



MYANMAR

STRATEGY SUPPORT PROGRAM | WORKING PAPER 71

SEPTEMBER 2025

Analyzing Early Childhood Development (ECD) in Yangon and rural Ayeyarwady

October – November 2023

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KEY FINDINGS

- **Support for learning: 79 percent** of children received four or more stimulating activities, but only **20 percent** had three or more books; fathers' engagement with children (30 percent) lags behind mothers (81 percent).
- **Caregiver Reported Early Development Instruments (CREDI):** the standardized score in the study sample was **58.4**, which is lower than scores reported in similar studies from India (70.0), Tanzania (64.0), and Armenia (81.8)
- **Household inequalities:** Asset-rich, food-secure households show higher ECD scores; severe food insecurity lowers scores by **~2 points**.
- **Conflict and shocks:** Migration and physical insecurity reduce ECD scores by **0.5-1.0 points**.
- **Parental influences:** Fathers' education boosts ECD outcomes; maternal depression and low aspirations for girls reduce ECD outcomes.
- **Care quality:** Inadequate care reduces ECD scores by **1.3 points**; stunting lowers ECD scores by **0.8 points**, while access to books and ECE increases ECD scores by **0.7 points**.

ABSTRACT

The evidence from this study highlights the urgent need for comprehensive, multi-sectoral strategies to improve early childhood development (ECD) in Myanmar. Several key findings carry important policy implications.

First, compared to the 2015–16 Demographic and Health Survey (DHS) findings for Yangon, a higher proportion of children in this survey had support for learning (78.9 vs. 51.8 percent), access to children’s books (20.7 vs. 5.3 percent), and availability of playthings (85.5 vs. 82.6 percent). **Despite these gains, fathers’ involvement in learning activities (30 percent) continues to lag far behind mothers’ (81 percent).**

Second, the **mean Caregiver Reported Early Development Instruments (CREDI) population standardized scores observed in the sample was 58.4**, which is somewhat lower than scores reported for children of similar ages in other country studies.

Third, **household wealth and food security are critical drivers of developmental outcomes.** Children in severely food-insecure households scored nearly 2 points lower than their food-secure peers, a gap equivalent to several months of developmental progress.

Fourth, **conflict and displacement** undermine developmental progress. Children from households affected by migration or physical insecurity exhibited measurable developmental penalties.

Fifth, **parental and caregiver characteristics matter greatly.** Fathers’ education is a strong predictor of child development outcomes, suggesting that policies should actively promote paternal engagement in early learning. Maternal depression is strongly associated with lower child development, highlighting the need to expand community-based mental health services and integrate maternal well-being into ECD programming. In addition, low educational aspirations for girls translate into poorer developmental investments, underscoring the importance of shifting gender norms around education.

In summary, policymakers should prioritize integrated approaches that simultaneously address food insecurity, poverty, maternal mental health, and gender equity, while investing in early learning environments and father engagement. Such holistic strategies are essential to ensure that all children in Myanmar can reach their full developmental potential, even amid ongoing conflict and economic hardship.

1. BACKGROUND

From birth to age three, children's brains develop more rapidly than at any other stage, forming 700-1,000 neural connections per second (Harvard Center on the Developing Child, 2007). Early childhood development (ECD), a dynamic process involving motor, cognitive, language, socio-emotional, and regulatory skills, forms the foundation of human capital (UNICEF, 2017). Unlike formal education, which is shaped by teachers and school environments, ECD depends heavily on caregivers such as parents, grandparents, siblings, and professionals, as well as on nutrition and health. Yet, an estimated 249 million children under age five (43 percent) in low- and middle-income countries are at risk of impaired development due to poverty and poor nutrition. Barriers such as malnutrition, low parental education, gender discrimination, disability stigma, and cultural practices further constrain outcomes, with early nutrition strongly influencing long-term cognitive and health trajectories (Mattei & Pietrobelli, 2019). Socioeconomic factors, including parental education, household income, and occupation, play a crucial role, as children in low-income households are more likely to face cognitive and behavioral challenges (Akram et al., 2024; Blodgett & Lanigan, 2018). Evidence from Pakistan highlights that parental education, economic status, gender, disability, nutrition, and disciplinary practices are key determinants of ECD (Akram et al., 2024), underscoring the need to address these barriers so children can reach their full developmental potential.

In Myanmar, about 45 percent of children under 5 years of age are at risk of developmental delays (MIMU, n.d.). The gross enrolment rate in pre-primary education was only 9 percent in 2018, considerably lower than Cambodia (27 percent), Laos (49 percent), and Vietnam (93 percent). Earlier efforts to support ECD in Myanmar were severely disrupted by the COVID-19 pandemic in 2020 and then escalating conflict and declining governance quality since 2021. If anything, the many barriers to better ECD have become worse since 2021, including a deteriorating nutritional situation, rising poverty rates, disruptions to all forms of education, and deteriorating mental health due to the intensification of conflict, as well as crime, addictions and economic stresses. Unfortunately, the limited availability of data on ECD in Myanmar impedes efforts to provide a more detailed and systematic account of the sector (Ang & Wong, 2015).

In light of these knowledge gaps, MAPSA conducted an in-person survey between October-November 2023, which included an assessment of early childhood education and quality of care, including the short form of the Caregiver Reported Early Development Instrument (CREDI). CREDI provides ECD indicators derived from caregiver interviews, in order to assess the overall development of children under three years old. The purpose of the CREDI short form used in this study is to deliver population-level monitoring on global advancements in reducing ECD-related inequalities and achieving target 4.2 of the Sustainable Development Goals (SDGs) (Altafim et al., 2020).

2. DATA

This study uses the 11th round of the Rural-Urban Food Security Survey (RUFSS) conducted in-person principally in Yangon as well as a small sample from the Ayeyarwady region. This survey follows up 10 previous rounds of surveys conducted from June 2020 to December 2021 on about 1000 mothers in each round who were recruited from antenatal clinics in January 2020 i.e. they were pregnant in January 2020. The latest follow-up survey was conducted in-person between October – November 2023 by the Innovations for Poverty Action (IPA) Myanmar office under the supervision of researchers from the International Food Policy Research Institute (IFPRI).

The survey specifically targeted mothers (caregivers) of young children mainly in urban and peri-urban Yangon, as well as a small sub-sample from rural Ayeyarwady, and collected a variety of data, including household assets, income, food insecurity, shocks, coping strategies, maternal nutritional knowledge, and mental health. However, in this latest round we also collected data on height and weight of mother and child as well as ECD indicators. Out of approximately 1,500 mothers who participated in at least one round of the previous 10 phone survey rounds, we successfully followed up with 702 mother-child pairs located in peri-urban Yangon and townships in Ayeyarwady. About 95.7 percent of the sample were from the Yangon region and 4.3 percent were from Ayeyarwady. For more information, please refer to the sample note published from this dataset (Myanmar Agriculture Policy Support Activity, 2024).

The CREDI indicator of ECD is designed to assess the cognitive, motor, socio-emotional, and language development of children from birth to age three, with questions surrounding these key developmental milestones of children in 6-month age intervals. Given the nature of our sample as seen in Appendix Table A. 1, the majority of our children are in the age group 24 months and older, up to age 48 months. To align with the CREDI modules, the final sample for our analysis included two age bands: children aged 24-29 months (4 percent, 29 children) and those aged 30 months and older (94 percent, 663 children), resulting in a total of 692 children included in our analysis.

It is worth noting that although the sample is relatively large, it is not representative of mother-child dyads and their households in either Yangon or Ayeyarwady because of the specific recruitment strategy through antenatal clinics, as well as other issues such as attrition related to conflict and other factors. That said, the sample does cover a wide variety of households in terms of livelihoods, asset levels and caregiver education levels, as we show below, which may indicate that the sample is also not highly unrepresentative of the general population of Yangon, in particular. Indeed, in a previous note, we also show that the RUFSS sample has relatively similar socioeconomic characteristics to the 2015-16 Demographic Health Survey (DHS) Yangon sub-sample (MAPSA, 2024). Hence, in some of the results below we also make comparisons to the 2015-16 DHS where possible.

Table 1 presents some background characteristics of the sample of children aged 24-48 months, including socioeconomic status of households, caregiver's education level, main livelihood, household wealth, and the Food Insecurity Experience Scale (FIES). Due to the nature of the follow-up survey of mothers who were pregnant in early 2020, the majority of the children are in the 30+ month old category in 2023. There is a relatively equal split of boys (50.9 percent) and girls (49.1 percent) in our sample. The average household size is 4.5 members. Most of the caregivers have education at the secondary (middle school) level (29.5 percent) with 27.3 percent having education at high school level and 16.5 percent having more than high school level. In our sample, the most common main household livelihood was salaried work (38.4 percent) with other major livelihoods being trade (27 percent), and unskilled labor work (28.8 percent). Almost 97.4 percent of households had improved toilet facilities with 88.9 percent having an improved source of drinking water as well.

