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Early Childhood Development in Developing Countries: Pre-primary Education, Parenting, and Health Care

Yuko Nonoyama-Tarumi and Yumiko Ota

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Yuko Nonoyama-Tarumi
Ochanomizu University, Tokyo, Japan

Yumiko Ota
UNICEF, New York, NY

Address correspondence to:
Yuko Nonoyama-Tarumi
Assistant Professor, Research Center for Human Development and Education,
Ochanomizu University,
2-1-1 Ohtsuka, Bunkyo-ku, Tokyo 112-8610, Japan
E-mail: tarumi.yuko@ocha.ac.jp Tel/Fax: 813-5978-5249

Introduction

There is increasing consensus that the early childhood years set the foundations for later life. The brain research field has been especially influential, as it has highlighted the role of the early years in the formation of the human brain. The neurons (brain cells) as well as the synapses, which connect the neurons, develop rapidly and are shaped by the stimulation from the environment in early years. Despite the convincing argument for the importance of early childhood, more than 200 million children under five years of age in developing countries do not reach their developmental potential (McGregor et al., 2007).

One of the complexities in investing in early childhood years is the fact that early childhood interventions are diverse in their domains. There are basic health and nutrition interventions, as well as education interventions. Programmes can include some or all of these under one intervention. Often researchers and practitioners in the health discipline are disconnected from those in the education discipline. While the former tend to emphasize child survival, the latter tend to emphasize child development. While the former tend to emphasize the youngest age, zero to three, the latter tend to emphasize the later age, three to five or until primary school entry age. The Lancet Child Development Series in 2007 was an attempt to overcome the bridge, and served as a companion to the previous Lancet Child Survival Series in 2003. From the child rights perspective, children have rights to both survival and development, to receive immunizations as well as a stimulating learning environment.

The modalities of early childhood programmes are also diverse: home-based activities, such as home visits in which parents receive support and advice; centre-based activities, such as pre-primary schools and health facilities; or a combination of both. The service may directly target children, indirectly target parents, or target both. In describing the current situation of early childhood in developing societies, it is important to capture these multiple conditions. Thus, in this paper, we examine across the age span, across the disciplines, and

across the modalities. We examine to what extent young children (under age five) have access to basic health care, such as immunization, a stimulating environment at home, such as parenting activities, resources, and supervision, and educational opportunities at centers, such as pre-primary schools.

Prior Research

Immunization

The worldwide effort to increase the prevalence rate of immunization is reinforced by MDG goals, mainly Goal 4 (reduction in child mortality), and indeed "the proportion of 1 year-old children immunized against measles" is one of the MDG indicators (Indicator 4.3). The impact of vaccines on global public health has been impressive. The combination of improved routine measles immunization coverage and follow-up campaigns providing a second chance for children to be immunized has led to a steep reduction in the number of measles deaths: by 60 percent worldwide and by 75 percent in sub-Saharan African between 1999 and 2005 (UNICEF, 2007). In addition to their impact on mortality, vaccines contribute significantly to reduction of illness and long-term disability, and lead to savings through reductions in clinic visits and hospitalization. Although immunization comes closer to achieving universal coverage than many other health interventions, such as improved drinking water sources or births attended by skilled health personnel (GAVI Alliance, 2010), progress has been unevenly distributed. For example, of the world's 26 million children not immunized with DPT3, 20 million live in 10 countries, of which 11.5 million live in India (UNICEF, 2007).

Various factors have been identified as determinants of childhood immunization rates, albeit mostly through single country studies, such as mother's education and household's economic status (Waters et al., 2004; Cutts et al., 1991), mother's knowledge of immunization (Odusanya et al., 2008.), birth order, and migration (Barreto and Rodrigues, 1992).

Some studies have focused on the predictors of the supply side (health-facility level). Barreto and Rodrigues (1992) found that the characteristics which best discriminated children's vaccination status was the year the child was born, which they concluded as the effect of health service practices on the increase in vaccination coverage. More concretely, management of the health-facility such as having an immunization plan and regular supervisory visits from health-district level officials (Waters et al., 2004), vaccination card[1] (Waters et al., 2004; Bolton et al., 1998), type of prenatal care (Waters et al., 2004; Sia et al., 2009), vaccination at a privately funded health facility (Odusanya et al., 2008), regular home visits by community health workers who are empowered to give immunizations at home (Bishai et al., 2002), and positive experience with vaccination services, such as short waiting times, not having been turned away from vaccination, and not knowing a child with a post-vaccine 'abscess'(Cutts et al., 1991) have been identified as key supply side determinants of positive immunization status.

One important issue to highlight in discussing the immunization coverage rate is the discrepancy between government data and household surveys. When comparing officially reported national data for DPT3 coverage with those from the Demographic Health Surveys (DHS) in 45 countries, Murray et al. (2003) found that the former is higher than the latter, and that the size of the difference increased with the rate of reported coverage. Service providers may record all vaccinations not just those that have been delivered, figures may be intentionally inflated where vaccination coverage is related to financial incentives for health workers or supervisors, or simply weak information systems may distort the information as it flows from the periphery to the centre (Murray et al., 2003). Therefore, in this paper, we use a household survey to calculate the coverage rate of four key immunizations: BCG, measles, polio3 and DPT3. We are unable to examine the supply-side predictors due to the nature of the survey, but by using a cross-national household survey, we are able to compare the

[1] As the authors note, immunization card is clearly subject to endogenaeity, children who have been immunized are more likely to have cards.

coverage rate across countries, investigate demand-side factors associated with higher coverage rate and whether these patterns are similar across countries.

Stimulating environment at home

Parenting practices contribute significantly to the course of early child development, because they constitute the majority of child-environment interactions and affect child adaptation (Bornstein, 2006). Long-term influences of parenting practices have been evidenced as well, such as favorable outcomes in terms of educational attainment, occupational status, age of beginning gainful employment, and some indicators of integration into modern urban life (Kagitcibasi et al., 2001). Stimulation occurs through responsive and increasingly complex developmentally appropriate interactions between caregivers and children that enhance child development. Responsiveness in the parent-child relationship not only promotes healthy socioemotional development, but also leads to improved physical and cognitive growth (Zaff et al., 2003).

Walker et al. (2007) summarized seven causal studies on the effects of cognitive stimulation interventions from developing countries, and found significantly higher cognitive functioning in young children, from birth to five years of age, given additional cognitive stimulation or learning opportunities than non-stimulated controls. Interventions included teaching mothers the techniques for educational play and play materials, verbal stimulation, developing children's motor skills and cognitive skills, increasing responsiveness, etc. Most effect sizes ranged from 0.5 SD to 1.0 SD. They showed that only 10-41% of parents provide cognitively stimulating materials to their child, and only 11-33% of parents actively involve their children in cognitively stimulating activities, and concluded inadequate cognitive stimulation as one of the four developmental risk factors.

Despite consensual acknowledgement of the importance of early environments and parenting practices, there is a dearth of population-based multinational data on the situation.

Much of what is known about early parenting practices that promote child development in developing countries comes from studies of small samples in single countries (for review of such studies, see Engle et al, 2007; Walker et al., 2007). In this paper, we examine the situation of parenting practices and resources in a wide range of developing countries, and to what extent the situation varies across and within countries. More specifically, we analyze the extent to which parents read books, tell stories, sing songs, take the child outside, play, and name, count and draw things, the amount of books and children's books that parents possess in the home, and the extent of parental supervision.

Participation in early learning programme

Gross enrollment ratio in early childhood development programmes was decided as one of the two ECD indicators for the Convention on the Rights of the Child and the international agreements made at the World Conference on Education for All (Jomtien), and thus, governments need to collect and present this data in country reports. However, as enrollment in pre-primary education often relies on governmental data by education ministries, the numbers may be over-estimated if they are linked to resource distribution to schools, or they many include children that are registered at the beginning of the year but do not continue to participate. On the other hand, they may be under-estimated, if they do not include ECD centers offered by other ministries, private groups, or communities. Myers (2001) emphasized the importance of considering the variation in age span, what constitutes ECD programmes, and days and hours of operation, in analyzing ECD indicators cross-nationally. Nonoyama et al. (2009) showed that participation rate vary extensively by age, and also highlighted the regional difference in the definition of ECD programmes by analyzing the discrepancy in responses to different questions in MICS and DHS. In this paper, we re-visit the participation rate in organized early learning programmes and also explore the variation in the hours of operation.

Methods

Data

This study uses nationally representative household survey data from the third round of Multiple Indicator Cluster Surveys (MICS3). MICS3 was developed by UNICEF and conducted in 51 countries by government organizations between 2005 and 2007 with technical support by UNICEF and other partners. As of March 2010, 39 countries had released data to the public, and 37 of them were available for our analysis. [2] (See Appendix for the list of countries in this study and the years that MICS3 were implemented in each country.)

MICS3 consists of three standard questionnaires (i.e., household, individual women, and children under five), and includes 42 modules in total. 21 of them are *core modules*, which UNICEF expects all participating countries to include in their surveys for the purposes of monitoring and international comparison. Countries can customize their surveys by selecting modules of their interest from the remaining additional and optional modules. The *additional modules* focus on issues that are applicable to certain countries, such as malaria or female genital mutilation/cutting, and the *optional modules* cover topics such as child development, child discipline or disability. While most of the questions are standardized in terms of content and wording, MICS3 has flexibility that allows countries to adapt the survey to their own situation and needs by choosing appropriate modules.

