status (wealth),[10] geographic location (region or governorate), and residence (urban/rural). Understanding these relationships can help identify why some children have poor ECD outcomes and which children to target with policy or programmatic interventions.

Survival, Health Care, and Nutrition

Certain background characteristics are closely related to early childhood deaths. Children from the poorest households are more likely to die in the first month or year of life. While neonatal mortality is 22 deaths per thousand births in the poorest fifth of households, it is only 9 deaths per thousand births in the richest fifth of households, with a similar pattern for infant mortality. Children born to less educated parents also have a greater chance of early mortality. Rural areas have higher mortality than urban areas. Nationally, infant mortality is 17 per thousand, but infant mortality is 12 deaths per thousand births in urban areas, and 25 per thousand in rural areas. Taking into consideration multiple characteristics, having a father with primary or secondary education, as compared to no education, significantly[11] decreased neonatal mortality, and having a father with primary education significantly decreased infant mortality. The fourth wealth level had significantly lower infant mortality than the poorest.

Use of prenatal care, especially regular prenatal care, is closely associated with wealth, education, and geography. Because prenatal care is nearly universal, there are only small differences by background, but regular prenatal care shows larger differences. While 73 percent of births in the poorest fifth of households received regular prenatal care, 97 percent of births in the richest fifth of households did so. The differences based on a mother or father with no education and a mother or father with secondary or higher education were very similar to the wealth gaps. Births in rural areas were less likely to receive regular prenatal care (81 percent) than births in urban areas (88 percent). Sidi Bouzid (65 percent), Kasserine (75 percent), and the South East (77 percent) were regions with particularly low rates of regular prenatal care.

The relationships between use of skilled birth attendants and wealth, education, and geography are similar to that of prenatal care. While only 94 percent of births in the poorest fifth of households were attended by a skilled attendant, every other wealth level was at almost a 100 percent rate. Similar patterns were observed for parents' education as for wealth. Rates of births with skilled attendants were higher in urban areas (almost 100 percent) than rural areas (97 percent). Sidi Bouzid in particular had low rates of skilled delivery, at 89 percent.

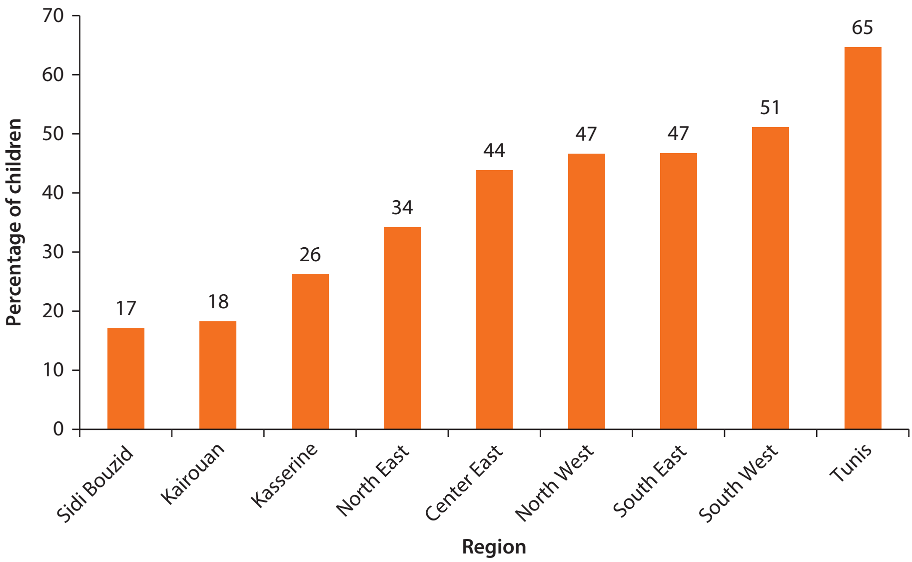
Social, Emotional, and Cognitive Development

Social, emotional, and cognitive development are related to the wealth level of the child's household, parents' education, and the location of the household. Poorer children, from the lower four wealth levels, are less likely to experience at least four development activities than children from the richest fifth of households (figure 13.7). While a child from the poorest fifth of households has a 44 percent chance of experiencing development activities, a child from the richest fifth of households has a 91 percent chance. Children in rural areas are also less likely to experience development activities (52 percent) than children in urban areas (82 percent). Rates are particularly low in Sidi Bouzid (27 percent). Children with uneducated mothers have only a 45 percent chance of experiencing development activities, compared to a 95 percent chance for children with mothers with higher education; similar patterns are observed for fathers. Taking into consideration multiple characteristics, children living in rural areas are significantly less likely to experience development activities than children in urban areas, and children in Sidi Bouzid are significantly less likely to experience development activities than children in Tunis. If children have a mother with secondary or higher education, as compared to no education, they are more likely to experience development activities, and every other wealth level has a significantly higher chance of experiencing development activities compared to the poorest.

As with development activities, there are large differences in access to ECCE based on background. The national rate of ECCE attendance for children aged three to four is 44 percent; however, children in urban areas have a 60 percent chance of attending ECCE, while rural children have only a 17 percent chance. Differences by region are also substantial (figure 13.6). While 17–18 percent of children aged three to four in Sidi Bouzid and Kairouan attend ECCE, 65 percent of children in Tunis do so. There are enormous wealth differences in ECCE attendance (figure 13.7); while just 13 percent of children from the poorest fifth of households attend ECCE, 82 percent of children from the richest fifth of households do so. Taking into consideration multiple characteristics, rural children (as compared to urban children) and children in the North East, Kairouan, and Sidi Bouzid (as compared to Tunis) are significantly less likely to attend ECCE. Attendance increases significantly with every other wealth level as compared to the poorest fifth of households.

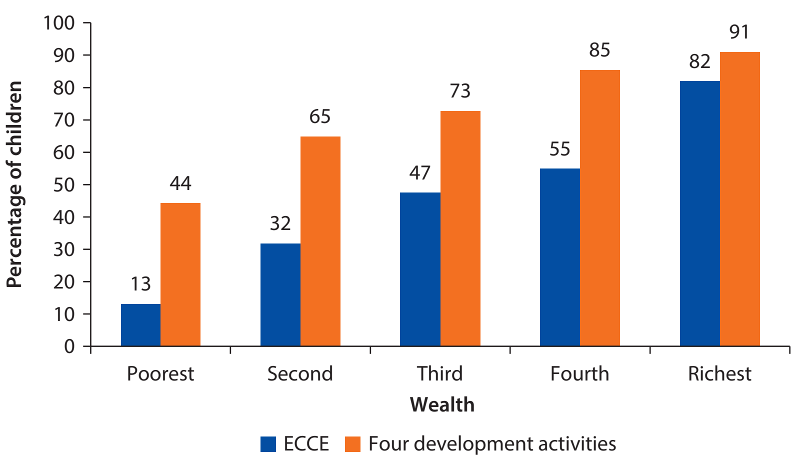
Differences in early cognitive, social, and emotional development are likely to compound each other. Figure 13.7 shows both the percentage of children

Figure 13.6 Percentage of Children Attending ECCE by Region, Ages 3–4



Source: World Bank calculations based on Tunisia MICS 2011/2012.
Note: ECCE = early childhood care and education.

Figure 13.7 Percentage of Children Experiencing Development Activities or Attending ECCE, by Wealth, Ages 3–4



Source: World Bank calculations based on Tunisia MICS 2011/2012.
Note: ECCE = early childhood care and education.

experiencing development activities and the percentage attending ECCE, by wealth. Poorer children experience lower chances of both ECCE and development activities, which will put them at a compounded disadvantage by the time they enter school. For instance, while a child from the poorest fifth of households has a 13 percent chance of attending ECCE and a 44 percent chance of experiencing development activities, a child from the richest fifth of households has an 82 percent chance of attending ECCE and a 91 percent chance of development activities.

There are no clear or systematic patterns in terms of violent child discipline, but child labor is related to children's background characteristics. While 20 percent of males engage in early work at age five, 28 percent of females do so. Child labor increases and then decreases with wealth, with the highest rate of child labor, 32 percent, in the middle wealth level. Child labor is more common in urban areas (26 percent) than rural areas (21 percent). Taking into consideration multiple characteristics, female children are significantly more likely to engage in child labor than male children. Children in Kasserine and Kairouan are significantly less likely to engage in child labor than children in Tunis. Children in the third wealth level are significantly more likely to engage in child labor than the poorest children.

Children Face Unequal Opportunities for Healthy Development

Children in Tunisia face unequal opportunities for healthy development, based on factors beyond their control. To measure the extent of inequality, the analysis calculates (a) the percentage of opportunities that need to be distributed differently for equality of opportunity to have occurred for each of the ECD indicators, and (b) the chance of whether these differences might have occurred by random variation (table 13.1).

Children have relatively equal chances of receiving early immunizations. Inequality in early mortality is high, but since this is a rare occurrence, we cannot definitively say whether or not these differences are due to chance. Likewise, inequality in stunting and child labor is substantial, but this may be due to chance. Inequality in ECCE is particularly high and statistically significant; 26 percent of the opportunities to attend ECCE would have to be distributed differently in order to achieve equality of opportunity. Inequality in development activities is also substantial and significant, with 12 percent of opportunities requiring redistribution.

Wealth, parents' education, and area of residence make the largest contributions to children's unequal chances. Table 13.2 shows the different contributions

Table 13.1 Percentage of Opportunities to Be Redistributed

	Dissimilarity index
Fully immunized	4.4
Neonatal mortality	40.0
Infant mortality	33.4
Stunted	19.8
ECCE	25.5***
Development activities	11.8**
Child labor	21.7

Source: World Bank calculations based on Tunisia MICS 2011/2012.
Note: The rates for prenatal care and delivery care are not modeled because they are nearly universal. The overall model for violent child discipline was not significant, so it was not modeled. Significance level: * = chance < 5%, ** = chance < 1%, *** = chance < 0.1%. ECCE = early childhood care and education.

Table 13.2 Contributions of Background Characteristics to Inequality
Percentage

	Wealth	*Mother's education*	*Father's education*	*Rural*	*Region*	*Child's sex*
Fully immunized	13.6	20.1	8.2	10.4	47.7	0.1
Neonatal mortality	8.5	6.6	40.0	10.3	30.3	4.4
Infant mortality	19.5	7.0	43.7	10.2	19.3	0.2
Stunted	25.8	10.3	23.0	11.3	25.0	4.6
ECCE	29.0	8.7	7.3	42.5	12.2	0.2
Development activities	27.8	19.3	9.8	25.6	16.6	0.9
Child labor	16.3	12.7	6.2	8.7	49.5	6.6

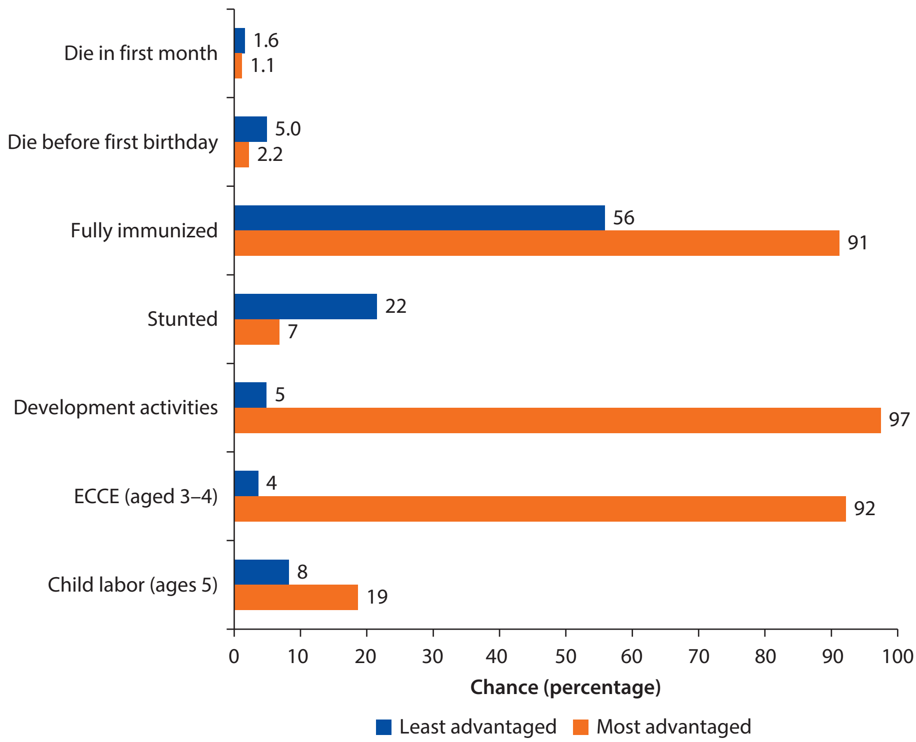
Source: World Bank calculations based on Tunisia MICS 2011/2012.
Note: Shapley decompositions of the dissimilarity index. The rates for prenatal care and delivery care are not modeled, because they are nearly universal. The overall model for violent child discipline was not significant, so it was not modeled. ECCE = early childhood care and education.

of circumstances to inequality for different outcomes, as percentages. Wealth contributed around a quarter to inequality in stunting, ECCE, and development activities. Mother's education contributed particularly to inequality in immunizations and development activities, while father's education contributed the most to mortality and stunting. Residence in an urban or rural area matters for all outcomes but especially for inequality in ECCE and development activities. The region where the child resides is particularly important for inequality in immunizations, mortality, stunting, and child labor. A child's gender contributes little to inequality.

Children tend to be consistently advantaged or disadvantaged across a variety of dimensions of ECD and can face very different life chances based on just a few characteristics. Early childhood is when cycles of poverty and inequality are transmitted across generations. If we observe a child who lives in a rural area in Sidi Bouzid, in the poorest 20 percent of households, and with uneducated parents (a least advantaged child) and compare that child to one who has parents with higher education, is from the richest 20 percent of households, and lives in an urban area of Tunis (a most advantaged child), we find that they have very different chances of healthy ECD. Figure 13.8 presents the chances (predicted chance) of different ECD indicators (based on the regressions) for these "least advantaged" and "most advantaged" individuals.

On almost every indicator, the least advantaged child faces poorer prospects for early development. Children face different prospects for surviving the first year of life, based on their profile. While a most advantaged child has a 1.1 percent chance of dying in the first month and a 2.2 percent chance of dying in the first year, a least advantaged child has a 1.6 percent chance of dying in the first month and a 5.0 percent chance of dying in the first year. This means a child is twice as likely to die by age one based on his or her background. The least advantaged child has a 56 percent chance of being fully immunized, compared to 91 percent for the most advantaged child. While the least advantaged child has a 22 percent chance of being stunted, the most advantaged child has a

Figure 13.8 Most Advantaged and Least Advantaged Simulations



Source: World Bank calculations based on Tunisia MICS 2011/2012.
Note: The rates for prenatal care and delivery care are not modeled, because they are nearly universal. The overall model for violent child discipline was not significant, so it was not modeled. ECCE = early childhood care and education.

7 percent chance. The greatest differences are in terms of development activities and ECCE. While the least advantaged child has a 5 percent chance of experiencing development activities, the most advantaged child has a 97 percent chance—almost twenty times greater. While the least advantaged child has a 4 percent chance of attending ECCE, the most advantaged child has a 92 percent chance, more than twenty times greater. The only outcome where the least advantaged child is likely to do better is a lower chance (8 percent) of child labor than the most advantaged child (19 percent).

Conclusions

While Tunisia has successful areas in ECD, children still face a number of obstacles to achieving their full potential for early development. Early health care coverage is high and mortality relatively low. However, stunting is a problem, with 1 in 10 children stunted. Children are more likely to be violently disciplined than to experience development activities, and less than half of children aged three to four are attending ECCE. Child labor is also common. As well as substantial obstacles to their early development, children face unequal chances of attaining their full potential based on the circumstances into which they are born. Inequality was particularly acute for experiencing development activities and attending ECCE, with a variety of characteristics contributing to inequality. More must be done to ensure children have equal chances to develop to their full potential.

Annex 13A: The Data

The Data Set

The analysis utilizes cross-sectional data on the well-being of women and children collected in the MICS for 2011/2012 in Tunisia. The MICS survey has a household questionnaire that includes important background characteristics of individuals and families. It also has a questionnaire for ever-married women aged 15–49, which captures information on important components of ECD, such as prenatal care, skilled assistance with the delivery of children, and children's immunizations. Weight and height data are collected for children under five years of age. The survey is nationally representative and includes data that allow for an analysis of the relationship between ECD and child and household indicators within Tunisia.

