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**INEQUALITY OF OPPORTUNITY IN EARLY CHILDHOOD
DEVELOPMENT IN ALGERIA OVER TIME**

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Abstract

Early childhood is the most important time for human development. However, countries tend to under-invest in this stage of development, particularly in the Middle East and North Africa. Children are facing unequal opportunities to develop because of the circumstances of their birth. This paper analyzes inequality of opportunity in early childhood development and trends over time in Algeria, using two surveys conducted between 2006 and 2012. The findings demonstrate that there is substantial inequality of opportunity starting early in life. A variety of circumstances impact early inequality, with wealth, mother's education, and geographic differences all contributing substantially.

Keywords: Early childhood development, inequality of opportunity, Algeria.

JEL Classifications: D63, J13, O15.

ملخص

الطفولة المبكرة هي أهم وقت للتنمية البشرية. ومع ذلك، تميل البلدان إلى عدم الاستثمار في هذه المرحلة من التطور، خاصة في منطقة الشرق الأوسط وشمال أفريقيا، إذ يواجه الأطفال فرصًا غير متكافئة للتطور بسبب ظروف ولادتهم. تحلل هذه الورقة عدم تكافؤ الفرص في تنمية الطفولة المبكرة واتجاهاتها بمرور الوقت في الجزائر، وذلك باستخدام استقصاءين أجري بين عامي 2006 و 2012. وتبين النتائج أن هناك عدم تكافؤ كبير في الفرص يبدأ في وقت مبكر من الحياة. وهناك مجموعة متنوعة من الظروف تؤثر في عدم المساواة في وقت مبكر - مثل الثروة، وتعليم الأم، والاختلافات الجغرافية - ولها تأثير كبير.

1. Introduction

In an increasingly abundant literature, particular emphasis is placed on the inequalities of opportunities. According to this literature, inequalities in income, expenditure and wealth are generated, either because of differences in life circumstances or because of differences in the efforts made by individuals.

Similarly, the question is raised about the level of influence that personal circumstances have on children's access to the basic services necessary for productive life. Indeed, for some countries in Latin America in particular, it has been shown that much of the income inequality observed among adults is due to the circumstances they faced when they had just begun their lives, so in their early childhood. Roemer (1998) and Bourguignon et al. (2003 and 2007) have also shown that some of the inequalities in income or expenditure are directly explained by unequal opportunities.

To approach these inequalities in opportunities in several countries and at different levels, several empirical indices and approaches have been proposed. These include the Human Opportunity Index (HOI) proposed by Barros et al. (2008, 2009). Despite its limitations (Brunori et al., 2013), this index has often been used to approximate inequalities in children's access to basic services in conjunction with circumstances variables.

It appears from the literature that inequalities of this type for children are largely explained by the socio-economic characteristics of households. These inequalities are identified from the first six months of life in Egypt (Kirksey et al., 1994). Other inequalities, related to the poverty status of households and the different dimensions of child development (cognitive, physical, socio-emotional, etc.), were recorded by Grantham-McGregor et al. (2007) at the age of 10 months in India, 12 months in Brazil and 18 months in Bangladesh. Moreover, at the level of pre-school education, it has been demonstrated that any delay in cognitive or linguistic development could rapidly translate into an accumulation of delays that are difficult to catch up on later. Paxson and Schady (2007) reported in their study on Ecuador that differences in vocabulary, which may be low at age 3, are magnified at age 6, between children from households at different levels of income poverty or parental education. These inequalities in terms of opportunities thus contribute to the perpetuation and even reinforcement of intergenerational poverty. The underlying cycle unfortunately is simple and obvious. Children in poor households accumulate little or no human capital, compared to those of the richest households. The same children of poor households are likely to be poor in adulthood.

On the other hand, some studies (Nores and Barnett (2010)), Sala-i-Martin, Doppelhofer, and Miller (2004) have shown that investment in early childhood would have a clear impact on economic growth through the accumulation of human capital. It also increases its performance, which would significantly exceed the costs that would be incurred in this area (Engle et al., 2011). Arbitration, in terms of economic policies, is then clear and obvious. Heckman and Masterov (2007) show that early childhood policies improve total equity in society.

However, one of the practical difficulties of this approach resides in the identification of the variables of circumstances to be taken into account versus those which represent the efforts of individuals. Indeed, at the empirical level each individual must be characterized by three types

of variables. Those relating to income (wages, income, expenditure or other), those which represent other circumstances and those relating to the effort.

Bourguignon et al. (2003 and 2007) have also proposed an approach that assesses the contribution of inequalities in opportunities to unequal spending. This approach also identifies the exogenous determinants of income (or spending) that would be beyond the control of individuals (circumstances), other explanatory variables related to individual efforts. It makes it possible to approximate, by simulation, the fall in (monetary) inequality if the variables of circumstance had been the same between the individuals.

1.1. Literature in Arab countries

Despite the importance of this issue, very few studies have dealt with it in the case of the MENA region. Krafft C and El-Kogali S (2014), Krafft C (2015), Assaad R (2013), Assaad R., Hassine B.N., and Isfahani D.S. (2012) show that there is a substantial inequality of opportunity and that unequal opportunities are particularly high in early learning and in activities that promote early cognitive development.

Krafft C (2015) examines the determinants and mediators of health disparities in children's height and weight in Jordan, focusing on factors that might mediate socio-economic disparities, including parental health knowledge, food quantity and quality, health conditions, the health environment, and prenatal development. She demonstrates that the health environment and food quantity and quality contribute to inequality in child health, these effects mediate only a small share of socio-economic disparities. A large share of inequality in children's health is determined prenatally, for instance through disparities in fetal growth.

Krafft C and El-Kogali S (2014) analyzes the inequality of opportunity in early childhood development in twelve countries in the Middle East and North Africa, assessing development along a variety of dimensions and across the early life course. They quantify inequality from in utero to age five in terms of health, nutrition, social-emotional development, early learning, and early work and decompose inequality into the shares related to different circumstances. The findings demonstrate that there is substantial inequality of opportunity starting early in life, and that inequality of opportunity is particularly high in early learning and in activities that support early cognitive development. A variety of circumstances impact early inequality, with wealth, mother's education, and geographic differences all contributing substantially. The analysis indicates that ensuring equality of opportunity in school and adult life will require redressing the causes of inequality of opportunity in early childhood.

Deficits accumulating across different developmental domains throughout early childhood compound each other (Helmers & Patnam, 2011) and position children for a lifetime of risk and diminished human capital.

Deficits in early childhood tend to persist into adult life. For instance, children who do not receive adequate iodine in the early years will have permanently decreased intelligence (Qian et al., 2005). Children who are stunted perform worse in school (Glewwe, Jacoby, & King, 2001) and ultimately earn lower wages (Hoddinott, Maluccio, Behrman, Flores, & Martorell, 2008). That early childhood is the most sensitive and important time for human development is now firmly established in the literature (Heckman, 2006, Shonkoff & Phillips, 2000).

The paper is organized as follows. In section 1 we review the theoretical and conceptual framework of unequal opportunities in early childhood development. Section 2 describes the

data sources and methods adopted in our analysis. Section 3 discusses the descriptive results to contextualize and motivate our analysis. Section 4 presents our empirical results and Section 5 finally concludes.

2. Methodology and Analysis

2.1. Data and Sample

In this paper, we exploit two surveys Multiple Indicator Surveys MICS3 (2006) and MICS4 (2012) carried out in Algeria by the Ministry of Health, Population and Hospital Reform with the support of the United Nations Fund for (UNICEF), the United Nations Population Fund (UNFPA) and the National Office of Statistics (ONS). The MICS surveys provide information on the situation of children, women and households at the national level, according to socio-demographic and socio-economic characteristics of household members, in different domains related to health, education, protection, living conditions of the population. The MICS3 survey targeted a sample of 29,400 households divided between the four health regions (Center, East, West and South). For information at a finer level, health regions were classified into 17 sub-regions. The MICS4 survey targeted a sample of 28,000 households distributed according to the seven territorial programming spaces. It thus provides statistics representative of the Algerian population at the national level and at the level of these territories.

Three questionnaires were used for these two surveys: 1) A "household" questionnaire for collecting information on housing conditions and demographic, social and health characteristics for all household members. 2) An individual questionnaire for each woman aged 15 to 49 years. 3) An individual questionnaire for each child aged 0-5 years. The third questionnaire is particularly interesting to us in this work. It consists of six modules: a) Birth registration and early childhood education, b) Breastfeeding, c) Treatment of diseases, d) Vaccination, e) Sanitary conditions for male circumcision, f) Anthropometry.

2.2. Empirical Strategy

In this paper, we propose to go beyond the traditional measures of the monetary inequalities usually calculated on household spending in Algeria. We examine the unequal opportunities that children in Algeria may encounter in early childhood in various areas of development: health, nutrition, socio-economic development, early learning and early work.

Our empirical strategy is three-fold. Initially, the state of early childhood development (ECD) will be assessed through at least twelve different indicators : prenatal consultations, birth attended by skilled personnel, infant mortality (under-one deaths), vaccination, underweight, stunting, wasting, iodized salt, early childhood care and education, parental development activities, violent discipline against children and child labor. Secondly, we describe the relationship between these indicators and a number of characteristics of children's basic data (circumstances), such as gender, wealth, parents' education, place of residence (urban or rural) and region of residence. Third, we quantify the unequal chances that children face in order to live out their situation in each of these indicators, using the D-index dissimilarity index. This index quantifies inequality as the percentage of an outcome that should be redistributed from children in the best-off groups to children in the least well-off groups so that all children have equal opportunities for this outcome, irrespective of their circumstances. We decompose the

inequality, measured by the D-index, according to the components due to the individual circumstances (such as gender), using Shapley decomposition.

