

My Childhood, My Future



Early Childhood Development
in
Yemen



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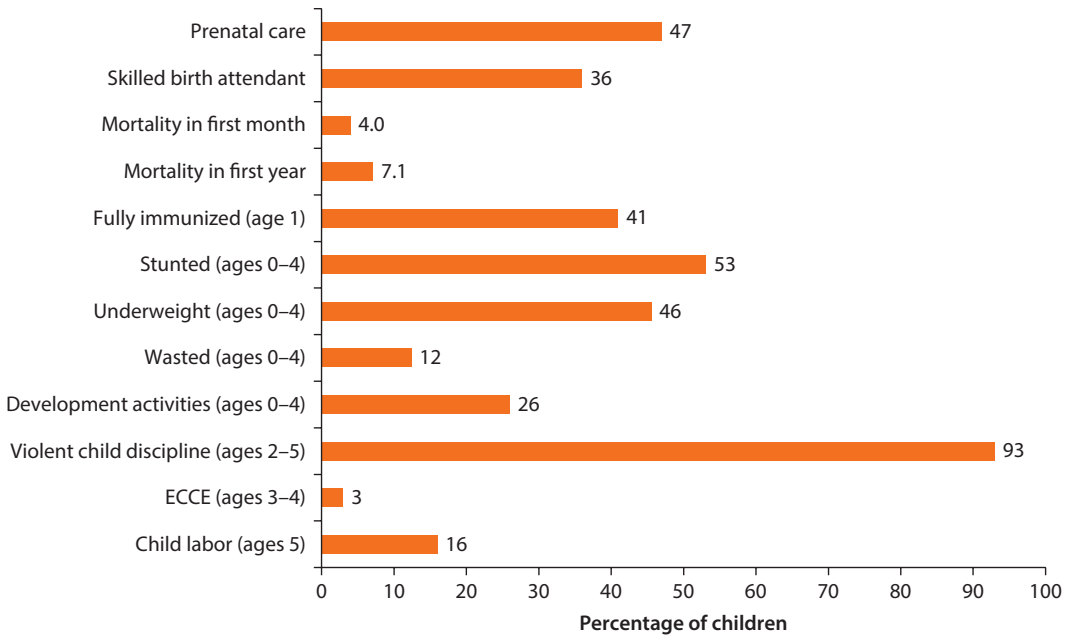
The Republic of Yemen

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

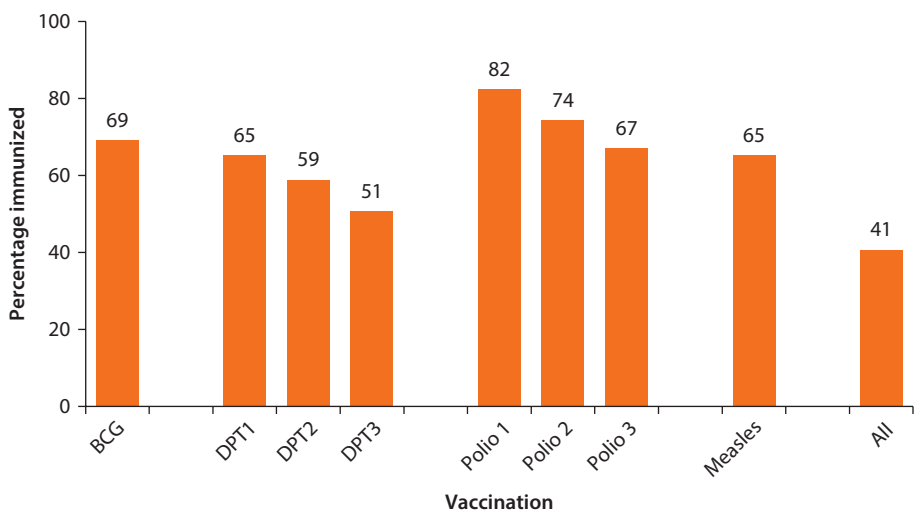
The first step in healthy ECD is simply surviving early childhood. In the Republic of Yemen, 1 in every 14 children born dies by age one.¹ This means that 168 children under the age of one die every day. Infant mortality, which refers to children dying before their first birthday, was 71 deaths per thousand 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 births³ 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 births⁵ 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.