In terms of food security, a high proportion of households (19.9 percent) have moderate to severe food insecurity according to the Food Insecurity Experience Scale.

Table 1. Background characteristics of children aged (24 – 48 months) and caregivers

	Yangon (N=662)	Ayeyarwady (N=30)	Total (N=692)
Residence			
Yangon	100.0%	0.0%	95.7%
Ayeyarwady	0.0%	100.0%	4.3%
Child's age (in months)	37.2	38.8	37.2
Age bands			
Aged 24 – 29 months	4.2%	3.3%	4.2%
Aged 30 – 35 months	13.3%	0.0%	12.7%
Aged 36 – 41 months	78.4%	90.0%	78.9%
Aged 42+ months	4.1%	6.7%	4.2%
Gender of Children			
Boys	50.6%	56.7%	50.9%
Girls	49.4%	43.3%	49.1%
Household size (Min-Max)	4.5 (2-15)	4.6 (3-11)	4.5 (2-15)
Caregivers Education			
Primary*	26.4%	33.3%	26.7%
Secondary	29.5%	30.0%	29.5%
High school	27.3%	26.7%	27.3%
More than high school	16.8%	10.0%	16.5%
Main Livelihood			
Farming	3.9%	26.7%	4.9%
Other livelihoods	0.8%	3.3%	0.9%
Salary	40.0%	3.3%	38.4%
Trade	27.2%	23.3%	27.0%
Unskilled labor	28.1%	43.3%	28.8%
Improved toilet facilities	98.6%	70.0%	97.4%
Improved source of drinking water	89.6%	73.3%	88.9%
Asset Class			
Asset-poor	31.6%	66.7%	33.1%
Asset-low	55.7%	33.3%	54.8%
Asset-rich	12.7%	0.0%	12.1%
Food Insecurity			
FIES Severe	7.0%	0.0%	6.7%
FIES Moderate	13.2%	13.3%	13.2%
FIES Mild	24.8%	13.3%	24.3%
Not food insecure	55.1%	73.3%	55.9%
FIES (Raw Score, 0-8)	1.1	0.7	1.1

Source: Author's calculation on RUFSS follow-up survey, October –November 2023.

3. EARLY CHILD DEVELOPMENT INDICATORS

3.1 Early Childhood Education and Quality of Care

Early childhood care and development was established as a high priority national goal of Myanmar through the Myanmar Policy for Early Childhood Care and Development (ECCD) formulated in 2014. The policy prioritizes young children's development, education, health, nutrition, and protection from the time of conception to age eight and aims to guarantee that all Myanmar children receive the ECCD services necessary to reach their full developmental potential. As part of the policy, early childhood intervention services were intended to be offered to children aged 0 to 5 who exhibit abnormal behaviors, developmental delays, malnourishment, disabilities, or chronic illnesses to improve their development. Moreover, preschool services are supposed to be offered for all children aged 3 to 5 years, including services providing activities to transition children to kindergarten and primary school. Daycare and comparable preschool and preprimary classes are run by social organizations, the Department of Social Welfare, private schools, monasteries, churches, and voluntary welfare schools operated by nongovernmental organizations. These institutions are connected to basic education schools. However, due to the breakdown in governance since the military takeover of early 2021, it may be expected that implementation of this policy is very weak.

To explore this further, we assessed whether children (including younger children) had previously attended or were presently enrolled in an organized learning program. In this study, attendance at early childhood education was defined as attending any organized learning or early childhood education programs (such as, a private or government facility, including kindergarten or community childcare) following similar definition from the Myanmar DHS (MoHS and ICF, 2017).

Table 2. Attending early childhood education (children aged 24 – 59 months), RUFSS follow-up survey, and Myanmar DHS 2015-2016

	RUFSS Follow-up ^a			DHS 2015-2016 ^b	
	Yangon (N=662)	Ayeyarwady (N=30)	Total Sample (N=692)	Yangon (N=149)	National Level (N=1690)
Child Age groups					
24 –29 months	0.0	0.0	0.0	34.6	18.5
30+ months	9.1	0.0	8.7	23.3	24.0
Child Gender					
Boys	8.7	0.0	8.2	28.0	21.9
Girls	8.9	0.0	8.5	19.8	25.8
Caregiver's education					
Primary or lower	6.3	0.0	5.9	16.4	32.5
Secondary	7.7	0.0	7.4	33.5	35.6
More than secondary	22.5	0.0	21.8	31.0	42.9
Asset class					
Asset-poor	5.7	0.0	5.2	-	-
Asset-low	9.2	0.0	9.0	-	-
Asset-rich	14.3	0.0	14.3	-	-
Total	8.8	0.0	8.4	23.6	23.8

^a Children age include 24 – 48 months in RUFSS sample.

^b Weighted calculation from DHS Myanmar 2015-2016, Children Dataset.

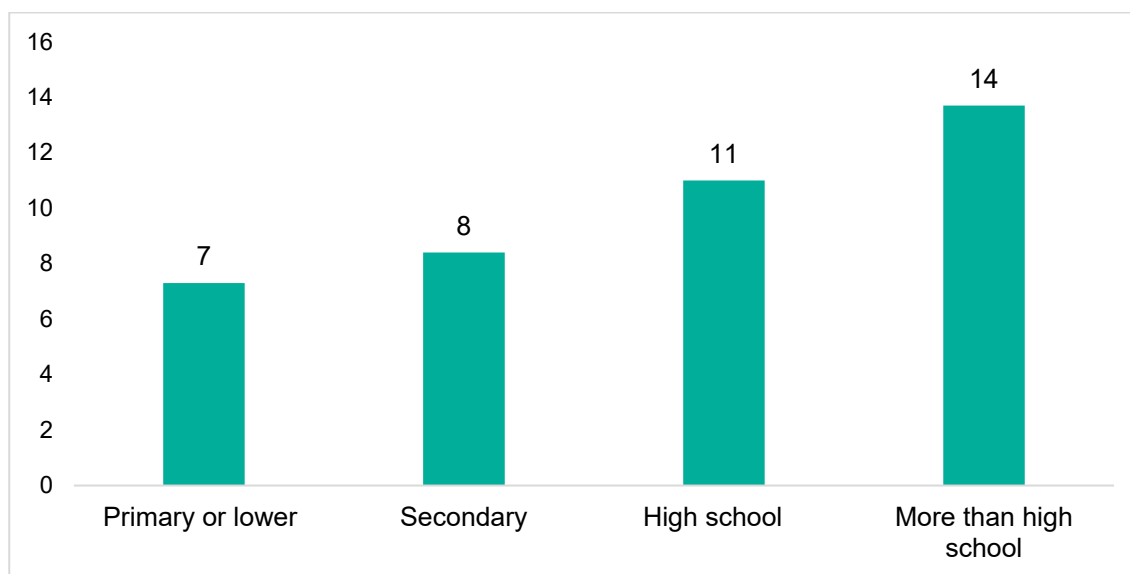
Source: Author's calculation on RUFSS follow-up survey, October –November 2023 and DHS 2015 – 2016 Children Dataset, Myanmar.

The RUFSS follow-up survey found that only 8.7 percent of children aged 24 –59 months had attended an organized early childhood education program, and the majority of that small proportion were from households with higher asset levels (see Table 2). None of the children from Ayeyarwady

region reported that they have attended any organized early childhood education. Households with few assets and low parental education are much less likely to have children attending early childhood education programs. This is a drastic fall from the latest round of the MDHS data in 2015-16 where we find 23.6 percent of children in this age group have participated in an organized early childhood education program (MoHS and ICF, 2017).

Caregiver’s education is strongly related to the child attending early childhood education program - a higher percentage of children attended early childhood education programs when their caregivers had higher levels of education. Specifically, around 25 percent of children whose caregivers had education beyond the secondary level attended early childhood education programs, compared to only 7 percent of children whose caregivers had primary education or less (Figure 1).

Figure 1. Attendance of children in early childhood education (%), by caregiver’s education



Source: Author’s calculation on RUFSS follow-up survey, October –November 2023.

3.2 Support for Learning

The first three years of a child’s life are vital for brain development, yet many children lack access to ECCD services such as parental education, support programs, Mothers’ Circles, home visits, and quality daycare. Myanmar’s ECCD policy acknowledges the need for a national parent education and support system that is both culturally and linguistically tailored to effectively serve all parents across the country (The Republic of The Union of Myanmar, 2014). Effective learning support includes adults dedicating quality time to children, access to books and toys at home, and sufficient care to meet their needs.