The Sample

The 2011/2012 MICS dataset for Tunisia sampled 9,171 households, 10,215 women aged 15–49, and 2,899 children under age five. The analysis in this note is weighted in order to be representative at the national level. The sample sizes reported (N) in each of the tables are based on the unweighted number of observations in the data.

Annex 13B: Indicators by Background Characteristics

Table 13B.1 Indicators by Background Characteristics

	Prenatal care—trained health professional	*Prenatal care: at least four visits*	*Trained attendant at delivery*	*Die in first month*	*Die before first birthday*	*Fully immunized (18–29 months)*	*Stunted*	*Height-for-age (SD)*	*ECCE (ages 3–4)*	*Development activities (ages 3–4)*	*Violent discipline*	*Child labor (age 5)*	*Percent of children (ages 0–4)*
Gender													
Male				1.1	1.8	88.7	11.3	−0.33	42.5	68.2	95.0	19.9	52.7
Female				1.3	1.5	90.7	8.8	−0.11	46.8	74.3	94.7	28.0	47.3
Wealth quintile													
Poorest	95.6	73.4	93.8	2.2	3.0	89.2	15.6	−0.65	13.1	44.2	95.2	16.1	19.2
Second	99.0	86.2	99.8	1.5	1.7	90.9	10.2	−0.23	31.8	64.9	97.0	25.6	21.7
Third	95.9	82.6	100.0	1.3	2.2	84.2	7.5	−0.13	47.4	72.9	94.2	32.4	18.6
Fourth	99.6	89.3	99.8	0.2	0.2	90.2	9.1	−0.12	54.9	85.4	91.6	26.2	22.9
Richest	100.0	96.5	99.6	0.9	1.5	93.2	7.7	0.02	82.0	91.0	96.8	21.2	17.6
Mother's education													
None	96.6	73.5	93.1	2.6	3.6	90.9	16.4	−0.59	18.4	44.6	95.8	15.7	12.6
Primary	97.9	81.8	98.2	1.4	1.9	90.2	9.9	−0.34	35.8	63.5	93.7	30.0	32.8
Secondary	97.3	85.6	99.8	0.5	1.0	94.7	9.9	−0.19	53.4	81.3	96.0	20.7	36.8
Higher education	100.0	95.6	100.0	1.3	1.3	80.7	6.6	0.16	75.7	95.3	94.2	26.4	17.8
Father's education													
None	93.0	77.0	89.9	5.5	5.5	78.0	16.8	−0.77	20.9	42.0	94.3	17.7	4.4
Primary	96.8	80.1	98.2	0.9	1.3	91.9	11.0	−0.36	33.8	64.1	96.3	25.9	39.5
Secondary	98.8	87.3	99.2	0.8	1.2	89.1	8.5	−0.11	51.7	76.9	92.2	24.1	37.8
Higher education	100.0	95.8	100.0	0.9	1.4	91.2	6.1	0.18	75.2	92.2	97.4	18.3	13.6
DK/missing	99.5	85.9	99.5	3.9	5.7	74.2	21.1	−0.68	34.1	68.7	95.9	27.5	4.6

table continues next page

Table 13B.1 Indicators by Background Characteristics *(continued)*

	Prenatal care—trained health professional	*Prenatal care: at least four visits*	*Trained attendant at delivery*	*Die in first month*	*Die before first birthday*	*Fully immunized (18–29 months)*	*Stunted*	*Height-for-age (SD)*	*ECCE (ages 3–4)*	*Development activities (ages 3–4)*	*Violent discipline*	*Child labor (age 5)*	*Percent of children (ages 0–4)*
Residence													
Urban	98.7	88.4	99.7	0.8	1.2	90.2	8.1	–0.11	60.3	82.1	94.7	25.8	63.7
Rural	96.9	80.7	96.9	1.9	2.5	88.6	13.6	–0.43	17.4	52.1	95.1	20.7	36.3
Region													
Tunis	97.7	90.9	100.0	0.9	1.7	91.0	8.5	–0.07	64.7	81.9	95.4	29.0	23.0
North East	97.4	88.9	100.0	1.1	1.4	97.2	12.6	–0.31	34.2	75.7	93.6	34.8	16.4
North West	98.1	80.6	95.6	2.7	3.4	90.2	14.5	–0.36	46.6	70.3	95.0	25.5	9.8
Center East	98.8	90.3	100.0	0.4	0.7	81.4	6.1	–0.08	43.8	68.7	93.8	14.9	22.0
Kasserine	97.0	75.5	100.0	1.5	2.4	86.9	13.8	–0.51	26.2	58.8	96.3	7.5	5.2
Kairouan	97.8	83.3	94.0	1.3	1.7	96.9	15.0	–0.67	18.2	65.7	96.6	8.0	5.3
Sidi Bouzid	90.3	64.9	88.1	0.4	1.7	75.4	13.7	–0.34	17.1	26.9	95.1	21.0	3.0
South East	100.0	76.7	99.4	1.8	2.1	96.3	6.9	–0.21	47.1	66.9	95.9	30.4	11.1
South West	100.0	83.8	95.5	2.0	2.0	91.6	14.3	–0.19	51.1	77.3	95.9	31.4	4.3
Total	98.1	85.5	98.6	1.2	1.7	89.6	10.1	–0.23	44.5	71.1	94.9	24.0	100.00
N (observations)	1,135	1,128	1,135	2,977	2,977	581	2,640	2,640	1,161	1,164	1,260	639	

Source: World Bank calculations based on Tunisia MICS 2011/2012.
Note: DK = do not know; ECCE = early childhood care and education; SD = standard deviation.

Annex 13C: Relationship between ECD Indicators and Background, When Accounting for Multiple Characteristics

Table 13C.1 Relationship between ECD Indicators and Multiple Background Characteristics

	Fully immunized	*Neonatal mortality*	*Infant mortality*	*Stunted*	*Height-for-age*	*ECCE*	*Development activities*	*Violent discipline*	*Child labor*
Female					+				+
Rural						–	–		
Region (Tunis omitted)									
North East						–			
North West									
Center East									
Kasserine									–
Kairouan					–	–			–
Sidi Bouzid						–	–		
South East									
South West									
Mother's education (no education omitted)									
Primary									
Secondary							+		
Higher education	–						+		
Father's education (no education omitted)									
Primary	+	–	–						
Secondary		–			+				
Higher education					+				
Missing/DK									
Wealth level (Poorest omitted)									
Second					+	+	+		
Third					+	+			+
Fourth			–			+	+		
Highest						+	+		
P-value (model)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.148	0.000
Observations (N)	581	2,977	2,977	2,640	2,640	1,161	1,164	1,260	639
R-squared					0.044				
Pseudo R-squared	0.158	0.106	0.085	0.042		0.225	0.179	0.051	0.081

Source: World Bank calculations based on Tunisia MICS 2011/2012.
Note: Blank cells indicate no statistically significant relationship. Prenatal and delivery care could not be modeled due to near-universal coverage. DK = do not know; ECCE = early childhood care and education; ECD = early childhood development.

Notes

1. Mortality rates calculated from the 2011/2012 MICS are based on the one to five years prior to the survey.
2. Either a doctor, a registered nurse, or a midwife.
3. The DPT vaccine is a combination vaccine that covers diphtheria, whooping cough (pertussis), and tetanus. Children must receive three doses to be fully immunized.
4. Children must receive three doses to be fully immunized against polio.
5. The units for height-for-age, weight-for-age, and weight-for-height are how Tunisian children are, on average, different from the reference population in terms of standard deviations.
6. More than 15 ppm of iodine in the salt
7. The six activities are (1) read books or look at picture books with the child; (2) tell stories to the child; (3) sing songs with the child; (4) take the child outside the home, compound, yard, or enclosure; (5) play with the child; and (6) spend time with the child naming, counting, and/or drawing things.
8. Per the MICS definitions, violent child discipline is based on discipline by anyone in the household within the last month, and includes psychological aggression (shouted, yelled, or screamed at the child; called the child dumb, lazy, or another name like that); physical punishment (shook the child; spanked, hit, or slapped the child on the bottom with a bare hand; hit the child on the bottom or elsewhere on the body with something like a belt, hairbrush, stick, or other hard object; hit or slapped the child on the hand, arm, or leg); and severe physical punishment (hit or slapped the child on the face, head, or ears; beat the child with an implement; hit over and over as hard as one could).
9. The questions were: (1) During the past week, did (child) do any kind of work for someone who is not a member of this household? (2) During the past week, did (child) help with household chores such as shopping, collecting firewood, cleaning, fetching water, or caring for children? (3) During the past week, did (child) do any other family work (on the farm or in a business or selling goods in the street)?
10. Wealth is defined in terms of which 20 percent of households a child falls into, based on an asset (wealth) index of durable goods.
11. A 5 percent level of statistical significance is used throughout.

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CHAPTER 14

West Bank and Gaza

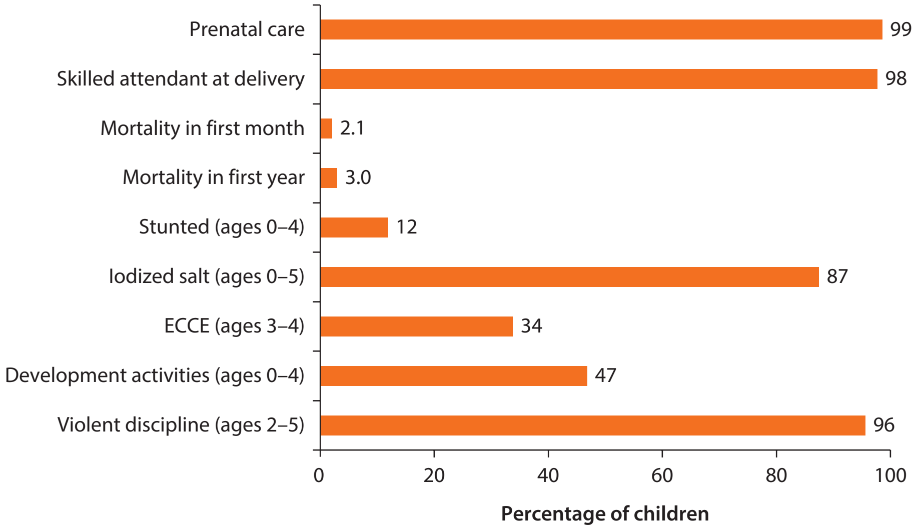
The State of Early Childhood Development in West Bank and Gaza

The state of early childhood development (ECD) in West Bank and Gaza includes major successes in some areas and serious deficits in other areas. Figure 14.1 shows summary indicators of ECD in West Bank and Gaza. In terms of prenatal and delivery care, West Bank and Gaza is doing very well: 99 percent of births received prenatal care, and 98 percent of births had a skilled attendant at delivery. Approximately 2.1 percent of children die in the first month of life, and 3.0 percent of children die in the first year of life. Most children (87 percent) have access to adequately iodized salt, which is important for their cognitive development. However, malnutrition is a problem, with 12 percent of children stunted. Also, in terms of their social and emotional development, children face serious deficits, with only 47 percent experiencing development activities and 96 percent of children being violently disciplined. Moreover, children have limited access to early learning and cognitive development; only a third (34 percent) of children aged three to four attend early childhood care and education (ECCE).

This chapter presents the status of ECD in West Bank and Gaza. The health status of children is examined through indicators (see box 14.1) of early mortality, prenatal care, and having a trained attendant at birth. Children's nutritional status is measured by stunting (height-for-age), as well as the availability of micronutrients, specifically iodine. To assess cognitive and social or emotional development, the analysis looks at the extent to which children are engaged in developmental learning activities, attendance in early childhood care and education, and whether children are violently disciplined. To better understand the context and conditions that influence ECD outcomes, the analysis also examines background factors that may be associated with ECD outcomes at the individual, household, and community levels and their relationships (see annexes 14A, 14B, and 14C for additional information on the data and these relationships). For the overall context, see box 14.2. Finally, the analysis measures the gaps and extent of inequality in ECD outcomes.

The analysis is based on the latest available data: the Palestinian Family Health Survey (PFHS) from 2006/2007. The survey was conducted in cooperation with

Figure 14.1 ECD Summary Indicators



Source: World Bank calculations based on Palestinian Family Health Survey (PFHS) 2006.
Note: ECCE = early childhood care and education; ECD = early childhood development.

Box 14.1 ECD Indicators Examined in West Bank and Gaza

Prenatal care
Trained attendant at delivery
Neonatal mortality (dying in the first month)
Infant mortality (dying in the first year)
Stunting/height-for-age
Salt iodization
Early childhood care and education
Parental development activities
Violent child discipline

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the Pan-Arab Project for Family Health (PAPFAM), United Nations Children's Fund (UNICEF), and United Nations Population Fund (UNFPA) and includes the key indicators of UNICEF's Multiple Indicator Cluster Survey (MICS). The data cover the various dimensions of early childhood from before a child is born up until the age of school entry (six years in West Bank and Gaza). If more indicators were available and examined, they could provide an even richer picture of ECD in West Bank and Gaza. This chapter also refers to the summary findings of the 2010 Palestinian Family Health Survey (Palestinian Central Bureau of Statistics 2013). Although the survey final report was released in 2013, the microdata were not available at the time and therefore could not be used for this chapter.

Box 14.2 Summary of Development Indicators in West Bank and Gaza

West Bank and Gaza is a lower-middle-income economy with an estimated population of 4.0 million, of which 41 percent are under the age of 15. The average life expectancy at birth is 73 years. The primary gross enrollment rate in West Bank and Gaza was 94 percent in 2012. Overall, West Bank and Gaza ranks 110 out of 186 economies with comparable data in the 2012 Human Development Index.

Table B14.2.1 West Bank and Gaza's Socioeconomic Indicators

	1990	*2012*
Total population (millions)	2.0	4.0
% of population under 15	48	41
Life expectancy at birth (years)	68	73
School enrollment, primary (% gross)	—	94

Sources: UNDP 2014; World Development Indicators.
Note: — = not available.

Survival, Health Care, and Nutrition

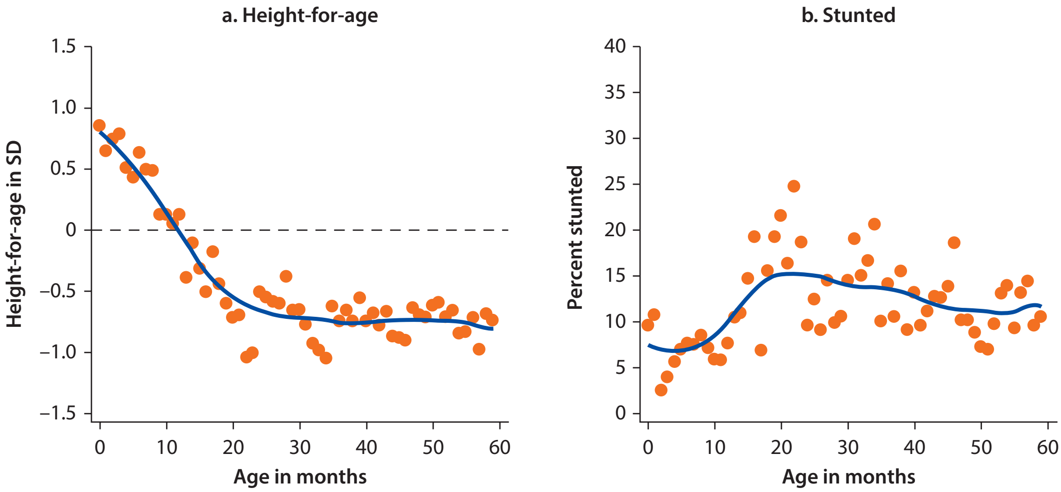
The first step in healthy ECD is simply surviving early childhood. In West Bank and Gaza, as of 2006, infant mortality, which refers to children dying before their first birthday, was 30 deaths per thousand births.[1] Most of infant mortality is composed of neonatal mortality—children dying within the first month of life. In West Bank and Gaza, 21 children out of every thousand died during their first month of life. There have been substantial improvements in mortality since 2006. In 2010, infant mortality was down to 19 deaths per thousand births, and neonatal mortality dropped to 12 deaths per thousand births (Palestinian Central Bureau of Statistics 2013). These 2010 mortality rates are below the Middle East and North Africa (MENA) regional averages (UNICEF 2014).