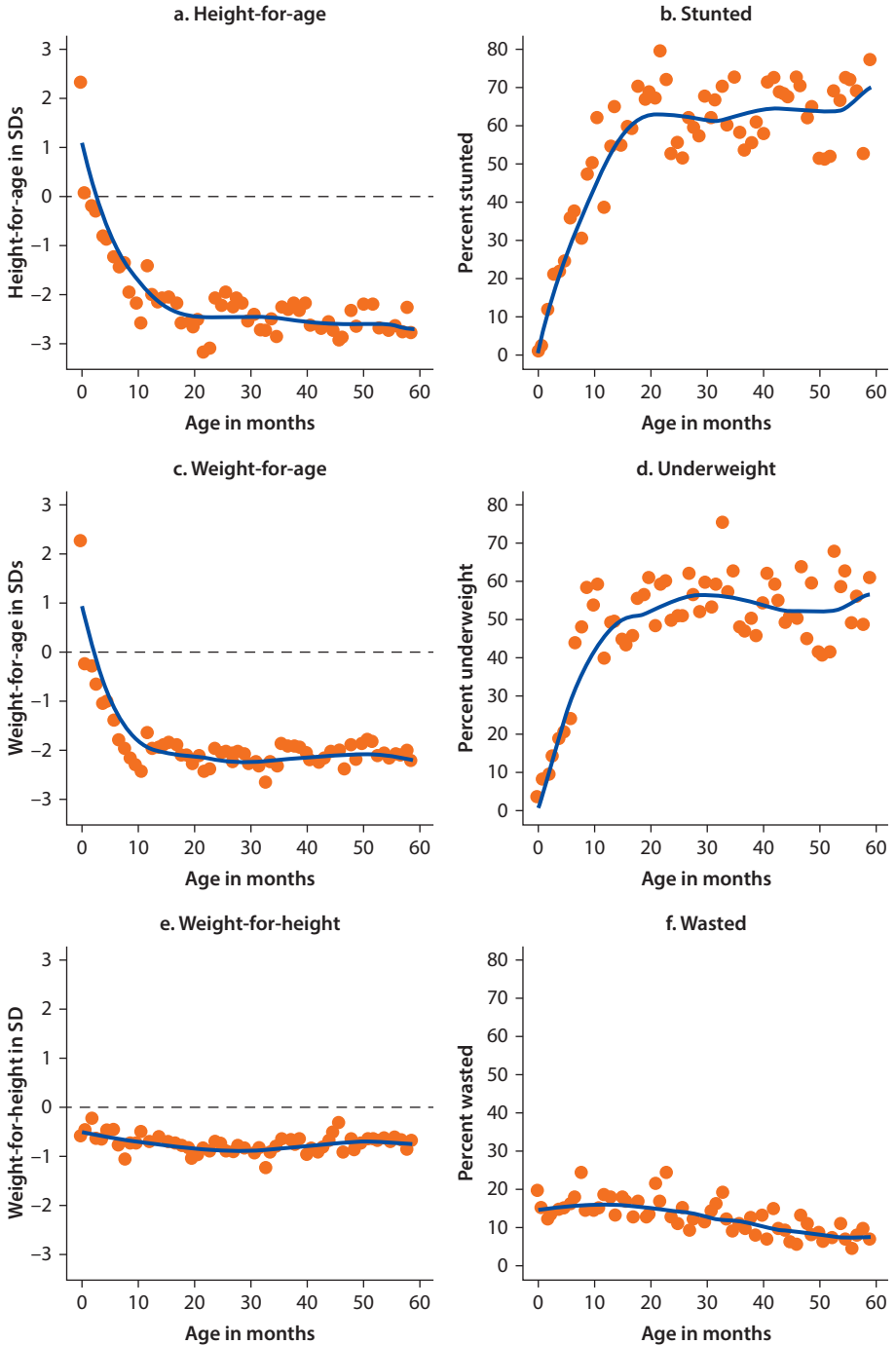
According to the latest available data,¹⁰ 53 percent of children in the Republic of Yemen are stunted, 46 percent are underweight, and 12 percent are wasted. Children in the Republic of Yemen fall behind soon after birth, with height-for-age that is below the healthy average (figure 15.3).¹¹ Over the 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