For the analysis of early childhood care and education (ECCE), this study uses data from questionnaires for household and children under five. The household questionnaire provides data on household composition (e.g., listing of household members with their age, gender, and parent-child relationship), location of residence, household wealth and education level and schooling of household members. The questionnaire for children under five collects data on early learning, child development, and immunization, for all and each child under five in the

[2] The number of variables available for our analysis varies by country. Thus, each part of the analysis covers a different number of countries as indicated in the descriptive tables.

household.[3]

MICS3 employs probability sampling methods and ensures to be nationally representative. The sampling must be based on three-stage sampling with implicit stratification, a type of geographic stratification that automatically distributes the sample proportionately into each subdivision. At the first stage, 250 to 350 primary sampling units (PSUs) are defined in the country based on the latest census enumeration areas. At the second stage, one cluster (10 to 30 households) is randomly selected from each PSU. Then, at the third stage, households in each cluster are systematically selected for interview. As a general rule, the overall sample size is within a range of 2,500 to 14,000 households per country. Instead of constructing new sampling, countries are allowed to add MICS questionnaires to another household survey, if the sample design is appropriate, or use the sample or clusters from a previous or another survey.

Measures

Five domains of ECCE

This study explores the situation of early childhood care and education (ECCE) from five domains: early learning, parenting activities, parenting resources, parental supervision and health care. Early learning is measured by (1) whether the child currently attends any organized learning or early childhood education programme, including kindergarten or community child care, and (2) the number of hours in the programme, if the child attends a programme. In the MICS questionnaire, attendance to early learning programme is defined broadly and asked with the following question: "Does (*NAME*) attend any organized learning or early childhood education programme, such as a private or government facility, including kindergarten or community child care?" Thus, the category 'any organized learning or early childhood education programme' is an open category which may include various early learning

[3] If there are two children under five in the household, both children are included in our sample, rather than randomly selecting one child per household.

programmes, but excludes parenting or nutrition programmes. The questions are asked for three and four year olds. We examine the percentage of children attending early learning programme, which shows the quantity of early learning programme in the country, and the average number of hours of attendance in the last seven days of the survey, which could be considered as a proxy of the quality of early learning programmes in the country.

Parenting activities is measured by if an adult in the household (either a father, a mother, or any other adult household member over 15 years old) engaged in various parenting activities in the past three days. The MICS parenting activities consist of the following six: (1) reading books or looking at picture books with the child, (2) telling stories to the child, (3) singing songs, (4) taking the child outside the home/compound/yard/enclosure, (5) playing with the child, and (6) spending time with the child naming, counting, and/or drawing things. The question is asked for zero to four year olds. Although it is possible to analyze the activities by father, mother or others separately, we aggregated the responses to the three questions and created a variable to indicate whether any adult in the household engaged in each activity. For each activity, we examine the percentage of children with parents or any adult in the household routinely engaging in the activity. We also examine the average number of parenting activities in the household, and the percentage of households engaging in more than four activities in the country. We use four activities as the threshold to be consistent with the MICS Indicator (Indicator 46: support for learning), which is defined as 'the percentage of children aged 0-59 months living in households in which an adult has engaged in four or more activities to promote learning and school readiness in the past three days'.

Parenting resources are measured by (1) the number of books (any genre, including school books for older children but excluding children's books or picture books for young children) in the household and (2) the number of children's books in the household. The questions are asked for zero to four year olds. We examine the average number of books, the

average number of children's books, as well as the percentage of children with more than three children's books. We use three books as the threshold to be consistent with the MICS indicator (Indicator 48: Support for learning: children's books), which is defined as 'the percentage of children in households with three or more children's books.'

Parental supervision is measured by if the child was left alone or in a care of another child under ten during the past week of the survey. The question is asked for zero to four year olds. We examine the percentage of children left alone, left with another child under ten, as well as the percentage of children with neither situation in the past week of the survey.

For health care, we focus on immunization. The measure is based on the child's immunization history of BCG, measles, DPT3 (three doses of diphtheria, pertussis and tetanus) and polio3 (three doses of Polio). Children are considered immunized if they have records of immunization on their immunization card at any time before the survey or if the mother or caretaker, without immunization card, recalls and reports to the interviewer. Although there are recommended timings of each immunization, we do not take account of the date the child was immunized. In other words, children who received immunization at any time before the survey are recorded as 'immunized'. We take this decision, because using two dates to compute the timing of the immunization introduces noise as well as more missing data. As this 'loose' criterion is likely to over-estimate the number of children immunized, we restrict our sample to one year olds (12-23 months) or other age groups specified by the country (e.g., 15-26 months or 18-29 months) based on their country's immunization schedule and used in their MICS final (country) reports.

Measures of inequity

The study also examines the level of inequity in ECCE by gender, place of residence, household wealth, and mother's education. Gender is divided into two categories, male and female. Place of residence is divided into two categories, whether the family lives in urban area

or rural area. Household wealth is constructed using principal component analysis and includes several items, such as main material of dwelling floor; number of rooms in dwelling; main source of drinking water; toilet facility used; household has electricity, radio, television, refrigerator; member of household owns bicycle, motorcycle, car; and main cooking fuel used by household. The measure is then divided into quintiles within each country. While the levels of wealth index are not directly comparable across countries, for example the poorest 20 percent in Venezuela cannot be compared to the poorest 20 percent in Laos; they are derived using an identical methodology. In our analyses, we compare children from families in the top 20 percent of the wealth distribution and those from families in the bottom 20 percent of the distribution. Mother's education level is measured by the highest level of school attended and recorded into three categories: i) none or preschool, ii) primary school, religious school or non-standard curriculum, and iii) secondary school or higher, including vocational/tertiary school. Since the measure is based on the level attended, it is not able to capture the credential effect of education. In other words, we cannot differentiate mothers who have attended minimal years of secondary education and those that have finished secondary school.

Strategy

We first present descriptive statistics of each measure for the five domains of ECCE across countries. This includes percentage of children attending early learning programmes; average number of hours in the attended early learning programmes; percentage of children with a household adult engaging in each parenting activity; average number of parenting activities in the household; average number of books in the household; average number of children's books in the household, percentage of children left alone; percentage of children left in a care of another child under 10; percentage of children who received BCG, measles, DPT3, Polio3, and all four immunizations at any time before the survey. This analysis will present the prevalence of ECCE across countries, that is, to what extent countries differ in their ECCE

situation. It will also demonstrate the variation across the domains in each country, for example, whether countries with high prevalence of early learning programmes also have high prevalence rate of immunization.

Then we examine the cross-tabulation between the five domains of ECCE and measures of inequity (gender, place of residence, household wealth, and mother's education level) to examine the level of inequity in ECCE within countries. We present the ratio of percentages of children who meet the criteria by groups; for example, percentage of boys attending early learning programmes over the percentage of girls attending early learning programmes is used as a measure of inequity in early learning programmes by gender.[4]

Findings

Analysis of prevalence across countries

First, we examine countries' average in each domain to see to what extent countries vary in their prevalence rate in each domain, and whether this variation is similar across the domains.

The percentage of children attending early learning programme varies widely across countries (Table 1). Overall, when combining 3 and 4 year olds and all the countries in our sample, on average, one in five (19.7%) children participates in some kind of organized form of early learning programmes. However, there is a wide range across countries, from 2.2% of Burkina Faso to 88.1% of Belarus. As highlighted in earlier study (Nonoyama-Tarumi et al., 2009) the participation rate also varies across the age. The overall participation rate of 3 year olds is 14.7% compared to 25.2% of 4 year olds. With the exception of two countries (Macedonia and Tajikistan), the participation rate of four year olds is much higher than that of 3 year olds. Turning to the average number of hours attended, interestingly, the variation is

[4] We do not compute the ratio if the weighted sample size in one of the group is less than 50. For example, if there are at least 50 girls and 50 boys with valid data on early learning programme, we calculate the percentage of girls and boys attending the programme separately and take the ratio of percentages to see the level of inequity. However, if one of the groups (e.g., female or male) has less than 50 weighted cases, the ratio is not calculated.

smaller, both across countries and across the age. For example, the coefficient of variation[5] for participation rate is 0.91, whereas 0.42 for number of hours attended. As children who do not attend early learning programmes are excluded in calculating the average number of hours attended, it could be inferred that the variation in early learning opportunities is smaller when comparing across those who have access. This is in line with Benavot's argument that intended instructional times and official curricula become more similar across countries with educational expansion (Benavot , 1992).

[TABLE 1 ABOUT HERE]

For the six parenting activities, the prevalence rate varies extensively across the activities (Table 2). Overall, over 80% of parents play or take the child outside routinely, while only 33% read books and 46% tell stories. The variation across countries is higher for the latter two activities as well (The coefficient of variation is 0.14 for take outside, 0.12 for play, whereas 0.80 for read books and 0.53 for tell stories). This suggests that there are some parenting activities that are more difficult than other activities for parents to engage in. In fact, reading books could be expected to be a difficult activity for some parents, as it requires financial resources as well as certain educational level. However, telling stories, which is not necessarily a resource-bound activity, is also not such a common parenting activity in many developing countries. Overall, only one in two adults routinely engage in such activity (46%), and in countries like Burkina Faso, Cote d'Ivoire, and Lao, the prevalence of such activity is extremely low (5.9%, 15.4%, and 15.9% respectively). When looking at "spend time on naming, counting, and/or drawing", which also requires some literacy skills and/or some resources for drawing materials, the prevalence rate is higher and the dispersion among the countries is smaller than read books.

