My Childhood, My Future

Early Childhood Development in Tunisia

WORLD BANK GROUP

CHAPTER 13

Tunisia

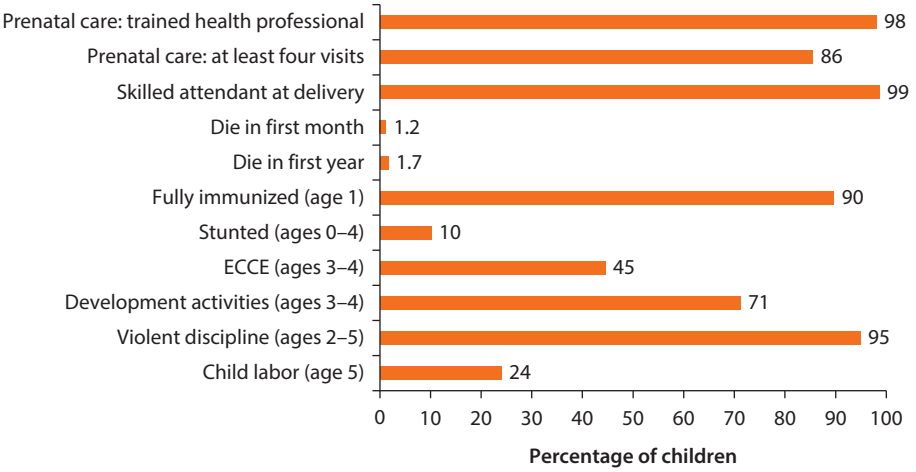
The State of Early Childhood Development in Tunisia

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.

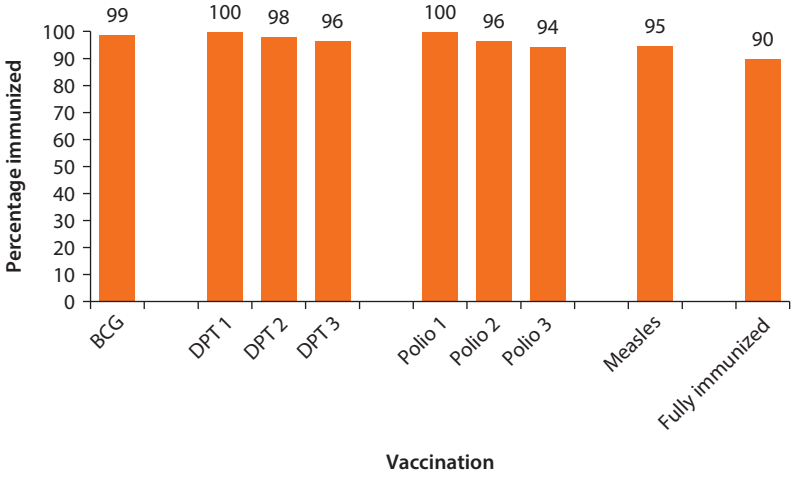
Survival, Health Care, and Nutrition

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



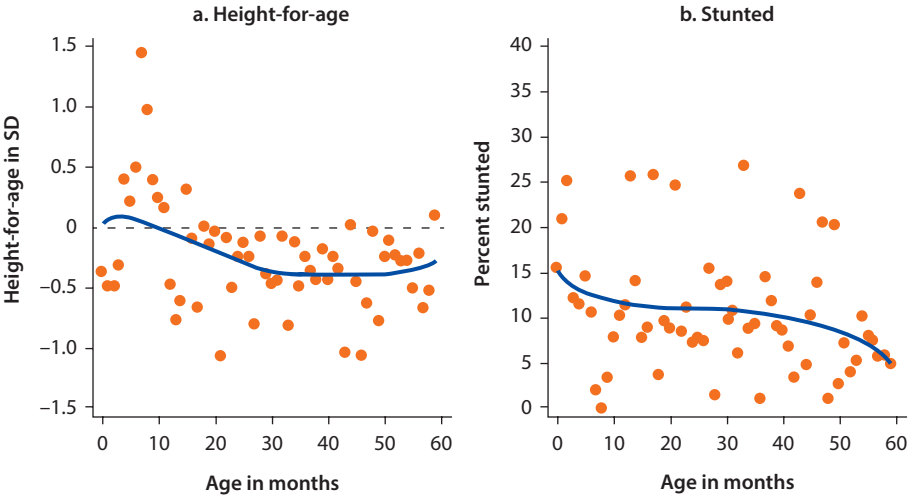
Source: World Bank calculations based on Tunisia MICS 2011/2012.
Note: BCG = Bacillus Calmette–Guérin (tuberculosis vaccine); DPT = diphtheria, pertussis, tetanus.