In this study, we collect data on support for learning at the household level closely following the definitions in the MDHS for comparison. **Support for learning** was defined as any adult family member having engaged in four or more activities to promote learning and school readiness in the 3 days before the survey interview, namely, (a) reading a book(s) or looking at a picture book(s) with the child; (b) telling a story to the child; (c) singing song(s) to or with the child, including lullabies; (d) taking the child outside the home, compound, yard, or enclosure; (e) playing with the child; and (f) naming, counting, or drawing things with the child. The **availability of children’s books** was defined as having three or more children’s books in the home. **Availability of playthings** was defined as the child playing with two or more types of playthings out of homemade toys, toys from a shop, and household/outside objects (sticks, rocks, animal shells, or leaves). **Inadequate care** was defined as the child’s being left alone or in the care of another child younger than 10 years for more than 1

hour(s) at least once in the last week. Table 3 presents estimates from the RUFSS sample as well as a comparison between the RUFSS sample and DHS 2015-16 Survey for Yangon and National level.

The majority of children aged 24 –59 months (78.9 percent) were engaged by adult household members in four or more activities that promote learning and school readiness in the past 3 days of the survey. However, **fathers (30.1 percent) were less likely than mothers to engage in four or more learning activities with their children (81.1 percent)**, highlighting a notable disparity in parental involvement with children within the households. Compared to Yangon and national estimates from the DHS 2015-16, the RUFSS follow-up survey found a significantly higher proportion of children receiving learning support from adult household members. Similar gender patterns of parental involvement were observed in DHS survey (Table 3).

Table 3. Support for Learning and quality of care, RUFSS follow-up survey, and Myanmar DHS 2015-2016

	RUFSS Follow-up ^a			DHS 2015-2016 ^b	
	Yangon (N=662)	Ayeyarwady (N=30)	Total Sam- ple (N=692)	Yangon (N=149)	National Level (N=1690)
Support for learning (> 4 activities)^c					
4 or more activities	78.9	80.0	78.9	51.8	36.3
Less than 4 activities	21.2	20.0	21.1	48.2	63.7
Mother/Father engagement in learning activities					
Mother engaged in 4 or more activities	81.5	62.5	81.1	31.1	22.2
Father engaged in 4 or more activities	30.2	37.5	30.4	2.9	4.9
Availability of children's books					
3 or more children's books	20.7	9.7	20.2	5.3	4.4
Less than 3	79.3	90.3	79.8	94.7	95.6
Availability of playthings					
2 or more types of playthings	85.5	87.1	85.6	82.6	71.9
Less than 2 types	14.5	12.9	14.4	17.4	28.1
Inadequate care^d					
Yes	3.0	3.2	3.0	3.2	10.3
No	97.0	96.8	97.0	96.8	89.7
Total number of under five children	671	31	702	421	4551

^a Children aged include 24 – 48 months in RUFSS sample.

^b Weighted calculation from DHS Myanmar 2015-2016, Children Dataset.

^c In the last 3 days before the interview, any family member over 15 years of age had been engaged in four or more of the following activities with the child: (a) reading a book(s) or looking at a picture book(s) with the child; (b) telling a story to the child; (c) singing song(s) to or with the child, including lullabies; (d) taking the child outside the home, compound, yard, or enclosure; (e) playing with the child; and (f) naming, counting, or drawing things with the child.

^d Proportion of children who were left alone or in the care of another child younger than 10 years for more than 1 hour at least once in the last week.

Note: Availability of children's books, Playthings and inadequate care are calculated for children under five years old.

Source: Author's calculation on RUFSS follow-up survey, October –November 2023 and DHS 2015 – 2016 Children Dataset, Myanmar.

Most children under age 5 in the RUFSS follow-up survey did not have access to books in the household. **Only one in five children under 5 have three or more children's books in the households.** Similar situations are observed among children from the DHS survey. Regionally, children from Yangon have nearly twice as much access to children's books compared to those in the Ayeyarwady region (20.7 vs 9.7 percent).

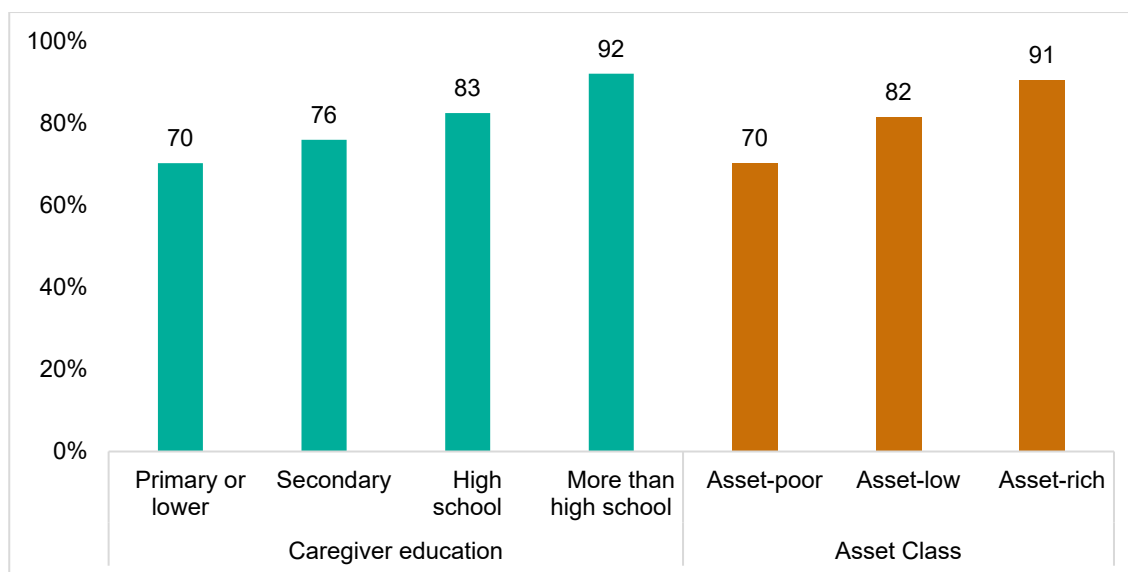
Sixty-nine percent of children under 5 reported that they play with homemade toys (including dolls). Overall, 85.6 percent of children play with two or more types of playthings,

including homemade toys, purchased toys or manufactured toys, homemade objects (such as bowls or pots) or toys found outside (such as sticks, rocks, animal shells or leaves).

Similar to the DHS survey, we asked the caregiver whether their child under 5 has been left alone or left in the care of another child under 10 years old for 1 hour or more during the past week before the survey. We found that only **3.0 percent of children under 5 years old were left alone or in the care of another child younger than 10 years for more than one hour(s) at least once in the past week**. Similar percentages were observed among children from the Yangon and Ayeyarwady regions. These results are very similar to the 2015-16 DHS results for Yangon (3.2 percent), but lower than the national level DHS results (10.3 percent).

Figure 2 presents the proportion of children engaged with 4 or more learning activities by adult household members based on the caregiver’s highest level of education and household asset level. There are significant differences in adult members’ involvement based on education and household asset level. Children in households where caregivers have only primary education or less, and those from asset-poor households, are significantly less likely to receive such stimulation compared to children whose caregivers have higher education or who live in asset-rich households (about 70 percent vs 92 percent). These patterns remain consistent when examining maternal and paternal involvement separately, underscoring the strong association between socioeconomic status, parental education, and the quality of early learning support provided within households.

Figure 2. Adult member’s support for child learning (4 or more activities) by caregiver’s education levels and household asset levels

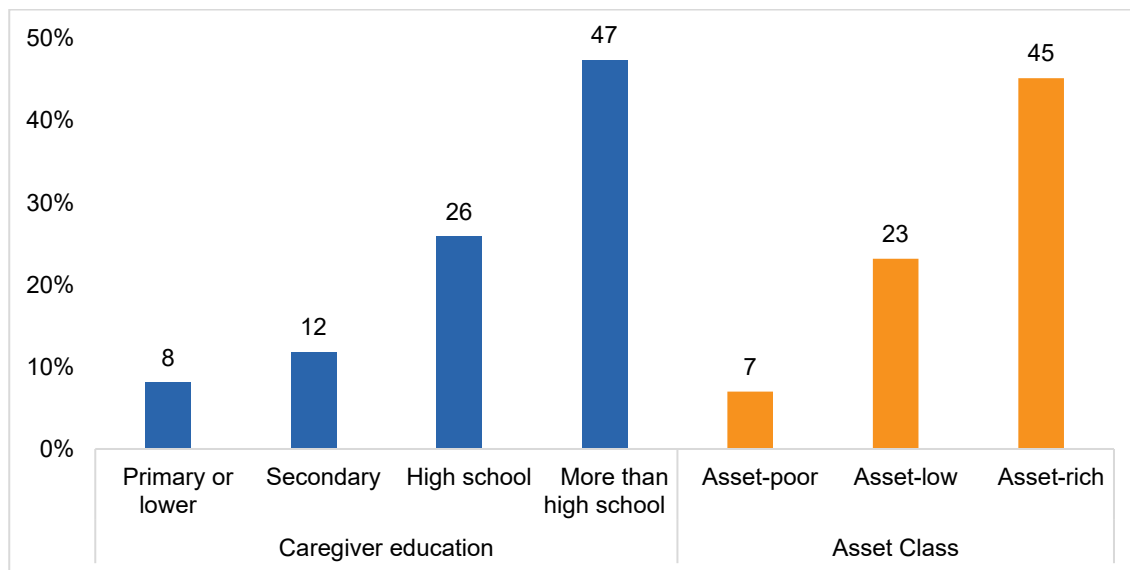


Source: Author’s calculation on RUFSS follow-up survey, October –November 2023.