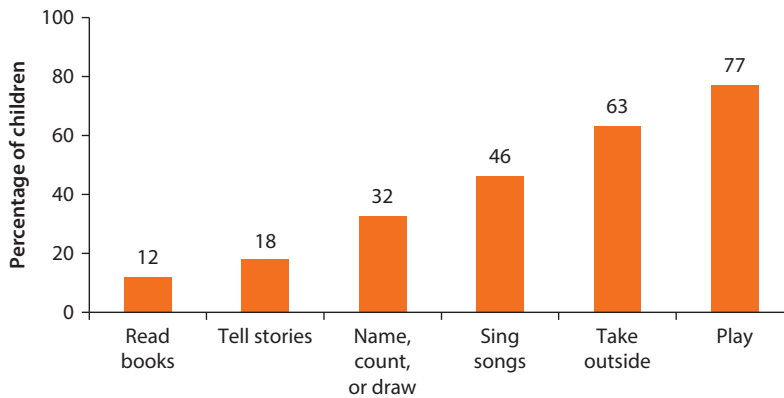
Although it has been proven that play and interaction are important components of ECD, children in the Republic of Yemen are missing out on these opportunities for psychosocial growth. In the MICS survey, caretakers of children aged zero to four were asked whether adults in the household had engaged 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 discipline¹⁵ 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.

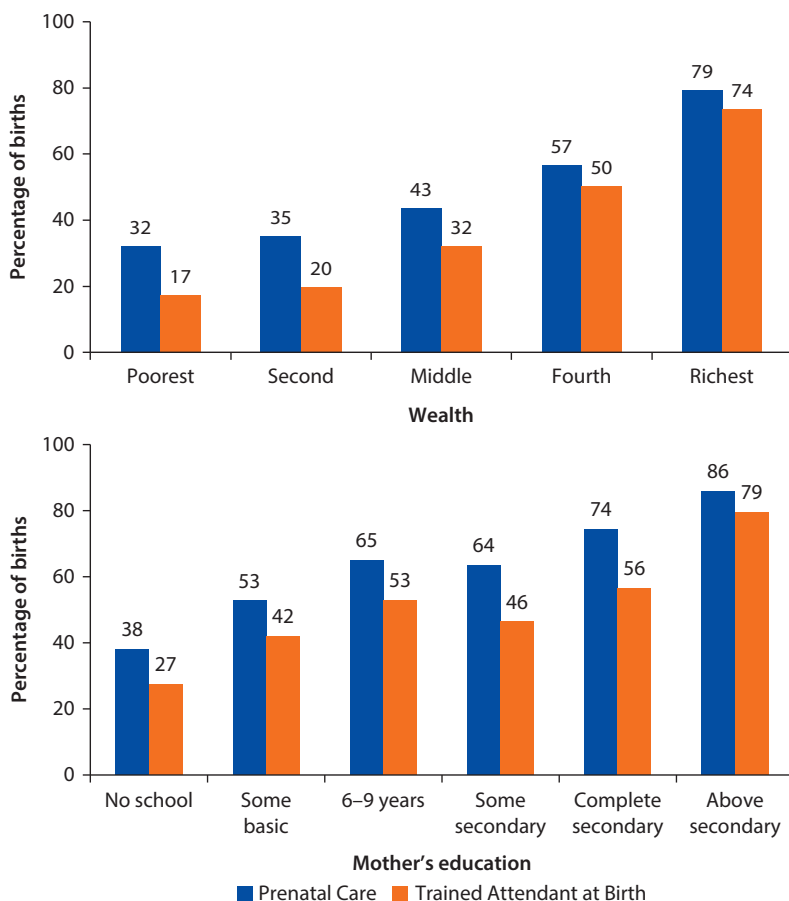
Survival, Health, and Nutrition

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 significantly¹⁸ 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