We examine the development of early childhood in a variety of dimensions: health, nutrition, social and emotional development, early learning. Our indicators cover the entire early life cycle, from birth to the age of five, just before the age of entry into school, which is 6 years in Algeria.

2.3. Inequality of opportunity

To examine inequality in early childhood development, we draw on Roemer's (1998) conceptualization of inequality of opportunity. Roemer makes the distinction between circumstances and effort in determining an individual's outcomes. Effort is under an individual's control, and therefore inequality due to effort is morally acceptable. Circumstances are factors that lie outside an individual's control, and inequality due to circumstances is not morally justifiable, and constitutes inequality of opportunity.

In the case of early childhood development and the age range we are focusing on, from in utero to age five, no circumstances are within a child's control. Under Roemer's framework, all inequality in outcomes in early childhood is necessarily inequality of opportunity. The implication, that equality of opportunity in ECD can be achieved only by perfect equality in outcomes, is an unrealistic standard. Therefore, as others have done (Assaad, Krafft, Hassine, & Salehi-Isfahani, 2012), we modify the traditional approach and consider all inequality that is attributable to observable circumstances, such as gender, parents' education, wealth, and place of residence, to be inequality of opportunity. Inequality not explained by observable circumstances we attribute to 'luck' and do not consider it to be inequality of opportunity. Since a limited set of circumstances are observed in the surveys, our estimated inequality of opportunity is therefore a lower bound on true inequality of opportunity.

We measure inequality of opportunity using the dissimilarity index (D-index). The D-index for a particular ECD outcome is computed as:

$$D = \frac{1}{2\bar{p}} \sum_{i=1}^k \alpha_i |p_i - \bar{p}|$$

Where \bar{p} is the population mean for that outcome and p_i is the mean for unique circumstance group i . The α_i are population shares or sampling weights (Barros et al. 2009). The D-index essentially compares the dissimilarity between groups, as defined by circumstances, and the population mean. The D-index can be interpreted as the percentage of available opportunities that need to be reallocated from the children in groups that are better off to the children in groups that are worse off in order to achieve equality of opportunity (de Barros et al., 2009). Expressed as a percentage, the D-index ranges from zero to 100, with zero indicating a situation of perfect equality of opportunity.

The D-index quantifies the inequality due to circumstances. This inequality can be decomposed into the shares due to different, specific circumstances, such as gender or wealth, using Shapley decomposition (Deutsch & Silber, 2008, Shorrocks, 2013). The decomposition is based on the marginal contributions of each circumstance as they are removed from the regression in sequence.

Empirically, the D-index is computed based on a logistic regression model (Azevedo J.P., Franco S., Rubiano E., Hoyos A (2010). Whether a child, j , has achieved a particular ECD outcome is regressed on his or her circumstances.

2.4. The explanatory variables

We examine early childhood development across a variety of dimensions: health, nutrition, social and emotional development, and early learning and early work. Our indicators cover the entire early life course, from in utero through age five. For the age range we are examining, in utero through age five, any variations in early childhood development that are linked to the circumstances into which a child is born are considered inequality of opportunity. Children have no control over their circumstances at this age, such that circumstances can be treated as exogenous. For the sake of comparability across surveys and given the limitations of the datasets, we focus primarily on a relatively small set of circumstances that have previously been linked to ECD and inequality, namely child gender, household wealth, parents' education, rural/urban residence and region of residence.

Wealth is operationalized as a categorical variable for which quintile of households a child falls into, based on an asset index (see Filmer & Pritchett, 2001, Rutstein & Johnson, 2004). Mother's and father's education were categorical variables for education levels. Rural/urban residence was a dichotomous variable. Regions were country specific categories.

3. Findings

3.1. ECD Trends over Time

We analyzed early childhood development trends in Algeria, looking first at health and survival, followed by nutrition, and then cognitive, emotional, and social development.

3.1.1. Health and Survival

While health and survival outcomes for the most part have been improving over time, major deficits remain. As shown in Figure 1, children's chances of prenatal care have increased from 88.4% in 2006 to 94.6% in 2012. The proportion is 83% for the case of Morocco (2012) and 98.1% for Tunisia (2012). A similar increase has occurred in delivery care from 94.9% in 2006 at 96.4% in 2012 (84% Morocco, 98.6% Tunisia - 2012). Algeria had good immunization coverage in 2006, with 85.3% of children aged one year fully immunized. This rate increased to 94.3% in 2012 (87% Morocco, 2011, 89.6%, 2012). Pushing this immunization rate higher is important to ensure herd immunity, that is, to achieve a level of immunization that is high enough to prevent widespread outbreaks. Owing at least in part to improved access to prenatal and delivery care, progress has been made in reducing infant mortality, it fell from 27 deaths per thousand births to 25 in 2012 (27 for Morocco, 2011, 17 for Tunisia, 2012).

3.1.2. Nutrition

Children in Algeria face a number of ongoing challenges in terms of nutrition (Figure 2). There has been a decrease over time in the chances of stunting (which captures accumulated malnutrition). Almost 12.6% of the children were stunted as of 2006, and although the 2011 rate was lower 9.2% (15% in Morocco, 10.1% in Tunisia), many children's nutrition and development are threatened.

3.1.3. Cognitive, Emotional, and Social Development

Algerian children face a number of challenges in terms of their cognitive, emotional and social development. In 2006, approximately 9% of children aged five received early childhood education (ECE). By 2012, this rate had risen to 17.1%. The percentage of children engaged in developmental activities increased from 61.7% in 2006 to 78.9 % in 2012 (34% for Morocco and 71.1% for Tunisia – 2012). Most concerning are the high chances of violent discipline, with 89.5% in 2006 and 90.1% in 2012 of children experiencing violent discipline in the past month, substantially endangering their development. This proportion is around 90% for Morocco (2006) and 94.9% for Tunisia (2012). Work or domestic work done by children aged 5 or under is also a potential problem, with 12.5% of children engaged in such work (20% for Morocco and 24% for Tunisia). This may make the transition to school more difficult.

3.2. Risk Factors for Poor ECD over Time

3.2.1. Health and Survival

A number of different risk factors contribute to children's chances for poor ECD in health and nutrition. There has not been a systematic pattern in terms of rising or falling inequalities by children's different circumstances over time in health and survival. Inequality has been rising, falling, and remaining steady across different dimensions of health. Table 1 (in annex 1) shows health outcomes over time and their relationship with different circumstances.

With regard to prenatal and delivery care, there have been substantial disparities depending on the families' education and wealth and where the children live.

Disparities have, however, been narrowing over time as health care coverage has risen. Figure 4 shows narrowing disparities in prenatal care by mother's education over time. While children of uneducated mothers have the lowest chances of prenatal care and children of secondary and higher educated mothers have always had chances in the 95–100 percent range, these gaps have been narrowing. While in 2006, 75.6% of births to uneducated mothers had prenatal care, this rose to 88.4% by 2012.

The poorest children have always had the lowest chances of being fully immunized (Figure 5), the chance of children from the poorest fifth of households being fully immunized is around 68.6% in 2006 (92.8% in 2012). On the other hand, the chance of children from the richest fifth of households being fully immunized was more than 97% in 2012. There are also regional differences, the lowest proportion in fully immunization is recorded in Higher Plateau Central (88.6%) and in South region (92.8%). Other results are a positive correlation between full immunization and the education of the mother. The education of the mother is very important for the children care.

3.2.2. Nutrition

In addition to facing different chances of early health care and even early death, children face unequal chances of healthy growth and nutrition depending on their backgrounds. Table 2, in the annex, presents the full set of relationships between nutrition and children's background. Notably, there are substantial disparities in nutrition by wealth (Figure 6). As of 2012, 10.7% of the poorest children were stunted compared to 8.2% of the richest. In addition to differences by wealth, there are substantial disparities depending on where children live and the mother's education for stunting and other nutrition outcomes.

Location acutely affects children's chances of living in a household that uses adequately iodized salt and, therefore, being protected against cognitive deficits. As Figure 7 shows, rates range from 24.2% in Higher Plateau Central to 84.2% in North Central. Additionally, there are large differences by wealth and parents' education (mother's education).

3.2.3. Cognitive, social and Emotional Development

Children's social, emotional and cognitive development shows substantial disparities depending on their circumstances (annex, Table 2). These differences will lead to persistent disparities in adult life (school and in the labor market). Children's chances of experiencing development activities are closely linked to their backgrounds and poverty is increasingly a risk factor for poor development (figure 8). While in 2006 around 47.8% of the poorest children and 74.4% for the richest children experienced development activities, this increased to 64.7% in 2012 for the poorest and 91.6% for the richest in 2012. Differences by region and parent's education also occur.

Figure 9 shows differences in ECE attendance by mother's education over time, we find a positive correlation between education of the mother and ECE where the proportion increased for all groups (whatever the level of education of the mother) over time. For the first group (no education of mother) the proportion is around 3% in 2006 (4.7% in 2012), while the proportion is around 31% in 2006 (35.5% in 2012) when the education of mother is higher. Differences in ECE are visible depending in region of residence and wealth.

4. Inequality in ECD over Time

Inequality in early childhood is of particular concern for three reasons. First, it is morally objectionable, Children have no control over their circumstances. Second, it acts as a key mechanism for adult inequality because disparities tend to persist and are even compounded. Third, inequality in early childhood plays an important role in the intergenerational transmission of poverty. This section assesses how inequality has been evolving over time in Algeria. The tables underlying the quantification of inequality "dissimilarity index" and the different factors that contribute to inequality "Shapley decomposition" are presented in the annex (Table 4 and Table 5).