Definition: Support for learning was defined as any adult family member having engaged in four or more activities to promote learning and school readiness in the 3 days before the survey interview, namely, (a) reading a book(s) or looking at a picture book(s) with the child; (b) telling a story to the child; (c) singing song(s) to or with the child, including lullabies; (d) taking the child outside the home, compound, yard, or enclosure; (e) playing with the child; and (f) naming, counting, or drawing things with the child.

Figure 3 presents the proportion of children with three or more books, based on the caregiver's highest level of education and household asset level. Children whose caregivers have higher education and who come from wealthier households are six times more likely to have children's books compared to those caregivers with primary education or lower, with similar disparities between asset-rich and asset-poor households.

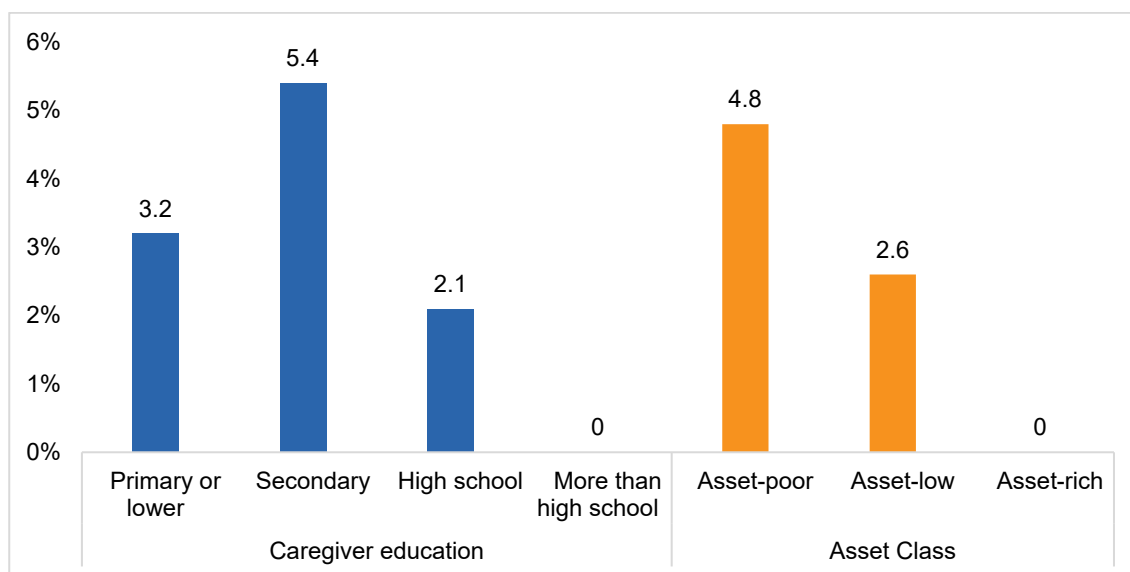
Figure 3. Availability of children’s books (3 or more books) by caregiver’s education and household asset level (%)



Source: Author’s calculation on RUFSS follow-up survey, October –November 2023.
 Definition: The availability of children's books was defined as having three or more children's books in the home.

With respect to inadequate care received by the child, we find that children whose caregivers have secondary or lower levels of education are more likely to leave the child alone or with another child under 10 years old for more than one hour in the past week compared to those with more than high school level of education (see Figure 4). Similar patterns are found with respect to household asset levels where caregivers in asset poor households are more likely to leave the child unattended (4.8 percent) compared to those in asset rich households reflecting the added burden of childcare in households with limited resources.

Figure 4. The percentage of children with inadequate care by caregiver’s education and household asset level (%)



Source: Author’s calculation on RUFSS follow-up survey, October –November 2023.
 Definition: Inadequate care was defined as the child's being left alone or in the care of another child younger than 10 years for more than 1 hour(s) at least once in the last week.

3.3 CREDI Assessment and Scaled Scoring

Following the CREDI Short Form guidelines, we utilized the caregiver-reported instrument to assess the overall early childhood development of children in our sample. The CREDI modules were developed to assess the ECD outcomes of children aged 0-36 months in culturally diverse settings. Different sets of questions are administered to children in 6 different age groups: 0-5 months, 6-11 months, 12-17 months, 18-23 months, 24-29 months, and 30+ months (see the full questionnaire in Appendix). Each age group includes a total of 20 items that cover different developmental domains. Although some items appear on more than one set of items, many of the items in each age group are unique. Items were selected for each age group depending on the developmental appropriateness. Only one set of items were administered to each child receiving the CREDI Short Form. For example, if a child is 4 months old, he/she receives the set of items for 0-5 months. As most of the children are above 30 months of age, they should be reaching the developmental milestones detailed in the 30-36 months CREDI module, as reported in Table 4.

3.3.1 CREDI Domains

The CREDI is designed to capture five inter-related ECD domains shown to develop most rapidly within the 0 to 3 age range; domains also shown to be critical for predicting later life success (See Figure 5). These are: (1) motor development, or their ability to use fine and gross movements to explore and engage with their environments; (2) children’s language development, or their ability to communicate their needs and desires, and understand what others are saying to them; (3) cognitive development, including their ability to pay attention, remember information, perceive and discriminate between objects and people in their environment, solve problems, and acquire basic knowledge; (4) social-emotional development, including their ability to control their behaviors and emotions, understand their feelings, and get along well with others. Finally, the CREDI Long Form – not used in this study - also captures early symptoms of children’s mental health, including the absence of behaviors related to aggression, anxiety, and distress.

Figure 5. The 5 CREDI domains



Source: https://credi.gse.harvard.edu/sites/projects.iq.harvard.edu/files/credi/files/credi_user_guide.pdf

As can be seen from Table 4, the CREDI questions cover a range of milestones focused on physical abilities – sometimes accompanied by pictures – such as “Can the child jump with both feet leaving the ground?”, as well as emotional responses (“Does the child smile when other smile at him/her?”), a range of verbal skills (Can the child speak using sentences of three or more words that go together such as *I want water?*), memory (Can the child sing a short song or repeat parts of a rhyme from memory by him/herself?), counting (Can the child count up to five objects (e.g., fingers, people?)), curiosity (Does the child ask why questions?), and various indicators of potential psychosocial problems (Does the child often kick, bite, or hit other children or adults?).

Table 4. CREDI development milestone questions for children aged 30-35 months

Item #	Item	Response		
F1	Can the child say ten or more separate words (e.g., names like "Mama" or objects like "ball")?	Yes	No	DK
F2	Can the child jump with both feet leaving the ground?	Yes	No	DK
F3	Can the child speak using sentences of three or more words that go together (e.g., "I want water" or "The house is big")?	Yes	No	DK
F4	Can the child sing a short song or repeat parts of a rhyme from memory by him/herself?	Yes	No	DK
F5	Can the child correctly ask questions using any of the words "what," "which," "where," or "who"?	Yes	No	DK
F6	Does the child ask about familiar people other than parents when they are not there (e.g., "Where is the neighbor?")?	Yes	No	DK
F7	Can the child correctly use any of the words "I," "you," "she," or "he" (e.g., "I go to store," or "He eats rice")?	Yes	No	DK
F8	Can the child count up to five objects (e.g., fingers, people)?	Yes	No	DK
F9	Can the child identify at least one color (e.g., red, blue, yellow)?	Yes	No	DK
F10	If you show the child two objects or people of different size, can he/she tell you which one is the big one and which is the small one?	Yes	No	DK
F11	If you point to an object, can the child correctly use the words "on," "in," or "under" to describe where it is (e.g., "The cup is on the table" instead of "The cup is in the table.")	Yes	No	DK
F12	Can the child explain in words what common objects like a cup or chair are used for?	Yes	No	DK
F13	Can the child dress him/herself (e.g., put on his/her pants and shirt without help)?	Yes	No	DK
F14	Does the child ask "why" questions (e.g., "Why are you tall?")?	Yes	No	DK
F15	If you ask the child to give you three objects (e.g., stones, beans), does the child give you the correct amount?	Yes	No	DK
F16*	Does the child often kick, bite, or hit other children or adults?	Yes	No	DK
F17*	Does the child become extremely withdrawn or shy in new situations?	Yes	No	DK
F18*	Does the child frequently act impulsively or without thinking (e.g., running into the street without looking)?	Yes	No	DK
F19	Can the child say what others like or dislike (e.g., "Mama doesn't like fruit," "Papa likes football")?	Yes	No	DK
F20	Can the child talk about things that have happened in the past using correct language (e.g., "Yesterday I played with my friend" or "Last week she went to the market")?	Yes	No	DK

Source: <https://credi.gse.harvard.edu/credi-materials>

*Reverse coding was applied to these items to account for behaviors that may negatively impact child development

3.3.2 CREDI scaled scores

For all CREDI questions, there are three response options: “Yes”, “No”, and “Don’t Know”, with responses coded as 1, 0, and -98, respectively. In the analysis, we treat responses of “Don’t Know” as non-response (missing) according to the CREDI scoring guideline (McCoy & Fink, 2017). The CREDI scale is constructed according to the CREDI manual guidelines (McCoy & Fink, 2017). Reverse coding was applied to selected items to account for behaviors that may negatively impact child development, specifically items F16, F17 and F18 in Table 4 (McCoy & Fink, 2017).