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.

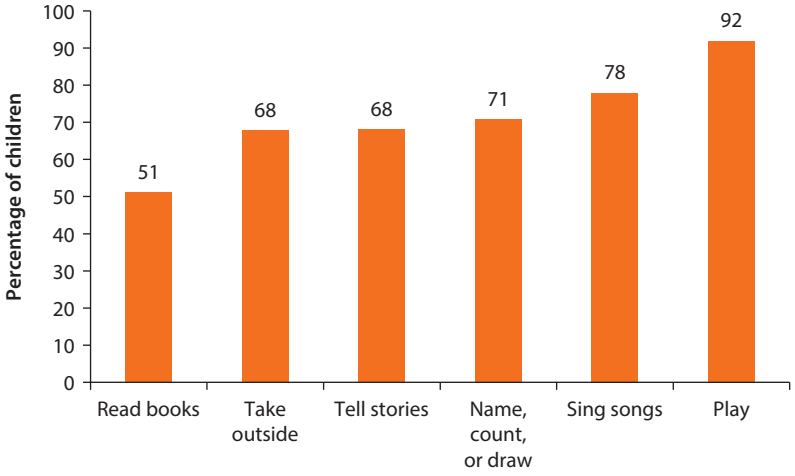
Social, Emotional, and Cognitive Development

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.

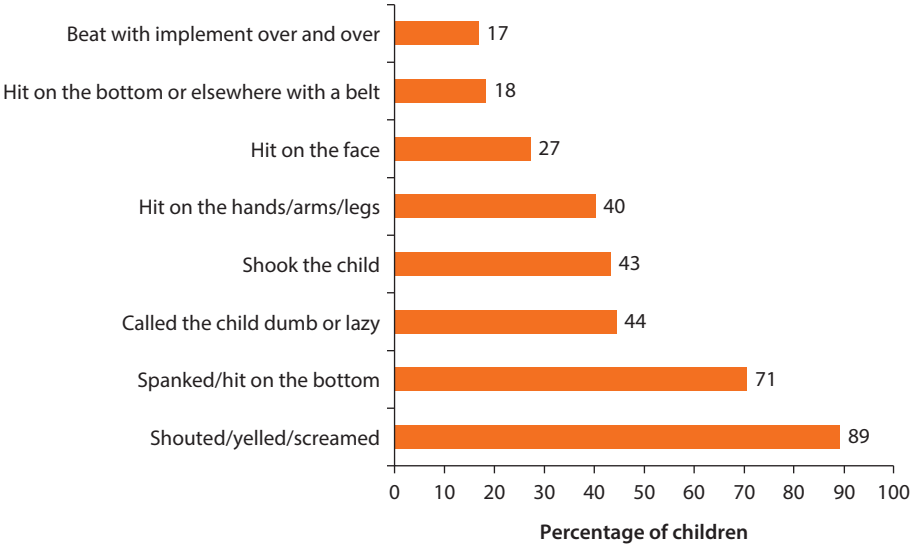
Another challenge that risks hindering the healthy development of children is violent discipline.[8] In Tunisia, 95 percent of children ages two to five have experienced violent child discipline. Disciplining children is an important part of child rearing. However, research has found that violent discipline 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.

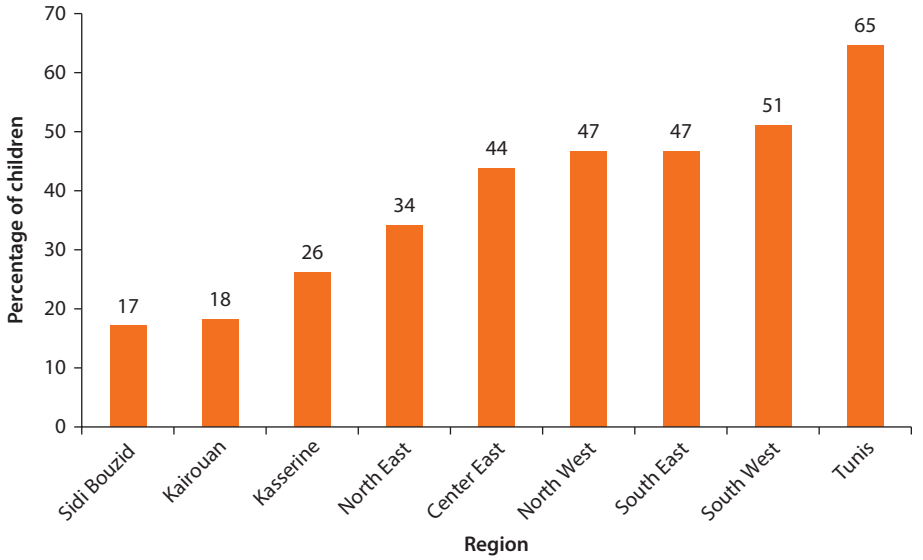
Social, Emotional, and Cognitive Development

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.