Addressing both early mortality and ECD begins during pregnancy and delivery. In West Bank and Gaza, 99 percent of births[2] received prenatal care, and 98 percent were attended by a health professional, as of 2006.[3] Prenatal care coverage remained high at 98 percent as of 2010, and 99 percent of births occurred with a skilled attendant (Palestinian Central Bureau of Statistics 2013).

Children in West Bank and Gaza start their lives on fairly healthy footing, in terms of nutrition measured by height-for-age; however, over the first two years of life, they experience a substantial falling off from healthy growth. As of 2006, 12 percent of children were stunted, 2 percent were underweight, and 2 percent were wasted.[4] Nutrition problems persisted as of 2010, when 11 percent of children were stunted, 4 percent underweight, and 3 percent wasted (Palestinian Central Bureau of Statistics 2013).

Figure 14.2 shows how children in West Bank and Gaza in 2006 fared compared to a healthy reference population.[5] While healthy growth in terms of weight is not an issue in West Bank and Gaza, children are faltering in their growth in terms of height. They start life with above-average height-for-age, and

Figure 14.2 Average Height-for-Age and Percentage Stunted, by Age in Months, Ages 0–59 Months



Source: World Bank calculations based on PFHS 2006.
Note: SD = standard deviation.

then by age one they are around the same height as the healthy reference population. They continue to fall off a healthy height-for-age until age 2; then for the next several years of life their growth stabilizes with children being about 0.75 standard deviations (SD) below the healthy reference median. The rate of stunting is quite low for young children but increases sharply between ages one and two and peaks around 20 months before decreasing slightly through age five.

Micronutrients such as iron, vitamin A, zinc, and iodine play an important role in both physical and cognitive development. While 87 percent of children under the age of five lived in a household with sufficiently iodized salt[6] in 2006, the remaining 13 percent who did not were at risk for impaired cognitive development. It is also concerning that salt iodization rates have fallen from 2006 (87 percent) to 2010 (77 percent) (Palestinian Central Bureau of Statistics 2013), representing a threat to the cognitive development of an increasing percentage of children.

On the positive side, there have been improvements in the coverage of other micronutrients. Vitamin A is essential for eyesight, growth, and development and also helps protect against some diseases. In 2006 in West Bank and Gaza, only 11 percent of children aged 6–59 months had received vitamin A during the six months preceding the survey (Palestinian Central Bureau of Statistics 2007). As of 2010, this rate had increased substantially to 89 percent (Palestinian Central Bureau of Statistics 2013).

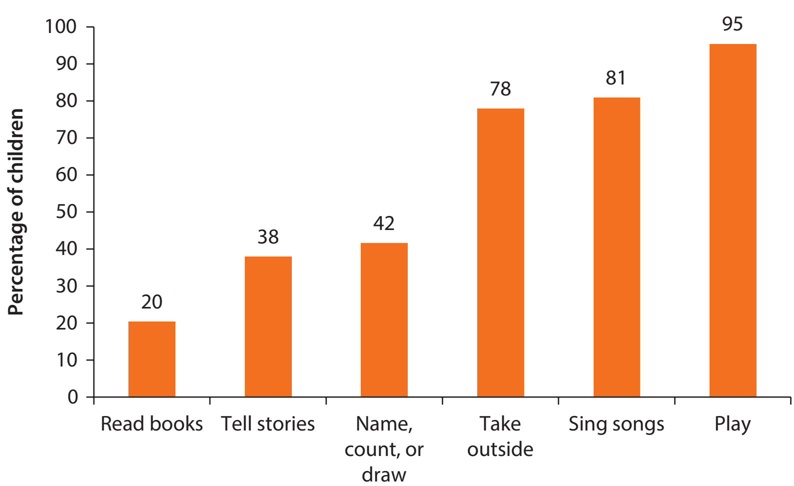
Cognitive, Social, and Emotional Development

Although it has been proven that play and interaction are important components of ECD, children in West Bank and Gaza are missing out on these opportunities for psychosocial growth. In the survey, caretakers of children aged zero to four were asked whether adults in the household had engaged in any of six different activities that support child development.[7] The results showed that in 2006, only half (47 percent) of children aged zero to four had experienced four or more development activities, and 2 percent of children experienced none of the activities. To compare with 2010, we focus on ages three to four because in 2010, this data is only available for children aged three to four. While in 2006, around two-thirds (68 percent) of children aged three to four experienced four or more development activities, in 2010 this rate had dropped to 58 percent, a substantial deterioration in children's early social, emotional, and cognitive development (Palestinian Central Bureau of Statistics 2013).

All the activities are important to social and emotional development, but reading and naming, counting, and drawing have an important educational and cognitive component. The most common activities in 2006 were playing (95 percent), singing (81 percent), and being taken outside (78 percent) (figure 14.3). The least frequently observed activity was reading books, with only 20 percent of children having books (or picture books) read to them. Naming, counting, and drawing (42 percent) and telling stories (38 percent) were also uncommon. Families in West Bank and Gaza are generally engaged socially and emotionally with their children; however, there is room for improvement in the cognitive development of children, especially in terms of reading or activities like naming, counting, and drawing.

Evidence has shown that early childhood care and education improves cognition and socioemotional development, with benefits that can last a lifetime. In West Bank and Gaza in 2006, only a third (34 percent) of children aged three to four were attending an ECCE program. ECCE attendance was much more common among four-year-olds (54 percent) than three-year-olds (15 percent). In 2006, the question was asked about all types of ECCE, including nursery care.

Figure 14.3 Percentage of Children Experiencing Development Activities, by Activity, Ages 0–4



Source: World Bank calculations based on PFHS 2006.

In 2010, a more restrictive question asked about early childhood education programs. Relatively few children (15 percent) aged three to four attend such programs in West Bank and Gaza (Palestinian Central Bureau of Statistics 2013).

Another challenge that risks hindering the healthy development of children is violent discipline. Disciplining children is an important part of child rearing. However, research has found that violent discipline negatively impacts the physical, psychological, and social development of children (UNICEF 2010). Violent child discipline[8] is common in West Bank and Gaza. According to the 2006 survey data, almost all (96 percent) of children aged two to five have experienced some form of violent discipline. Although beating with an implement (15 percent) and causing trauma (6 percent) were relatively less common, shouting/screaming at the child (93 percent), hitting with a hand (78 percent), and calling a child stupid were quite common (50 percent). There was a small decline in 2010, but rates of violent discipline remain excessive, with 92 percent of two- to four-year-olds having been violently disciplined (Palestinian Central Bureau of Statistics 2013).

Key Factors Affecting Early Childhood Development

A number of background characteristics at the child, family, and community levels affect ECD outcomes: gender, parents' education, household socioeconomic status (wealth),[9] geographic location (region or governorate), and residence (urban/rural/refugee camp). Understanding these relationships can help identify why some children have poor ECD outcomes and which children to target with policy or programmatic interventions.

Survival, Health, and Nutrition

Background characteristics have a complex relationship with infant mortality in West Bank and Gaza as of 2006. There is no clear pattern in the relationship between neonatal mortality and wealth. The rate of infant mortality is only slightly lower in the richest fifth of households than the poorest fifth of households. There are no discernable differences based on the household head's education and no large differences based on geography. In fact, when observing the models of neonatal and infant mortality based on background characteristics, there is not a statistically significant relationship.[10]

The rate of use of prenatal care is universally high at 99 percent, but shows some minor variation by wealth, education, and geography. While 99 percent of births in the richest fifth of households received prenatal care, 97 percent of births in the poorest fifth of households did so. Differences based on education are slightly larger, as 99 percent of mothers with higher education received prenatal care compared to 93 percent of illiterate mothers and 96 percent of mothers who could only read and write. Births in refugee camps actually had the highest rate of prenatal care—nearly 100 percent—while births in urban areas were at 98 percent. After taking into account other characteristics, use of prenatal care is significantly higher in the fourth and richest fifth of households compared to the poorest fifth of households. Mothers with more education were significantly more likely to use prenatal care. Being in a rural area or refugee camp as opposed to an urban area significantly increased the chance of prenatal care, as did being in Gaza, after accounting for other characteristics.

Use of skilled birth attendants was universally at a high rate—98 percent. There are no clear differences in use of skilled delivery care based on wealth or education. The largest difference was in terms of region of residence, with rates of skilled delivery care at almost 100 percent in Gaza but 97 percent in the West Bank. After taking into account other characteristics, use of delivery care was higher in Gaza than the West Bank. Use of delivery care also significantly increased with partner's education, but there were no significant differences based on women's education.

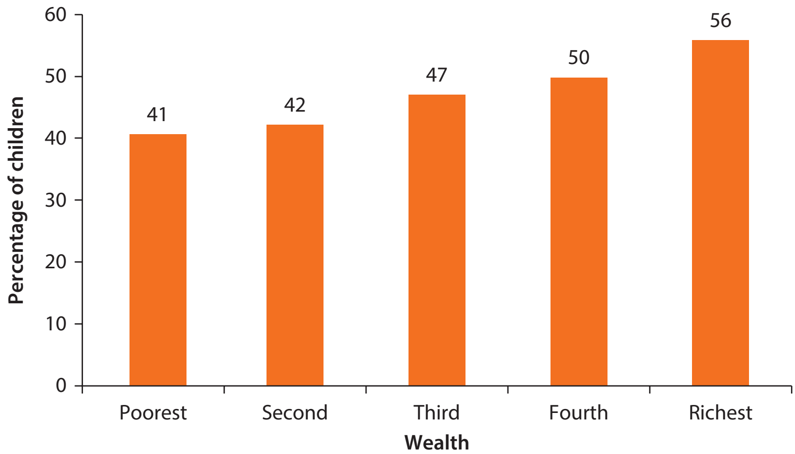
In West Bank and Gaza, stunting shows moderate differences based on wealth, suggesting that both poverty and problems in public health and nutrition quality are driving stunting. For instance, a child from the poorest fifth of households has a 16 percent chance of being stunted, while a child from the richest fifth of households has a 10 percent chance. Both have a moderately high chance of stunting, but there is a clear difference based on wealth. Similar differences are seen based on parents' education. There are notable differences in rates of stunting based on geography, with children in the West Bank at 10 percent and children in Gaza at 15 percent. There is a wide variety of stunting rates by governorate: Tulkarm has a 5 percent stunting rate, while in North Gaza the stunting rate is 33 percent. After taking into account other characteristics, children were significantly less likely to be stunted if they were living in a refugee camp, but they were more likely to be stunted if living in Gaza as compared to the West Bank. Stunting was significantly lower in every other wealth level when compared to the poorest fifth of households. Additionally, stunting was significantly lower for children who have a secondary- or highly educated mother.

Use of iodized salt was generally at a high rate—87 percent in 2006, although this has dropped somewhat in 2010. The availability of iodized salt varies little with background. Children living in refugee camps actually had a slightly higher chance of having iodized salt than children in urban areas (90 percent vs. 87 percent). The chance of a household having iodized salt was slightly higher with increased mother's and father's education. There was moderate variation in use of iodized salt based on governorate, ranging from 83 percent to 98 percent. However, overall, the variation in children's access to iodized salt based on background characteristics is not statistically significant.

Cognitive, Social, and Emotional Development

Children from the poorest two wealth levels are less likely to experience four development activities (41–42 percent), especially compared to children from the richest fifth of households, who have a 56 percent chance (figure 14.4). Parents' engagement with their young children and promotion of their early development are important components of ECD. Children should have equal parental care and development regardless of their background, but in West Bank and Gaza in 2006 there were appreciable differences in children experiencing at

Figure 14.4 Percentage of Children Aged 0–4 Experiencing Development Activities, by Wealth Level

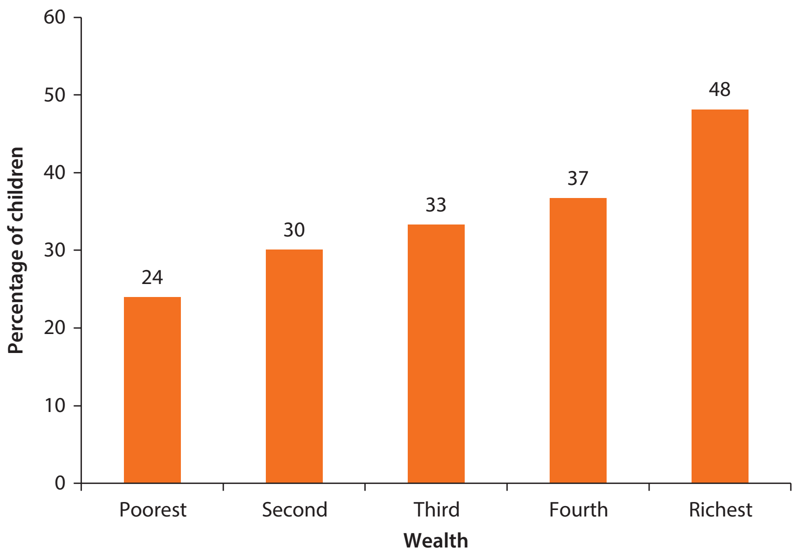


Source: World Bank calculations based on PFHS 2006.

least four development activities, based on background. The largest differences are seen in the second to third fifth of households (5 percentage points) and the fourth to richest fifth of households (6 percentage points). Similar differences are observed by parent's education. Children in refugee camps were slightly less likely to experience development activities (45 percent) compared with children in urban (47 percent) or rural (48 percent) settings. Children in Gaza were less likely to experience development activities (44 percent) than children in the West Bank (49 percent). After taking into account other characteristics, children in Gaza were less likely to experience at least four development activities as compared to those in the West Bank. The chance of experiencing four development activities increased significantly with increasing wealth, as well as with secondary- or higher-educated mothers, but not fathers.

In West Bank and Gaza, it is children from the most advantaged backgrounds who are attending ECCE, despite the fact that early childhood education has the greatest benefits for disadvantaged and vulnerable children (figure 14.5). While a three- to four-year-old child from the poorest fifth of households has a 24 percent chance of attending ECCE, a child from the richest fifth of households is twice as likely to do so (48 percent). The largest difference in rates of ECCE attendance is in comparing the fourth 20 percent of households (37 percent) to the richest (48 percent). These differences compound the deficits based on wealth in other domains of early development, such as experiencing development activities (see figure 14.4). Similar or smaller differences were observed in rates based on parental education. After taking into account other characteristics, children in rural areas were significantly more likely to attend ECCE, as were children from Gaza. ECCE attendance increases significantly with wealth, as well as with mother's (but not father's) education.

Figure 14.5 ECCE Attendance, by Wealth Level, Ages 3–4



Source: World Bank calculations based on PFHS 2006.
Note: ECCE = early childhood care and education.

Violent child discipline is widespread, with no large differences by background. The chance of being violently disciplined was slightly higher in Gaza (97 percent) than the West Bank (95 percent). This was also the only statistically significant difference after taking into account other characteristics.

Children Face Unequal Opportunities for Healthy Development

Children in West Bank and Gaza face unequal opportunities for healthy development, based on factors beyond their control. To measure the extent of inequality, the analysis calculates (a) the percentage of opportunities that needed to have been distributed differently for equality of opportunity to have occurred for each of the ECD indicators, and (b) the chance of whether these differences might have occurred by random variation (table 14.1). For prenatal care and delivery care, there is almost no inequality of opportunity, although the differences in skilled delivery care based on background are not just due to chance. There is inequality in terms of healthy physical growth; 13.4 percent of the chances of being stunted would have to be distributed differently for equality of opportunity to prevail.

There is inequality in opportunities for early cognitive development. Experiencing development activities and especially ECCE attendance show inequality of opportunity: 12.1 percent of chances to attend ECCE would need to have been distributed differently in order for children to have equality of opportunity. There is little inequality in chances of being violently disciplined. Since there were no significant differences in early deaths or access to iodized

Table 14.1 Percentage of Opportunities to Be Redistributed

	Dissimilarity index
Prenatal care	0.5
Skilled delivery	0.8*
Stunted	13.4**
Development activities	5.7**
Violent discipline	0.8
ECCE	12.1**

Source: World Bank calculations based on PFHS 2006.
Note: Significance level: * = chance < 5%, ** = chance < 1%, *** = chance < 0.1%. ECCE = early childhood care and education.