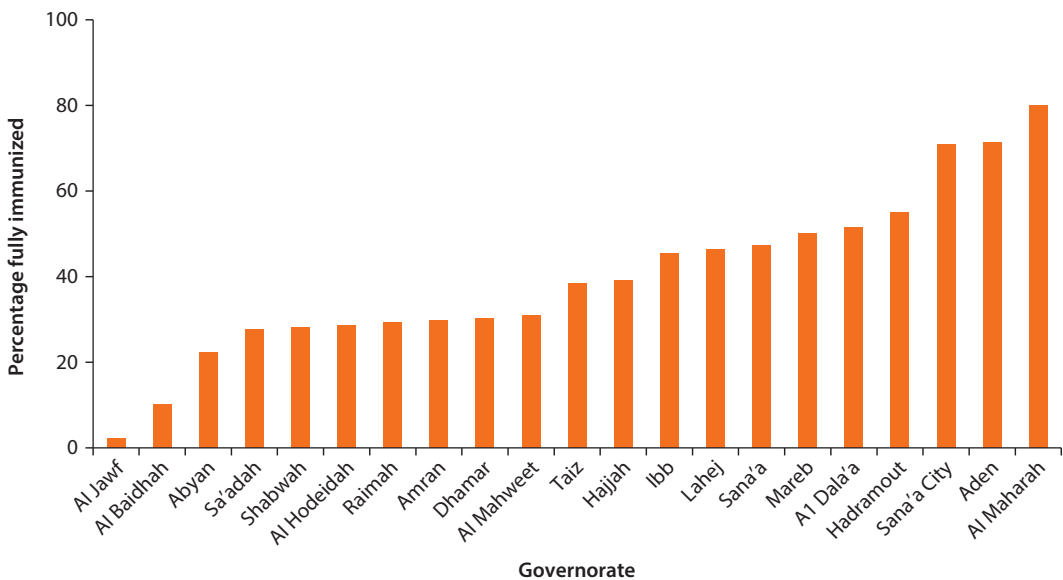
Source: World Bank calculations based on Yemen, Rep. MICS 2006.

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.

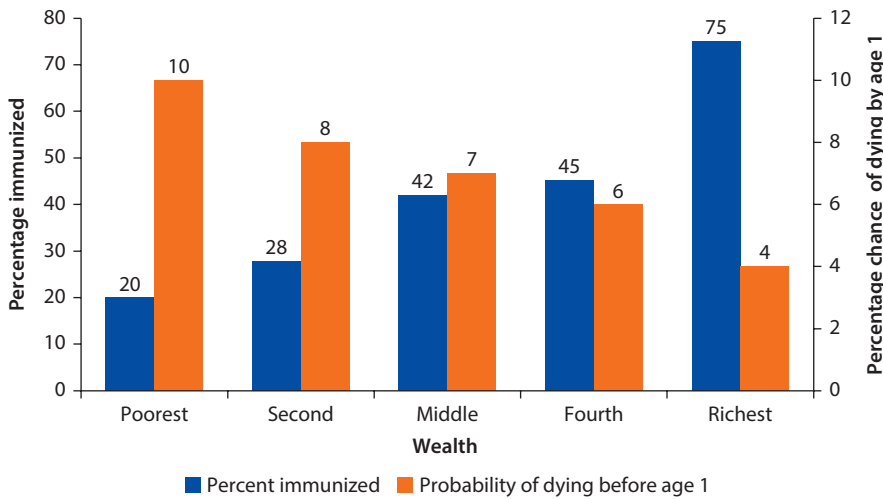
The differences in accessing immunizations based on wealth level likely contribute to differences in early mortality. Figure 15.7 shows the relationship between wealth and immunizations (left y axis) and infant mortality (right y axis). Only a fifth of children age one from the poorest fifth of households 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