[TABLE 2 ABOUT HERE]

[5] The coefficient of variation is computed by dividing the standard deviation by the mean. It allows us to compare the dispersion of each measure with different units or widely different means.

Turning to parenting resources, the correlation between the two measures are high (.85), and overall, households have twice as many books as children's books (Table 3). With the exception of Ukraine, in all countries, families are more likely to have non-children's books than children's books, if any, which suggests that children's books are more difficult to obtain or that children's books are perceived as a luxury in many societies. However, it should be noted that the question on 'books' is more comprehensive than 'children's books', as the question asks to include schoolbooks. It is also possible that some households may have included religious texts (such as Koran, Bible, etc) as 'books'. The variation across countries for children's books is larger than that of non-children's books. For example, when comparing across the countries, the average number of children's books in the household is 3.3, but the average number for Cameroon, Cote d'Ivoire, Ghana, Lao, Sierra Leone, Togo, and Yemen are lower than one.

[TABLE 3 ABOUT HERE]

Looking at parental supervision, the overall prevalence rate of the child being left alone is 7.4%, and 15.9% for the child left with another child under 10 (Table 4), but these rates are likely to be under-estimated in household surveys, because parents tend to underreport bad behaviors (Heymann, 2006). The rates tend to be higher in West African countries, such as Cameroon, Cote d'Ivoire, Gambia, Ghana, Sierra Leone, and Togo. The coefficient of variation is higher for left alone than left with another child under 10 (1.51 and 0.71 respectively), which may suggest that 'leaving the child alone' is perceived as undesirable in some countries, but less so in other countries.

[TABLE 4 ABOUT HERE]

Finally, looking at immunization, the overall prevalence rates are 94.9% for BCG, 82.0% for polio3, 91.5% for DPT3, and 82.0% for measles (Table 5). It should be noted that there are two separate questions for 'DPT3' and 'HepB3 or DPT3/HepB3' in the MICS

questionnaire. The latter includes DPT3 given as a package with HepB3, but also HepB3 alone, and it is not possible to distinguish the two in the data. Given that countries only include the latter question when there is the option of the package in their immunization schedule, we have incorporated it in our calculation. However, this leads to overestimation.[6] The overall percentage of children who received all four immunizations is 77.8%. Countries with low rate for 'fully immunized' vary region-wise.

[TABLE 5 ABOUT HERE]

Looking across the domains, the coefficient of variation for early learning is 0.91 (for 3 and 4 year olds combined) whereas 0.22 for immunization (for fully immunized). This suggests that disparity across countries is larger for access to early learning programmes than immunization coverage. One could interpret that there is a wider consensus globally on immunization as a necessity, whereas there are some countries that still perceive early learning opportunity as a luxury. As a result, governments or international agencies are able to provide immunizations free through immunizations campaigns in some countries, whereas they are less likely to provide early learning programmes without fee.

[TABLE 5 ABOUT HERE]

Analysis of inequity within countries

Now, we turn to explore whether the prevalence rate of each domain differ by sub-groups within a country, such as gender, place of residence, household wealth, and mother's education. As noted earlier, we use the ratio to examine the extent of inequity among different sub-groups. For example, if the gender ratio for early learning is larger than one, this suggests that more males are participating in early learning programmes than females in that society. In contrast, if the ratio is smaller than one, this indicates that more females are participating than males.

[6] When we calculated just using the first question ('DPT3'), the overall percentage was as low as 73.5 %, which suggests that our DPT3 rate needs to be interpreted with caution.

We examine inequity in early learning by analyzing the percentage of children attending early learning programmes. Table 6 shows that inequity in early learning programmes is striking among sub-groups. For example, in 24 countries, the participation rates of urban children are two times or larger than those of rural children. One exception is Bangladesh, where the rate for urban children is smaller than that of rural children (ratio of 0.77). This warrants further research, but it may be due to high prevalence of non-formal pre-primary education, such as BRAC, in the rural area in the country. Likewise, in 26 countries, the participation rates of children from the richest 20% households are two times or larger than those of children from the poorest 20% households. In 17 countries, the participation rates of children with mothers with secondary education or higher are two times or larger than those of children with mothers with no education. It should be noted that we have fewer countries in the analyses for mother's education level, because in some countries, there are too few cases for children with mothers with no education, or children with mother with secondary education or higher. We can expect that there are overlaps among these sub-groups. That is, there may be more poor households and mothers with no education in rural area. But we can also expect that these sub-groups may have independent effects. Interestingly, the inequity among boys and girls is not uniform across countries. There were only two countries (Burkina Faso and Macedonia) in which boy's participation rate was two times larger than girls' participation rate. In fact, there are several countries where the participation rate is higher for girls.

[TABLE 6 ABOUT HERE]

For parenting activities, we analyze the percentage of children with a household adult routinely engaging in more than four stimulating activities at home. The inequity among the sub-groups in parenting activities is not as striking as that of early learning programmes. Although families in urban area, richest 20%, mothers with secondary education level are

more likely to engage in multiple parenting activities (the ratio is larger than one) across countries, with the exception of Cote d'Ivoire, the difference between the groups are not so immense. For example, there are only four countries with ratios larger than two for household wealth and mother's education. This may be due to the fact that there is the issue of supply in early learning programmes. For example, there are simply not enough early leaning programme centers in rural area, whereas for parenting activities, even without the supply, parents may engage in such activities once they learn the benefit of these activities for their children's development. In addition, participating in early learning programmes often requires more financial burden on parents compared to engaging in stimulating activities at home. Thus the disparity among the urban and rural families and rich and poor households may be larger for early learning programmes than parenting activities. However, when we lower the cut-off point to 1.1, number of countries are: 17 for place of residence, 25 for household wealth, and 20 for mother's education (secondary education versus primary education), which clearly shows the disparity in parenting activities by sub-groups across the countries.

[TABLE 7 ABOUT HERE]

For parenting resources, we examine the percentage of children with more than three children's books in the household. Again, there is no pattern across countries for gender. However, the inequity by place or residence, household wealth and mother's education (secondary education versus no education) are striking. The numbers of countries with ratios larger than two for each category are 12, 22, and 14 respectively. These countries are similar across the groups, and when comparing with Table 3, they are countries with low prevalence rate. In other words, countries with low average of children's books tend have greater disparity in the possession of children's books across the sub-groups.

[TABLE 8 ABOUT HERE]

We examine the percentage of children not left alone nor in a care of another child

under 10 to examine inequity in parental supervision. Again, there is no pattern across countries for gender. Unlike other domains, children in rural area or poor households, or children with mothers with little education are not necessarily likely to be left alone or in a care of another child. Even in countries with the expected direction, the extent of inequity is small, compared to other domains. Moreover, in several countries, the relationship is in the opposite direction. For example, in Albania, Bosnia and Herzegovina, Kazakhstan, Macedonia, and Uzbekistan, children in richest households are more likely to be left alone or in care of another child than children in poorest households. This may be due to the fact that women in the former socialist societies are more likely to be working. This somewhat complicating pattern in parental supervision suggests that there are other factors, than the four factors we examined, associated with parental supervision.

[TABLE 9 ABOUT HERE]

Finally, we examine the percentage of children fully immunized, i.e. received BCG, three doses of polio and DPT, and measles, to study the extent of inequity in health care. Again, the pattern is not uniform across countries for gender. For place of residence, household wealth, and mother's education, we detect an association in the expected direction, but the extent of inequity is not as large as early learning. For example, the number of countries with ratios larger than two is only one for household wealth. However, when we lower the cut-off point to 1.1, number of countries are 14 for place of residence, 12 for household wealth, six to 11 for mother's education (six for primary education versus no education and 11 for secondary education versus no education). This suggests that children in rural areas, children from poorest households, and children with mothers with no education need to be targeted in reaching full coverage of immunization, but on the other hand, there is a substantial population within these groups that have been fully immunized as well. It is also worthy to note that there are a few countries with exceptions. For example, the ratio between

the rich and poor is 0.57 in Guyana, and 0.82 in Uzbekistan, which implies that immunization policies or campaigns that target the poor have been effective in these societies. Overall, compared to the extent of inequity by family background in access to early learning programmes, the extent of inequity by family background in health care is much smaller. It could be argued that the former situation allows us to see the latter situation as "the cup half full" rather than "the cup half empty."

[TABLE 10 ABOUT HERE]

Conclusions

In describing the current situation of early childhood in developing societies, it is important to capture the multiple environments in which children develop. Thus, in this paper, we examined across the age span (zero to four), across the disciplines (health and education), and across the modalities (center-based and home-based) and targets (children and parents). We first examined the prevalence rate of five domains of ECCE (early learning, parenting activities, resources, and supervision at home, immunization) across countries. Throughout the domains, it was shown that the rate varies widely across countries, but the extent of variation varied across the domains. The variation across countries was largest for early learning attendance, relatively small for immunization and parenting activities, and somewhere in between for parental resources and supervision. Clearly, for attendance in early learning programme, there are countries that are lagging far behind in reaching the international goals and commitments. The picture of parenting activities warrants further investigation. Some activities had high average and low variation across countries (e.g. take outside, and play), whereas some activities had low average and high variation (e.g. read books, and tell stories). In promoting parenting activities that are beneficial for child development, it is crucial that we take account of the cultural context of each society and understand why some activities may be more difficult for parents to engage in compared to

other activities.

