My Childhood, My Future

Early Childhood Development in Egypt

WORLD BANK GROUP

CHAPTER 6

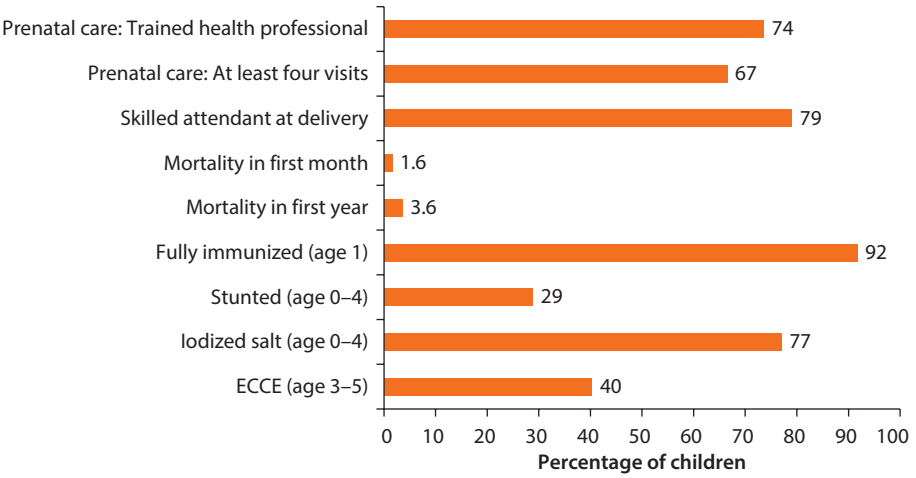
The Arab Republic of Egypt

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

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.

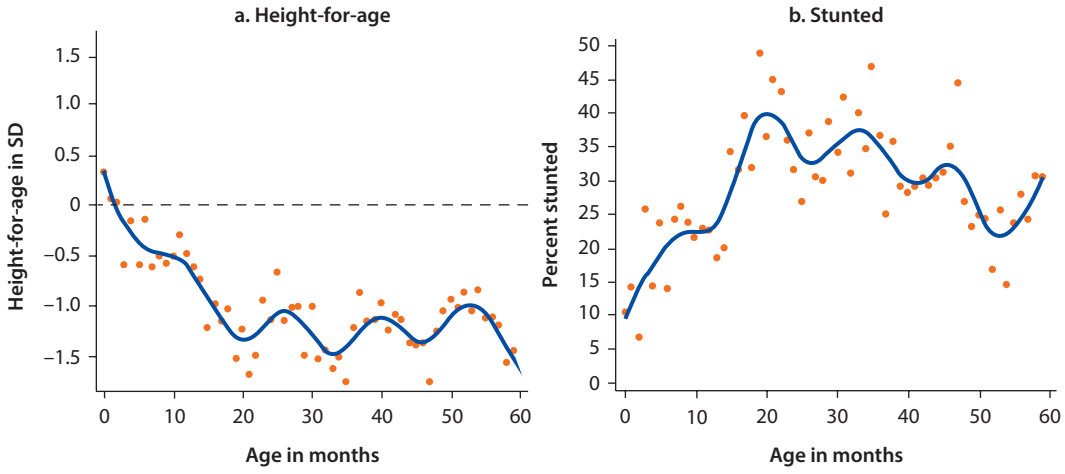
Delivery with a skilled attendant is also an important component of reducing newborn mortality and illness. Skilled attendants aid in safe delivery, and can identify health issues and provide postnatal care (World Health Organization 2004). Ensuring that skilled health personnel attend more births is 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