Table 14.2 Contributions of Background Characteristics to Inequality
Percentage

	Wealth	*Mother's education*	*Father's education*	*Residence*	*Region*	*Child's sex*
Prenatal care	21.5	23.9	17.5	21.6	15.6	n.a.
Skilled delivery	6.1	5.2	7.9	5.7	75.0	n.a.
Stunted	17.7	11.2	5.0	10.8	51.9	3.4
Development activities	48.2	23.7	12.1	2.8	11.9	1.2
Violent discipline	23.7	17.8	6.7	8.3	40.9	2.7
ECCE	32.0	41.8	20.9	1.5	3.7	0.1

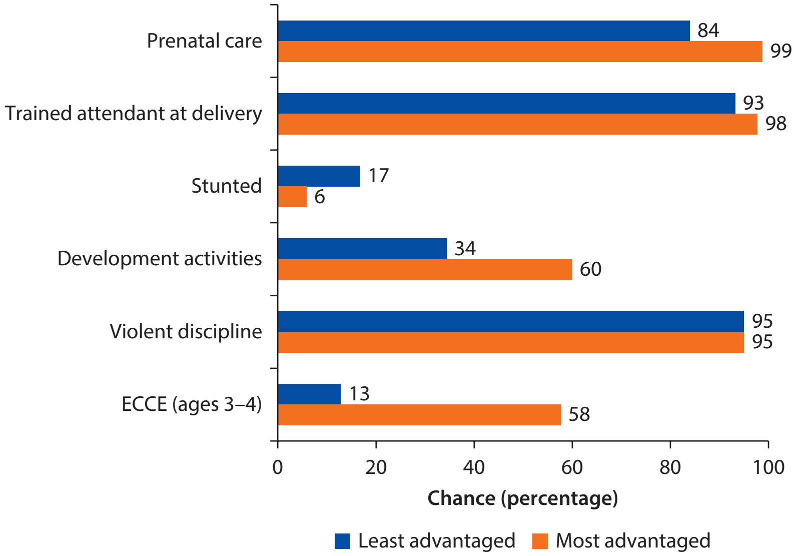
Source: World Bank calculations based on PFHS 2006.
Note: Shapley decompositions of the dissimilarity index. n.a. = not applicable. ECCE = early childhood care and education.

salt, when considering multiple characteristics, these outcomes could also be considered equitably distributed.

Wealth, mother's education, and geography make the largest contributions to children's unequal chances. Table 14.2 shows the different contributions of circumstances to inequality for different outcomes, as percentages. Wealth plays a particularly large role in development activities and ECCE, contributing between a half and a third to inequality for each of these measures. Mother's education is particularly important for ECCE and development activities, contributing substantially to inequality on these indicators. Father's education plays a small but important role in inequality for these outcomes as well. Differences in residence (urban, rural, or refugee camp) contribute little to inequality, but region does matter, especially for inequality in stunting. A child's gender contributes very little to inequality.

Children tend to be consistently advantaged or disadvantaged across a variety of dimensions of ECD and can face very different life chances based on just a few characteristics. Early childhood is when cycles of poverty and inequality are transmitted across generations. If we observe a child who lives in the poorest 20 percent of households and who has uneducated parents (a least advantaged child) and compare that child to one who has parents with higher education and is from the richest 20 percent of households (a most advantaged child), we find that they have very different chances of healthy ECD.[11] Figure 14.6 presents the chances (predicted chance) of different ECD indicators (based on the regressions)

Figure 14.6 Most Advantaged and Least Advantaged Simulations



Source: World Bank calculations based on PFHS 2006.
Note: Because the models for neonatal mortality, infant mortality, and access to iodized salt had no explanatory power, most and least advantaged simulations were not conducted. ECCE = early childhood care and education.

for these "least advantaged" and "most advantaged" individuals. Notably, the models for neonatal mortality, infant mortality, and access to iodized salt show that background characteristics are not statistically significant in explaining opportunities for ECD in these dimensions. This indicates that children do not face unequal chances of an early death or access to iodized salt based on their backgrounds. On all other indicators, the least advantaged child faces poorer ECD.

Comparing the least and most advantaged, the gap in prenatal care is 15 percentage points, and the gap in skilled delivery care is 5 percentage points. In terms of nutrition, a least advantaged child is three times as likely to be stunted—a 17 percent chance of being stunted, compared to 6 percent for a most advantaged child. There is a 26 percentage point gap in the chances of engaging in at least four development activities. The largest relative difference is in ECCE attendance, where a least advantaged child has a 13 percent chance of attending ECCE and a most advantaged child has a 58 percent chance—more than four times more likely to attend ECCE. A least advantaged child is almost equally likely to be violently disciplined as a most advantaged child, with less than a percentage point difference.

Conclusions

Despite some successes in ECD, children in West Bank and Gaza face a number of important shortfalls in their early development. Early health outcomes are good, with prenatal and skilled delivery care rates high and low mortality (as of 2010). However, stunting remains a substantial problem. Children also face a large number of threats to their early social, emotional, and cognitive development. Violent discipline is nearly universal, but just half of children experience development activities, and only a third attend ECCE. Inequality during the early years is also an issue in West Bank and Gaza, particularly for stunting, development activities, and ECCE. Children face unequal chances for early development, based on their circumstances. More attention to address these deficits is important to ensure children can develop fully and have equal chances for healthy development in the first few years of life.

Annex 14A: The Data

The Data Set

The analysis utilizes cross-sectional data on the well-being of women and children collected in West Bank and Gaza as the Palestinian Family Health Survey (PFHS) from 2006/2007. This survey has a household questionnaire that includes important background characteristics of individuals and families. It also includes a questionnaire for ever-married women aged 15–54, which captures information on important components of ECD, such as prenatal care and skilled assistance with the delivery of children. Weight and height data are collected for children under five years of age. The survey is nationally representative and includes data that allow for an analysis of the relationship between ECD and child and household indicators within West Bank and Gaza. See Palestinian Central Bureau of Statistics (2007) for additional information in the final report on the survey.

The Sample

The 2006/2007 PFHS dataset for West Bank and Gaza sampled 11,509 households, 9,785 ever-married women aged 15–54, and 10,107 children younger than age five. The analysis in this note is weighted in order to be representative at the national level. The sample sizes reported (N) in each of the tables are based on the unweighted number of observations in the data.

Annex 14B: Indicators by Background Characteristics

Table 14B.1 Indicators by Background Characteristics

	Prenatal care—trained health professional	*Trained attendant at delivery*	*Die in first month*	*Die before first birthday*	*Stunted*	*Height-for-age (SD)*	*Iodized salt*	*ECCE (ages 3–4)*	*Development activities*	*Violent discipline*	*Percent of children (ages 0–4)*
Gender											
Male			2.2	3.0	12.3	–0.45	87.2	34.5	46.4	95.7	51.1
Female			1.9	3.0	11.3	–0.44	88.3	33.6	47.3	95.4	48.9
Wealth quintile											
Poorest	97.2	97.3	2.1	3.7	15.6	–0.70	87.6	24.0	40.6	96.7	20.0
Second	98.5	97.7	2.2	3.0	10.8	–0.49	86.9	30.1	42.2	95.4	21.0
Third	98.7	98.2	1.6	2.4	10.3	–0.44	87.2	33.3	47.0	95.1	21.8
Fourth	98.9	97.9	2.5	2.9	12.4	–0.36	88.5	36.7	49.8	96.8	19.8
Richest	99.1	97.3	1.8	2.8	9.8	–0.18	88.6	48.1	55.8	93.6	17.5
Woman's education											
Illiterate	93.0	97.9									
Read and write	96.4	96.5									
Elementary	98.2	97.5									
Preparatory	98.5	97.6									
Secondary	99.2	97.9									
Intermediate	99.1	97.9									
Higher education	99.3	98.6									
Partner's education											
Illiterate	94.6	94.2									
Read and write	97.5	97.2									

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Table 14B.1 Indicators by Background Characteristics *(continued)*

	Prenatal care—trained health professional	*Trained attendant at delivery*	*Die in first month*	*Die before first birthday*	*Stunted*	*Height-for-age (SD)*	*Iodized salt*	*ECCE (ages 3–4)*	*Development activities*	*Violent discipline*	*Percent of children (ages 0–4)*
Elementary	98.2	97.7									
Preparatory	98.5	97.6									
Secondary	99.2	97.4									
Intermediate	99.3	98.1									
Higher education	98.7	98.6									
Missing/absent/DK	95.9	100.0									
Household head's education											
Illiterate			2.1	3.1							
Primary			1.8	2.8							
Secondary +			2.1	3.0							
Mother's education											
Illiterate or Read/write					15.9	–0.66	87.8	19.7	38.4	95.2	6.9
Basic					12.1	–0.49	87.3	30.1	44.9	95.8	57.1
Secondary/diploma					11.2	–0.40	88.0	42.1	50.6	95.2	27.6
Higher					7.8	–0.05	89.3	51.8	54.2	96.7	8.0
Missing/absent/DK					21.8	–0.72	97.3	33.3	51.9	81.1	0.4
Father's education											
Illiterate or Read/write					14.1	–0.72	86.3	24.3	38.9	96.9	8.8
Basic					11.9	–0.48	86.8	30.7	45.9	95.4	51.2
Secondary/diploma					12.3	–0.38	88.4	37.4	48.5	95.1	25.3
Higher					9.7	–0.24	90.8	47.0	52.1	96.4	13.1
Missing/absent/DK					6.1	–0.42	89.9	42.3	50.6	92.3	1.5

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Table 14B.1 Indicators by Background Characteristics *(continued)*

	Prenatal care—trained health professional	*Trained attendant at delivery*	*Die in first month*	*Die before first birthday*	*Stunted*	*Height-for-age (SD)*	*Iodized salt*	*ECCE (ages 3–4)*	*Development activities*	*Violent discipline*	*Percent of children (ages 0–4)*
Residence											
Urban	98.1	97.7	2.0	3.0	12.7	−0.47	86.5	34.3	46.6	95.7	54.8
Rural	98.5	97.3	2.0	2.8	10.3	−0.42	88.9	33.3	48.2	94.9	27.2
Refugee camp	99.7	98.4	2.3	3.0	11.4	−0.41	89.7	34.5	45.3	96.0	18.0
Region											
West Bank	98.1	96.5	1.9	2.8	9.6	−0.34	88.0	32.6	48.8	94.4	58.1
Gaza	99.0	99.5	2.2	3.3	14.7	−0.58	87.3	36.2	44.0	97.1	41.9
Governorates											
Jenin	98.6	94.8			8.0	−0.42	94.4	35.4	45.8	95.1	5.5
Tubas	94.7	96.3			7.2	−0.32	94.2	30.7	43.7	86.7	1.1
Tulkarm	98.4	96.6			4.8	−0.11	88.0	45.3	55.4	92.9	3.9
Nablus	99.1	98.8			7.7	−0.34	82.7	34.4	50.7	96.9	7.8
Qalqiliya	97.3	95.3			6.2	−0.10	93.4	36.9	40.4	87.7	2.4
Salfit	99.2	93.7			11.7	−0.32	98.1	50.4	53.8	97.4	1.9
Ramallah & Al Bireh	98.0	99.1			9.3	−0.28	89.8	40.9	62.6	94.8	7.1
Jericho & Al Aghwar	99.2	99.2			14.0	−0.25	84.6	36.7	39.8	99.2	1.1
Jerusalem	97.7	90.2			12.0	−0.28	86.8	35.7	52.9	96.0	8.5
Bethlehem	98.9	99.7			5.8	−0.10	90.1	35.2	48.9	91.0	3.9
Hebron	97.6	98.0			12.6	−0.52	85.3	17.5	40.4	94.5	14.8
North Gaza	98.7	99.5			33.2	−1.32	92.1	26.5	39.2	96.2	7.8
Gaza	98.5	99.2			9.6	−0.40	83.8	41.9	42.6	98.2	15.9

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Table 14B.1 Indicators by Background Characteristics *(continued)*

	Prenatal care—trained health professional	*Trained attendant at delivery*	*Die in first month*	*Die before first birthday*	*Stunted*	*Height-for-age (SD)*	*Iodized salt*	*ECCE (ages 3–4)*	*Development activities*	*Violent discipline*	*Percent of children (ages 0–4)*
Dir Al Balah	100.0	99.6			10.5	–0.36	82.7	24.3	44.6	95.6	5.6
Khan Yunis	99.3	99.8			12.8	–0.49	88.2	44.0	48.8	96.8	7.5
Rafah	99.3	99.7			9.7	–0.32	94.9	33.9	48.0	97.2	5.1
Total	98.5	97.7	2.1	3.0	11.8	–0.44	87.7	34.1	46.8	95.5	100.0
N (observations)	6,342	6,323	8,526	8,526	9,236	9,236	12,135	3,952	10,105	2,796	

Source: World Bank calculations based on PFHS 2006.
Note: Data by governorate for neonatal and infant mortality, ECCE, and child labor is omitted because of small sample size or low rates. Other blank cells indicate not applicable or not available. DK = do not know; ECCE = early childhood care and education; SD = standard deviation.

Annex 14C: Relationship between ECD Indicators and Background, When Accounting for Multiple Characteristics

Table 14C.1 Relationship between ECD Indicators and Multiple Background Characteristics

	Prenatal	*Delivery*	*Iodized salt*	*ECCE*	*Stunted*	*Neonatal mortality*	*Infant mortality*	*Development activities*	*Violent discipline*
Female									
Residence—compared to urban									
Rural	+			+					
Refugee camp	+		+		–				
Gaza—compared to West Bank	+	+		+	+			–	+
Wealth—20% of households—compared to poorest									
Second quintile				+	–				
Third quintile				+	–	–		+	
Fourth quintile	+			+	–			+	
Richest quintile	+			+	–			+	
Woman's education—compared to none									
Read/write			n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Elementary			n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Preparatory	+		n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Secondary	+		n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Intermediate	+		n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Higher education	+		n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Partner's education—compared to none									
Read/write			n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Elementary		+	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Preparatory		+	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Secondary			n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Intermediate		+	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Higher education		+	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Missing/absent/DK		+	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Mother's education—compared to none									
Basic	n.a.	n.a.		+		n.a.	n.a.		
Secondary/diploma	n.a.	n.a.		+	–	n.a.	n.a.	+	
Higher education	n.a.	n.a.		+	–	n.a.	n.a.	+	
Missing/DK	n.a.	n.a.				n.a.	n.a.		–
Father's education—compared to none									
Basic	n.a.	n.a.				n.a.	n.a.		
Secondary/diploma	n.a.	n.a.				n.a.	n.a.		
Higher education	n.a.	n.a.	+			n.a.	n.a.		
Missing/DK	n.a.	n.a.			–	n.a.	n.a.		
Household head's education—compared to none									
Primary	n.a.	n.a.	n.a.	n.a.	n.a.			n.a.	n.a.
Secondary +	n.a.	n.a.	n.a.	n.a.	n.a.			n.a.	n.a.

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Table 14C.1 Relationship between ECD Indicators and Multiple Background Characteristics *(continued)*

	Prenatal	*Delivery*	*Iodized salt*	*ECCE*	*Stunted*	*Neonatal mortality*	*Infant mortality*	*Development activities*	*Violent discipline*
P-value (model)	0.000	0.000	0.238	0.000	0.000	0.424	0.724	0.000	0.012
Observations (N)	6,342	6,216	12,123	3,947	9,227	8,487	8,484	10,095	2,794
Pseudo R-squared	0.067	0.065	0.006	0.037	0.020	0.004	0.004	0.013	0.026

Source: World Bank calculations based on PFHS 2006.
Note: Blank cells indicate no statistically significant relationship. DK = do not know; ECCE = early childhood care and education; ECD = early childhood development; n.a. = not applicable or not available.

Notes

1. Both infant and neonatal mortality rates are calculated based on deaths in the 12–59 months preceding the survey.
2. The West Bank and Gaza 2006 PFHS asks about prenatal care for the most recent live birth in the past five years only. Since live births are likely to be associated with prenatal care, the percentage of births not receiving prenatal care is likely to be an underestimate of the percentage of pregnancies not receiving prenatal care.
3. Either a doctor or a nurse/midwife.
4. While previous reports (World Bank 2011) have suggested that West Bank and Gaza has some of the best child nutrition outcomes in the world, the World Bank (2011) report used different, older data for comparison. A stunting rate of 12 percent, although good for the region and given West Bank and Gaza's level of income, is still a substantial shortfall in children's development that must be addressed.
5. The units for height-for-age show, on average, how children in West Bank and Gaza are different from the reference population in terms of standard deviations.
6. More than 15 ppm of iodine in the salt
7. The six activities are (1) read books or look at picture books with the child; (2) tell stories to the child; (3) sing songs with the child; (4) take the child outside the home, compound, yard, or enclosure; (5) play with the child; and (6) spend time with the child naming, counting, and/or drawing things.
8. Per the MICS definitions, violent child discipline is based on discipline by anyone in the household within the last month, and includes psychological aggression (shouted, yelled, or screamed at the child; called the child dumb, lazy, or another name like that); physical punishment (shook the child; spanked, hit, or slapped the child on the bottom with a bare hand; hit the child on the bottom or elsewhere on the body with something like a belt, hairbrush, stick, or other hard object; hit or slapped the child on the hand, arm, or leg); and severe physical punishment (hit or slapped the child on the face, head, or ears; beat the child with an implement; hit over and over as hard as one could).
9. Wealth is defined in terms of which 20 percent of households a child falls into, based on an asset (wealth) index of durable goods.
10. Throughout, we use a 5 percent level of significance.
11. Since there was no clear systematic component with geographic differences, urban/rural/refugee camp, or West Bank versus Gaza, we do not incorporate a geographic component into our simulations; simulations are for a reference category of an urban child living in the West Bank.