We then examined the extent of inequity within each society for each ECCE domains. Across the domains, there was no pattern for gender. In other words, boys were not more advantageous than girls in attending early learning programmes, having adequate parenting activities, resources or supervision at home, or receiving immunization, at least at the country level. However urban children, children from rich families, children with mothers with high educational level were in much better situation across the domains; household wealth and parental education were especially strong markers of disparity. When comparing across the domains, the disparity was again largest for attendance in early learning programmes, relatively small for immunization, parental supervision and parenting activities, and in between for parental resources. This suggests that when investing in early childhood interventions, it is critical to consider that some domains have been more successful in reaching the disadvantaged population. In expanding the opportunities of early learning programmes, it is important to ensure that the programmes are reaching the disadvantaged population. Equalizing access to early learning programmes could close the socio-economic status gaps in school readiness and later educational and occupational outcomes (Rouse et al., 2005), as well as parenting activities and parental resources and supervision, when those children become parents.

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Table 1 Percentage of children attending early learning programmes and average number of hours in the programme (3-4 year olds)

	% of children attending			Average number of hours attended			Number of children		
Country	Age 3 (%)	Age 4 (%)	Total (%)	Age 3	Age 4	Total	Age 3	Age 4	Total
Albania	33.9	44.9	40.2	19.2	18.8	19.0	221	287	508
Bangladesh	7.2	22.3	14.9	8.0	9.6	9.2	6,573	6,751	13,324
Belarus	85.4	90.6	88.1	8.5	9.2	8.9	540	598	1,138
Belize	17.8	42.8	31.5	13.1	16.8	15.9	135	166	298
Bosnia and Herzegovina	6.1	6.8	6.5	20.4	19.2	19.7	609	676	1,286
Burkina Faso	1.4	3.5	2.2	10.8	17.7	14.8	1,079	751	1,829
Burundi	3.9	5.9	4.8	13.7	12.8	13.2	1,523	1,195	2,719
Cameroon	14.7	32.0	22.6	21.9	21.9	21.9	1,301	1,102	2,402
Côte d'Ivoire	3.7	7.4	5.6	17.9	16.1	16.6	1,560	1,578	3,138
Djibouti	12.1	15.7	13.6	4.2	6.8	5.5	506	388	894
Gambia	14.2	28.2	20.1	17.6	16.3	16.8	1,202	894	2,095
Georgia	41.3	47.1	44.3	21.7	25.6	23.9	400	448	848
Ghana	44.3	60.9	52.4	14.6	13.8	14.2	699	660	1,359
Guinea Bissau	6.4	13.8	9.9	13.0	14.6	14.1	1,106	1,015	2,121
Guyana	22.4	75.6	50.2	14.8	12.8	13.2	496	544	1,040
Iraq	1.6	3.4	2.5	13.6	10.2	11.3	3,096	3,091	6,188
Jamaica	79.7	93.6	87.0	23.3	21.6	22.3	276	296	571
Kazakhstan	15.9	16.7	16.3	16.7	17.6	17.2	829	796	1,625
Kyrgyzstan	16.5	21.0	19.0	17.5	24.4	21.7	527	648	1,175
Lao	5.9	10.5	8.0	29.3	24.4	26.5	865	678	1,544
Macedonia	13.3	8.4	10.9	36.1	30.7	34.0	1,040	1,015	2,055
Malawi	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Mauritania	6.3	7.7	6.6	7.0	7.2	7.1	1,823	614	2,436
Mongolia	32.6	43.4	38.0	37.0	37.0	37.0	647	663	1,309
Montenegro	22.1	35.6	29.7	23.8	24.4	24.2	208	264	472
Serbia	29.1	36.8	33.1	28.0	28.8	28.5	724	794	1,518
Sierra Leone	8.4	19.5	13.2	14.7	16.1	15.6	1,170	888	2,057
Somalia	1.2	3.3	2.3	23.8	21.7	22.1	1,287	1,321	2,607
Syria	5.2	10.9	7.6	18.8	19.5	19.2	2,579	1,885	4,464
Tajikistan	10.4	10.4	10.4	11.3	9.6	10.4	840	854	1,694
Thailand	48.5	73.5	61.0	25.4	25.1	25.2	1,878	1,884	3,761
Togo	10.2	23.1	15.9	19.8	19.7	19.7	792	627	1,420
Trinidad and Tobago	60.0	90.1	76.2	21.1	22.2	21.8	210	243	453
Ukraine	59.5	67.2	63.6	34.3	34.5	34.4	620	674	1,295
Uzbekistan	19.2	21.2	20.2	24.1	26.9	25.6	965	935	1,902
Vietnam	48.1	73.3	60.5	33.4	32.1	32.7	532	516	1,048
Yemen	2.1	3.2	2.6	4.6	9.4	7.4	757	690	1,447
Average	22.5	32.5	27.5	19.0	19.3	19.2	1,100	1,012	2,112
Overall	14.7	25.2	19.7	20.7	19.8	20.1	39,615	36,429	76,040

Notes: Children's sample weight (chweight) is used in the estimation.

Number of children refers to the number of children with valid data for attendance in early learning programmes.

Each country contributes with equal weight to the Average, whereas each country contributes in proportion to the number of weighted cases to the Overall.

n/a: Data are not available since the country did not include the question(s) in its questionnaire.

Table 2 Percentage of children with a household adult (mother, father, or others) engaging in parenting activities (0-4 year olds)

Country	Read books (%)	Tell stories (%)	Sing songs (%)	Take outside (%)	Play (%)	Name, count, draw (%)	Average number of activities	Number of children
Albania	61.9	63.9	89.3	90.0	92.1	52.7	4.5	1,093
Bangladesh	39.8	50.4	39.8	85.0	74.4	47.6	3.4	31,483
Belarus	81.7	73.2	84.0	93.5	96.7	71.5	5.0	3,051
Belize	73.2	74.1	88.7	93.1	95.7	84.4	5.1	796
Bosnia and Herzegovina	44.8	69.0	78.4	93.1	96.5	79.1	4.6	3,187
Burkina Faso	3.0	5.9	26.8	66.6	62.2	25.2	1.9	5,283
Burundi	11.2	35.5	51.6	59.6	57.8	28.1	2.4	2,719
Cameroon	8.8	29.0	73.5	76.5	88.9	45.3	3.2	6,233
Côte d'Ivoire	5.2	15.4	63.7	91.7	92.0	54.4	3.2	8,420
Djibouti	50.4	83.6	91.6	93.5	91.9	75.9	4.9	688
Gambia	25.0	35.4	64.6	83.2	82.6	46.3	3.4	6,477
Georgia	67.3	78.1	81.9	93.8	94.1	83.6	5.0	2,037
Ghana	16.1	24.4	73.2	84.4	91.2	36.8	3.3	3,464
Guinea Bissau	12.1	87.3	77.5	70.1	95.1	52.8	4.0	3,842
Guyana	69.0	75.2	87.5	92.8	94.7	83.7	5.0	2,365
Iraq	20.3	35.7	52.7	63.5	83.9	68.1	3.2	16,469
Jamaica	74.3	68.5	89.8	91.1	96.8	87.8	5.1	1,378
Kazakhstan	59.0	70.7	90.6	94.1	94.1	77.0	4.9	4,415
Kyrgyzstan	47.2	60.3	82.2	90.8	83.8	75.0	4.4	2,987
Lao	17.6	15.9	26.2	72.3	70.2	65.9	2.7	4,136
Macedonia	56.1	78.8	86.1	89.9	93.1	92.4	5.0	4,547
Malawi	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Mauritania	11.5	32.2	61.6	59.6	70.3	48.0	2.8	8,366
Mongolia	48.6	27.3	73.4	86.0	80.9	51.7	3.7	3,547
Montenegro	75.8	88.9	97.4	95.9	97.0	76.3	5.3	1,031
Serbia	72.4	86.9	92.5	94.1	95.7	72.5	5.1	3,578
Sierra Leone	13.4	28.1	85.4	91.8	97.9	67.9	3.8	5,246
Somalia	9.6	58.8	72.8	69.5	84.0	92.3	3.8	6,057
Syria	35.2	52.0	74.7	87.7	85.2	44.6	3.8	11,017
Tajikistan	25.6	50.0	73.8	84.7	80.8	57.5	3.7	4,273
Thailand	65.6	59.1	80.7	95.8	97.2	78.1	4.8	9,406
Togo	10.4	21.7	79.4	77.5	83.9	34.2	3.1	4,073
Trinidad and Tobago	82.2	82.2	93.1	96.2	98.5	91.8	5.4	1,117
Ukraine	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Uzbekistan	42.5	63.5	89.9	94.7	86.2	66.8	4.4	4,986
Vietnam	26.2	48.1	64.0	71.7	92.2	69.4	3.7	2,604
Yemen	11.7	17.9	46.1	63.1	77.0	32.4	2.5	3,780
Average	39.3	52.8	73.8	83.9	87.3	63.4	4.0	5,261
Overall	32.5	46.4	65.0	81.6	84.1	58.6	3.7	184,149

Notes: Children's sample weight (chweight) is used in the estimation.

Number of children refers to the number of children with valid data for average number of activities.

Each country contributes with equal weight to the Average, whereas each country contributes in proportion to the number of weighted cases to the Overall.

n/a: Data are not available since the country did not include the question(s) in its questionnaire.