CREDI raw scores are then calculated by summing up the total score of each child. We then calculated the adjusted raw score for each child by correcting the total score for missing values. In our analysis, there were no missing (“don’t know”) responses among children aged 24-29 months. However, for the children aged 30 months and older, some caregivers provided “don’t know” responses for 3 to 5 items. To address this, we calculated the adjusted raw scores for these children, as follows, and these scores were used in the analysis:

$$\text{Adjusted Raw Score} = \frac{\text{Total Score} \times 20}{\text{Items Completed}}$$

Based on the final raw scores, age-specific standardized scores were applied by referencing the CREDI score guidelines and manual (McCoy & Fink, 2017). This process involved calculating Z-scores for each child's raw score to assess their performance relative to their age group. These standardized scores allow for meaningful comparisons among children of different ages, facilitating the identification of developmental progress and areas needing support.

Table 5 presents the CREDI scores by 24-29 months and 30+ months age bands. **The mean score of CREDI scaled for children aged 24-29 months old was 13.8 out of a maximum score of 20, and 15.5 out of 20 for children aged 30+ months**, while population standardized scores were 57.3 and 58.4, respectively. Distribution of CREDI z-scores among children aged 30+ months using a kernel density plot is presented in Figure 6.

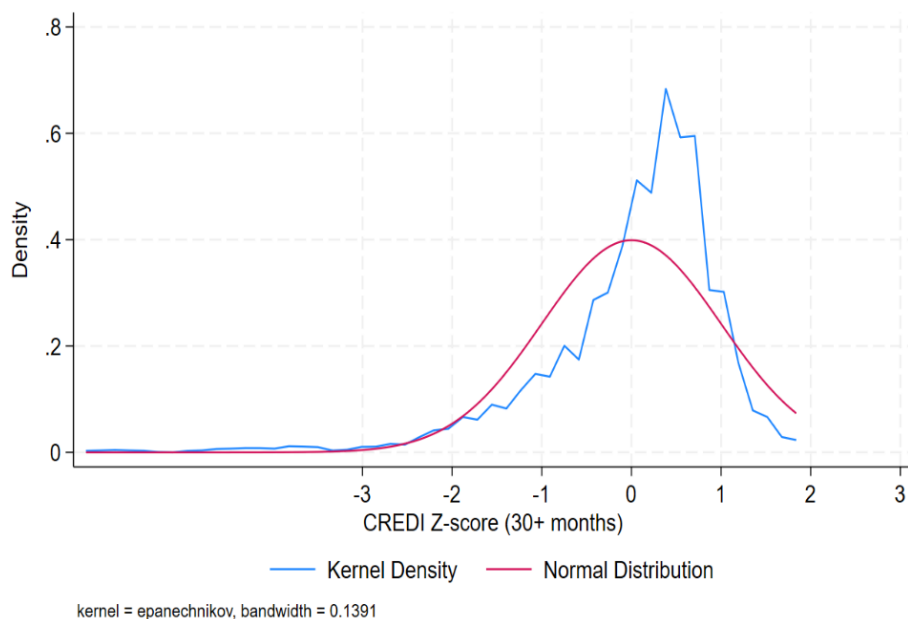
Table 5. CREDI scaled scores for children

	Mean	SD	Min – Max
Children (Aged 24-29 months, N=29)			
CREDI raw score overall (0-20)	13.8	4.2	2.0 –19.0
CREDI population standardized overall	57.3	2.2	50.9 – 61.0
CREDI Overall Z-score	0.0	1.0	-2.8 – 1.2
Children (Aged 30+ months, N=663)^a			
CREDI raw score overall	15.5	2.6	0.0 –20.0
CREDI population standardized overall	58.4	1.5	48.7 – 62.4
CREDI Overall Z-score	0.0	1.0	-5.9 – 1.7

^a Children aged 30+ months include 30 – 48 months

The CREDI population standardized scores observed in our sample were somewhat lower than those reported for children in comparable age groups from other countries. For example, Alderman et al. (2021) used the CREDI to assess the development of 994 children aged 22–35 months in rural India and reported an average standardized score of 70.0. McCoy et al. (2017) administered the CREDI to 2,481 children aged 18–36 months in peri-urban and rural Tanzania and found an average score of 64.0. By contrast, Karapetyan (2018) evaluated 225 Armenian children under the age of 3 and found a higher average score of 81.8. While none of these samples are nationally representative or precisely comparable age groups, it does seem that the Myanmar sample of children have worrying low ECD scores.

Figure 6. Kernel density plot with distribution of CREDI z-scores (children aged 30+ months)



^a Children aged 30+ months include 30 – 48 months

Source: Author's calculation on RUFSS follow-up survey, October –November 2023.

Table 6 presents the CREDI raw scores (0–20) and population standardized scores by child demographic and household socioeconomic characteristics. As expected, both raw and standardized scores tend to increase with child age, reflecting the accumulation of developmental milestones over time. Gender differences are modest, with girls showing slightly higher raw scores than boys (15.8 vs 15.2), though standardized scores are similar. Household size is not strongly associated with outcomes, though children in households with 8+ members show somewhat lower raw scores (14.6) and standardized scores (57.9) compared to smaller households.

Caregivers' education shows a positive gradient, where higher levels of education are associated with higher CREDI scores, particularly among caregivers with education beyond high school. Raw scores increase from 15.3 in households where caregivers completed primary education to 15.8 for those with more than high school, with corresponding standardized means ranging from 58.3 to 58.6. In terms of main livelihood, children from households relying on farming, salaried work, and trade generally have higher scores than those from unskilled labor households.

Water and sanitation infrastructure access is positively associated with outcomes: children in households with improved toilets or drinking water report higher mean raw scores (15.5) and standardized scores (58.4–58.5) compared to those without. Socioeconomic status, as captured by asset class, demonstrates clear differences, with asset-rich households reporting higher scores than asset-poor and asset-low households.

Finally, food insecurity presents the sharpest disparities. **Severely food-insecure households report substantially lower scores (13.6; standardized 57.4), while food-secure households reach the highest (15.8; standardized 58.6) - a striking 15.8 percent lower raw score.** These differences suggest a strong negative association between food insecurity and early child development outcomes. Overall, the largest disparities are observed across age, food insecurity, and asset class, while gender and household size play relatively smaller roles.

Table 6. CREDI scores by child demographic and household socioeconomic characteristics

	CREDI raw score overall (0-20)		CREDI population standardized overall	
	Mean	SD	Mean	SD
Child's Age bands				
Aged 24 – 29 months	13.8	4.2	57.3	2.2
Aged 30 – 35 months	14.4	3.1	57.8	1.6
Aged 36 – 41 months	15.7	2.5	58.5	1.4
Aged 42+ months	16.1	3.1	58.7	1.9
Gender of Children				
Boys	15.2	3.0	58.2	1.6
Girls	15.8	2.4	58.6	1.4
Household size				
2-4 members	15.5	2.6	58.4	1.5
5-7 members	15.7	2.4	58.5	1.4
8+ members	14.6	4.4	57.9	2.4
Children less than 5 years				
1	15.5	2.7	58.4	1.5
2+	14.8	3.2	58.0	1.8
Caregivers Education				
Primary*	15.3	3.0	58.3	1.7
Secondary	15.5	2.6	58.4	1.4
High school	15.5	2.5	58.4	1.3
More than high school	15.8	2.9	58.6	1.7
Main Livelihood				
Farming	15.6	1.8	58.3	1.0
Other livelihoods	16.0	2.1	58.6	1.1
Salary	15.7	2.6	58.6	1.5
Trade	15.5	2.2	58.4	1.2
Unskilled labor	15.1	3.3	58.2	1.9
Improved toilet facilities (=1)	15.5	2.7	58.4	1.5
Improved source of drinking water (=1)	15.5	2.7	58.4	1.5
Asset Class				
Asset-poor	15.2	2.8	58.2	1.5
Asset-low	15.5	2.8	58.4	1.5
Asset-rich	16.4	2.1	58.9	1.4
Food Insecurity				
FIES Severe	13.6	4.5	57.4	2.5
FIES Moderate	15.0	3.3	58.2	1.8
FIES Mild	15.5	2.4	58.4	1.3
Not food insecure	15.8	2.3	58.6	1.4

Source: Author's calculation on RUFSS follow-up survey, October –November 2023.