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CHAPTER 15

The Republic of Yemen

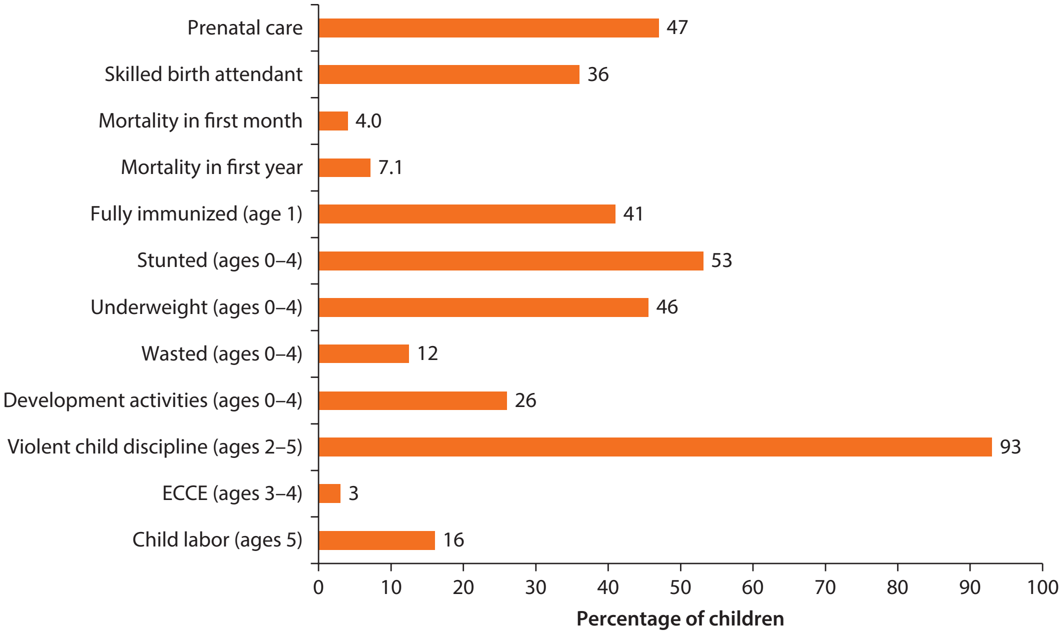
The State of Early Childhood Development in the Republic of Yemen

Children in the Republic of Yemen face a series of challenges and risks that seriously jeopardize their early development. Figure 15.1 shows summary indicators of early childhood development (ECD) in the Republic of Yemen. In terms of prenatal and delivery care, only half of births receive prenatal care and only a third of deliveries are attended by a skilled worker. Early mortality is high, with 4 percent of children dying in the first month of life, and 7 percent in the first year. Those children who survive are at great risk of disease, malnutrition, and death. More than half of children are not fully immunized at age one, 53 percent are stunted, 46 percent are underweight, and 12 percent are wasted. In terms of their social and emotional development, only a quarter of children experience development activities, and only 3 percent attend early childhood care and education (ECCE). Furthermore, over 90 percent of children between ages two and five are violently disciplined, and 16 percent of five-year-old children engage in child labor.

This chapter presents the status of ECD in the Republic of Yemen. The health status of children is examined through indicators (see box 15.1) of early mortality, prenatal care, and having a trained attendant at birth. Children's nutritional status is measured by stunting (height-for-age), underweight (weight-for-age), and wasting (weight-for-height). To assess cognitive and social or emotional development, the analysis looks at the extent to which children are engaged in developmental learning activities, attendance in ECCE, and whether children are violently disciplined. Child labor at age five is also examined. To better understand the context and conditions that influence ECD outcomes, the analysis also examines background factors that may be associated with ECD outcomes at the individual, household, and community levels and their relationships (see annexes 15A, 15B, and 15C for additional information on the data and these relationships). For the overall country context, see box 15.2. Finally, the analysis measures the gaps and extent of inequality in ECD outcomes.

The analysis is based on the latest available data: the Multiple Indicator Cluster Survey (MICS) from 2006. While the data cover the various different dimensions of early childhood from before a child is born until the age of school

Figure 15.1 ECD Summary Indicators



Source: World Bank calculations based on Yemen, Rep. Multiple Indicator Cluster Survey (MICS) 2006 except stunted, underweight, and wasted, which are based on Yemen, Rep. Pan Arab Project for Family Health (PAPFAM) 2003.
Note: ECCE = early childhood care and education; ECD = early childhood development.

Box 15.1 ECD Indicators Examined in the Republic of Yemen

Prenatal care
Trained attendant at delivery
Neonatal mortality (dying in the first month)
Infant mortality (dying in the first year)
Fully immunized
Stunting/height-for-age
Underweight/weight-for-age
Wasting/weight-for-height
Early childhood care and education
Parental development activities
Violent child discipline
Child labor

entry (six years in the Republic of Yemen), they do not include data on height or weight, which was calculated using the most recent Pan Arab Project for Family Health survey (PAPFAM) in 2003. If more indicators were available and examined, they could provide an even richer picture of ECD in the Republic of Yemen. While under normal circumstances ECD indicators change relatively

Box 15.2 Summary of Development Indicators in the Republic of Yemen

The Republic of Yemen is a lower-middle-income country with a gross domestic product (GDP) per capita in 2012 of about $1,494 (in current US Dollars, table B15.2.1). The Republic of Yemen's population doubled in the past two decades, reaching 23.9 million, of which 41 percent are under the age of 15. Life expectancy has improved from 58 years in 1990 to 63 in 2012, and the primary gross enrollment rate reached 97 percent in 2012. Overall, the Republic of Yemen ranks 160 out of 186 countries with comparable data in the 2012 Human Development Index.

Table B15.2.1 The Republic of Yemen's Socioeconomic Indicators

	1990	*2012*
Total population (millions)	11.8	23.9
% of population under 15	52	41
GDP per capita (current US dollars)	$479	$1,494
Life expectancy at birth (years)	58	63
School enrollment, primary (% gross)	—	97

Sources: World Development Indicators and UNDP 2014.
Note: GDP = gross domestic product; — = not available.

slowly, on the ground today, in light of the Arab Spring in the Republic of Yemen, there may have been more rapid and substantial changes, providing both new challenges and new opportunities to improve ECD in the Republic of Yemen.

Survival, Health Care, and Nutrition

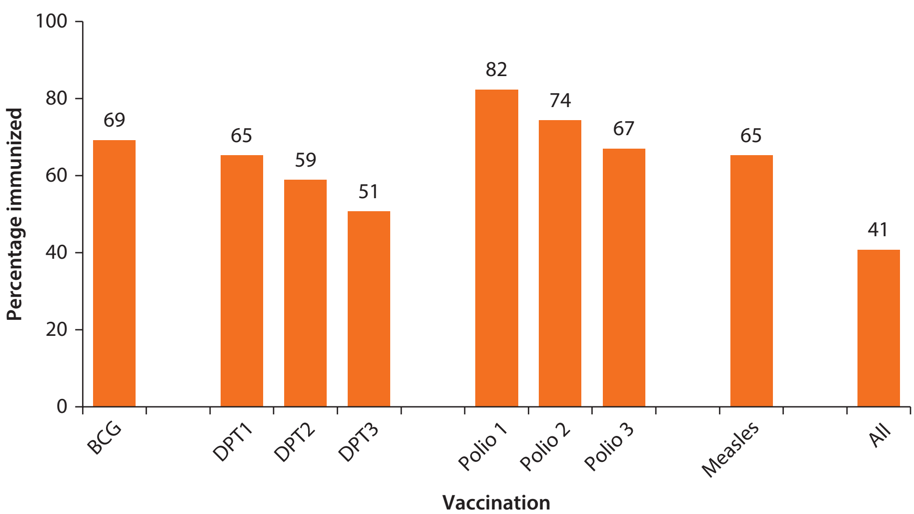
The first step in healthy ECD is simply surviving early childhood. In the Republic of Yemen, 1 in every 14 children born dies by age one.[1] This means that 168 children under the age of one die every day. Infant mortality, which refers to children dying before their first birthday, was 71 deaths per thousand births in the Republic of Yemen,[2] nearly three times the rate for the Middle East and North Africa (MENA) region in 2012 (24 per thousand) (UNICEF 2014). Most infant mortality is composed of neonatal mortality—children dying within the first month of life. In the Republic of Yemen, 40 children out of every thousand born die during their first month of life. This is substantially higher than the 2012 regional average of 15 per thousand and substantially above the 2012 average for the least developed countries of 20 deaths per thousand births (UNICEF 2014). While the infant mortality rate has been falling in the Republic of Yemen—down from around 100 deaths per thousand births in 1986—neonatal mortality has been a more persistent problem and has shown a smaller and slower decline (World Development Indicators).

In the Republic of Yemen, less than half (47 percent) of births[3] receive prenatal care and only a third (36 percent) are attended by a trained health professional,[4] putting children and mothers at great risk. This rate of prenatal care in the Republic of Yemen is below both the 2012 MENA regional average

(83 percent) and the average for the least developed countries (74 percent) (UNICEF 2014). That only a third (36 percent) of live births[5] were attended by a health professional is far below the 2012 MENA regional average (79 percent) and below the average for the least developed countries (46 percent) (UNICEF 2014). Access to prenatal care in the Republic of Yemen has been increasing over time; in 2003, 41 percent of births received prenatal care. The percentage of deliveries with a skilled attendant has increased more substantially from 27 percent in 2003 to 36 percent in 2006 (World Development Indicators). There is substantial overlap between births that do not receive prenatal care and births that do not have trained birth attendants. Four-fifths (81 percent) of births that received no prenatal care also had no trained birth attendants.

The full immunization of children plays an important role in reducing childhood diseases that can hamper growth or cause death. Children are considered fully immunized if they have received immunizations for all six major preventable childhood diseases: tuberculosis, diphtheria, whooping cough, tetanus,[6] polio,[7] and measles. They should be fully immunized by 12 months of age. The Republic of Yemen falls short of the level of immunization coverage that will allow for herd immunity;[8] only 41 percent of children aged 12–23 months are fully immunized. While the Republic of Yemen made real progress in increasing immunization rates across the board in the late 1990s (World Development Indicators), rates have been stagnant through the 2000s. A variety of vaccines are underutilized in the Republic of Yemen (figure 15.2). Tuberculosis (Bacillus Calmette-Guerin [BCG]) and measles vaccines have coverage lower than 70 percent. Diphtheria, pertussis, and tetanus (DPT)[9] coverage is below 70 percent, and children are often not receiving all the doses of DPT or polio. Most children are, however, receiving some vaccinations,

Figure 15.2 Percentage of Children Aged 12–23 Months Immunized, by Vaccination



Source: World Bank calculations based on Yemen, Rep. MICS 2006.
Note: BCG = Bacillus Calmette–Guérin (tuberculosis vaccine); DPT = diphtheria, pertussis, and tetanus.

which provides contact with the health care system and the opportunity to readily achieve fuller coverage by following up on multiple immunizations.

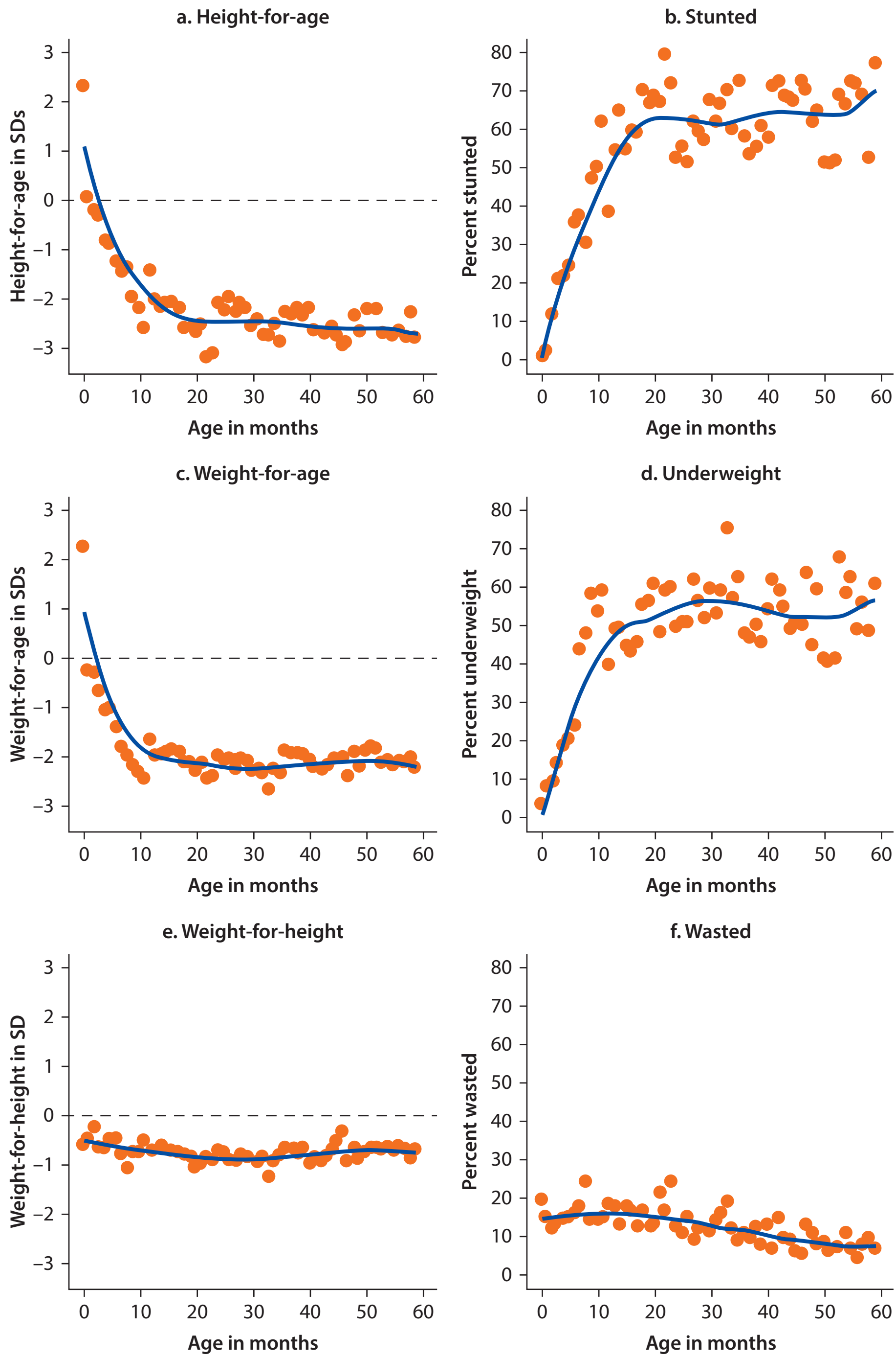
According to the latest available data,[10] 53 percent of children in the Republic of Yemen are stunted, 46 percent are underweight, and 12 percent are wasted. Children in the Republic of Yemen fall behind soon after birth, with height-for-age that is below the healthy average (figure 15.3).[11] Over the first year of life, children experience a substantial falling off from healthy growth. For example, height-for-age averages almost a full 2 standard deviations (SD) below the healthy reference population from age one onward. Around 60 percent of children age one and older are stunted. Within the first few months of life, children's weight-for-age falters; after age one, weight-for-age remains about 2 SD below the reference median. Correspondingly, more than 50 percent of children are underweight after age one. Weight-for-height, graphed against age, shows that children are, on average, between one-half and one SD below the healthy reference population of the same height. Wasting—being far below a healthy weight-for-height—is most acute in the first year of life and falls very slightly thereafter.