Table 3 Average number of books and children's books in the household (0-4 year olds)

Country	Average number in household		Number of children
	Books	Children's books	
Albania	4.8	2.1	1,093
Bangladesh	n/a	n/a	n/a
Belarus	n/a	n/a	n/a
Belize	6.7	4.9	796
Bosnia and Herzegovina	6.9	5.9	3,187
Burkina Faso	n/a	n/a	n/a
Burundi	n/a	n/a	n/a
Cameroon	4.0	0.6	6,350
Côte d'Ivoire	2.4	0.3	8,604
Djibouti	2.2	1.1	2,245
Gambia	n/a	n/a	n/a
Georgia	7.9	6.3	2,037
Ghana	3.3	0.9	3,467
Guinea Bissau	n/a	n/a	n/a
Guyana	4.7	4.2	2,499
Iraq	n/a	n/a	n/a
Jamaica	8.2	4.6	1,427
Kazakhstan	8.5	5.4	4,415
Kyrgyzstan	7.0	2.8	2,987
Lao	0.8	0.3	4,135
Macedonia	4.7	3.9	4,547
Malawi	n/a	n/a	n/a
Mauritania	n/a	n/a	n/a
Mongolia	4.7	1.8	3,547
Montenegro	7.7	6.8	1,050
Serbia	7.4	7.1	3,748
Sierra Leone	2.3	0.8	5,246
Somalia	n/a	n/a	n/a
Syria	5.7	2.3	11,017
Tajikistan	3.8	1.3	4,273
Thailand	5.9	3.1	9,406
Togo	1.9	0.4	4,073
Trinidad and Tobago	8.6	7.1	1,117
Ukraine	8.5	9.5	3,049
Uzbekistan	6.7	3.0	4,986
Vietnam	5.6	2.0	2,680
Yemen	5.4	0.8	3,780
Average	5.4	3.3	3,917
Overall	5.0	2.7	105,760

Notes: Children's sample weight (chweight) is used in the estimation.

Number of children refers to the number of children with valid data for children's books.
Each country contributes with equal weight to the Average, whereas each country contributes in proportion to the number of weighted cases to the Overall.

n/a: Data are not available since the country did not include question(s) related to the indicator in its questionnaire.

Table 4 Percentage of children with inadequate supervision (0-4 year olds)

Country	Left alone (%)	Left with another child under 10 (%)	Number of children
Albania	2.2	12.4	1,094
Bangladesh	n/a	n/a	n/a
Belarus	n/a	n/a	n/a
Belize	2.5	2.8	796
Bosnia and Herzegovina	2.0	6.1	3,187
Burkina Faso	n/a	n/a	n/a
Burundi	n/a	n/a	n/a
Cameroon	8.5	33.8	6,355
Côte d'Ivoire	45.1	32.8	8,562
Djibouti	6.2	9.2	2,235
Gambia	4.2	13.8	6,524
Georgia	2.7	7.5	2,033
Ghana	10.2	20.2	3,459
Guinea Bissau	n/a	n/a	n/a
Guyana	4.1	7.4	2,434
Iraq	n/a	n/a	n/a
Jamaica	1.1	2.7	1,427
Kazakhstan	2.3	9.0	4,416
Kyrgyzstan	1.3	9.6	2,980
Lao	5.8	23.9	4,134
Macedonia	2.7	7.8	4,548
Malawi	n/a	n/a	n/a
Mauritania	n/a	n/a	n/a
Mongolia	2.7	11.9	3,546
Montenegro	1.2	4.9	1,047
Serbia	4.1	6.6	3,755
Sierra Leone	5.4	19.6	5,240
Somalia	n/a	n/a	n/a
Syria	1.4	16.3	11,014
Tajikistan	2.8	12.3	4,273
Thailand	4.8	11.0	9,406
Togo	8.5	28.7	4,065
Trinidad and Tobago	0.4	0.8	1,118
Ukraine	3.5	7.7	3,034
Uzbekistan	0.9	4.7	4,986
Vietnam	5.9	15.8	2,678
Yemen	9.8	30.7	3,779
Average	5.4	13.2	4,005
Overall	7.4	15.9	112,155

Notes: Children's sample weight (chweight) is used in the estimation.

Number of children refers to the number of children with valid data for both 'left alone' and 'left with another child under 10'. Each country contributes with equal weight to the Average, whereas each country contributes in proportion to the number of weighted cases to the Overall.

n/a: Data are not available since the country did not include the question(s) in its questionnaire.

Table 5 Percentage of children immunized (12-23 month old †)

Country	BCG (%)	POLIO3 (%)	DPT3‡ (%)	Measles (%)	All 4 (%)	Number of children
Albania	97.3	65.8	87.9	75.9	53.2	154
Bangladesh	97.7	96.3	99.8	87.9	92.9	5,437
Belarus*	99.8	99.2	99.7	98.4	97.9	631
Belize*	99.3	75.2	91.6	92.2	80.9	131
Bosnia and Herzegovina*	97.9	87.4	93.2	76.7	77.0	587
Burkina Faso	95.9	85.9	99.0	78.2	86.7	874
Burundi	96.4	81.4	90.0	82.5	71.9	1,209
Cameroon	93.5	84.9	87.9	81.0	77.1	1,095
Côte d'Ivoire	88.0	78.5	86.2	70.5	70.0	1,388
Djibouti	97.3	68.6	92.1	78.2	67.4	291
Gambia	99.0	89.5	92.6	92.3	83.3	1,427
Georgia	96.4	67.4	92.9	61.9	59.8	241
Ghana	95.7	85.2	91.2	86.6	81.0	647
Guinea Bissau	94.4	68.5	50.9	79.1	40.1	374
Guyana*	98.1	79.7	60.4	88.5	51.1	407
Iraq*	95.5	75.9	79.6	68.6	68.4	2,548
Jamaica*	98.3	87.8	89.7	93.1	80.7	270
Kazakhstan**	99.8	94.9	98.7	86.2	82.9	972
Kyrgyzstan	98.3	47.3	100.0	90.8	67.2	302
Lao	92.4	63.3	74.8	57.8	49.6	450
Macedonia*	98.6	86.0	92.6	87.2	80.7	781
Malawi	97.4	87.4	99.7	85.3	85.3	4,390
Mauritania	93.1	53.6	79.2	77.3	48.4	934
Mongolia	99.0	89.6	96.9	89.1	84.5	671
Montenegro*	88.9	77.3	81.9	82.3	59.6	193
Serbia*	74.8	86.2	90.7	84.2	54.6	743
Sierra Leone	95.7	78.0	97.5	84.4	89.0	691
Somalia	45.0	58.0	83.9	40.7	58.6	162
Syria	97.6	87.5	93.5	88.2	84.9	1,673
Tajikistan*	96.5	59.1	79.7	78.9	60.2	467
Thailand	99.3	96.8	98.6	94.5	93.2	1,791
Togo	91.5	75.2	79.8	65.0	63.4	703
Trinidad and Tobago*	n/a	86.9	79.8	90.8	n/a	206
Ukraine	n/a	n/a	n/a	n/a	n/a	n/a
Uzbekistan**	99.0	53.2	97.1	91.2	57.5	663
Vietnam	96.9	76.7	96.7	88.7	80.3	457
Yemen	74.7	72.4	37.0	70.4	24.7	462
Average	93.7	78.0	87.3	81.2	70.4	956
Overall (12-23 months)	94.9	82.0	91.5	82.0	77.8	34,214

Notes: Children's sample weight (chweight) is used in the estimation.

Number of children refers to the number of children with valid data for all four immunizations, except Trinidad and Tobago where only three of them are administered. For Trinidad and Tobabo, the number of children refers to the number of children with valid data for measles.

Each country contributes with equal weight to the Average, whereas each country contributes in proportion to the number of weighted cases to the Overall.

†While MICS3 indicators for immunization are defined for 12-23 months, countries are allowed to use other age bands based on their own immunization schedules. The analysis above uses the age bands adopted by countries for their MICS3 final reports. If countries do not report immunization coverage in their MICS3 final reports, we use 12-23 months as defined for MICS indicators.

* 18-29 months. ** 15-26 months.

‡ Three doses of DPT or DPT/HepB.

n/a: Data are not available since the country did not include the question(s) in its questionnaire.