4.1. Health and Survival

Young children in Algeria face widely disparate development opportunities in terms of health. Inequality persists in access to early health care. Around 2 and 1 percent of the opportunities for prenatal, full immunization and delivery care would have to have been distributed differently for equality of opportunity to prevail in 2012. However, these levels are substantially lower (by more than 30 percent) compared to 2006.

4.2. Nutrition

Inequality in nutrition in terms of being stunted, underweight, and wasted is low and has decreased between 2006 and 2012 (0.5% for stunting, 0.1% for wasting and 0.4% for underweight). The level of inequality in access to adequately iodized salt is very high³. For children to have equal chances, 20 percent of the opportunities to access adequately iodized salt would have to be redistributed. Urban/rural differences contribute substantially to inequality, along with regional differences.

³ Only one year of data is available (so we are unable to assess trends).

4.3. Cognitive, Social and Emotional Development

Children's social, emotional and cognitive development shows some of the greatest and most persistent inequalities. As of 2006, the inequality was 34.1% of opportunities needing to be redistributed for ECE, 7.9% for development activities, 1.7% for violent child discipline. By 2012, inequality decreases for ECE (30.9%) also for development activities (7.5%). However, inequality for violent discipline increases 3%. No data are available for comparing violent discipline or work (including domestic work) over time.

5. Circumstances Contributing to Inequality in ECD

The Shapley decompositions show the relative contributions of different circumstances (wealth, mother's education, region, urban versus rural and gender) to the inequality, as percentages. The contributions of different background characteristics vary over time and across the measures of ECD. Firstly, wealth contributes substantially. Mother's education also plays an important role in inequality. Regional and urban/rural differences contribute to inequality, often substantially, but to varying degrees across indicators. Notably, the child's gender contributes very little to inequality of opportunity in ECD except for child work. In 2012, 29-18% of the inequality in prenatal and delivery care was due to wealth and 38-31% due to mother's education. Wealth plays an increasing role in ECE (30.5% in 2012) and development activities (29.6% in 2012). Urban-rural disparities are particularly large contributors to inequality in ECE (30.6% in 2012) and development activities (16.9% in 2012). Regional disparities make particularly large contributions to inequality in work, including domestic work (55%) at age five. These different contributing factors can help policymakers target groups particularly at risk for disparities and understand some of the mechanisms contributing to inequality in ECD.

6. Conclusion

The early years of life are crucial for human development. Deficits and inequality early in life tend to accumulate and lead to persistent shortfalls in human capital. This paper has examined Early Childhood Development Algeria across multiple dimensions of development and over time. Examining eleven different indicators, covering a variety of dimensions of development and the early life course from in utero through age five, we measured inequality of opportunity in early childhood development. The deficits and inequalities we observe in Early Childhood Development are troubling from the issues of equity because children are being affected by circumstances entirely outside of their control. Children face unequal opportunities to develop in terms of health, nutrition, cognitive, social, and emotional development. These deficits and inequalities are also limiting the human and economic potential of the country. Our analysis also illustrated the contributions of circumstances to children's early opportunities. Wealth, mother's education, and geographic differences tend to contribute substantially to inequality of opportunity. The practical approach and measurement of inequalities of all kinds are therefore crucial in order to better guide policies in terms of development and improvement of equity and equal opportunity indices in particular.

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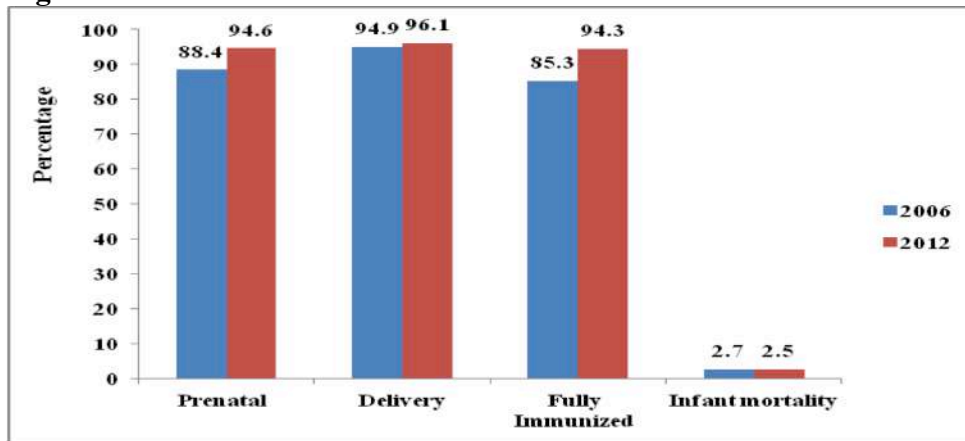
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Table 1. Shapley decomposition of the D-Index (Percentage explained by each variable)

		Child Gender	Mother's Education	Rural	Region	Wealth
ECE	2006	2.4	35.9	17.6	8.3	35.8
	2012	0.2	36.2	30.6	2.4	30.5
No-Stunting	2006	3.5	29.1	10.4	19.6	37.4
	2012	12.3	41.9	11.9	5.6	28.2
No-Wasting	2006	6.7	7.3	15.2	69.2	1.7
	2012	11.8	4.2	8.7	72	3.4
No-Underweight	2006	0.8	22	12	38.9	26.2
	2012	0.2	20.3	5.3	51	23.3
Development activities	2006	0.5	23.1	17.2	25.2	34.1
	2012	0.1	31.7	16.9	21.7	29.6
Fully Immunized	2006	3.8	32.5	11.1	26.6	26
	2012	2.2	36.7	13	16.3	31.8
Prenatal	2006	na	38.7	20.4	8.9	32.1
	2012	na	35.8	15.6	18.8	29.8
Delivery	2006	na	31.7	24.1	15.8	28.4
	2012	na	18.1	22	41.3	18.7
Iodized salt	2006	-	-	-	-	-
	2012	0	9.2	7.4	60.9	22.6
Work and Domestic	2006	-	-	-	-	-
	2012	34.7	6.6	0.5	55	3.1
Violent discipline	2006	0	26	33.3	14	26.7
	2012	0	92.4	0.4	3.8	3.4

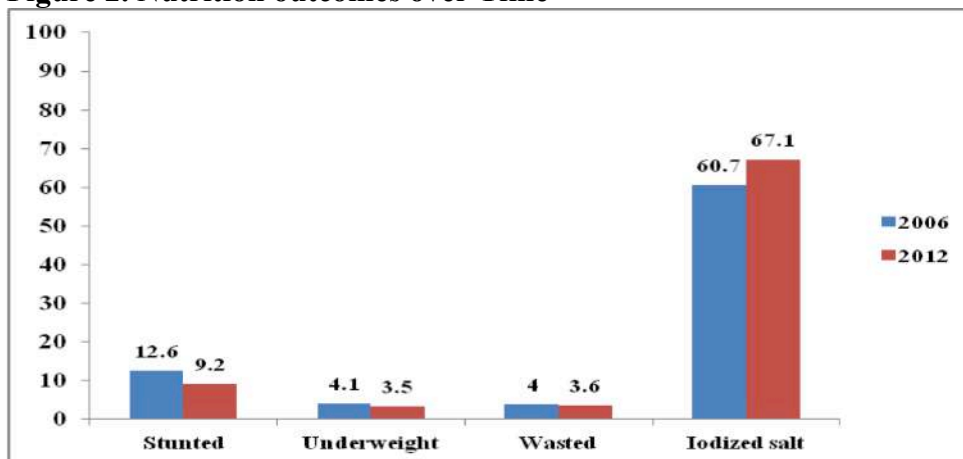
Source: Authors' calculations based on MICS 2006-2012. Note: n.a. = Not applicable.

Figure 1. Health and Survival Outcomes over Time



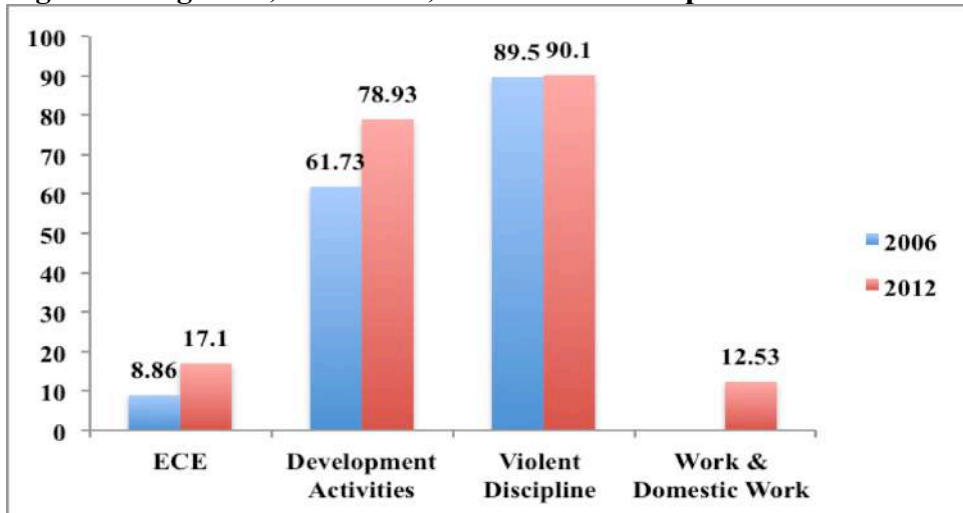
Source: Authors' calculations based on MICS2006 – 2012.