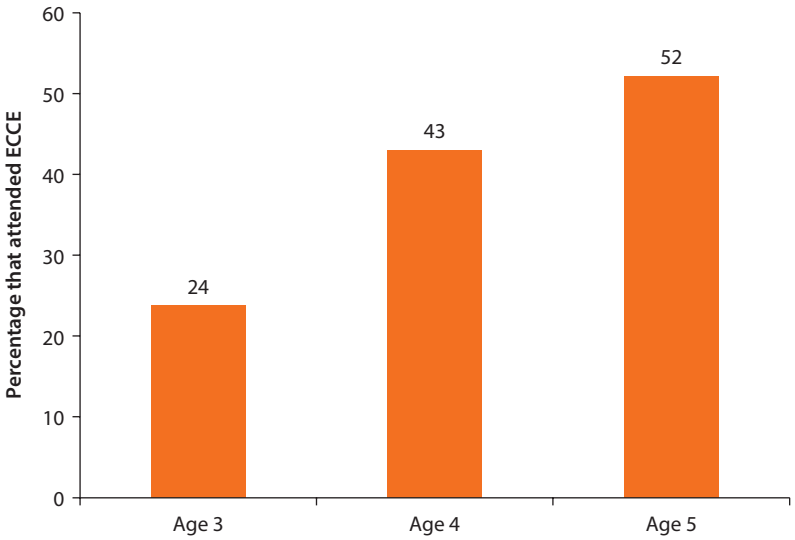
One of the Education for All goals is to expand ECCE, especially for the most disadvantaged and vulnerable children. Early childhood education and early learning play an important role in school success. Evidence has shown that ECCE improves cognition and socioemotional development, with benefits that 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



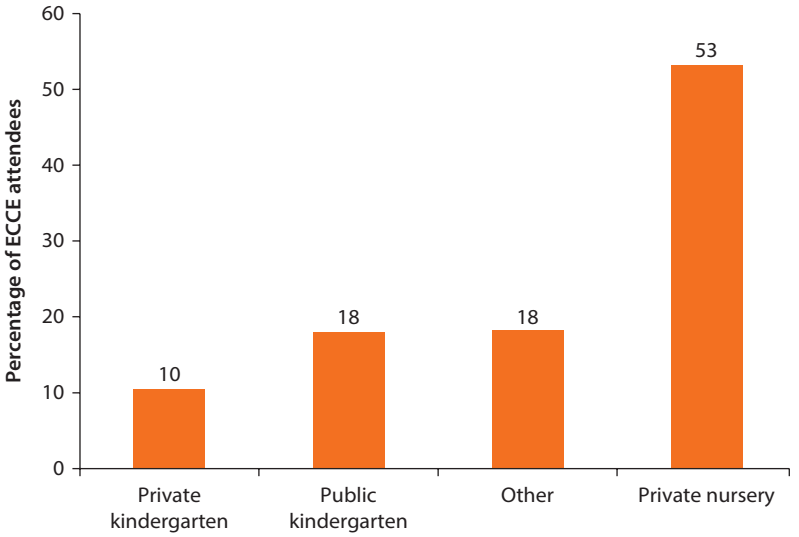
Source: World Bank calculation based on Egypt DHS 2008.
Note: ECCE = early childhood care and education.

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

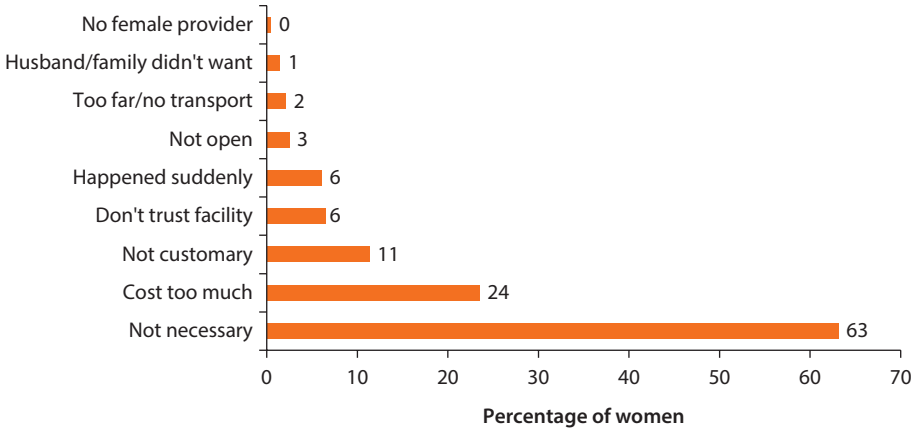
education is very similar to that of wealth, with prenatal care increasing with higher levels of education. Urban births are much more likely (85 percent) to receive prenatal care than rural births (67 percent). The difference when comparing regions is particularly acute, where the urban governorates (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.