Note: Children aged 30+ months include 30 – 48 months

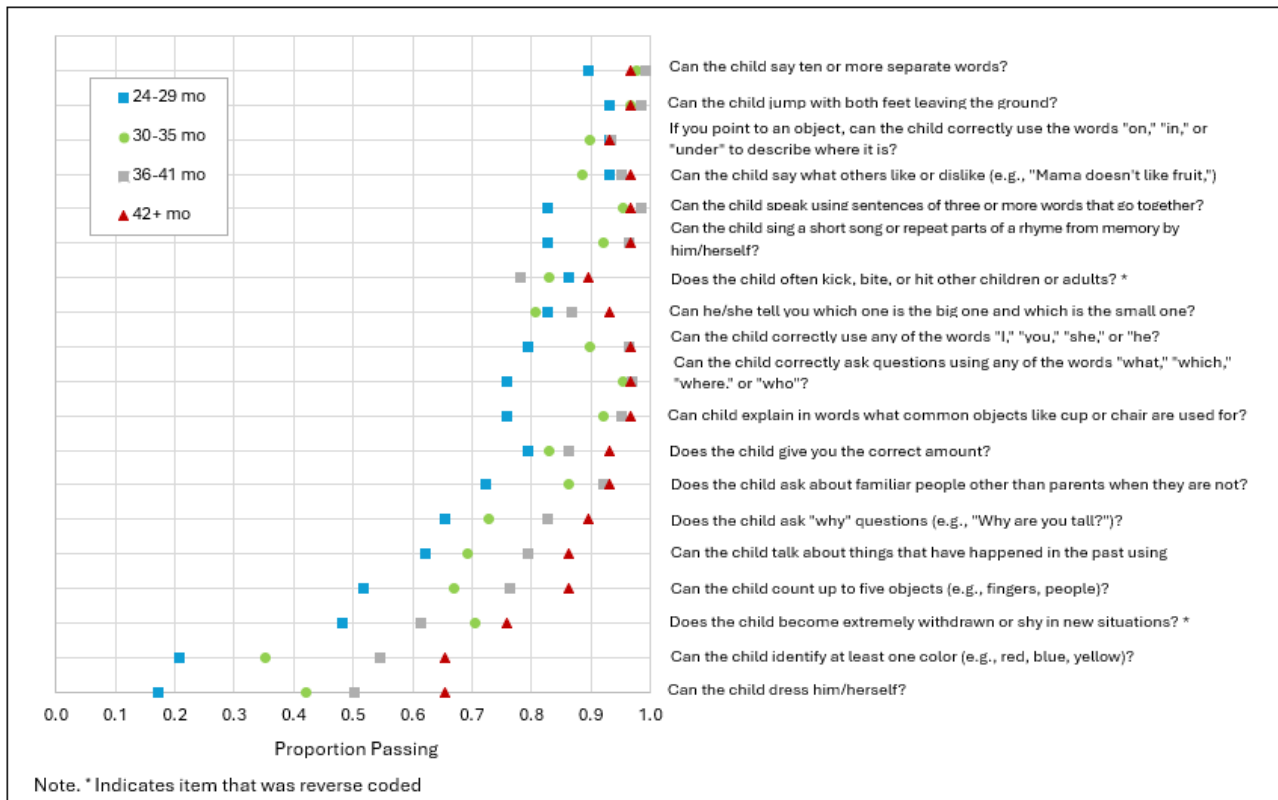
Next, we look at the response for each of the 20 items on the CREDI module separately for the different age groups, i.e. 24–29 months and 30+ months. We also further break the 30+ month group into three groups namely, 30-35 months, 36-41 months, and 42+ months.

Figure 7 presents the results of the percentage of children in each age group with positive responses for the 20 items on the module. Full tables are presented in the Appendix Table A. 2 and Table A. 3.

Overall, the trend presented among the age group is consistent with achievement of developmental milestones with higher proportion of children in older age groups achieving success in each question of the assessment. For children aged 24-29 months (n=29), although the sample size is small, language skills are found to be somewhat well-developed. On the other hand, cognitive development is rather lacking, particularly the children's ability to count (51.7 percent passing) and recognize colors (20.7 percent) as well as perceiving and discriminating between objects and people in their environment (65.5 percent).

Next, we turn to results of the percentage of children aged 30+ months (n=663) with positive response for the 20 items on the module. Since the module was designed for children aged 30-35 months old, we categorize the results for 30-35 months (n=88), 36-41 months (n=546), and 42+ months (n=29) age groups. It is unsurprising that a greater proportion of older children successfully achieve positive responses to the CREDI module items intended for children aged 30–35 months. **Children in the study exhibit reasonably well-developed language skills overall.** However, their ability to accurately describe past events using appropriate language is limited. This ability improves with age, as evidenced by better performance in the 36–41-month and 42+ month age groups. Similar to previous findings, **cognitive development is somewhat lagging, particularly in areas such as counting, recognizing colors, and the ability to perceive and differentiate between objects and people or ask “why” questions.** However, these skills also show improvement with age, as demonstrated by the older age groups.

Figure 7. Proportion children passing each cognitive item, by age (n= 692)



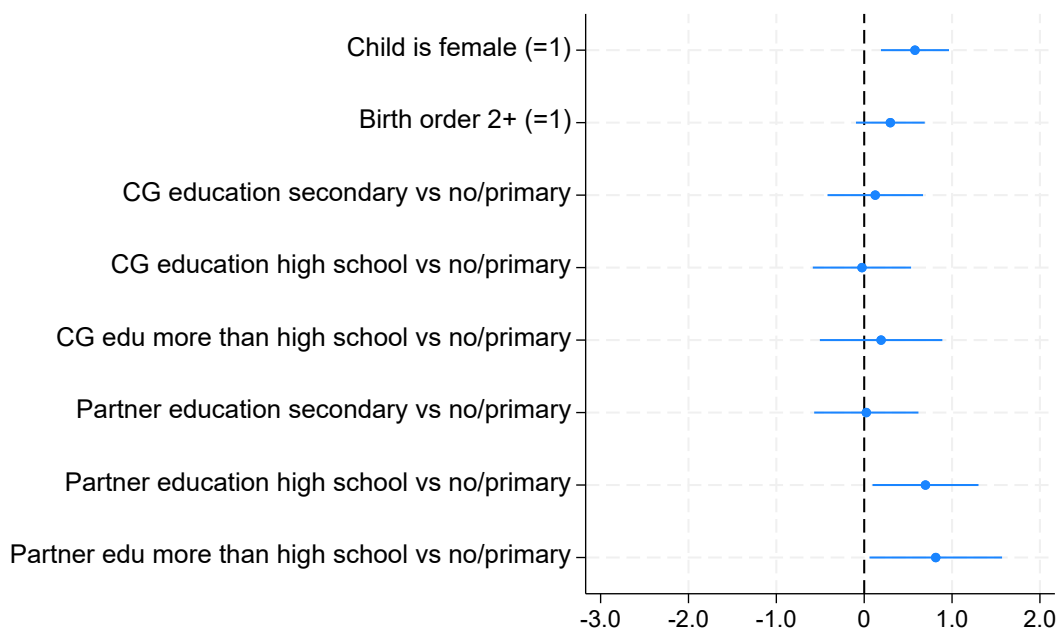
4. REGRESSION ANALYSIS EXPLORING THE ASSOCIATION BETWEEN DIFFERENT SOCIOECONOMIC FACTORS AND CREDI OUTCOMES

In this section, we explore the relationship between different socioeconomic factors and CREDI score using regression analysis to find out how such factors influence child development. In each regression model, the outcome variable is the raw CREDI score (0-20) for all children aged 24 months and above.

4.1 Association with Caregiver or Partner Education

We first examine the relationship between child gender, birth order, and parental education using a regression model (Figure 8). Results indicate that girl children score on average 0.6 points higher on the CREDI scale compared to boy children. While the caregiver's education (which in the majority of cases (98.6 percent was the mother) was not found to have a statistically significant association with child development outcomes, the education level of the partner (father) was strongly significant. **Specifically, fathers with at least a high school education were associated with an increase of 0.65 to 0.82 points in children's CREDI scores on average.** This finding is consistent with previous literature emphasizing the strong role of paternal education (especially father's) in shaping early childhood development outcomes.

Figure 8. Association of CREDI score with caregiver and caregiver's partner's education



Source: Author's calculation on RUFSS follow-up survey, October –November 2023.
Note: The regression model also controls for child age dummies (months).