Figure 2. Nutrition outcomes over Time



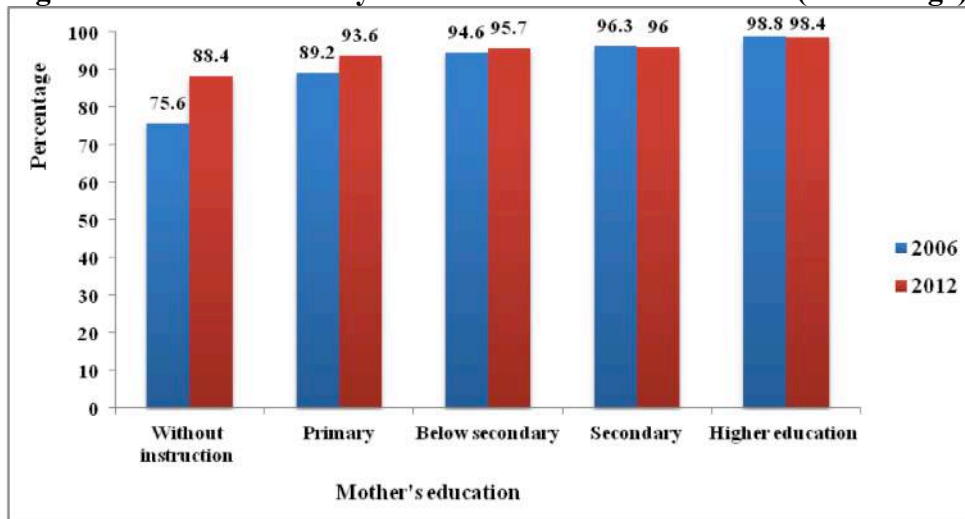
Source: Authors' calculations based on MICS2006 – 2012.

Figure 3. Cognitive, Emotional, and Social Development Outcomes over Time



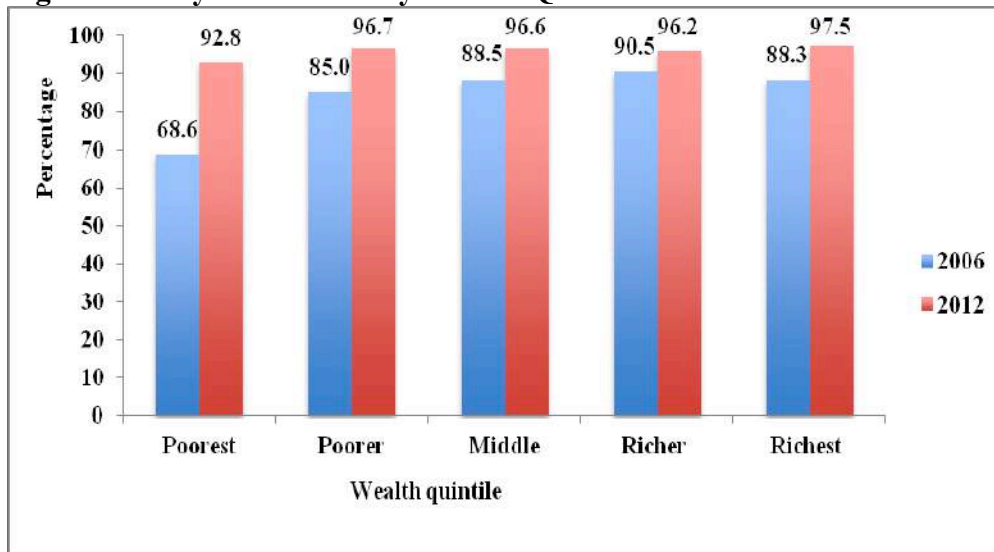
Source: Authors' calculations based on MICS 2006 – 2012.

Figure 4. Prenatal Care by Mother's Education and Year (Percentage)



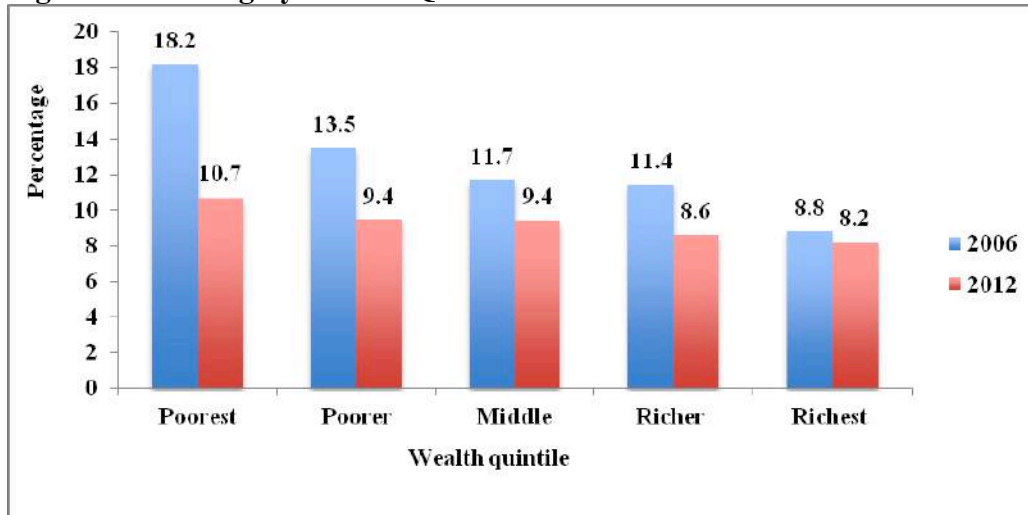
Source: Authors' calculations based on MICS2006 – 2012.

Figure 5. Fully Immunized by Wealth Quintile and Year



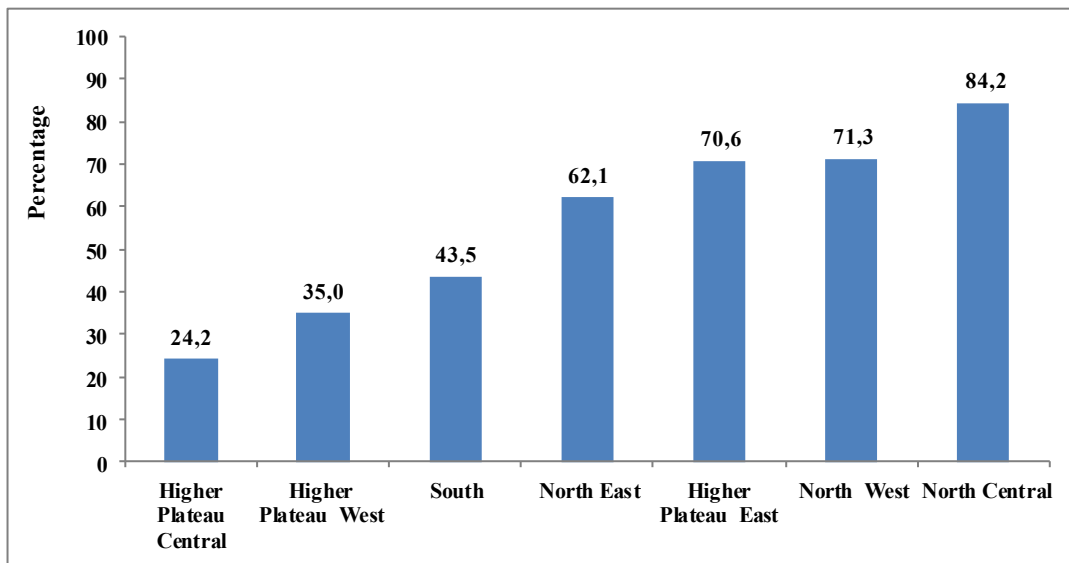
Source: Authors' calculations based on MICS2006 – 2012.

Figure 6. Stunting by Wealth Quintile and Year



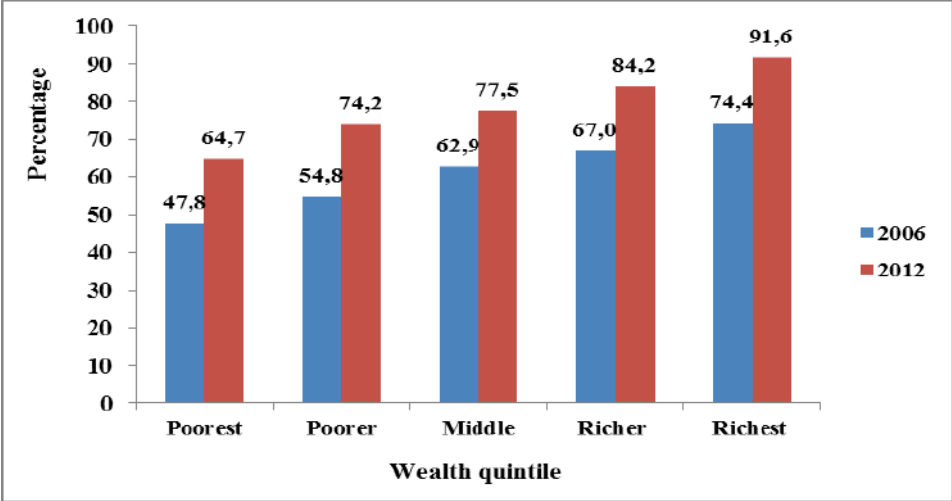
Source: Authors' calculations based on MICS2006 – 2012.