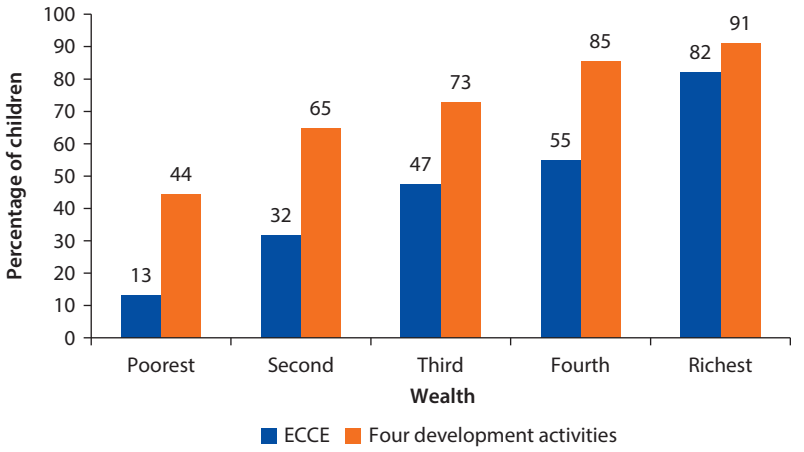
Differences in early cognitive, social, and emotional development are likely to compound each other. Figure 13.7 shows both the percentage of children

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

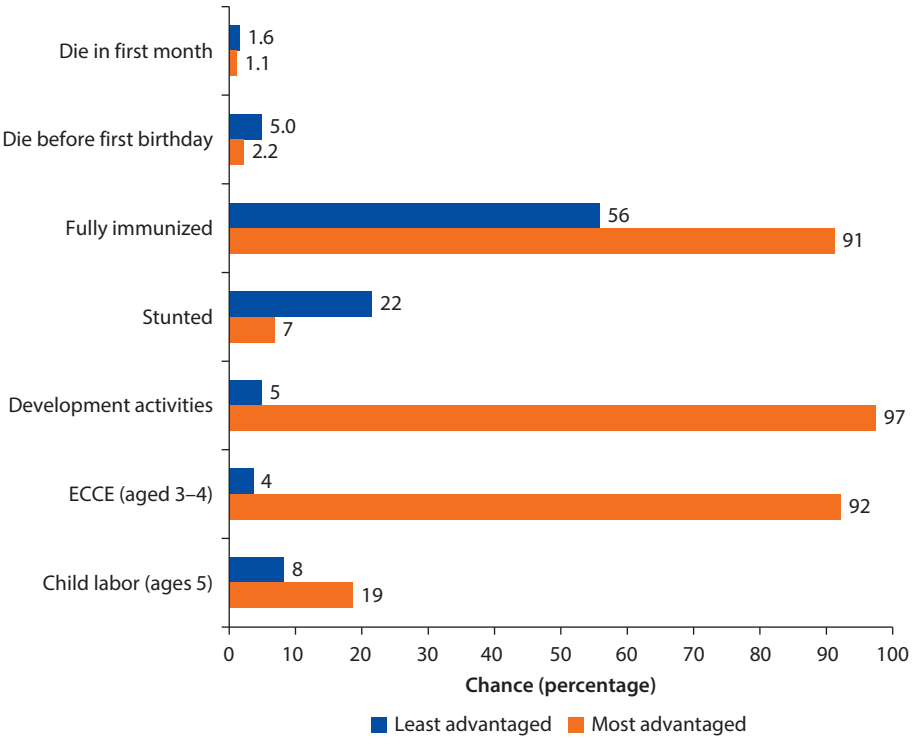
Source: World Bank calculations based on Tunisia MICS 2011/2012.
Note: Shapley decompositions of the dissimilarity index. The rates for prenatal care and delivery care are not modeled, because they are nearly universal. The overall model for violent child discipline was not significant, so it was not 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

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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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