4.2 Association with Household Socioeconomic Status, and Shock Exposure

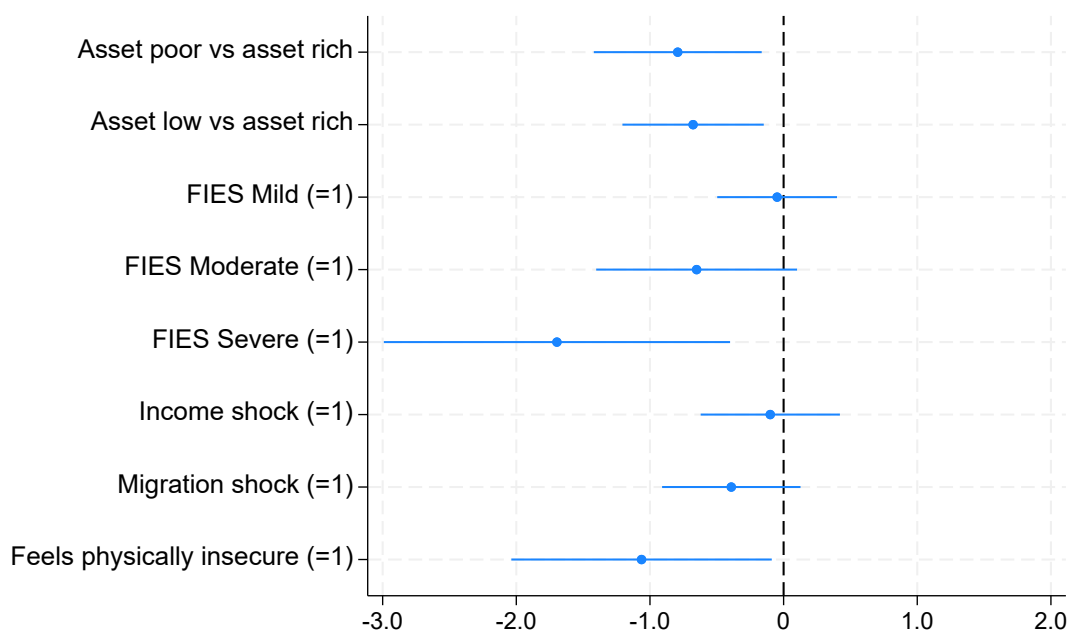
Household socioeconomic status and exposure to shocks play a critical role in shaping early childhood development. In this section, we examine their association with CREDI scores (Figure 9).

Results indicate that children from asset-poor and asset-low¹ households have significantly lower developmental outcomes compared to those from asset-rich households, which represent more permanent forms of wealth. These disparities likely reflect resource constraints in poorer households, which limit their ability to provide adequate support for children’s developmental needs.

Household food insecurity is a powerful stressor negatively associated with child development for children under 5 years old. Measured using the Food Insecurity Experience Scale (FIES), a 30-day recall- and experience-based metric capturing difficulties in securing sufficient, safe, and nutritious food for growth and healthy living, food insecurity is strongly negatively associated with child development. **Children in moderate and severely food-insecure households score, on average, 0.57 to 1.90 points lower on the CREDI scale compared to those in food-secure households.**

We also assess the impact of external shocks on child development. While income shocks show no statistically significant effect, potentially due to measurement noise, conflict and migration exhibit clear negative associations. In the context of Myanmar, where protracted conflict and displacement are widespread, these findings are particularly salient. **On average, household migration is associated with a 0.5-point reduction in CREDI scores, while self-reported physical insecurity, a well-documented proxy for exposure to conflict, reduces scores by 1.0 point.** These results underscore the detrimental effects of both chronic deprivation and acute shocks on early childhood development.

Figure 9. Association between CREDI Scores, Household Socioeconomic Status, and Shock Exposure



Source: Author’s calculation on RUFSS follow-up survey, October –November 2023.

Note: The regression model also controls for child age dummies (months), child sex, and child birth order.

4.3 Association of CREDI Score with Nutrition and Caregiving Factors

Proper nutrition and nurturing caregiving are essential for healthy early childhood development, shaping brain maturation, cognitive functioning, physical growth, and overall health. Adequate

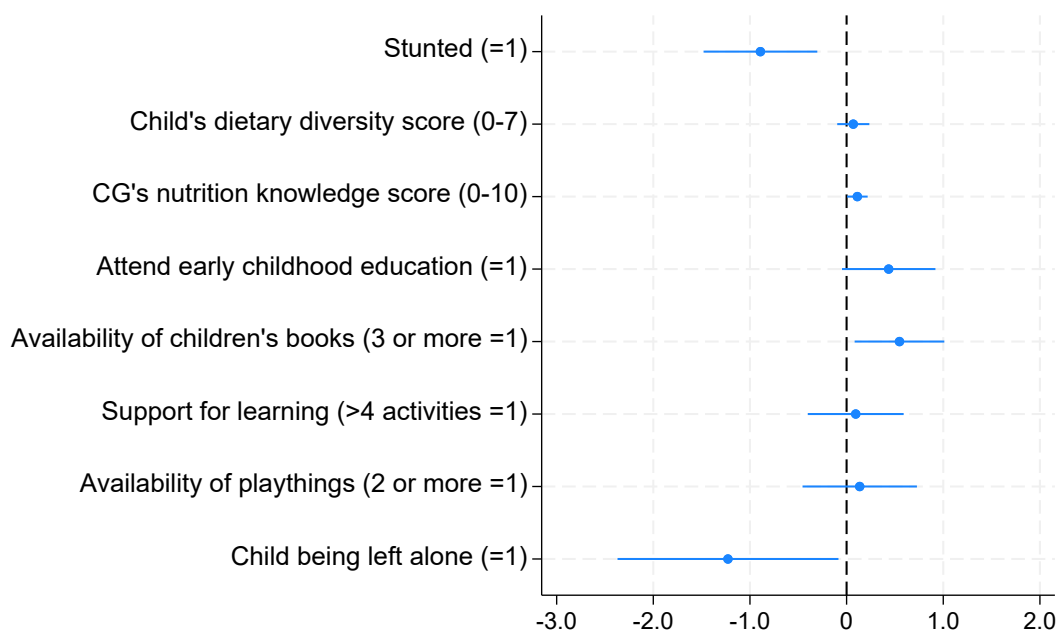
¹ Asset poverty is based on an asset count index, which is a simple summation of the number of assets owned by the household from a list of ten assets, namely – whether the household has piped water into the dwelling, a flush (improved) toilet, electricity from the national grid/private company/generator, a television, a fridge, a mechanized mode of transportation (car/motorcycle/boat), an electric rice cooker, a wardrobe, a working computer or tablet, and at least one-quarter room per person in household.

nutrient intake supports learning, attention, and optimal brain function, while responsive and stimulating caregiving fosters a secure environment, encourages exploration, and promotes socio-emotional development. Together, these factors provide the foundation for lifelong well-being and optimal developmental outcomes from conception through the first five years of life.

Empirical results from our analysis indicate a **strong and statistically significant negative association between child stunting and child development** (see Figure 10). Children who are stunted score on average **0.8 points lower** on the CREDI scale compared to their non-stunted peers. By contrast, no significant relationship is observed between dietary diversity, caregiver nutrition knowledge, and child development outcomes in this sample.

On the other hand, access to developmental resources demonstrates a positive influence. The presence of **children’s books** in the household and **attendance in early childhood education programs** is each associated with an average increase of **0.7 points** in CREDI scores. Inadequate care, defined as a child being left alone or supervised by another child younger than 10 years for more than one hour at least once during the past week, is significantly negatively associated with development, reducing scores by **1.3 points on average**.

Figure 10. Association of CREDI score with nutrition and caregiving factors



Source: Author’s calculation on RUFSS follow-up survey, October –November 2023.

Note: The regression model also controls for child age dummies (months), child sex, and child birth order.