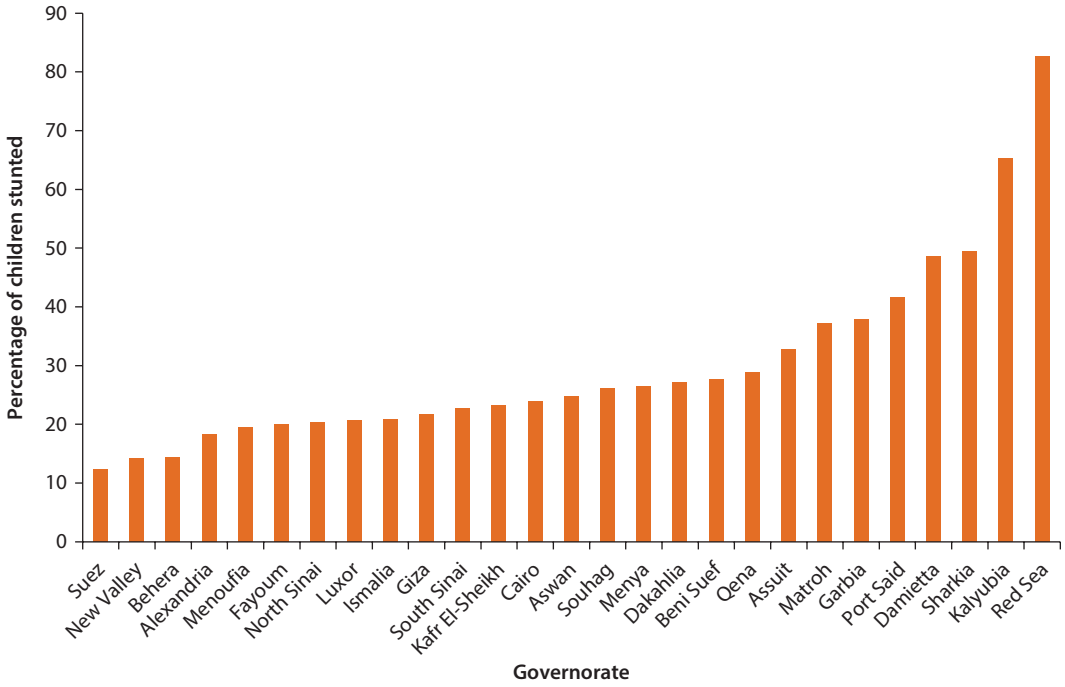
In terms of nutrition, stunting and height-for-age have a complex relationship with children's background characteristics in Egypt (see box 6.4 for a discussion of other health behaviors that may impact nutrition). Male children are more likely to be stunted (31 percent) than female children (27 percent). 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

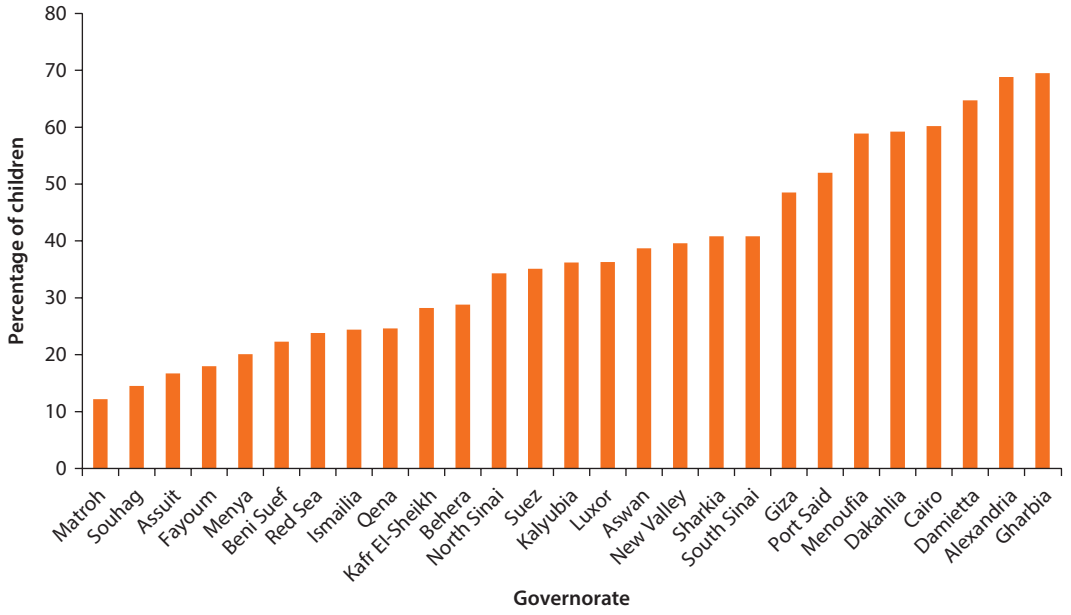
Although Egypt has struggled to decrease stunting, some health behaviors that are important components of early nutrition have improved over time. For instance, in 2003 only 30 percent of children under six months were exclusively breastfed, and as of 2008 this had increased to 53 percent (World Development 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