Micronutrients such as iron, vitamin A, zinc, and iodine play an important role in both physical and cognitive development. Iodized salt is the primary means for delivering iodine to children. In the Republic of Yemen, as of 2006, only 30 percent of children had access to adequately iodized salt. Thus two-thirds of children (70 percent) in the Republic of Yemen are at great risk for impaired cognitive development due to the fact that their households do not have sufficiently iodized salt (World Development Indicators).[12] Yemeni children and mothers face shortages of other important micronutrients. Vitamin A is essential for eyesight, growth, and development, and it also helps protect against some diseases. In the Republic of Yemen in 2007, only 47 percent of children aged 6–59 months had received a vitamin A capsule in the six months preceding the survey (World Development Indicators).

Social, Emotional, and Cognitive Development

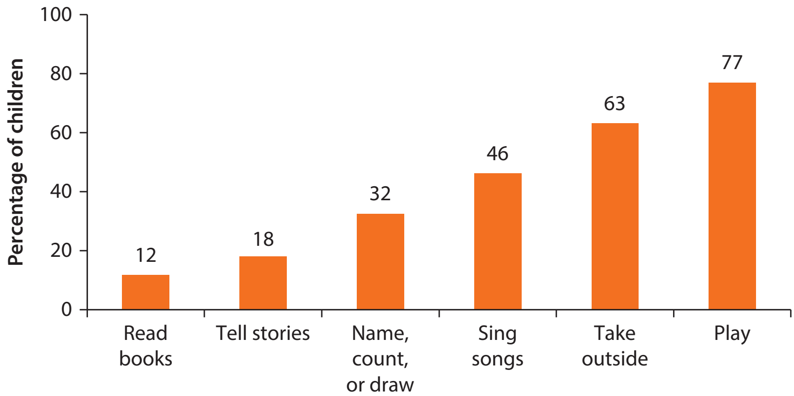
Although it has been proven that play and interaction are important components of ECD, children in the Republic of Yemen are missing out on these opportunities for psychosocial growth. In the MICS survey, caretakers of children aged zero to four were asked whether adults in the household had engaged in any of six different activities that support child development.[13] The results showed that more than 15 percent of children did not experience any of the six development activities and only a quarter (26 percent) of children had experienced four or more development activities. While all the activities are important to social and emotional development, reading and naming, counting, and drawing have an important educational and cognitive component. However, according to the survey, play (77 percent) was the most common development activity adults engaged in with children (figure 15.4). Most children were also taken outside (63 percent). Less than half of children experienced development activities with a strong component of cognitive stimulation; only 46 percent of children had songs sung to them; 32 percent had an adult name, count, or draw things with

Figure 15.3 Average Height-for-Age, Weight-for-Age, and Weight-for-Height Compared to Healthy Reference Population, in Standard Deviations and Percentage Stunted, Underweight, and Wasted, by Age in Months, Ages 0–4



Source: World Bank calculations based on PAPFAM 2003.
Note: SD = standard deviations

Figure 15.4 Percentage of Children Experiencing Development Activities, by Activity



Source: World Bank calculations based on Yemen, Rep. MICS 2006.

them; 18 percent had stories told to them; and only 12 percent had books (or picture books) read to them.

Evidence has shown that ECCE improves cognition and socioemotional development, with benefits that can last a lifetime. Only 3 percent of the Republic of Yemen's children attend ECCE. One of the Education for All goals is to expand ECCE, especially for the most disadvantaged and vulnerable children. In the Republic of Yemen, 97 percent of children ages three and four are not attending an early childhood education program. Although the MENA region generally has low early childhood attendance rates, with gross enrollment in pre-primary education at 27 percent (World Bank Development Indicators),[14] the Republic of Yemen is far below the average. There may be some children who attend early childhood education at age five or older. The Republic of Yemen generally has late school entry; while 68 percent of school-age children (aged 6–14) attend school, only 40 percent of children of school-entry age (age 6) are attending the first grade (Ministry of Health and Population and UNICEF 2008).

Other challenges that risk hindering the healthy development of children in the Republic of Yemen are violent discipline[15] and child labor. Violent child discipline is pervasive in the Republic of Yemen, with 93 percent of children ages two to five having been violently disciplined. Disciplining children is an important part of child rearing. However, research has found that violent discipline negatively impacts the physical, psychological, and social development of children (UNICEF 2010). Additionally, 16 percent of five-year-old children in the Republic of Yemen engaged in some type of child labor—working for someone not a member of the household, doing household chores, or doing other family work.[16] Child labor, engaging in work or chores, can be particularly dangerous for young children. It also may hamper their ability to successfully transition to school. Mostly children were engaged in chores (14 percent of five-year-olds), but some were engaged in family work (3 percent of five-year-olds) or work for others (1 percent of five-year-olds).

Key Factors Affecting Early Childhood Development

A number of background characteristics at the child, family, and community levels affect ECD outcomes: gender, parents' education, household socioeconomic status (wealth),[17] geographic location (region or governorate), and residence (urban/rural). Understanding these relationships can help identify why some children have poor ECD outcomes and which children to target with policy or programmatic interventions. Although wealth, education, and geographic differences are all found to influence ECD in the Republic of Yemen, there are rarely substantive or systematic differences in ECD based on gender.

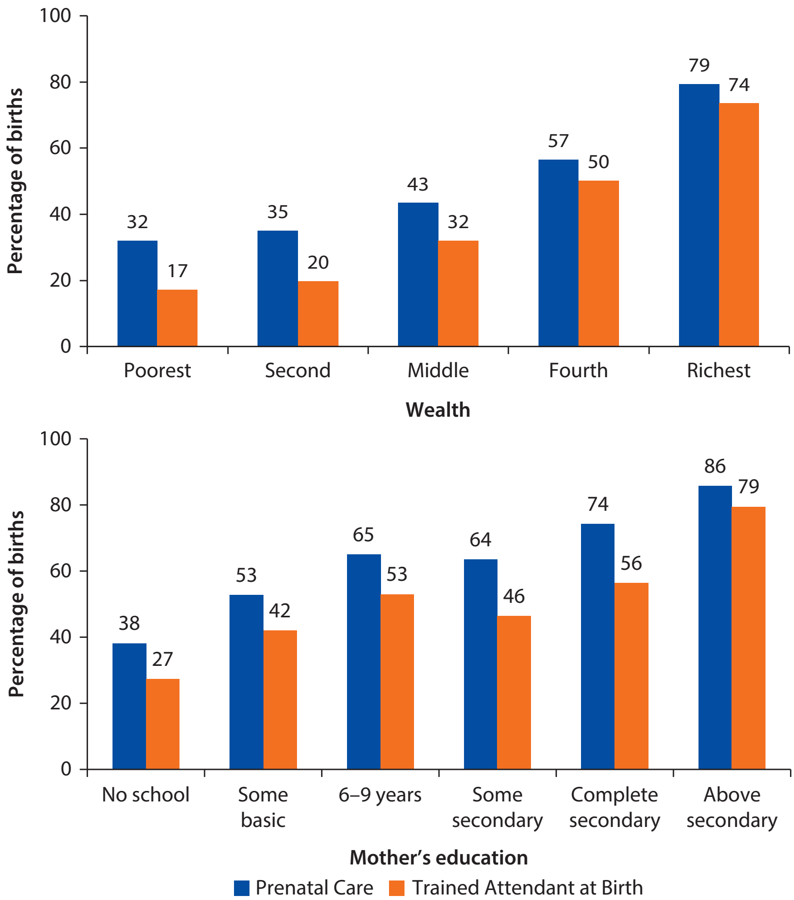
Survival, Health, and Nutrition

A child's chance of dying in the first year varies substantially by background characteristics. Males have an 8 percent chance of dying in the first year of life, and females have a 7 percent chance—higher infant mortality among males is a common pattern globally due to genetic factors (Hill and Upchurch 1995). The chance of dying is lower for children of mothers with basic or secondary education (around 6 percent) than for mothers with no education (around 8 percent). Deaths are more common in rural areas (8 percent) than urban areas (6 percent). Although the sample size is somewhat small for examining mortality by region, the North region stands out for high rates of neonatal mortality (6 percent) and infant mortality (10 percent). Children from the poorest fifth of households have a 10 percent chance of dying before age one, while children from the richest fifth of households have a 4 percent chance of dying before age one. After accounting for multiple characteristics, children in Aden and the Highlands were significantly[18] less likely to die in the first year of life compared to children in Sana'a, and children from the richest wealth level were less likely to die than children from the poorest fifth of households.

Use of prenatal care is strongly associated with wealth and education (figure 15.5). While 32 percent of births from the poorest fifth of households received prenatal care, 79 percent of births from the richest fifth of households did so. After accounting for other characteristics, being from the richest fifth of households and having parents with higher levels of education significantly increases the chances of a birth getting prenatal care. The importance of wealth and the education of women and their husbands in use of prenatal care suggests that both financial constraints and lack of information may prevent women from accessing prenatal care. There are also large geographic differences in rates of use of prenatal care, which likely represent differences in access to health infrastructure. While 79 percent of births in both the Sana'a City and Aden regions received prenatal care, less than half of births in the Highlands (45 percent), North (45 percent), and West (34 percent) received prenatal care.

There is an even stronger relationship between wealth and use of skilled birth attendants than for prenatal care (figure 15.5). While 17 percent of births from the poorest fifth of households used a skilled birth attendant, 74 percent of births from the richest fifth of households did so. Use of skilled birth attendants

Figure 15.5 Percentage of Births with Prenatal Care and Skilled Delivery Care, by Wealth Level and Mother's Education



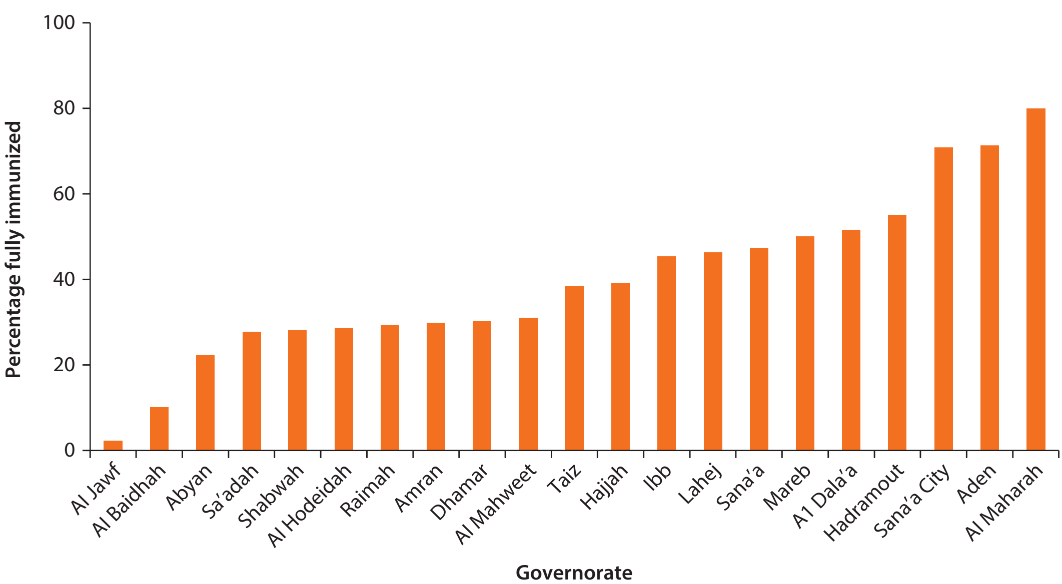
Source: World Bank calculations based on Yemen, Rep. MICS 2006.

increases substantially with increasing mother's education. For instance, a birth with an uneducated mother has a 27 percent chance of skilled delivery care, while a birth to a mother with above a secondary education has a 79 percent chance of skilled delivery care. After accounting for multiple characteristics, women who were educated above secondary were more likely to have skilled delivery attendants, but there were no other differences based on education. However, births in the third, fourth, and richest fifth of households were more likely to have skilled birth attendants than births from the poorest fifth of households. Births in rural areas were significantly less likely to have a trained attendant, as were births in the Highlands area compared to Sana'a, while births in Aden were more likely to have a skilled birth attendant. Larger differences, based on geography, in use of skilled birth attendants as compared to prenatal care suggest that, while women can and do travel for prenatal care, skilled birth attendants are often not readily or locally available when women go into labor.

Wealth and place of residence are closely associated with children's access to immunizations. Figure 15.6 shows the percentage of children age one fully immunized, by governorate. Rates range from 2 percent in Al Jawf to 80 percent in Al Maharah. Children have dramatically different chances of being protected against common illnesses, depending on where they live.

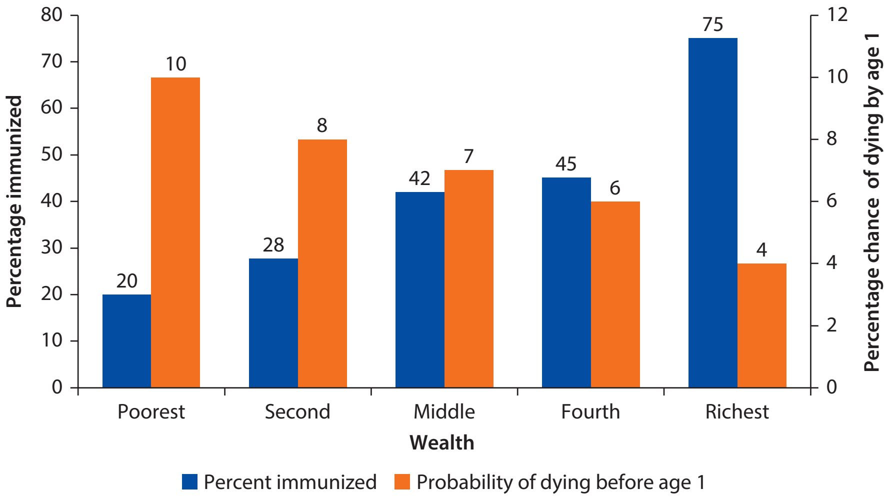
The differences in accessing immunizations based on wealth level likely contribute to differences in early mortality. Figure 15.7 shows the relationship between wealth and immunizations (left y axis) and infant mortality (right y axis). Only a fifth of children age one from the poorest fifth of households are fully immunized, while three-quarters of children from the richest 20 percent of households are fully immunized against childhood illnesses. There is a large disparity in immunization rates from even the fourth 20 percent of households (45 percent immunized and 6 percent infant mortality) to the richest (75 percent immunized and 4 percent mortality). Immunization should be a widely available public health service; instead, there are large disparities based on geography and wealth, with services captured by the wealthiest. Some of the gaps in rates of child mortality are likely to be mediated through this disparity in immunizations. Disparities in immunization rates are one of the many factors causing children from the poorest fifth of households to have a 10 percent chance of death in the first year of life, compared to 4 percent in the richest fifth of households. After accounting for other characteristics, being from the third, fourth, and richest wealth levels means a significantly higher chance of being immunized. Similarly, having a father with at least a basic education also significantly

Figure 15.6 Percentage of Children Aged 12–23 Months Fully Immunized, by Governorate



Source: World Bank calculations based on Yemen, Rep. MICS 2006.

Figure 15.7 Percentage of Children Aged 12–23 Months Fully Immunized, and Infant Mortality, by Wealth Level



Source: World Bank calculations based on Yemen, Rep. MICS 2006.

increases the chance of a child being immunized. This suggests that both financial and educational barriers to receiving immunizations exist.

In the Republic of Yemen, rates of stunting, underweight, and wasting show some differences by wealth level, suggesting that both poverty and problems in public health and nutrition quality are driving stunting. A child from the poorest quintile has a 57 percent chance of being stunted, while a child from the richest quintile has a 38 percent chance. So while both have a high chance of being stunted, there is a clear difference based on wealth. Small differences are seen with household head's education. While an urban child has a 44 percent chance of being stunted, a rural child has a 57 percent chance. There are no substantial differences by gender in terms of nutrition. After accounting for other characteristics, children are significantly less likely to be stunted if they are from the richest fifth of households as compared to the poorest fifth of households, but there are no significant differences by other wealth levels. Children with household heads who can read or write are slightly more likely to be stunted, as are rural children.