Table 6 Percentage of children (3-4 year olds) attending early learning programmes by background characteristics

	Female (%)	Male (%)	Ratio (M/F)	Rural (%)	Urban (%)	Ratio (U/R)	Poorest 20% (%)	Richest 20% (%)	Ratio (R/P)	None or preschool (%)	Primary school (%)	Secondary school or higher (%)	Ratio (P/N)	Ratio (S/N)	Ratio (S/P)
Albania	42.1	38.8	0.92	35.1	48.7	1.39	25.5	60.7	2.38	-	-	41.3	-	-	-
Bangladesh	15.5	14.3	0.92	15.8	12.2	0.77	11.6	16.5	1.42	11.3	16.8	17.5	1.49	1.56	1.04
Belarus	87.2	89.0	1.02	82.3	91.4	1.11	72.1	93.1	1.29	-	-	88.4	-	-	-
Belize	30.8	32.4	1.05	21.4	44.7	2.09	18.1	-	-	-	23.0	51.0	-	-	2.22
Bosnia and Herzegovina	8.1	4.9	0.60	2.5	14.4	5.84	1.3	14.8	11.72	-	1.6	9.3	-	-	5.83
Burkina Faso	1.3	3.1	2.34	0.9	8.0	9.17	0.0	9.4	N/A	1.0	3.9	29.0	4.11	30.27	7.37
Burundi	4.9	4.7	0.96	3.9	24.4	6.21	4.0	9.9	2.49	3.4	4.4	25.9	1.30	7.62	5.87
Cameroon	22.6	22.6	1.00	10.3	37.7	3.67	3.2	57.0	17.74	6.0	17.9	49.6	2.99	8.28	2.77
Côte d'Ivoire	6.4	4.8	0.74	1.4	12.9	9.52	0.9	23.6	25.49	2.5	6.7	25.9	2.66	10.37	3.89
Djibouti	15.6	11.9	0.76	-	14.0	-	N/A	N/A	N/A	9.9	12.6	27.8	1.27	2.80	2.21
Gambia	19.8	20.5	1.03	13.2	31.0	2.34	6.8	42.8	6.27	14.2	22.3	48.1	1.57	3.39	2.16
Georgia	43.2	45.1	1.04	24.7	66.5	2.70	17.7	73.6	4.16	-	48.7	43.4	-	-	0.89
Ghana	54.6	50.4	0.92	41.2	72.6	1.76	23.0	88.9	3.86	36.0	52.4	71.3	1.46	1.98	1.36
Guinea Bissau	10.1	9.8	0.97	6.3	18.5	2.94	3.8	25.5	6.75	6.8	15.5	25.6	2.29	3.77	1.65
Guyana	51.8	48.2	0.93	47.5	57.8	1.22	33.9	78.9	2.33	-	45.3	52.0	-	-	1.15
Iraq	2.7	2.2	0.82	0.9	3.6	4.03	N/A	N/A	N/A	1.4	1.4	5.0	1.04	3.60	3.44
Jamaica	87.8	86.0	0.98	82.8	90.2	1.09	N/A	N/A	N/A	-	-	87.0	-	-	-
Kazakhstan	14.3	18.1	1.27	7.2	24.5	3.42	2.8	46.0	16.49	-	-	16.4	-	-	-
Kyrgyzstan	17.0	21.1	1.24	9.7	33.6	3.44	7.0	48.0	6.85	-	-	19.1	-	-	-
Lao	7.7	8.2	1.06	2.5	36.1	14.58	1.4	47.6	33.69	1.0	3.5	37.4	3.60	38.27	10.64
Macedonia	6.0	15.1	2.54	1.6	18.7	11.65	1.5	24.6	16.17	0.8	1.8	23.0	2.31	29.20	12.64
Malawi	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mauritania	6.9	6.4	0.93	3.8	11.4	3.01	2.4	17.1	7.16	3.5	6.4	19.9	1.83	5.74	3.14
Mongolia	38.8	37.3	0.96	25.4	50.5	1.98	11.2	74.3	6.65	-	15.9	39.6	-	-	2.50
Montenegro	30.8	28.7	0.93	12.4	39.9	3.21	5.6	62.8	11.20	-	5.5	37.7	-	-	6.84
Serbia	32.8	33.5	1.02	14.8	45.9	3.11	7.3	65.0	8.91	-	7.8	39.3	-	-	5.04
Sierra Leone	13.3	13.0	0.98	10.2	24.9	2.44	8.1	31.5	3.88	10.3	17.3	39.1	1.69	3.81	2.26
Somalia	2.2	2.3	1.04	1.0	4.6	4.86	0.5	6.0	11.12	1.5	3.3	6.6	2.17	4.31	1.99
Syria	7.2	7.9	1.10	5.5	9.7	1.78	3.7	18.2	4.95	4.5	3.5	12.5	0.78	2.80	3.59
Tajikistan	10.0	10.7	1.07	4.7	24.9	5.32	1.3	29.8	22.16	-	-	10.5	-	-	-
Thailand	61.7	60.3	0.98	59.8	64.1	1.07	55.0	78.3	1.42	53.7	56.9	68.2	1.06	1.27	1.20
Togo	18.1	13.7	0.76	5.4	32.1	5.99	3.5	44.1	12.48	7.9	17.1	39.4	2.16	5.00	2.31
Trinidad and Tobago	77.0	75.4	0.98	N/A	N/A	N/A	65.2	89.4	1.37	-	67.3	79.0	-	-	1.17
Ukraine	63.1	64.1	1.02	36.1	76.5	2.12	30.9	74.7	2.42	-	67.4	62.8	-	-	0.93
Uzbekistan	19.8	20.6	1.04	13.8	35.9	2.61	5.5	46.5	8.47	-	-	20.1	-	-	-
Vietnam	65.4	55.8	0.85	54.5	79.1	1.45	37.2	86.3	2.32	32.2	45.1	73.3	1.40	2.28	1.62
Yemen	2.6	2.6	1.01	1.6	5.3	3.36	0.0	8.9	N/A	1.6	3.3	10.1	2.03	6.29	3.10

Note: - indicates that the analysis is not available since the total number of weighted cases in one of the groups is less than 50.

Table 7 Percentage of children (0-4 year olds) with a household adult engaging in at least 4 activities by background characteristics

	Female (%)	Male (%)	Ratio (M/F)	Rural (%)	Urban (%)	Ratio (U/R)	Poorest 20% (%)	Richest 20% (%)	Ratio (R/P)	None or preschool (%)	Primary school (%)	Secondary school or higher (%)	Ratio (P/N)	Ratio (S/N)	Ratio (S/P)
Albania	68.2	67.8	0.99	63.6	76.2	1.20	53.2	82.2	1.54	-	-	69.2	-	-	-
Bangladesh	47.4	47.6	1.00	44.3	56.5	1.27	32.7	67.9	2.07	32.6	46.3	63.5	1.42	1.95	1.37
Belarus	85.3	83.1	0.97	82.4	85.0	1.03	79.2	86.9	1.10	-	-	84.1	-	-	-
Belize	86.5	83.8	0.97	82.6	88.1	1.07	75.3	91.0	1.21	-	82.6	90.3	-	-	1.09
Bosnia and Herzegovina	75.9	75.3	0.99	71.3	84.7	1.19	63.9	85.1	1.33	-	65.9	80.5	-	-	1.22
Burkina Faso	11.7	11.6	1.00	10.1	18.4	1.83	10.8	19.8	1.84	10.8	15.3	20.3	1.42	1.88	1.33
Burundi	34.3	35.9	1.05	34.3	52.5	1.53	32.2	39.2	1.22	25.2	38.2	51.9	1.52	2.06	1.36
Cameroon	43.2	43.1	1.00	41.8	44.9	1.07	41.3	49.6	1.20	45.7	40.0	45.1	0.88	0.99	1.13
Côte d'Ivoire	42.2	42.1	1.00	44.1	38.8	0.88	44.9	43.8	0.97	43.3	38.8	43.7	0.90	1.01	1.13
Djibouti	84.3	88.7	1.05	-	87.0	-	N/A	N/A	N/A	88.0	82.9	86.7	0.94	0.99	1.05
Gambia	46.0	48.0	1.04	46.4	48.1	1.04	46.9	48.2	1.03	48.1	41.7	50.0	0.87	1.04	1.20
Georgia	83.9	84.0	1.00	81.4	86.5	1.06	80.6	87.7	1.09	-	89.4	82.9	-	-	0.93
Ghana	37.7	41.0	1.09	33.6	49.8	1.48	24.0	62.5	2.60	31.5	33.6	50.7	1.07	1.61	1.51
Guinea Bissau	72.3	72.8	1.01	71.9	74.5	1.04	75.6	77.5	1.03	71.1	74.9	79.1	1.05	1.11	1.06
Guyana	84.3	82.2	0.97	81.9	87.5	1.07	67.7	97.4	1.44	67.5	81.3	84.7	1.21	1.25	1.04
Iraq	44.1	44.7	1.01	36.2	49.8	1.38	N/A	N/A	N/A	35.5	41.3	55.1	1.17	1.55	1.33
Jamaica	86.4	86.7	1.00	83.3	89.0	1.07	N/A	N/A	N/A	-	81.9	87.0	-	-	1.06
Kazakhstan	80.9	81.1	1.00	79.1	82.9	1.05	79.7	86.9	1.09	-	-	81.0	-	-	-
Kyrgyzstan	69.4	72.1	1.04	64.7	79.5	1.23	63.7	83.5	1.31	-	-	70.7	-	-	-
Lao	25.6	24.9	0.97	21.8	42.7	1.96	14.9	45.5	3.05	16.6	27.1	41.6	1.64	2.51	1.53
Macedonia	85.6	84.9	0.99	83.0	87.2	1.05	76.0	96.3	1.27	57.7	82.8	93.9	1.43	1.63	1.13
Malawi	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mauritania	35.6	36.5	1.03	31.6	42.6	1.35	27.6	46.5	1.69	31.0	36.1	49.5	1.16	1.60	1.37
Mongolia	56.3	54.5	0.97	52.1	58.4	1.12	45.7	59.9	1.31	37.5	40.1	56.8	1.07	1.51	1.42
Montenegro	91.4	89.0	0.97	87.6	91.7	1.05	79.9	96.8	1.21	-	84.4	92.5	-	-	1.10
Serbia	87.2	85.3	0.98	85.1	87.2	1.03	73.0	91.3	1.25	41.0	76.3	89.8	1.86	2.19	1.18
Sierra Leone	65.8	63.5	0.96	62.7	72.3	1.15	64.1	72.1	1.12	63.3	68.5	72.7	1.08	1.15	1.06
Somalia	64.6	65.3	1.01	63.7	67.2	1.06	63.0	69.9	1.11	63.9	66.3	74.0	1.04	1.16	1.12
Syria	55.1	55.0	1.00	50.0	60.1	1.20	40.7	68.0	1.67	42.9	49.2	64.9	1.15	1.51	1.32
Tajikistan	60.0	59.3	0.99	56.4	68.8	1.22	44.1	72.9	1.65	-	51.5	59.9	-	-	1.16
Thailand	79.0	78.3	0.99	77.6	81.3	1.05	74.9	84.7	1.13	59.9	78.6	80.8	1.31	1.35	1.03
Togo	36.8	35.7	0.97	34.3	39.5	1.15	31.8	43.7	1.38	32.7	35.7	47.8	1.09	1.46	1.34
Trinidad and Tobago	93.6	94.4	1.01	N/A	N/A	N/A	91.9	97.3	1.06	-	94.4	94.0	-	-	1.00
Ukraine	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Uzbekistan	70.8	71.9	1.02	69.8	75.1	1.08	63.7	77.6	1.22	-	-	71.3	-	-	-
Vietnam	58.4	56.4	0.97	53.3	70.8	1.33	49.0	70.5	1.44	35.2	48.2	64.7	1.37	1.84	1.34
Yemen	25.9	25.1	0.97	20.7	38.4	1.86	13.5	44.5	3.31	19.3	34.3	46.2	1.78	2.39	1.35