Figure 7. Adequately iodized Salt by Region



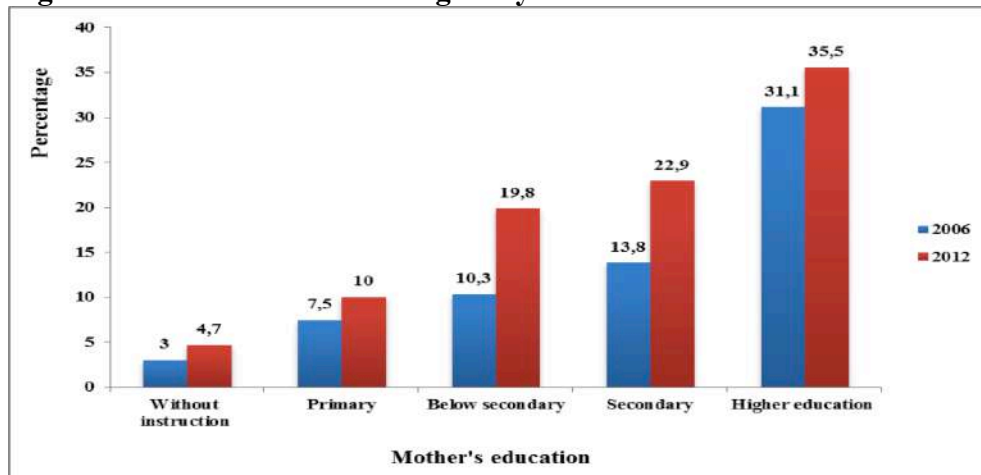
Source: Authors' calculations based on MICS2006 – 2012.

Figure 8. Development Activities by Wealth and Year



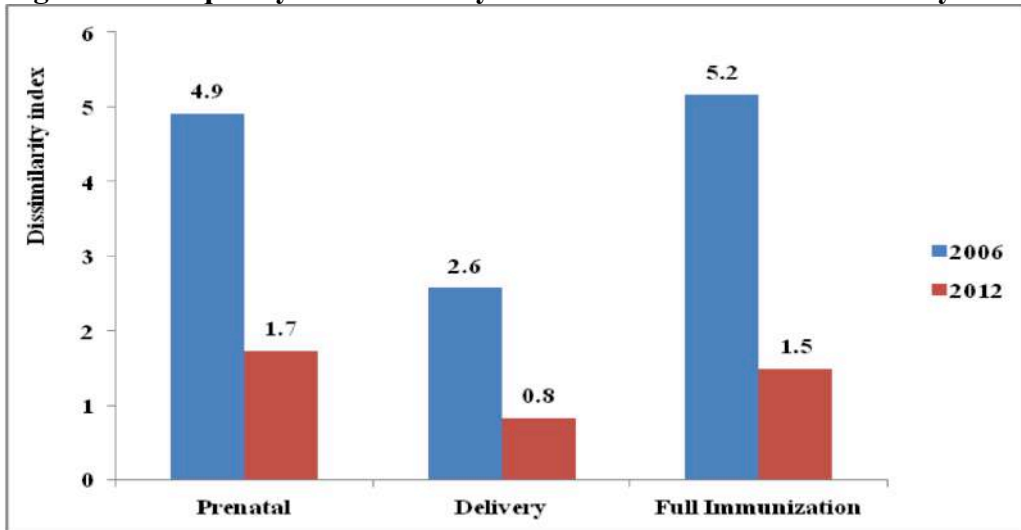
Source: Authors' calculations based on MICS2006 – 2012.

Figure 9. ECE Attendance at Age 5 by Mother's Education



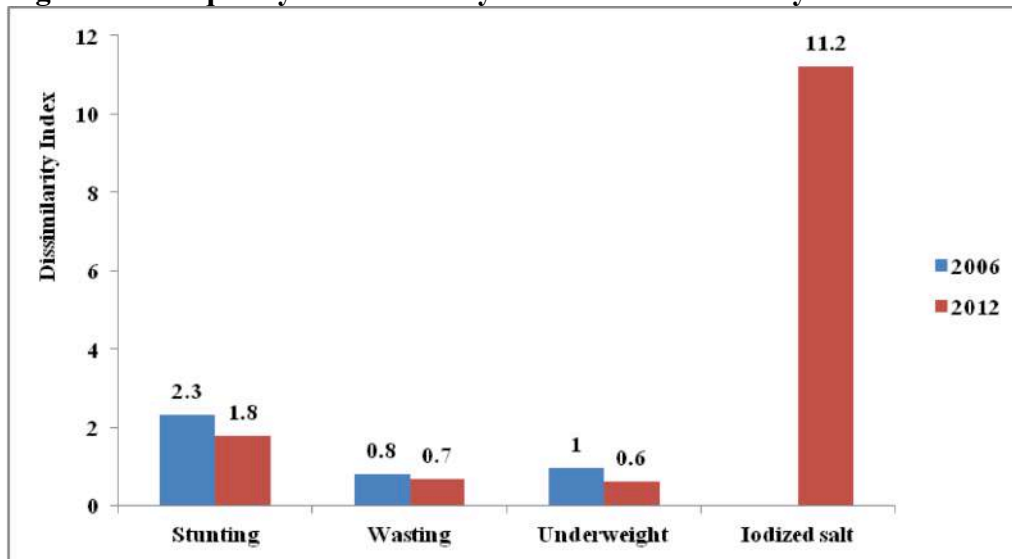
Source: Authors' calculations based on MICS2006 – 2012.

Figure 10. Inequality “Dissimilarity Index” in Health and Survival by Year



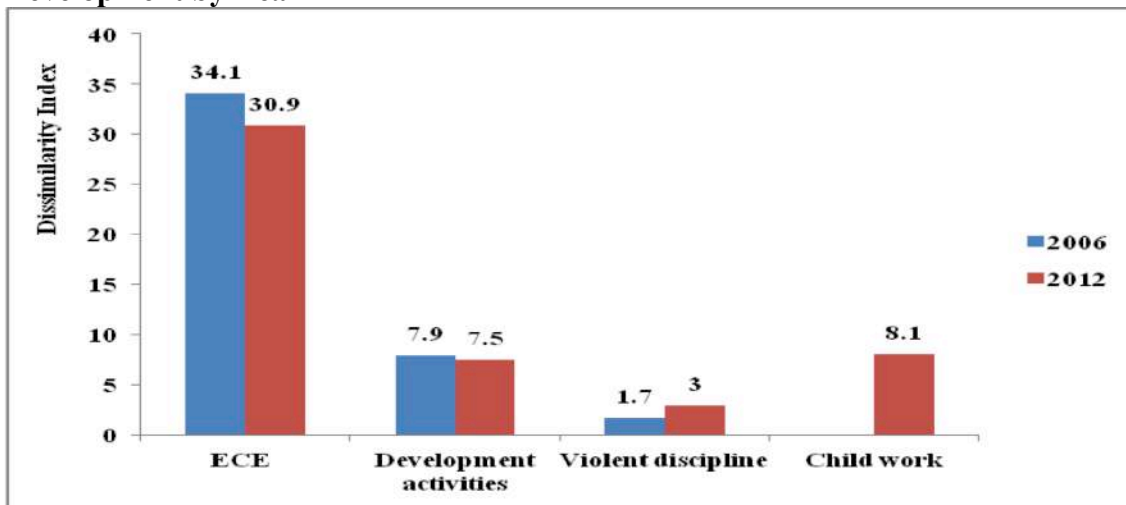
Source: Authors' calculations based on MICS2006 – 2012.

Figure 11. Inequality “Dissimilarity Index” in Nutrition by Year



Source: Authors' calculations based on MICS2006 – 2012.

Figure 12. Inequality “Dissimilarity Index” in Social, Emotional and Cognitive Development by Year



Source: Authors' calculations based on MICS2006 – 2012.

Annex 1

Table 1. Health and Survival Outcomes over Time

Indicators	Definition
Prenatal care	Measured as prenatal care from a doctor, nurse, or midwife.
Trained attendant at delivery	Measured as a delivery attended by a doctor, nurse, or midwife
Infant mortality	Dying in the first year
Fully immunized	Measured for children aged 12–23 months in terms of whether they had received the BCG (tuberculosis), measles, 3 DPT (Diphtheria, Pertussis [Whooping cough], and Tetanus) vaccine doses, and 3 polio vaccine doses
Stunting	Children are considered stunted when they are two standard deviations below the WHO healthy reference population in terms of height-for-age
Underweight	Children are considered underweight when they are two standard deviations below the WHO healthy reference population in terms of weight-for-age
Wasting	Children are considered wasted when they are two standard deviations below the WHO healthy reference population in terms of weight-for-height what is wasted and is it the same as stunted and underweight
Iodized salt	Salt with at least 15 ppm of iodine
Early childhood education	Early childhood refers to the period between birth and 8 years of life. The widely used term ‘early childhood education’ (ECE) refers to a range of processes and mechanisms that sustain and support development during the early years of life: it encompasses education, physical, social and emotional care, intellectual stimulation.
Parental development activities	The six activities are (a) reading books or look at picture books with the child; (b) telling stories to the child; (c) singing songs with the child; (d) taking the child outside the home, compound, yard, or enclosure; (e) playing with the child; and (f) spending time with the child naming, counting, and/or drawing things
Violent child discipline	According to 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)
Work and domestic work	The questions to capture work were as follows: (a) During the past week, did (the child) do any kind of work for someone who is not a member of this household? (b) During the past week, did (the child) help with household chores such as shopping, collecting firewood, cleaning, fetching water, or caring for children? (c) During the past week did (the child) do any other family work (on the farm or in a business or selling goods in the street)?