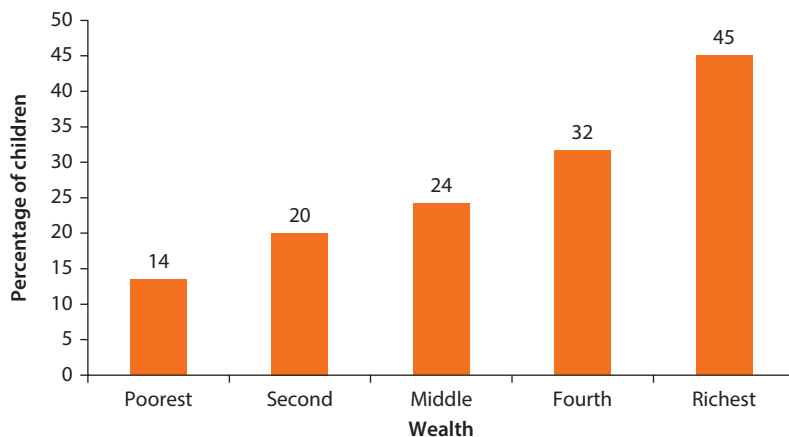
household head's education. Females are significantly less likely to be wasted than males, but there are no significant urban-rural differences in weight-for-age or -height, wasting, and underweight, after accounting for other characteristics. Stunting, underweight, and wasting are not inevitable; steps 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

	<i>Dissimilarity index</i>
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

	<i>Wealth</i>	<i>Mother's education</i>	<i>Father's education</i>	<i>Head's education</i>	<i>Rural</i>	<i>Region</i>	<i>Child's sex</i>
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.

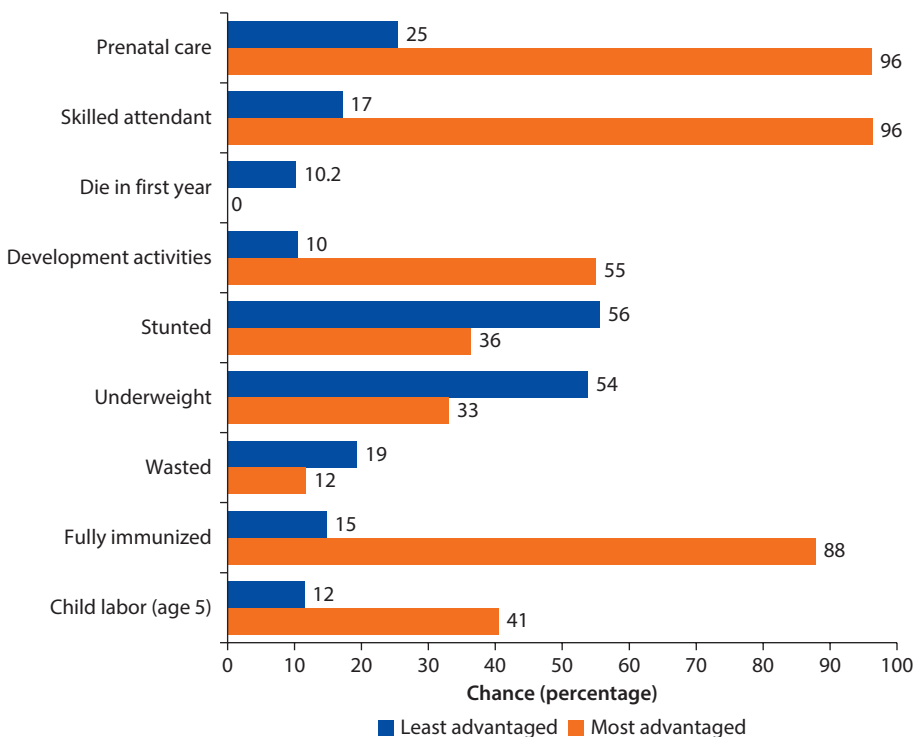
Wealth, mother's education, and geography make the largest contributions to children's unequal opportunities. Table 15.2 shows the different contributions of circumstances to inequality for different outcomes as percentages. Wealth plays a particularly large role in prenatal care, skilled delivery care, 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