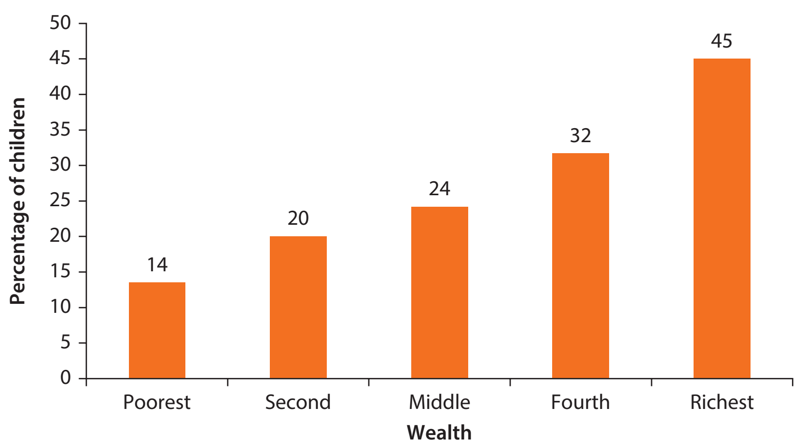
Compared to stunting, being underweight shows stronger gradients by certain background characteristics. There is an 11 percentage point difference in rates of being underweight based on residence (urban/rural). Wasting and weight-for-height show a similar relationship with background. After accounting for other characteristics, children have a lower chance of being underweight in every other wealth level compared to the poorest fifth of households, and weight-for-age rises significantly with every wealth level. The same pattern is true for weight-for-height and wasting. Children with secondary-educated household heads are significantly more likely to be underweight and have lower weight-for-age, but there are no significant differences in weight-for-height by household head's education. Females are significantly less likely to be wasted than males, but there are no significant urban-rural differences in weight-for-age or -height, wasting, and underweight, after accounting for other characteristics. Stunting, underweight, and wasting are not inevitable; steps can be taken to prevent malnutrition, as well as to monitor for and correct nutritional deficiencies.

Social, Emotional, and Cognitive Development

Poorer children in the Republic of Yemen—from the bottom three wealth levels—are less likely to experience four development activities (14–24 percent) than children from the fourth (32 percent) or richest (45 percent) fifth of households (figure 15.8). Children have higher chances of experiencing development activities if they have more educated parents. Children in urban areas have a higher chance (39 percent) of experiencing four development activities than rural children (21 percent). There are also substantial differences depending on region of residence, ranging from 20 percent in the West to 47 percent in Sana'a.

The children who are already at the greatest risk of poor outcomes—because of poverty, low parental education, and other risk factors—are also those who experience the fewest developmentally supportive activities, further compounding the likelihood of poor cognitive and socioemotional development. After accounting for other factors, the likelihood of experiencing at least four development activities increases with wealth, with significant differences at the fourth and richest wealth levels as compared to the poorest fifth of households. Parents' education also plays an important role in the likelihood of children experiencing at least four development activities; having a mother or a father with at least a basic or secondary education significantly increases the chance of experiencing at least four development activities. These development activities play an important role in children's socioemotional and cognitive development. Violent child

Figure 15.8 Percentage of Children Experiencing Four or More Development Activities, By Wealth Level



Source: World Bank calculations based on Yemen, Rep. MICS 2006.

discipline is actually a greater problem in the richest households (99 percent) than the poorest households (85 percent) and likewise seems to increase with parents' education. Violent discipline is more common in urban areas than rural areas.

Although it is difficult to characterize such a small population as Yemeni children attending ECCE, the evidence indicates that ECCE is associated with wealth. In the sample there were zero children from the poorest fifth of households attending ECCE and 9 percent of children from the richest quintile attending ECCE. Benefits from ECCE are likely to be greatest for the poorest and most vulnerable children, yet they have the least access. This situation further compounds differences in young children's access to early cognitive and socioemotional experiences. For instance, while 70 percent of three- to four-year-olds who attend ECCE already have someone engaging in at least four development activities at home, only 32 percent of three- to four-year-olds who do not attend ECCE have experienced at least four development activities in the three days preceding the survey.

Both urban and rural children engaged in child labor; however, rates are lower in the East and West regions. There is not a clear relationship observed between wealth and child labor, but interestingly, children from more educated families are more likely to be engaged in child labor. The lower rate of child labor in the East and Highlands as compared to Sana'a is statistically significant, even after accounting for other factors. After accounting for other factors, children from the richest fifth of households are less likely to be engaged in child labor than children from the poorest fifth of households. Female children are also significantly more likely to be engaged in child labor than male children. The chance of engaging in child labor significantly increases with mother's education.

Children Face Unequal Opportunities for Healthy Development

Children in the Republic of Yemen face unequal opportunities for healthy development, based on factors beyond their control. To measure the extent of inequality, the analysis calculates (a) the percentage of opportunities that needed to have been distributed differently for equality of opportunity to have occurred for each of the ECD indicators, and (b) the chance of whether these differences might have occurred by random variation (table 15.1). Children face unequal opportunities for healthy development while still in utero. There are substantial differences related to whether their mothers receive prenatal care and whether their births are handled by a skilled birth attendant. The analysis shows that 17 percent of opportunities would have to be distributed differently for children to have equal opportunities for prenatal care; the inequality in skilled delivery care is even higher, where 26 percent of opportunities would need redistribution for there to be equality.

While there are unequal chances to die early in life, since this is a rare occurrence, it is not definitive whether or not these differences are due to chance. However, there are unequal opportunities for children to get immunized: 21 percent of the chances to be immunized would need to have been distributed differently for equality of opportunity to prevail. Children face slightly unequal opportunities for healthy physical development in terms of stunting. There is

Table 15.1 Percentage of Opportunities to Be Redistributed

	Dissimilarity index
Prenatal care	16.8**
Skilled delivery	26.1***
Infant mortality	15.5
Fully immunized	20.6*
Stunted	4.9*
Development activities	19.3***
Child labor	25.1

Sources: World Bank calculations based on Yemen, Rep. MICS 2006 and Yemen, Rep. PAPFAM 2003.
Note: Significance level: * = chance < 5%, ** = chance < 1%, *** = chance < 0.1%.

Table 15.2 Contributions of Background Characteristics to Inequality
Percentage

	Wealth	*Mother's education*	*Father's education*	*Head's education*	*Rural*	*Region*	*Child's sex*
Prenatal care	28.6	23.5	13.4	n.a.	15.8	18.6	n.a.
Skilled delivery	42.2	12.1	3.3	n.a.	20.5	21.9	n.a.
Infant mortality	29.7	3.5	n.a.	n.a.	3.3	60.0	3.4
Fully immunized	32.4	28.6	6.8	n.a.	19.4	12.7	0.2
Stunted	55.5	n.a.	n.a.	8.1	36.3	n.a.	0.1
Development activities	29.1	28.5	11.2	n.a.	15.1	15.6	0.4
Child labor	11.3	22.6	20.0	n.a.	1.1	39.3	5.7

Sources: World Bank calculations based on Yemen, Rep. MICS 2006 and Yemen, Rep. PAPFAM 2003.
Note: Shapley decompositions of the dissimilarity index. n.a. = not applicable or not available.

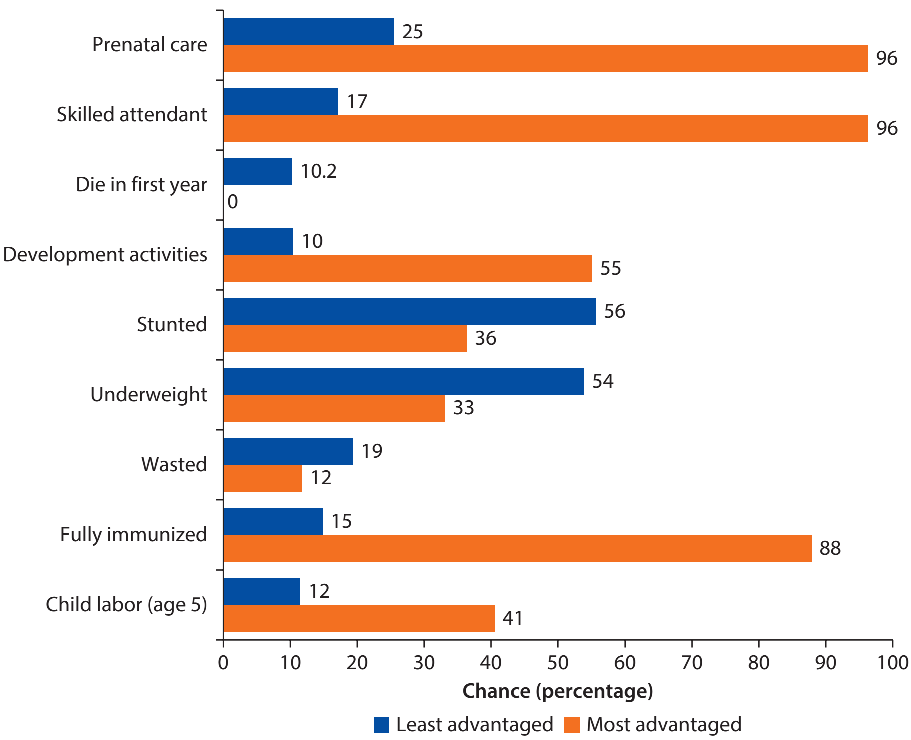
substantial inequality in terms of children experiencing development activities: 19 percent of chances to experience four or more development activities would need to have been distributed differently in order for children to have equality of opportunity.

Wealth, mother's education, and geography make the largest contributions to children's unequal opportunities. Table 15.2 shows the different contributions of circumstances to inequality for different outcomes as percentages. Wealth plays a particularly large role in prenatal care, skilled delivery care, immunizations, and development activities, contributing around a third to inequality for each of these measures. Mother's education is particularly important for prenatal care, immunizations, and development activities, contributing around a quarter to inequality on these indicators. Father's education plays a small but important role in inequality for these outcomes as well. Geographic differences matter for all outcomes but especially for inequality in prenatal and delivery care, immunizations, and development activities. A child's gender contributes very little to inequality.

Children tend to be consistently advantaged or disadvantaged across a variety of dimensions of ECD and can face very different life chances based on just a few characteristics. Early childhood is when cycles of poverty and inequality are transmitted across generations. If we observe a child who lives in the rural West, in the poorest 20 percent of households, and with uneducated parents (a least advantaged child) and compare that child to one who has parents with secondary or higher education, is from the richest 20 percent of households, and lives in urban Aden (a most advantaged child), we find that they have very different chances of healthy ECD. Figure 15.9 presents the chances (predicted chance) of different ECD indicators (based on the regressions) for these "least advantaged" and "most advantaged" individuals.

On every indicator except child labor, the least advantaged child faces much poorer ECD. Comparing the least and most advantaged, the gap in prenatal care is 71 percentage points and the gap in having a trained attendant at delivery is 79 percentage points. In terms of both prenatal care and delivery care, the most advantaged child is around five times as likely to receive care as the least advantaged child. The least advantaged child is 73 percentage points less likely to be immunized. This means that the most advantaged child is six times more likely to be protected against childhood illnesses and early mortality. While both the most and least advantaged children have high chances of stunting, underweight, and wasting, the least advantaged child is 20 percentage points more likely to be stunted, 21 percentage points more likely to be underweight, and 7 percentage points more likely to be wasted. The least advantaged child is 45 percentage points less likely to experience four development activities. This means that the

Figure 15.9 Most Advantaged and Least Advantaged Simulations



Sources: World Bank calculations based on Yemen, Rep. MICS 2006 and Yemen, Rep. PAPFAM 2003.

most advantaged child is five times more likely to experience activities that will help the child develop cognitively, socially, and emotionally. The most advantaged child is, however, much more likely to be engaged in child labor—by 29 percentage points—which may be related to the different economic opportunities wealthier families face.

Conclusions

The Republic of Yemen has a large youth population with enormous development potential. However, children are falling short of their full potential for healthy development due to major deficits in their health, nutrition, cognitive, social, and emotional development. Gaps in prenatal care, delivery care, and immunizations are putting mothers and children at risk and contributing to high rates of early mortality. Malnutrition affects more than half of children, limiting their ability to develop and become productive adults. Children face low and unequal chances to develop cognitively, socially, and emotionally, with low rates of ECCE and development activities and high rates of violent discipline. Children's chances for healthy development are also very unequal, especially in terms of early health. While the Republic of Yemen's children have great potential, more needs to be done to ensure that children can thrive during the early years and have equal chances to fulfill their potential.

Annex 15A: The Data

The Data Sets

The analysis utilizes cross-sectional data on the well-being of women and children collected in the 2006 Multiple Indicator Cluster Survey (MICS) for the Republic of Yemen. The survey is nationally representative and includes data that allow for an analysis of the relationship between ECD and child and household indicators. See Ministry of Health and Population and UNICEF (2008) for additional information in the final reports on the MICS survey. Additionally, the analysis utilizes cross-sectional data on height and weight (anthropometrics) from the 2003 Pan Arab Project for Family Health survey (PAPFAM). The survey is nationally representative and includes data that allow for an analysis of the relationship between height and weight and certain child and household indicators.

The Samples

The 2006 MICS dataset for the Republic of Yemen sampled 3,586 households, 3,742 ever-married women aged 15–49, and 3,783 children younger than age five (questioning their mothers or caretakers). The 2003 PAPFAM dataset for the Republic of Yemen includes 12,885 households, 11,292 ever-married women aged 15–49, and collected height and weight data on 10,116 children younger than age five. The analysis in this note is weighted in order to be representative at the national level. The sample sizes reported (N) in each of the tables are based on the unweighted number of observations in the data.

Annex 15B: Indicators by Background Characteristics

Table 15B.1 Indicators by Background Characteristics

	Prenatal care	*Trained attendant at birth*	*Died in first month*	*Died before first birthday*	*Fully immunized at age 1*	*Four development activities*	*Violent discipline (ages 2–5)*	*ECCE (ages 3–4)*	*Child labor (age 5)*	*Percent of children (ages 0–4)*
Year	*2006*	*2006*	*2006*	*2006*	*2006*	*2006*	*2006*	*2006*	*2006*	*2006*
Gender										
Male			4.3	7.6	39.6	25.1	92.9	2.6	13.9	50.9
Female			3.6	6.6	41.9	26.0	93.6	2.8	17.7	49.1
Wealth										
Poorest	32.0	17.1	4.9	10.0	19.8	13.5	84.6	0.0	17.6	23.2
Second	35.1	19.8	4.9	7.5	27.8	20.0	95.9	0.5	14.2	21.4
Middle	43.4	32.0	4.0	6.9	42.0	24.2	95.3	1.9	12.2	20.1
Fourth	56.6	50.1	2.7	5.6	45.2	31.7	94.3	4.4	18.7	19.5
Richest	79.3	73.6	3.0	4.3	75.1	44.6	99.2	9.1	15.0	15.8
Mother's education										
None			4.0	7.6	30.3	19.3	91.2	1.6	12.4	65.6
Basic			4.2	6.4	54.4	34.5	97.7	3.8	21.0	24.9
Secondary+			4.3	5.5	64.6	46.0	97.1	8.8	36.9	8.4
Nonstandard			0.0	0.0	67.2	37.8	100.0	9.5	23.4	1.1
Missing/DK			11.8	47.7		0.0		0.0	0.0	0.0
Father's education										
None					21.8	15.0	88.6	2.1	12.2	19.5
Basic					41.4	24.7	93.3	2.4	12.6	36.1

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Table 15B.1 Indicators by Background Characteristics *(continued)*

	Prenatal care	*Trained attendant at birth*	*Died in first month*	*Died before first birthday*	*Fully immunized at age 1*	*Four development activities*	*Violent discipline (ages 2–5)*	*ECCE (ages 3–4)*	*Child labor (age 5)*	*Percent of children (ages 0–4)*
Year	*2006*	*2006*	*2006*	*2006*	*2006*	*2006*	*2006*	*2006*	*2006*	*2006*
Secondary+					52.5	34.2	97.4	3.9	20.6	32.2
Nonstandard					34.0	17.0	84.3	1.2	26.8	4.3
Father not in household					38.8	24.5	94.0	2.4	13.8	7.8
Missing/DK					0.0	34.8	100.0	0.0	0.0	0.2
Women's education										
No school	38.2	27.4								
Some basic	52.7	42.0								
6–9 years	65.0	53.0								
Some secondary	63.5	46.4								
Complete secondary	74.3	56.4								
Above secondary	85.8	79.4								
Partner's education										
No school	30.4	24.1								
Some basic	38.9	30.1								
6–9 years	48.9	34.5								
Some secondary	51.7	42.1								
Complete secondary	53.4	41.6								
Above secondary	66.3	46.7								
Missing	43.9	40.7								

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Table 15B.1 Indicators by Background Characteristics *(continued)*