Table 2. Characteristics Health, Survival, Nutrition, Social, Emotional and Cognitive Development (Percentages)

	Health and Survival						Nutrition						Social, Emotional and Cognitive Development											
	Prenatal		Delivery		Infant mortality		Fully immunized		Stunted		Underweight		Wasted		Iodized Salt		ECE		Development activities		Violent discipline		Work and Domestic Work	
	2006	2012	2006	2012	2006	2012	2006	2012	2006	2012	2006	2012	2006	2012	2006	2012	2006	2012	2006	2012	2006	2012	2006	2012
Wealth Quintile																								
Poorest	74.1	89.8	85.3	95.4	-	31.3	68.6	92.8	18.2	10.7	5.8	4.4	3.9	3.9	40.3	53.9	2.8	6.6	47.8	64.7	86.9	89.2	-	10.1
Poorer	86.6	94.6	95.8	95.4	-	17.7	85	96.7	13.5	9.4	5.1	3.4	4.1	3.2	52.7	62.4	3.7	11.8	54.8	74.2	89.8	90.7	-	15.6
Middle	91.8	94.9	97.2	97.4	-	18.2	88.5	96.6	11.7	9.4	4.4	3.9	4.3	3.5	60.5	65.7	6.4	15.4	62.9	77.5	90.2	90.8	-	13.7
Richer	93.6	97.2	98.4	96.5	-	20.3	90.5	96.2	11.4	8.6	2.9	3	2.9	3.8	67.2	70.7	10.8	19.8	67	84.2	90.3	91.2	-	12.8
Richest	97.3	97.6	98.4	96.9	-	17.5	88.3	97.5	8.8	8.2	2.5	2.8	4.8	3.6	81.3	81.8	19.7	29.8	74.4	91.6	90.2	88.6	-	9.6
Region																								
North Central	93.3	97.4	95	96.6	-	14	90.8	98.4	9.3	5.1	2.7	1.9	2.7	2	-	84.2	8.1	16.9	69.9	86.1	85.3	92.1	-	15.7
North East	87.7	97	96.6	98.3	-	16.7	92.9	98	14.4	10.8	4.1	4	4	5.7	-	62.1	8.5	24	67.6	91.5	90.5	86.5	-	8.8
North West	88.3	90.4	97.3	96.7	-	27.6	79.3	90.2	11.7	16	3.5	3.4	6	3.6	-	71.3	9.9	16.6	55.7	84.3	92.2	86.2	-	9.7
Higher Plateau Central	78.5	93	88.4	97.5	-	26.2	49.5	88.6	19.9	12.2	7.8	4.1	6.6	4.4	-	24.2	3.9	5.4	52	61.9	88.3	90.1	-	4.3
Higher Plateau East	86.9	96.5	96.8	95.9	-	25.5	77.3	97.4	9.7	8.6	2.7	4	2.4	3.2	-	70.6	7.9	13.5	57.3	68	93.2	90.3	-	10.3
Higher Plateau West	79.3	90.1	94.2	97.2	-	19.9	79.7	93.9	18.8	13	4.8	4.7	3.4	4.2	-	35	9.2	8.1	53.1	67.4	91.4	89.2	-	14.4
South	88.1	89	90.4	90.5	-	32.1	81.1	92.8	17.6	9.4	8.9	6	6.7	6.2	-	43.5	14.6	28.1	54.2	69.9	92	94.2	-	19.3
Mother's education																								
None	75.6	88.4	87.6	94.9	-	25.6	70.7	92.5	16.7	11	5.5	4.4	3.5	3.9	-	57.8	3	4.7	52.6	60.3	89.2	85.3	-	9.6
Primary	89.2	93.6	96.7	96.1	-	22.8	88	96.5	11.9	10.1	4.5	3.7	4.4	3.5	-	68.1	7.5	10	60.3	74.4	90.9	89.6	-	10.7
Below secondary	94.6	95.7	98.2	96.1	-	20	89.1	96.7	10.9	8.8	3.7	3.5	4	3.9	-	71.4	10.3	19.8	64.1	84.7	90.1	90.9	-	12.8
Secondary ⁴	96.3	96	98.7	96.5	-	19.3	91.4	97.4	10.6	8.2	3.0	3	4	3.5	-	78.8	13.8	22.9	69.8	86.9	88.6	83.2	-	16
Higher education	98.8	98.4	98.9	97.4	-	-	88	96.2	6.5	8.2	1.5	2.5	5.1	2.9	-	-	31.1	35.5	76.5	88.4	81.1	-	-	13.8
Total	88.4	94.6	94.9	96.1	27.2	25.1	85.3	94.3	12.6	9.2	4.1	3.5	4	3.6	38.9	67.1	8.9	17.1	61.7	78.9	89.5	90.1	-	12.5

Source: Authors' calculations based on MICS 2006-2012.

⁴ Secondary – Higher education (2012).

Table 3. Determinants of Risk Factors for Poor ECD over Time - Logistic regression (marginal effects)

	No-Stunting		No-Wasting		No-Underweight		ECE		Development activities		Violent discipline		Child work		No-Immunized		No-Delivery		No-Prenatal	
	2006	2012	2006	2012	2006	2012	2006	2012	2006	2012	2006	2012	2006	2012	2006	2012	2006	2012	2006	2012
Gender	-0.0120**	-0.0116**	-0.00293	-0.00435	-0.00132	-0.000114	-0.00867	0.00521	0.00373	0.00342	0.00648	0.0159	-	0.00772	-0.0240	-0.00362	-	-	-	-
Male	(0.00576)	(0.00509)	(0.00340)	(0.00321)	(0.00331)	(0.00317)	(0.00628)	(0.00752)	(0.00851)	(0.0116)	(0.00922)	(0.0103)		(0.0104)	(0.0184)	(0.00405)				
Residence	-0.0142**	-0.00322	-0.00363	-0.00289	0.00242	-0.00341	-0.0104	-0.0679**	-0.0175*	-0.0413***	-0.00147	0.0159**	-	0.0227*	0.0392	-0.00122	-0.0247***	-0.0149***	-0.0241***	-0.00197
Urban	(0.00707)	(0.00638)	(0.00420)	(0.00402)	(0.00404)	(0.00385)	(0.00813)	(0.00942)	(0.0106)	(0.0146)	(0.00525)	(0.00622)		(0.0125)	(0.0240)	(0.00506)	(0.00394)	(0.00574)	(0.00621)	(0.00495)
Region																				
North East	-0.0758***	-0.0737***	-0.0237***	-0.0695***	-0.0285***	-0.0342**	-0.00460	-0.0510***	-0.0212	-0.0703***	0.0277***	-0.0501***	-	-0.0507***	-0.0601*	0.0102	-0.00189	-0.0163**	0.0696***	0.0248
	(0.0139)	(0.0185)	(0.00911)	(0.0173)	(0.00988)	(0.0136)	(0.00460)	(0.0184)	(0.0158)	(0.0262)	(0.00558)	(0.0121)		(0.0143)	(0.0310)	(0.0160)	(0.00542)	(0.00697)	(0.0151)	(0.0195)
North West	-0.0179	-0.166***	-0.0402***	-0.0233**	-0.0159*	-0.0211*	-0.0116	0.000485	0.131***	0.0236	0.0462***	-0.0537***	-	-0.0535***	0.137***	0.176***	-0.0117***	-0.0117	0.0762***	0.0828***
	(0.0116)	(0.0213)	(0.00944)	(0.0117)	(0.00844)	(0.0114)	(0.0114)	(0.0146)	(0.0148)	(0.0293)	(0.00498)	(0.0118)		(0.0140)	(0.0455)	(0.0398)	(0.00447)	(0.00722)	(0.0143)	(0.0282)