Note: - indicates that the analysis is not available since the total number of weighted cases in one of the groups is less than 50.

Table 8 Percentage of children (0-4 year olds) with more than 3 children's books in the household by background characteristics

	Female (%)	Male (%)	Ratio (M/F)	Rural (%)	Urban (%)	Ratio (U/R)	Poorest 20% (%)	Richest 20% (%)	Ratio (R/P)	None or preschool (%)	Primary school (%)	Secondary school or higher (%)	Ratio (P/N)	Ratio (S/N)	Ratio (S/P)
Albania	26.8	20.9	0.78	17.3	34.9	2.02	9.2	43.2	4.68	-	-	24.0	-	-	-
Bangladesh	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Belarus	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Belize	50.6	49.5	0.98	42.9	58.8	1.37	23.9	82.1	3.44	-	42.6	66.8	-	-	1.57
Bosnia and Herzegovina	64.5	63.6	0.99	58.7	75.6	1.29	48.6	82.4	1.69	-	49.4	71.2	-	-	1.44
Burkina Faso	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Burundi	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cameroon	6.3	6.4	1.01	2.8	10.8	3.88	1.8	17.6	9.56	2.3	4.5	13.2	2.00	5.80	2.90
Côte d'Ivoire	4.1	3.8	0.93	3.1	5.4	1.76	2.7	10.4	3.87	2.5	4.4	11.7	1.74	4.66	2.68
Djibouti	13.1	10.4	0.79	3.2	12.0	3.76	N/A	N/A	N/A	6.6	16.4	23.0	2.47	3.47	1.40
Gambia	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Georgia	67.8	67.1	0.99	53.4	81.3	1.52	41.9	88.3	2.11	-	70.3	66.8	-	-	0.95
Ghana	9.6	9.8	1.02	5.9	16.6	2.82	3.4	29.2	8.51	4.2	7.3	16.7	1.74	4.00	2.30
Guinea Bissau	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Guyana	50.9	47.0	0.92	42.5	68.5	1.61	22.8	83.1	3.65	21.4	38.5	53.6	1.80	2.50	1.39
Iraq	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Jamaica	46.8	50.8	1.09	37.4	57.7	1.54	N/A	N/A	N/A	-	43.9	49.2	-	-	1.12
Kazakhstan	58.6	57.9	0.99	45.0	70.9	1.58	32.8	84.4	2.57	-	-	58.2	-	-	-
Kyrgyzstan	28.6	33.1	1.16	17.1	51.2	2.99	14.0	63.7	4.54	-	-	30.9	-	-	-
Lao	1.7	1.5	0.88	0.6	6.6	10.86	0.6	8.4	12.98	0.5	0.8	6.3	1.52	11.53	7.60
Macedonia	42.7	41.4	0.97	27.7	54.1	1.95	14.9	85.4	5.73	7.7	22.2	76.9	2.88	9.97	3.46
Malawi	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mauritania	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mongolia	18.5	18.5	1.00	9.5	26.8	2.83	4.8	40.8	8.41	0.0	3.5	19.9	N/A	N/A	5.75
Montenegro	76.1	69.9	0.92	62.9	78.9	1.25	41.6	92.7	2.23	-	48.1	80.9	-	-	1.68
Serbia	77.3	74.2	0.96	69.6	80.6	1.16	45.3	93.6	2.06	15.9	49.5	83.9	3.12	5.28	1.69
Sierra Leone	8.9	9.1	1.03	5.2	23.1	4.42	2.3	26.4	11.29	6.9	12.0	24.9	1.74	3.60	2.07
Somalia	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Syria	25.2	25.3	1.00	20.0	30.6	1.53	9.2	43.9	4.78	11.5	18.6	36.4	1.62	3.17	1.96
Tajikistan	13.1	14.5	1.11	10.4	23.2	2.23	3.6	28.2	7.73	-	10.1	14.0	-	-	1.39
Thailand	32.4	31.9	0.98	27.0	45.3	1.68	15.4	63.0	4.08	9.5	24.8	43.3	2.61	4.54	1.74
Togo	2.7	3.6	1.32	1.6	5.9	3.75	0.9	11.1	12.42	1.3	3.1	9.0	2.43	7.16	2.95
Trinidad and Tobago	78.3	75.0	0.96	N/A	N/A	N/A	61.8	91.4	1.48	-	67.3	78.8	-	-	1.17
Ukraine	96.0	96.2	1.00	93.3	97.5	1.05	91.6	98.7	1.08	-	97.7	95.9	-	-	0.98
Uzbekistan	32.1	32.9	1.02	29.6	39.6	1.33	23.7	49.1	2.07	-	-	32.5	-	-	-
Vietnam	20.4	23.6	1.16	13.6	49.4	3.64	5.5	54.9	9.92	2.9	8.9	30.6	3.04	10.42	3.43
Yemen	8.5	8.1	0.96	5.1	17.1	3.36	3.0	25.6	8.64	4.8	13.3	19.9	2.76	4.12	1.50

Note: - indicates that the analysis is not available since the total number of weighted cases in one of the groups is less than 50.

Table 9 Percentage of children (0-4 year olds) not left alone nor in a care of another child under 10 by background characteristics

	Female (%)	Male (%)	Ratio (M/F)	Rural (%)	Urban (%)	Ratio (U/R)	Poorest 20% (%)	Richest 20% (%)	Ratio (R/P)	None or preschool (%)	Primary school (%)	Secondary school or higher (%)	Ratio (P/N)	Ratio (S/N)	Ratio (S/P)
Albania	88.9	85.7	0.96	89.5	82.9	0.93	91.1	84.3	0.93	-	-	87.2	-	-	-
Bangladesh	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Belarus	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Belize	96.5	95.7	0.99	96.1	96.4	1.00	93.4	98.2	1.05	-	96.2	95.5	-	-	0.99
Bosnia and Herzegovina	93.7	93.1	0.99	93.9	92.3	0.98	94.2	90.5	0.96	-	92.4	94.1	-	-	1.02
Burkina Faso	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Burundi	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cameroon	64.3	64.2	1.00	58.2	71.9	1.24	55.2	75.3	1.36	60.4	61.9	71.8	1.03	1.19	1.16
Côte d'Ivoire	42.5	40.4	0.95	40.2	43.5	1.08	38.2	48.9	1.28	40.1	43.0	45.6	1.07	1.14	1.06
Djibouti	87.7	89.4	1.02	87.1	88.7	1.02	N/A	N/A	N/A	88.6	87.4	89.8	0.99	1.01	1.03
Gambia	83.7	82.0	0.98	80.8	86.6	1.07	76.1	89.7	1.18	81.4	83.0	89.4	1.02	1.10	1.08
Georgia	92.1	92.4	1.00	93.5	91.0	0.97	92.5	92.4	1.00	-	92.0	92.3	-	-	1.00
Ghana	72.7	77.9	1.07	70.8	83.6	1.18	63.6	87.9	1.38	67.4	78.5	81.7	1.16	1.21	1.04
Guinea Bissau	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Guyana	92.3	89.5	0.97	88.8	96.9	1.09	82.9	97.5	1.18	90.1	86.3	92.5	0.96	1.03	1.07
Iraq	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Jamaica	97.1	95.9	0.99	96.5	96.5	1.00	N/A	N/A	N/A	-	98.0	96.5	-	-	0.99
Kazakhstan	90.4	90.1	1.00	90.9	89.6	0.99	92.4	90.1	0.98	-	-	90.3	-	-	-
Kyrgyzstan	91.4	88.2	0.96	88.1	92.4	1.05	90.0	94.6	1.05	-	-	89.8	-	-	-
Lao	74.8	74.3	0.99	72.3	85.4	1.18	66.7	83.5	1.25	70.6	74.0	85.6	1.05	1.21	1.16
Macedonia	89.1	92.1	1.03	90.0	91.3	1.01	92.7	86.4	0.93	92.0	91.7	89.1	1.00	0.97	0.97
Malawi	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mauritania	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mongolia	87.5	86.3	0.99	83.9	89.6	1.07	83.6	91.8	1.10	91.1	84.5	87.0	0.93	0.95	1.03
Montenegro	96.1	93.8	0.98	92.8	96.1	1.04	89.8	97.9	1.09	-	91.5	95.6	-	-	1.05
Serbia	90.7	92.6	1.02	90.5	92.7	1.02	86.3	92.4	1.07	87.1	89.6	92.4	1.03	1.06	1.03
Sierra Leone	78.8	79.9	1.01	78.5	82.4	1.05	81.5	83.4	1.02	79.3	75.6	85.0	0.95	1.07	1.13
Somalia	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Syria	83.3	83.6	1.00	81.7	85.2	1.04	78.5	85.1	1.08	71.4	84.3	87.4	1.18	1.22	1.04
Tajikistan	87.6	87.2	1.00	87.2	87.9	1.01	85.4	88.7	1.04	-	86.9	87.4	-	-	1.01
Thailand	87.3	86.3	0.99	85.6	90.0	1.05	81.9	92.8	1.13	84.4	84.7	89.6	1.00	1.06	1.06
Togo	70.5	69.4	0.98	62.6	82.3	1.31	61.8	82.4	1.33	62.3	76.2	79.3	1.22	1.27	1.04
Trinidad and Tobago	98.7	99.1	1.00	N/A	N/A	N/A	97.7	100.0	1.02	-	95.9	99.6	-	-	1.04
Ukraine	90.6	89.7	0.99	86.0	92.2	1.07	85.9	96.2	1.12	-	89.7	90.2	N/A	N/A	1.00
Uzbekistan	95.4	94.7	0.99	95.8	93.3	0.97	94.4	93.3	0.99	-	-	95.1	-	-	-
Vietnam	79.5	82.8	1.04	78.4	90.7	1.16	70.1	93.1	1.33	68.9	74.6	86.1	1.08	1.25	1.15
Yemen	67.5	64.4	0.96	61.0	79.2	1.30	53.6	77.9	1.45	62.4	71.0	77.8	1.14	1.25	1.10