	<i>Prenatal care</i>	<i>Trained attendant at birth</i>	<i>Died in first month</i>	<i>Died before first birthday</i>	<i>Fully immunized at age 1</i>	<i>Four development activities</i>	<i>Violent discipline (ages 2–5)</i>	<i>ECCE (ages 3–4)</i>	<i>Child labor (age 5)</i>	<i>Percent of children (ages 0–4)</i>
<i>Year</i>	<i>2006</i>	<i>2006</i>	<i>2006</i>	<i>2006</i>	<i>2006</i>	<i>2006</i>	<i>2006</i>	<i>2006</i>	<i>2006</i>	<i>2006</i>
<i>Gender</i>										
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
<i>Wealth</i>										
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
<i>Mother's education</i>										
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
<i>Father's education</i>										
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)

	<i>Prenatal care</i>	<i>Trained attendant at birth</i>	<i>Died in first month</i>	<i>Died before first birthday</i>	<i>Fully immunized at age 1</i>	<i>Four development activities</i>	<i>Violent discipline (ages 2–5)</i>	<i>ECCE (ages 3–4)</i>	<i>Child labor (age 5)</i>	<i>Percent of children (ages 0–4)</i>
<i>Year</i>	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)

	<i>Prenatal care</i>	<i>Trained attendant at birth</i>	<i>Died in first month</i>	<i>Died before first birthday</i>	<i>Fully immunized at age 1</i>	<i>Four development activities</i>	<i>Violent discipline (ages 2–5)</i>	<i>ECCE (ages 3–4)</i>	<i>Child labor (age 5)</i>	<i>Percent of children (ages 0–4)</i>
<i>Year</i>	<i>2006</i>	<i>2006</i>	<i>2006</i>	<i>2006</i>	<i>2006</i>	<i>2006</i>	<i>2006</i>	<i>2006</i>	<i>2006</i>	<i>2006</i>
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

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Table 15B.1 Indicators by Background Characteristics (continued)

<i>Year</i>	<i>Prenatal care</i>	<i>Trained attendant at birth</i>	<i>Died in first month</i>	<i>Died before first birthday</i>	<i>Fully immunized at age 1</i>	<i>Four development activities</i>	<i>Violent discipline (ages 2–5)</i>	<i>ECCE (ages 3–4)</i>	<i>Child labor (age 5)</i>	<i>Percent of children (ages 0–4)</i>
<i>2006</i>	<i>2006</i>	<i>2006</i>	<i>2006</i>	<i>2006</i>	<i>2006</i>	<i>2006</i>	<i>2006</i>	<i>2006</i>	<i>2006</i>	<i>2006</i>
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

Year	Height-for-age		Weight-for-age		Weight-for-height	
	Stunting	(SD)	Underweight	(SD)	Wasting	(SD)
	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

	<i>Neonatal mortality</i>	<i>Infant mortality</i>	<i>Prenatal</i>	<i>Delivery</i>	<i>Fully immunized</i>	<i>Development indicators</i>	<i>Child labor</i>
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.
<i>P</i> -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

	<i>Stunted</i>	<i>Height-for-age (SD)</i>	<i>Underweight</i>	<i>Weight-for-age (SD)</i>	<i>Wasted</i>	<i>Weight-for-height (SD)</i>
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	+	–				
<i>P</i> -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 PPFAM 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 PAPPAM
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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