Higher Plateau Central	-0.0879***	-0.0942***	-0.0453***	-0.0363***	-0.0604***	-0.0318***	0.0342***	0.0706***	0.166***	0.233***	0.0103*	-0.0205**	-	-0.0890***	0.415***	0.162***	0.0339***	-0.0175***	0.148***	0.0302*
	(0.0136)	(0.0172)	(0.0103)	(0.0122)	(0.0114)	(0.0116)	(0.00957)	(0.0103)	(0.0148)	(0.0312)	(0.00609)	(0.0102)		(0.0117)	(0.0541)	(0.0328)	(0.00755)	(0.00629)	(0.0168)	(0.0172)
Higher Plateau East	0.00983	-0.0565***	0.00671	-0.0133	0.00156	-0.0312***	0.00695	0.0202	0.103***	0.211***	0.0482***	-0.0160	-	-0.0309**	0.181***	0.0265*	-0.00439	0.00383	0.0839***	0.00961
	(0.0124)	(0.0162)	(0.00771)	(0.0103)	(0.00842)	(0.0121)	(0.0118)	(0.0127)	(0.0171)	(0.0322)	(0.00550)	(0.0103)		(0.0156)	(0.0566)	(0.0158)	(0.00535)	(0.00902)	(0.0169)	(0.0149)
Higher Plateau West	-0.0930***	-0.0992***	-0.00743	-0.0373***	-0.0247*	-0.0402***	-0.00343	0.0548***	0.149***	0.214***	0.0306***	-0.0269***	-	-0.00593	0.276***	0.0829***	0.00819	-0.00968	0.172***	0.0893***
	(0.0190)	(0.0173)	(0.0109)	(0.0122)	(0.0129)	(0.0124)	(0.0154)	(0.0109)	(0.0204)	(0.0319)	(0.00736)	(0.0104)		(0.0176)	(0.102)	(0.0230)	(0.00781)	(0.00706)	(0.0248)	(0.0269)
South	-0.0846***	-0.0518***	-0.0441***	-0.0664***	-0.0775***	-0.0617***	-0.0727***	-0.101***	0.179***	0.197***	0.0443***	0.0316***	-	0.0294	0.156***	0.0893***	0.0628***	0.0462***	0.0850***	0.0959***
	(0.0121)	(0.0148)	(0.00885)	(0.0143)	(0.0109)	(0.0138)	(0.0144)	(0.0193)	(0.0137)	(0.0304)	(0.00507)	(0.00822)		(0.0197)	(0.0403)	(0.0216)	(0.00925)	(0.0135)	(0.0136)	(0.0271)
Mother's Education																				
Primary	0.0294***	0.0115	-0.00271	0.00731	0.00228	0.00630	-0.0467***	-0.0599***	-0.0377***	-0.0609***	0.0120**	0.0170***	-	-0.00566	-0.0955***	-0.0141***	-0.0237***	-0.0127***	-0.0468***	-0.0147***
	(0.00725)	(0.00731)	(0.00518)	(0.00479)	(0.00431)	(0.00437)	(0.0149)	(0.0211)	(0.0121)	(0.0143)	(0.00529)	(0.00589)		(0.0163)	(0.0181)	(0.00459)	(0.00248)	(0.00483)	(0.00475)	(0.00425)
Below secondary	0.0364***	0.0234***	-0.00368	-0.00367	0.00953**	0.00707*	-0.0589***	-0.1000***	-0.0463***	-0.0938***	0.0160***	0.0327***	-	0.0204	-0.0882***	-0.0229***	-0.0336***	-0.0134***	-0.0753***	-0.0210***
	(0.00748)	(0.00688)	(0.00533)	(0.00490)	(0.00442)	(0.00424)	(0.0154)	(0.0197)	(0.0122)	(0.0141)	(0.00527)	(0.00559)		(0.0166)	(0.0208)	(0.00477)	(0.00296)	(0.00505)	(0.00512)	(0.00456)
Secondary	0.0307***	0.0200***	-0.00500	0.00359	0.0125***	0.00871*	-0.0791***	-0.130***	-0.0742***	-0.138***	-0.00936	0.0152*	-	0.0290	-0.112***	-0.0249***	-0.0323***	-0.0208***	-0.0817***	-0.0306***
	(0.00828)	(0.00748)	(0.00589)	(0.00505)	(0.00481)	(0.00451)	(0.0180)	(0.0232)	(0.0131)	(0.0139)	(0.0104)	(0.00901)		(0.0191)	(0.0208)	(0.00488)	(0.00308)	(0.00497)	(0.00539)	(0.00468)
Higher education	0.0607***	0.0199**	-0.0160	0.0107*	0.0213***	0.0150***	-0.206***	-0.239***	-0.0945***	-0.115***	-	-	-	0.0169	-0.0423	-0.0162**	-0.0272***	-0.0144**	-0.0886***	-0.0408***
	(0.0123)	(0.00979)	(0.0113)	(0.00593)	(0.00737)	(0.00542)	(0.0419)	(0.0381)	(0.0218)	(0.0193)				(0.0281)	(0.0348)	(0.00647)	(0.00357)	(0.00619)	(0.00518)	(0.00414)
Wealth																				
Poorer	0.0349***	0.0120	-0.00281	0.00302	0.00447	0.00790*	-0.0118	-0.0682***	-0.0599***	-0.0394**	0.00850	0.00128	-	0.0376*	-0.109***	-0.0266***	-0.0217***	-0.00906*	-0.0372***	-0.0224***
	(0.00748)	(0.00744)	(0.00578)	(0.00501)	(0.00448)	(0.00432)	(0.0154)	(0.0234)	(0.0130)	(0.0158)	(0.00640)	(0.00719)		(0.0201)	(0.0176)	(0.00415)	(0.00251)	(0.00501)	(0.00503)	(0.00423)
Middle	0.0461***	0.0193**	-0.00378	0.00186	0.00772	0.00587	-0.0158	-0.0869***	-0.124***	-0.0725***	0.0104	0.00687	-	0.0286	-0.119***	-0.0271***	-0.0240***	-0.0155***	-0.0572***	-0.0203***
	(0.00785)	(0.00795)	(0.00620)	(0.00551)	(0.00478)	(0.00480)	(0.0159)	(0.0254)	(0.0133)	(0.0161)	(0.00676)	(0.00789)		(0.0212)	(0.0193)	(0.00438)	(0.00298)	(0.00544)	(0.00548)	(0.00460)
Richer	0.0598***	0.0223***	0.0115**	0.00155	0.0225***	0.0109**	-0.0508***	-0.101***	-0.148***	-0.103***	0.00418	-0.00625	-	0.0122	-0.119***	-0.0263***	-0.0268***	-0.0103*	-0.0622***	-0.0287***
	(0.00817)	(0.00811)	(0.00573)	(0.00565)	(0.00460)	(0.00473)	(0.0194)	(0.0258)	(0.0140)	(0.0161)	(0.00741)	(0.00850)		(0.0211)	(0.0215)	(0.00480)	(0.00326)	(0.00619)	(0.00592)	(0.00479)
Richest	0.0765***	0.0242***	-0.00421	0.00152	0.0223***	0.0159***	-0.0988***	-0.153***	-0.198***	-0.164***	0.00167	-0.0227**	-	-0.0219	-0.110***	-0.0312***	-0.0200***	-0.00474	-0.0778***	-0.0300***
	(0.00844)	(0.00858)	(0.00720)	(0.00606)	(0.00511)	(0.00487)	(0.0253)	(0.0290)	(0.0144)	(0.0158)	(0.00815)	(0.00961)		(0.0193)	(0.0244)	(0.00513)	(0.00408)	(0.00758)	(0.00639)	(0.00510)
Observations	13712	13751	13618	13681	13781	13813	5346	5517	14227	5395	18993	16668	-	3030	1534	7185	11247	5866	11271	5870