Note: - indicates that the analysis is not available since the total number of weighted cases in one of the groups is less than 50.

Table 10 Percentage of children (12-23 month olds, unless otherwise noted †) who received all 4 immunizations (BCG, Polio3, DPT3 and Measles) by background characteristics

	Female (%)	Male (%)	Ratio (M/F)	Rural (%)	Urban (%)	Ratio (U/R)	Poorest 20% (%)	Richest 20% (%)	Ratio (R/P)	None or preschool (%)	Primary school (%)	Secondary school or higher (%)	Ratio (P/N)	Ratio (S/N)	Ratio (S/P)
Albania	58.7	50.0	0.85	52.7	-	-	-	-	-	-	-	53.7	-	-	-
Bangladesh	92.8	93.1	1.00	93.0	92.8	1.00	92.5	94.7	1.02	91.9	90.8	95.1	0.99	1.04	1.05
Belarus*	97.1	98.8	1.02	98.1	97.9	1.00	100.0	97.1	0.97	-	-	97.9	-	-	-
Belize*	74.5	85.5	1.15	75.4	86.4	1.15	-	-	-	-	83.3	-	-	-	-
Bosnia and Herzegovina*	75.4	78.2	1.04	79.4	72.6	0.91	74.5	75.6	1.01	-	77.9	77.2	-	-	0.99
Burkina Faso	84.8	88.8	1.05	85.2	91.2	1.07	88.6	87.6	0.99	85.1	92.7	-	1.09	-	-
Burundi	74.0	69.8	0.94	71.4	-	-	69.1	74.5	1.08	69.3	72.2	-	1.04	-	-
Cameroon	77.6	76.5	0.99	75.3	79.1	1.05	67.6	85.4	1.26	69.5	75.8	84.8	1.09	1.22	1.12
Côte d'Ivoire	71.0	69.0	0.97	66.8	74.3	1.11	66.3	80.0	1.21	67.4	68.2	89.0	1.01	1.32	1.30
Djibouti	68.1	67.3	0.99	-	67.6	-	N/A	N/A	N/A	61.7	71.4	77.3	1.16	1.25	1.08
Gambia	84.8	81.9	0.97	84.1	81.6	0.97	87.1	82.6	0.95	82.5	84.4	84.7	1.02	1.03	1.00
Georgia	58.8	60.6	1.03	59.1	60.5	1.02	-	59.0	-	-	-	58.6	-	-	-
Ghana	78.5	83.9	1.07	78.3	86.3	1.10	71.1	96.9	1.36	75.8	76.4	88.5	1.01	1.17	1.16
Guinea Bissau	38.1	41.8	1.10	40.0	40.8	1.02	35.6	37.1	1.04	42.8	39.0	-	0.91	-	-
Guyana*	55.6	47.1	0.85	51.4	50.0	0.97	66.7	37.9	0.57	-	51.2	50.7	-	-	0.99
Iraq*	66.4	70.2	1.06	58.4	74.2	1.27	N/A	N/A	N/A	63.1	64.1	76.9	1.02	1.22	1.20
Jamaica*	84.0	78.3	0.93	78.4	82.5	1.05	N/A	N/A	N/A	-	-	80.4	-	-	-
Kazakhstan**	80.2	81.6	1.02	78.0	83.7	1.07	77.9	90.8	1.17	-	-	80.9	-	-	-
Kyrgyzstan	60.2	75.7	1.26	59.7	73.9	1.24	-	77.5	-	-	-	67.6	-	-	-
Lao	45.1	54.7	1.21	46.4	65.4	1.41	40.2	69.8	1.74	41.3	49.4	65.4	1.19	1.58	1.32
Macedonia*	82.7	78.2	0.95	75.1	85.2	1.13	65.8	85.3	1.30	-	78.4	86.0	-	-	1.10
Malawi	85.7	84.9	0.99	84.9	87.8	1.03	84.1	88.3	1.05	82.0	84.7	93.5	1.03	1.14	1.10
Mauritania	48.7	48.1	0.99	46.0	52.5	1.14	35.8	55.8	1.56	43.2	49.3	55.7	1.14	1.29	1.13
Mongolia	85.8	83.3	0.97	82.9	86.0	1.04	86.6	88.8	1.03	-	-	83.7	-	-	-
Montenegro*	63.8	55.6	0.87	58.8	60.0	1.02	-	-	-	-	-	59.0	-	-	-
Serbia*	54.9	54.6	0.99	47.4	61.2	1.29	45.7	52.6	1.15	-	52.6	55.7	-	-	1.06
Sierra Leone	87.6	90.1	1.03	90.0	85.0	0.94	87.7	87.0	0.99	89.0	91.7	85.7	1.03	0.96	0.94
Somalia	54.7	61.2	1.12	48.0	64.0	1.33	-	58.5	-	59.5	56.6	-	0.95	-	-
Syria	85.4	84.6	0.99	83.2	86.6	1.04	74.9	90.3	1.21	71.6	82.1	90.5	1.15	1.26	1.10
Tajikistan*	59.5	60.8	1.02	56.5	68.3	1.21	66.3	66.7	1.01	-	-	61.4	-	-	-
Thailand	93.1	93.2	1.00	93.9	91.5	0.97	94.1	92.5	0.98	88.5	94.0	92.7	1.06	1.05	0.99
Togo	65.5	61.4	0.94	60.0	68.2	1.14	54.6	72.9	1.34	48.8	69.3	81.0	1.42	1.66	1.17
Trinidad and Tobago	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ukraine	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Uzbekistan**	55.4	55.9	1.01	56.5	53.8	0.95	66.0	54.2	0.82	-	-	55.9	-	-	-
Vietnam*	83.7	79.8	0.95	79.2	88.8	1.12	63.9	92.2	1.44	-	78.0	85.7	-	-	1.10
Yemen	21.5	27.8	1.29	20.8	32.7	1.57	13.6	30.8	2.26	19.7	32.6	29.7	1.65	1.51	0.91

Notes: † While MICS3 indicators for immunization are defined for 12-23 months, countries are allowed to use other age bands based on their own immunization schedules. The analysis above uses the age bands adopted by countries for their MICS3 final reports. If countries do not report immunization coverage in their MICS3 final reports, we use 12-23 months as defined for MICS indicators.

* 18-29 months. ** 15-26 months.

- indicates that the analysis is not available since the total number of weighted cases in one of the groups is less than 50.

Appendix 1 List of countries in this study and their years of surveys

Country	Year of survey
Albania	2005
Bangladesh	2006
Belarus	2005
Belize	2006
Bosnia and Herzegovina	2006
Burkina Faso	2006
Burundi	2005
Cameroon	2006
Cote d'Ivoire	2006
Djibouti	2006
Gambia	2005-06
Georgia	2005
Ghana	2006
Guinea-Bissau	2006
Guyana	2006-07
Iraq	2006
Jamaica	2005
Kazakhstan	2006
Kyrgyzstan	2005-06
Lao People's Democratic Republic	2006
Macedonia (The former Yugoslav Republic of)	2005
Malawi	2006
Mauritania	2007
Mongolia	2005
Montenegro	2005-06
Serbia	2005-06
Sierra Leone	2005
Somalia	2006
Syrian Arab Republic	2006
Tajikistan	2005
Thailand	2005-06
Togo	2006
Trinidad and Tobago	2006
Ukraine	2005
Uzbekistan	2006
Viet Nam	2006
Yemen	2006