Year	*Prenatal care*	*Trained attendant at birth*	*Died in first month*	*Died before first birthday*	*Fully immunized at age 1*	*Four development activities*	*Violent discipline (ages 2–5)*	*ECCE (ages 3–4)*	*Child labor (age 5)*	*Percent of children (ages 0–4)*
	2006	*2006*	*2006*	*2006*	*2006*	*2006*	*2006*	*2006*	*2006*	*2006*
Residence										
Urban	68.2	61.7	3.2	5.8	62.5	38.5	96.8	6.0	17.8	27.0
Rural	39.3	26.3	4.3	7.6	31.6	20.7	92.0	1.6	14.9	73.0
Region										
Aden	78.7	80.5	0.0	0.0	71.3	37.8	100.0	9.9	25.4	2.4
Sana'a City	78.9	69.4	3.3	7.3	70.8	47.3	100.0	7.8	25.2	8.0
West	33.8	23.9	4.0	8.3	31.6	19.6	90.0	0.8	14.8	34.4
South	54.7	46.2	5.6	7.5	32.6	32.9	97.0	2.0	23.3	10.2
Highlands	45.3	26.6	2.6	4.6	42.3	23.7	94.9	1.4	10.4	23.1
East	58.9	57.1	2.4	3.5	49.8	28.6	95.1	15.3	7.3	7.1
North	44.8	31.7	6.4	10.2	33.3	21.5	90.0	0.9	20.7	14.7
Governorate										
Ibb	44.5	26.1	3.6	6.5	45.3	25.2	94.3	2.1	7.4	11.4
Abyan	62.8	50.1	6.7	8.6	22.2	40.3	100.0	7.1	15.3	1.6
Sana'a City	78.9	69.4	3.3	7.3	70.8	47.3	100.0	7.8	25.2	8.0
Al Baidhah	33.3	41.6	7.8	11.9	10.0	4.9	98.9	2.4	10.6	3.4
Taiz	46.1	27.1	1.7	2.6	38.4	22.3	95.4	0.7	13.5	11.8
Al Jawf	54.4	21.4	20.1	24.9	2.2	11.3	73.6	0.0	31.6	2.0
Hajjah	40.1	13.9	5.1	8.9	39.1	14.2	80.9	0.0	1.7	6.6
Al Hodeidah	41.2	50.1	2.9	6.2	28.6	24.1	94.9	0.0	25.8	9.9

table continues next page

Table 15B.1 Indicators by Background Characteristics *(continued)*

Year	*Prenatal care*	*Trained attendant at birth*	*Died in first month*	*Died before first birthday*	*Fully immunized at age 1*	*Four development activities*	*Violent discipline (ages 2–5)*	*ECCE (ages 3–4)*	*Child labor (age 5)*	*Percent of children (ages 0–4)*
	2006	*2006*	*2006*	*2006*	*2006*	*2006*	*2006*	*2006*	*2006*	*2006*
Hadramout	61.2	66.4	2.5	3.1	55.0	26.1	94.6	20.9	6.5	5.2
Dhamar	30.1	16.4	4.8	9.7	30.2	19.3	98.8	2.5	8.5	11.7
Shabwah	49.3	24.5	2.4	5.0	28.0	33.2	95.6	3.4	11.1	1.8
Sa'adah	26.0	31.3	2.8	4.9	27.7	15.7	89.1	1.8	22.6	3.4
Sana'a	50.1	33.8	4.5	9.1	47.3	26.8	96.6	0.0	13.4	5.5
Aden	78.7	80.5	0.0	0.0	71.3	37.8	100.0	9.9	25.4	2.4
Lahej	67.8	46.2	2.7	2.7	46.3	44.7	100.0	0.0	35.3	3.2
Mareb	49.9	30.7	2.7	13.2	50.0	35.3	84.2	0.0	20.0	0.9
Al Mahweet	19.7	7.5	1.2	6.5	31.0	13.5	90.7	0.0	13.9	3.9
Al Maharah	69.2	69.2	0.0	0.0	80.0	47.8	100.0	0.0	0.0	0.2
Amran	48.4	37.1	4.3	5.6	29.7	20.9	90.3	1.8	22.3	2.8
Al Dala'a	57.6	50.0	5.8	6.8	51.5	55.1	87.6	0.0	24.9	2.0
Raimah	23.7	8.0	7.2	12.9	29.2	27.5	65.0	0.0	15.4	2.3
Total	47.0	35.7	4.0	7.1	40.7	25.5	93.2	2.7	15.8	100.0
N (Observations)	1,585	1,585	3,985	3,985	677	3,783	952	1,472	710	

Source: World Bank calculations based on Yemen, Rep. MICS 2006.
Note: Blank cells indicate not applicable or not available. ECCE = early childhood care and education.

Table 15B.2 Anthropometrics by Background Characteristics

	Stunting	*Height-for-age (SD)*	*Underweight*	*Weight-for-age (SD)*	*Wasting*	*Weight-for-height (SD)*
Year	*2003*	*2003*	*2003*	*2003*	*2003*	*2003*
Gender						
Male	53.1	−2.02	46.0	−1.75	13.3	−0.70
Female	53.1	−2.07	45.1	−1.77	11.4	−0.61
Wealth						
Poorest	57.1	−2.18	54.9	−1.99	18.3	−0.88
Second	55.8	−2.14	49.6	−1.87	13.4	−0.72
Middle	56.1	−2.18	45.4	−1.77	10.7	−0.56
Fourth	55.5	−2.08	44.0	−1.70	9.7	−0.56
Richest	38.2	−1.53	31.3	−1.39	9.7	−0.56
Household head education						
Illiterate	52.9	−2.02	46.1	−1.76	13.0	−0.69
Read and/or write	54.5	−2.09	45.8	−1.76	12.3	−0.62
Primary	54.4	−2.16	48.0	−1.78	11.5	−0.62
Preparatory	53.2	−2.08	45.1	−1.79	12.1	−0.67
Secondary	51.2	−1.98	45.8	−1.79	13.1	−0.74
Higher education	48.6	−1.84	37.0	−1.53	10.0	−0.53
Unknown	52.0	−2.01	19.5	−1.52	17.0	−0.41
Residence						
Urban	44.2	−1.71	36.7	−1.54	10.0	−0.62
Rural	55.5	−2.13	47.9	−1.81	13.1	−0.67
Total	53.1	−2.05	45.6	−1.76	12.4	−0.66
N (observations)	10,116	10,116	10,116	10,116	10,116	10,116

Source: World Bank calculations based on Yemen PAPFAM 2003.

Annex 15C: Relationship between ECD Indicators and Background, When Accounting for Multiple Characteristics

Table 15C.1 Relationship between ECD Indicators and Multiple Background Characteristics

	Neonatal mortality	*Infant mortality*	*Prenatal*	*Delivery*	*Fully immunized*	*Development indicators*	*Child labor*
Female							+
Rural				–			
Region—compared to Sana'a City							
Aden	–	–		+			
West			–				
South							
Highlands		–	–	–			–
East							–
North							
Wealth—20% of households—compared to poorest							
Second							
Third				+	+		
Fourth				+	+	+	
Highest		–	+	+	+	+	–
Mother's education—compared to no education							
Basic education			n.a.	n.a.		+	+
Secondary +			n.a.	n.a.		+	+
Nonstandard curriculum	–	–	n.a.	n.a.			
Father's education—compared to no education							
Basic education	n.a.	n.a.	n.a.	n.a.	+	+	
Secondary +	n.a.	n.a.	n.a.	n.a.		+	
Nonstandard curriculum	n.a.	n.a.	n.a.	n.a.			
Not in HH	n.a.	n.a.	n.a.	n.a.			
Women's education—compared to no education							
Some basic	n.a.	n.a.			n.a.	n.a.	n.a.
6–9 years	n.a.	n.a.	+		n.a.	n.a.	n.a.
Some secondary	n.a.	n.a.			n.a.	n.a.	n.a.
Complete secondary	n.a.	n.a.	+		n.a.	n.a.	n.a.
Above secondary	n.a.	n.a.		+	n.a.	n.a.	n.a.
Partner's education—compared to no education							
Some basic	n.a.	n.a.			n.a.	n.a.	n.a.
6–9 years	n.a.	n.a.	+		n.a.	n.a.	n.a.
Some secondary	n.a.	n.a.			n.a.	n.a.	n.a.
Complete secondary	n.a.	n.a.			n.a.	n.a.	n.a.
Above secondary	n.a.	n.a.	+		n.a.	n.a.	n.a.
P-value (model)	0.4161	0.0148	0.000	0.000	0.000	0.000	0.000
Observations (N)	3,842	3,842	1,584	1,584	676	3,776	708
Pseudo R-squared	0.021	0.021	0.112	0.163	0.133	0.066	0.085

Source: World Bank calculations based on Yemen, Rep. MICS 2006.
Note: Blank cells indicate no significant relationship. Significance level: + = chance < 5% and positive; – = chance < 5% and negative; ECD = early childhood development; HH = household; n.a. = not applicable.

Table 15C.2 Relationship between Anthropometric Indicators and Multiple Background Characteristics

	Stunted	*Height-for-age (SD)*	*Underweight*	*Weight-for-age (SD)*	*Wasted*	*Weight-for-height (SD)*
Wealth—20% of households—compared to poorest						
Second			–	+	–	+
Third			–	+	–	+
Fourth			–	+	–	+
Highest	–	+	–	+	–	+
Head education—compared to no education						
Read/write	+	–				
Primary		–	+			
Preparatory						
Secondary			+	–		
Higher education						
Female					–	+
Rural	+	–				
P-value (model)	0.000	0.000	0.000	0.000	0.000	0.000
Observations (N)	10,116	10,116	10,116	10,116	10,116	10,116
R-squared		0.019		0.021		0.013
Pseudo R-squared	0.014		0.018		0.014	

Source: World Bank calculations based on Yemen PAPFAM 2003.
Note: Blank cells indicate no statistically significant relationship. + = chance <5% and positive; – = chance <5% and negative; SD = standard deviation.

Notes

1. Based on 2007 annual number of births (UNICEF 2008) and the infant mortality rate calculated from MICS.
2. Both infant and neonatal mortality rates are calculated based on deaths in the five years preceding the survey.
3. The survey asks women about prenatal care for live births in the past two years only. Since live births are likely to be associated with prenatal care, the percentage of births not receiving prenatal care is likely to be an underestimate of the percentage of pregnancies not receiving prenatal care.
4. Doctor, nurse or midwife.
5. As was true for prenatal care, delivery questions are asked about live births in the past two years only. Since live births are likely to be associated with care by a health professional, the percentage of live births with a health professional is likely to overestimate the number of deliveries with a health professional.
6. The DPT vaccine is a combination vaccine that covers diphtheria, whooping cough (pertussis), and tetanus. Children must receive three doses to be fully immunized. In the Republic of Yemen children, usually receive the Pentavalent vaccine, which also protects against Hepatitis B and Haemophilus Influenzae Type b (HiB).
7. Children must receive three doses to be fully immunized against polio.
8. Herd immunity occurs when even unvaccinated individuals in the population (the "herd") are protected against illness because the disease can no longer spread. This is achieved once around 90–95 percent of infants are vaccinated.

9. Includes the Pentavalent vaccine, which covers DPT, Hepatitis B, and Haemophilus Influenzae Type b.
10. 2003 PAPFAM
11. The units for height-for-age, weight-for-age, and weight-for-height show how much children in the Republic of Yemen are, on average, different from the reference population in terms of standard deviations.
12. More than 15 ppm of iodine in the salt
13. The six activities are (1) read books or look at picture books with the child; (2) tell stories to the child; (3) sing songs with the child; (4) take the child outside the home, compound, yard, or enclosure; (5) play with the child; and (6) spend time with the child naming, counting, and/or drawing things.
14. Data are for 2011.
15. Per the MICS definitions, violent child discipline is based on discipline by anyone in the household within the last month, and includes psychological aggression (shouted, yelled, or screamed at the child; called the child dumb, lazy, or another name like that); physical punishment (shook the child; spanked, hit, or slapped the child on the bottom with a bare hand; hit the child on the bottom or elsewhere on the body with something like a belt, hairbrush, stick, or other hard object; hit or slapped the child on the hand, arm, or leg); and severe physical punishment (hit or slapped the child on the face, head, or ears; beat the child with an implement; hit over and over as hard as one could).
16. The questions were: (1) During the past week, did (child) do any kind of work for someone who is not a member of this household? (2) During the past week, did (child) help with household chores such as shopping, collecting firewood, cleaning, fetching water, or caring for children? (3) During the past week did (child) do any other family work (on the farm or in a business or selling goods in the street)?
17. Wealth is defined in terms of which 20 percent of households a child falls into, based on an asset (wealth) index of durable goods.
18. Throughout, we use a 5 percent level of significance.

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APPENDIX A

Methods

Regression Analysis

Regression analyses are used to estimate the impact of a particular factor—such as living in a rural area as compared to an urban area—while holding other characteristics (such as wealth, or parents' education) constant. For the outcomes examined in this report that are binary (yes/no) outcomes, this report uses a probit model to estimate the effect of different background characteristics on early childhood development outcomes. For models of continuous variables (height-for-age, weight-for-age, and weight-for-height), ordinary least squares regressions are used.

Least Advantaged/Most Advantaged Simulations

The most advantaged and least advantaged simulations are based on probit regression models. For both the least advantaged and most advantaged profiles, the probability of an indicator, such as being fully immunized, was predicted based on the coefficients from the probit regression model and the characteristics of the profile. This allows the impact of differences in multiple characteristics to be accurately simulated simultaneously.

Dissimilarity Index

This report measures inequality of opportunity in ECD using the dissimilarity index (D-index). This measure is common in sociology and demography for applications with binary outcomes (de Barros, Vega, and Saavedra 2008; de Barros et al. 2009), and the ECD outcomes this report examines are binaries. The D-index for a particular ECD outcome is computed as:

$$D = \frac{1}{2\bar{p}} \sum_{i=1}^{k} \alpha_i \left| p_i - \bar{p} \right| \qquad \text{(A.1)}$$

where $\bar{p}$ is the population mean for that outcome and p_i is the mean for unique circumstance group i. The α_i are population shares or sampling weights (de Barros et al. 2009). The D-index essentially compares the difference or "dissimilarity" between groups, as defined by circumstances, and the population mean. The D-index can be interpreted as the percentage of available opportunities that would have to have been allocated differently, that is, from the children in groups that are better off to the children in groups that are worse off, in order for equality of opportunity to have held (de Barros et al. 2009). Expressed as a percentage, the D-index ranges from zero to 100, with zero indicating a situation of perfect equality of opportunity. Empirically, the D-index is computed based on a logistic regression model for an ECD indicator and its relationship with children's background characteristics.[1]

Shapley Decomposition

Using the dissimilarity index, it is possible to decompose inequality into the contribution of different circumstances, such as gender or household wealth, using a Shapley decomposition (Deutsch and Silber 2008; Shorrocks 2013). The decomposition consists of calculating the marginal contributions of each circumstance as they are removed in sequence. To address the path dependency of contributions to inequality due to the order of circumstance elimination, all possible elimination sequences can be computed and the marginal impacts averaged over the different sequences. The result is an exact, additive decomposition of the D-index into the contributions of each circumstance (Shorrocks 2013; World Bank 2012).

Note

1. This report implements the D-index in STATA using the module hoi (Azevedo et al. 2010).

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In early childhood, a child's brain develops rapidly in response to his or her physical, social, and emotional environment. Early childhood development therefore is crucially formative and provides a vital foundation for success during childhood, adolescence, and adult life. The Middle East and North Africa (MENA) stands out as a region that, to date, has lagged behind other regions in its approach to early childhood development. Yet investing in early childhood development is critical to promoting human and economic development and ensuring children have equal opportunities to grow and succeed in adult life.

Expanding Opportunities for the Next Generation: Early Childhood Development in the Middle East and North Africa assesses the state of early childhood development in MENA and suggests policies and programs that can effectively address inequality and shortfalls in early development that exist in the region. The book reviews the importance of early childhood development as a critical foundation for later development, sets early childhood development in MENA in a global context, then examines the state of early childhood development in twelve MENA countries and territories: Algeria, Djibouti, the Arab Republic of Egypt, Iraq, Jordan, Lebanon, Libya, Morocco, the Syrian Arab Republic, Tunisia, West Bank and Gaza, and the Republic of Yemen. By offering evidence on the state of early childhood development in MENA, the book encourages policy makers to implement better policies and programs, as well as to target programs to those with the greatest need.

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