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Source: Authors' calculations based on MICS 2006-2012.

Table 4. Measures of Inequality (Dissimilarity Indices) by Outcome and Over Time

	2006	2012
Stunting	2.3362*** (0.5912)	1.7969*** (0.5963)
Wasting	0.8108** (0.3509)	0.6848** (0.3639)
Underweight	0.9584*** (0.3314)	0.6352** (0.3248)
Iodized salt		11.2245*** (2.1584)
ECE	34.1346*** (7.4528)	30.8715*** (5.7774)
Development activities	7.9128*** (1.2415)	7.5259*** (1.4167)
Violent discipline	1.7177*** (0.6584)	2.9650 (2.4033)
Child work		8.0752*** (1.4512)
Delivery	2.5731*** (0.8254)	0.8257* (0.5298)
Prenatal	4.9123*** (0.8667)	1.7290** (0.6495)
Full Immunization	5.1661** (2.3029)	1.4927*** (0.5471)

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1
Source: Authors' calculations based on MICS 2006-2012.

Table 5. Measures of Inequality (Dissimilarity Indices) by Outcome and Over Time

	No-Stunting		No-Wasting		No-Underweight		IODATION DU SEL		ECE		Development activities		Violent discipline		Child work		Delivery		Prenatal		Full Immunization		
	2006	2012	2006	2012	2006	2012	2006	2012	2006	2012	2006	2012	2006	2012	2006	2012	2006	2012	2006	2012	2006	2012	
Gender																							
Male	2.3547 (0.8645)	2.0253 (0.8569)	0.9843 (0.4950)	0.9479 (0.4889)	1.1660 (0.5143)	0.7639 (0.4092)	-	-	34.7332 (9.0409)	32.7084 (7.5564)	7.9046 (1.7416)	7.2848 (1.9382)	1.7499 (0.6811)	-	-	7.1848 (2.1810)	-	-	-	-	-	5.6328 (3.7239)	1.4607 (0.7136)
Female	2.3122 (0.8120)	1.7249 (0.8077)	0.7256 (0.4884)	0.5164 (0.4931)	0.8639 (0.4899)	0.5216 (0.5210)	-	-	35.6222 (11.2954)	29.6827 (8.3320)	8.1059 (1.7987)	8.0609 (2.0858)	1.8214 (2.2174)	-	-	6.9676 (1.9134)	-	-	-	-	-	5.2002 (2.9904)	1.6429 (0.7818)
Residence																							
Urban	1.8478 (0.7894)	1.7064 (0.6975)	0.7985 (0.4623)	0.7853 (0.4702)	0.8404 (0.4141)	0.7192 (0.4130)	-	10.2705 (2.1931)	24.1298 (8.7947)	19.5411 (5.3696)	5.8071 (1.4215)	5.5516 (1.4501)	0.9874 (0.6274)	3.2399 (3.1116)	-	9.1514 (2.9664)	0.7799 (0.4370)	0.8526 (0.7953)	2.8625 (0.8478)	1.2922 (0.7450)	3.1118 (2.7153)	1.3021 (0.7053)	
Rural	2.9072 (0.8993)	2.4926 (1.0828)	0.9562 (0.5911)	0.6491 (0.6171)	1.1281 (0.5665)	0.5797 (0.5601)	-	13.4466 (6.1260)	43.2509 (16.9578)	37.8795 (20.9984)	8.6792 (2.1892)	9.8605 (2.8672)	2.8077 (1.2099)	4.7670 (10.6552)	-	9.0447 (1.7859)	3.9078 (1.2625)	1.1870 (1.1854)	6.4989 (1.3721)	2.5798 (1.2030)	8.9926 (4.8998)	2.1047 (1.0001)	
Region																							
North Central	1.2846 (1.2476)	0.5880 (1.0108)	0.4204 (0.5593)	0.4551 (0.6409)	0.5334 (0.5939)	0.4823 (0.7983)	-	3.8707 (3.7741)	46.4321 (12.3590)	32.0607 (16.6883)	5.6694 (2.5141)	5.3073 (3.6726)	2.4224 (1.3770)	3.3196 (14.1226)	-	6.8250 (4.0918)	3.1081 (2.1637)	0.7926 (1.6723)	3.6632 (2.0981)	1.5668 (2.5380)	2.6075 (3.7874)	0.5985 (1.0191)	
North East	1.5718 (1.7261)	1.9366 (2.0074)	0.6271 (0.9264)	1.0190 (1.2581)	0.3926 (0.9213)	0.6756 (1.3337)	-	4.6385 (6.8062)	31.0804 (21.1624)	18.9644 (13.3738)	4.8332 (3.3670)	2.5374 (2.4795)	0.8887 (1.2615)	6.2383 (8.9971)	-	8.9825 (4.9682)	1.9648 (1.8759)	0.5346 (1.6407)	6.6816 (3.1846)	1.4180 (2.3467)	3.9116 (6.2734)	0.8287 (1.3968)	
North West	1.7152 (1.5235)	2.5077 (1.9133)	0.8752 (0.9021)	0.6350 (1.1108)	0.8367 (0.7826)	0.8128 (1.0234)	-	7.1533 (5.2894)	36.1067 (18.2512)	31.7572 (12.7692)	8.3261 (3.7087)	4.6797 (3.3936)	0.7202 (0.8968)	3.8235 (6.4583)	-	5.6722 (3.9943)	1.3638 (1.2677)	0.9802 (1.8208)	3.4906 (1.8749)	1.9405 (2.4079)	6.6315 (8.3450)	1.7336 (2.7839)	
Higher Plateau Central	3.3280 (2.2743)	1.5819 (1.6276)	0.9009 (1.4239)	0.6337 (0.9418)	1.7237 (20.8873)	0.9473 (0.9890)	-	20.9965 (18.4701)	43.0633 (28.7747)	43.4739 (20.8873)	10.2870 (4.1799)	11.6023 (5.2772)	1.0684 (1.4144)	6.0811 (12.8843)	-	6.3050 (4.6317)	5.0791 (2.4345)	1.0201 (1.8159)	8.2693 (2.6580)	1.6175 (1.2144)	22.7822 (12.1035)	4.0675 (3.4331)	
Higher Plateau East	1.4539 (1.6746)	1.5489 (1.3996)	0.5779 (0.9146)	0.6106 (0.8755)	0.5452 (0.8297)	0.6055 (0.9638)	-	5.0444 (7.0068)	40.8007 (27.6102)	36.8673 (15.1163)	9.2417 (4.7808)	10.0667 (4.7444)	0.6842 (1.1475)	4.7947 (8.6481)	-	7.2112 (3.9241)	1.0160 (1.2248)	0.7918 (1.5022)	4.3578 (2.5836)	0.5910 (1.1398)	12.3340 (10.9634)	0.8138 (1.1259)	
Higher Plateau West	4.4394 (3.0701)	1.5479 (1.6245)	0.8432 (1.3193)	0.4987 (0.7871)	1.4750 (1.6237)	0.4294 (0.9352)	-	13.6648 (13.3666)	39.2316 (40.9848)	39.4359 (23.0522)	7.3652 (5.9585)	10.7592 (4.7908)	0.9115 (1.8269)	2.7823 (5.1689)	-	8.4273 (4.1660)	2.4662 (2.2972)	1.1604 (1.5428)	5.3795 (3.7753)	2.5874 (2.2457)	14.6837 (16.3044)	1.7192 (1.7414)	
South	3.2116 (1.6579)	1.9295 (1.5101)	0.8510 (0.9897)	0.7029 (0.9449)	1.1960 (1.2016)	1.1960 (1.0761)	-	8.0027 (12.5161)	20.1519 (13.7347)	21.8173 (8.5882)	7.8708 (3.4505)	5.4878 (3.9230)	1.4610 (1.2166)	2.6226 (5.7679)	-	4.1237 (2.4691)	4.5440 (1.7754)	3.0842 (2.1496)	5.8172 (2.1355)	3.9621 (3.2021)	7.5846 (6.4662)	2.1717 (1.8880)	
Mother's Education																							
Without instruction	3.0250 (1.3654)	2.3486 (1.2984)	0.8495 (0.6479)	0.8497 (0.8268)	1.2609 (0.7481)	1.1499 (0.8749)	-	12.8820 (2.9138)	42.1178 (24.9949)	38.4278 (34.0347)	7.2883 (2.7798)	10.4187 (4.4076)	2.4194 (1.3810)	4.1295 (4.8487)	-	9.5148 (2.7200)	4.4659 (1.8595)	2.2692 (1.6554)	5.3317 (2.0231)	3.1848 (2.2563)	12.6668 (7.0402)	2.9399 (1.8584)	
Primary	2.2921 (1.5548)	1.7078 (1.4841)	0.8821 (0.8932)	0.5805 (0.7138)	1.1139 (0.8366)	0.6742 (0.6899)	-	9.6600 (6.0298)	24.9717 (20.9946)	32.2906 (21.2316)	6.7459 (2.8738)	7.3684 (3.4428)	2.0174 (1.2343)	3.4913 (4.8799)	-	8.4409 (3.1499)	0.9630 (0.7030)	1.5505 (2.0888)	3.0830 (1.5761)	2.0531 (1.8723)	4.5083 (5.2174)	1.7994 (1.1995)	
Below secondary	1.8120 (1.1718)	1.8166 (1.1999)	0.7389 (0.6216)	0.9988 (0.6709)	0.8230 (0.7445)	0.8007 (0.6386)	-	7.2095 (4.5605)	22.4259 (15.5789)	21.8960 (10.0252)	7.2079 (2.4031)	5.8139 (2.1552)	1.0334 (1.1197)	4.4032 (6.6012)	-	9.2609 (3.2758)	0.6931 (0.6947)	1.0476 (1.3707)	1.7935 (1.0078)	1.3450 (0.8291)	3.0489 (3.7943)	1.3458 (1.1071)	
Secondary	1.5729 (1.2751)	2.1485 (1.2054)	1.0636 (0.7760)	0.7888 (0.7248)	0.6926 (0.5971)	0.6790 (0.6897)	-	9.0228 (13.4860)	19.0350 (14.9270)	20.8478 (9.6996)	4.6772 (2.2325)	3.5531 (2.1585)	1.6419 (1.4632)	4.6719 (54.0785)	-	8.6404 (3.9266)	0.4146 (0.4878)	0.8135 (1.6829)	1.2187 (0.9325)	1.0630 (1.6695)	4.5929 (5.4006)	1.1094 (1.1020)	
Higher education	1.4988 (2.4484)	2.1200 (1.8033)	1.7176 (2.3103)	0.8106 (1.2039)	0.6532 (1.1846)	0.7447 (1.0227)	-	16.6730 (20.6392)	15.9046 (14.4595)	3.0382 (3.7029)	4.2311 (5.4033)	2.0706 (2.6412)	-	-	-	10.6144 (8.6955)	0.4247 (2.4514)	1.0094 (1.3735)	0.8123 (2.4909)	1.0395 (2.7776)	3.8237 (8.9442)	1.1225 (2.4919)	
Wealth (ref Poorest)																							
Poorest	2.5940 (1.8914)	2.7566 (1.3672)	1.0939 (0.9760)	0.9272 (0.9574)	1.3190 (1.0762)	1.2497 (1.0017)	-	14.4973 (6.9597)	44.4770 (28.8529)	51.0192 (33.4403)	8.2455 (4.4997)	12.3993 (4.4647)	3.8523 (2.1357)	5.6741 (9.5287)	-	8.5385 (3.2480)	5.5416 (2.5483)	2.0799 (1.8883)	6.4472 (2.6996)	2.7516 (2.0737)	15.9264 (9.4097)	3.5499 (1.9727)	
Poorer	3.0398 (1.6197)	1.6233 (1.2680)	0.8850 (0.8190)	0.8653 (0.6988)	1.1440 (0.9781)	0.6777 (0.5939)	-	11.5176 (6.2772)	37.3371 (24.9370)	29.1708 (18.9151)	8.1612 (3.9396)	7.8511 (3.3008)	1.3679 (1.2785)	1.9006 (6.4247)	-	8.9074 (3.6656)	1.4708 (0.9190)	1.0853 (1.6792)	4.1236 (1.8154)	1.5048 (1.2424)	7.3158 (8.7524)	1.5681 (1.0885)	
Middle	2.6193 (1.4788)	2.1978 (1.4856)	1.1036 (0.7347)	0.8460 (0.8096)	1.0541 (0.7637)	0.7483 (0.7729)	-	11.1596 (5.7124)	27.0040 (20.3160)	25.4960 (12.6622)	4.4622 (2.9142)	5.8689 (3.5827)	2.0022 (1.5264)	2.4564 (4.9665)	-	8.3321 (3.5621)	1.4940 (1.0696)	0.8496 (2.1858)	2.7662 (1.4894)	1.5732 (1.5154)	3.3117 (3.6649)	1.1100 (0.9691)	
Richer	1.7432 (1.3126)	1.7651 (1.2860)	0.7595 (0.5248)	0.7797 (0.8405)	0.8787 (0.7881)	0.8479 (0.7751)	-	10.4597 (4.7924)	16.1344 (14.9008)	23.8986 (10.8490)	5.0612 (2.5229)	5.1218 (2.8769)	1.3309 (1.2367)	5.1413 (6.0230)	-	10.7781 (3.0695)	0.6340 (0.6317)	2.3923 (1.6997)	2.3927 (1.6439)	0.9562 (1.0166)	3.8383 (3.7972)	0.9875 (1.2563)	
Richest	1.1120 (1.2524)	2.2212 (1.2063)	1.0448 (0.8231)	0.7197 (0.8224)	0.6141 (0.5698)	0.5605 (0.8112)	-	7.7086 (4.1690)	16.4779 (12.0654)	15.4291 (8.5990)	4.0087 (2.4271)	2.8675 (1.8975)	0.9119 (1.1310)	4.0509 (7.6375)	-	8.7006 (3.7095)	0.5424 (0.6697)	0.5547 (1.5404)	1.4569 (0.9356)	0.8093 (1.5486)	3.6395 (5.1341)	0.9870 (1.3040)	

Source: Authors' calculations based on MICS 2006-2012.