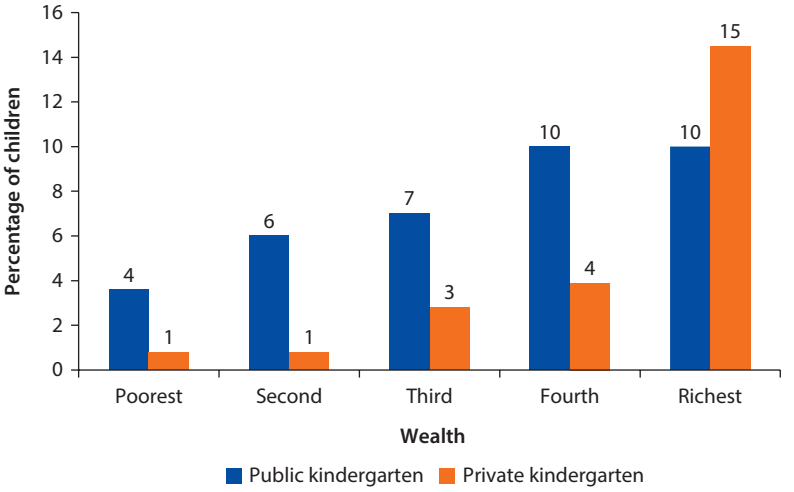
Source: World Bank calculations based on Egypt DHS 2008.
Note: ECCE = early childhood care and education.

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.

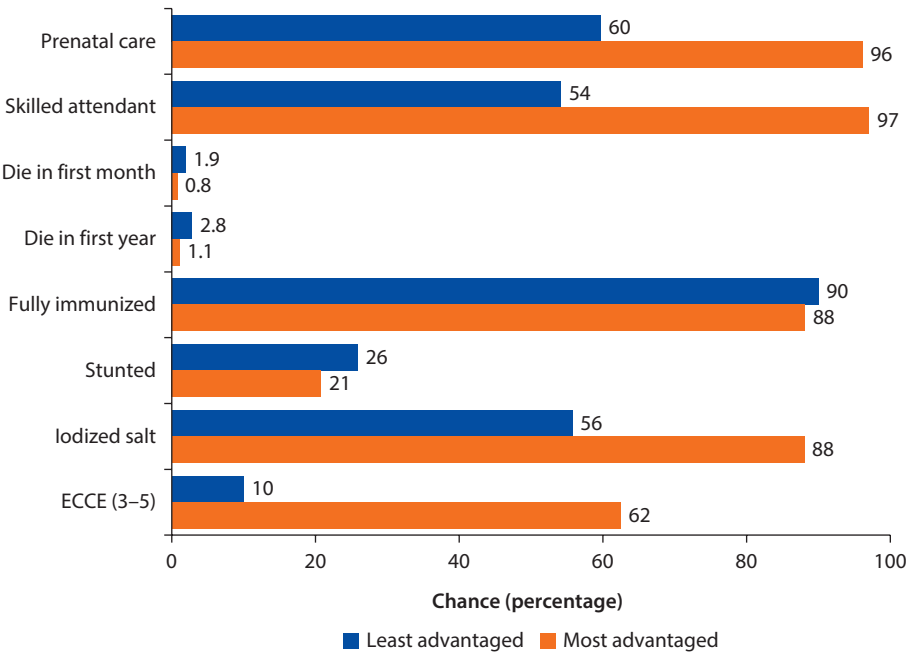
Source: World Bank calculations based on Egypt DHS 2008.
Note: Shapley decompositions of the dissimilarity index. n.a. = not applicable or not available.

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

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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

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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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