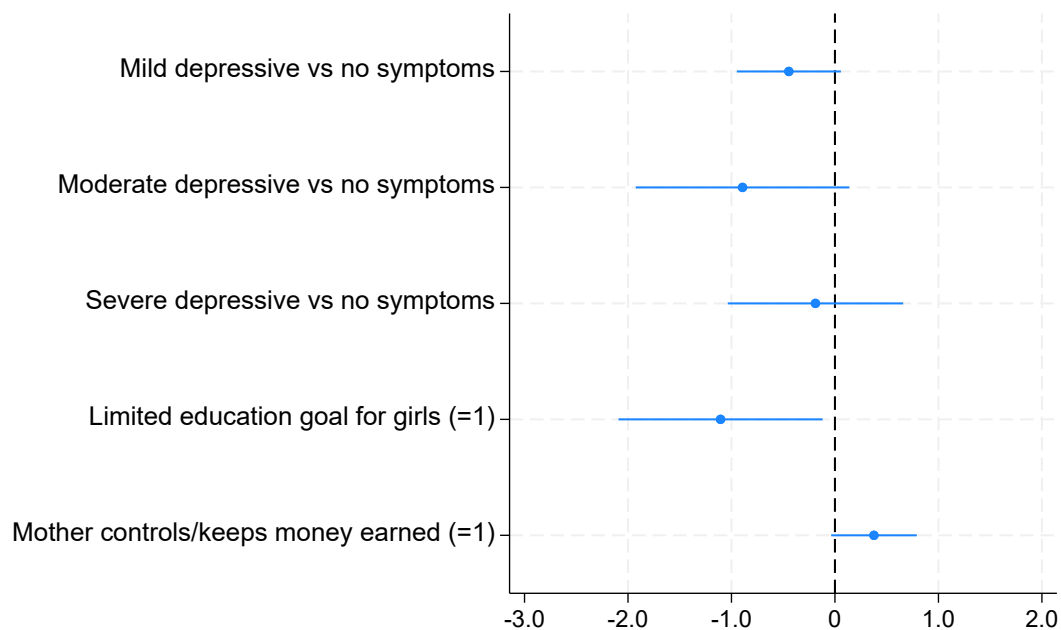
4.4 Association of CREDI Score with Caregiver’s Mental Health, Aspirations and Control over Income

Maternal depression can influence child development through multiple biological and psychosocial pathways. During pregnancy, depression may affect outcomes via altered placental function, epigenetic modifications, and heightened stress reactivity in the child. Postnatally, the association between maternal depression and child development is shaped by altered mother–child interactions, sociodemographic and environmental constraints, and the availability of social support. Beyond mental health, parents experiencing financial stress often report greater pessimism regarding both their own lives and their children’s economic prospects. As a result, they may adjust aspirations for their children’s education to align with what is perceived as realistically attainable, with lower educational goals becoming more acceptable. Such adaptations can reduce household investment

in early childhood development. Consistent with existing literature, greater maternal control over household income enhances women’s bargaining power, which has been positively linked to improved child development outcomes.

Our findings show that maternal mental health is a strong determinant of CREDI scores (see Figure 11). **Compared to mothers without depressive symptoms, as measured by the Patient Health Questionnaire-9, children of mothers with mild to moderate symptoms scored, on average, 0.62 to 1.1 points lower CREDI scores.** In addition, limited educational aspirations for girls, defined as caregiver-reported goals not exceeding 12 years of schooling, are strongly associated with lower child development outcomes. Finally, while maternal control over income is positively associated with CREDI scores, this effect is only weakly significant in our sample.

Figure 11. Association of CREDI score with caregiver’s mental health, aspirations and control over income



Source: Author’s calculation on RUFSS follow-up survey, October –November 2023.

Note: The regression model also controls for child age dummies (months), child sex, and child birth order. “Limited education goal for girls” is defined as a caregiver-reported aspiration for female children’s educational attainment not exceeding 12 years of schooling.

5. SUMMARY AND CONCLUSION

This study provides new evidence on early childhood development (ECD) outcomes among children aged 24–48 months in peri-urban Yangon and rural Ayeyarwady, Myanmar, using the Caregiver Reported Early Development Instruments (CREDI) and support for learning indicators similar to the Demographic and Health Surveys (DHS). Conducted in November 2023, amid a backdrop of political instability, conflict, and economic decline, the survey provides an in-depth assessment of developmental milestones and their socioeconomic determinants using a sample of 702 children.

Results show that while most children achieve age-appropriate developmental milestones, considerable inequalities exist across socioeconomic and caregiving environments. Children from asset-rich households perform significantly better than those from asset-poor and asset-low households, underscoring the importance of longer-term wealth and resources for supporting ECD. **Food insecurity emerges as one of the strongest predictors of poor outcomes:** children in severely food-insecure households score nearly 2 points lower on the CREDI scale than food-secure

children. Exposure to shocks, particularly migration and self-reported physical insecurity, is also associated with significant developmental penalties, reflecting the harmful effects of conflict and displacement on young children.

Parental and household-level influences are equally important. **Fathers' education is strongly associated with higher child development scores, while maternal education shows no statistically significant effect in this sample.** However, maternal depression is a powerful negative risk factor for poor ECD outcomes, with children of mothers experiencing mild to moderate depressive symptoms having between 0.62 and 1.1 points lower CREDI scores. Moreover, limited educational aspirations for girls—defined as expectations not exceeding 12 years of schooling—are significantly linked to poorer outcomes, revealing the impact of gendered norms and expectations on child development.

Nutrition and caregiving practices further influence development. **Stunted children scored, on average, 0.8 points lower, whereas access to children's books and participation in early childhood education programs increased scores by 0.7 points.** Inadequate care, measured as being left alone or with another young child for extended periods, reduced scores by 1.3 points, highlighting the importance of safe and attentive caregiving.

The findings on support for learning provide both encouraging and cautionary insights. **Nearly 79 percent of children received stimulation through four or more learning activities in the three days preceding the survey,** a rate higher than Yangon averages reported in the DHS 2015–16. However, **fathers' engagement was markedly lower (30 percent) compared to mothers' (81 percent),** indicating persistent gender gaps in caregiving roles. Access to learning resources remains limited: only 20 percent of households owned three or more children's books, with children in Yangon nearly twice as likely as those in Ayeyarwady to have access. While most children had access to playthings, disparities by household wealth and caregiver education were evident.

In conclusion, this study demonstrates that child development outcomes in Myanmar are shaped by a complex interplay of household wealth, caregiver education, food insecurity, nutritional status and mental health, as well as the quality of caregiving and learning environments. In fragile and conflict-affected settings such as Myanmar, targeted interventions are urgently needed to address structural poverty and food insecurity, expand access to affordable early childhood education and learning resources, strengthen parental support systems, and promote greater involvement of fathers in caregiving. Addressing maternal depression and challenging gender-biased educational aspirations are equally critical to ensure that all children, regardless of gender or background, can achieve their full developmental potential.

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APPENDIX

Internal consistency of CREDI results in sample

We determine the reliability of the CREDI results by testing internal consistency using Cronbach's alpha and Inter-item Covariance to establish whether the scale items contribute to the construct that is being measured. The Cronbach's alpha, the corrected item-to-total correlations or the average inter-item correlation (Clark & Watson, 1995; Polit & Beck, 2017), measures to what degree an item on a multi-item scale measures the same underlying construct. Similarly, Inter-item Covariance describes the associations between items on a scale to assess item redundancy and relatedness (Polit & Beck, 2017). In our data, the Cronbach's alpha is 0.9127 for the 24–29-month age group and 0.7499 for the 30+ month age group (see Table 5). Studies with high internal consistency for both the short- and long-form scores of the CREDI generally have a Cronbach's alpha value of around 0.80 (McCoy et al., 2021). On the other hand, to achieve acceptable reliability, the Inter-item Covariance should be around 0.30 (Clark & Watson, 1995). Lower values are preferable, as they indicate that each item contributes unique information, contributing to a more comprehensive and valid measure of child development. We find an Inter-item Covariance of 0.054 for the 24–29-month age group and 0.015 for the 30+ month age group (see Table 5). Therefore, we can conclude that the CREDI measure is reliable and internally consistent for our data.

Reliability test report

Measure	No of children	Cronbach's Alpha	Mean Inter-item Covariance	Number of Items
CREDI for Aged 24-29 months	29	0.9127	0.054	20
CREDI for Aged 30+ months	663	0.7499	0.015	20

Source: Author's calculation on RUFSS follow-up survey, October –November 2023.

Note: For high internal consistency, Cronbach's Alpha should have a value around 0.80 while the Inter-item Covariance should be around 0.30, with lower values being preferable.

Table A. 1 Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Child is female (=1)	702	0.491	0.500	0	1
Current residence: Ayeyarwady	702	0.044	0.206	0	1
Birth order 2+ (=1)	702	0.393	0.489	0	1
* Total household members	702	4.493	1.677	2	15
CG education secondary	702	0.296	0.457	0	1
CG education high school	702	0.275	0.447	0	1
CG education more than high school	702	0.165	0.372	0	1
Farming own/wages/salary	702	0.060	0.237	0	1
Non-Farm wages/salary	702	0.657	0.475	0	1
Non-farm business	702	0.272	0.445	0	1
Partner education secondary	691	0.314	0.464	0	1
Partner education high school	691	0.331	0.471	0	1
Partner education more than high school	691	0.129	0.335	0	1
Asset poor	702	0.329	0.470	0	1
Asset low	702	0.548	0.498	0	1
Piped water in household	702	0.024	0.154	0	1

flush toilet] in household	702	0.100	0.300	0	1
[Electricity] in household	702	0.849	0.358	0	1
television in household	702	0.610	0.488	0	1
fridge in household	702	0.422	0.494	0	1
car/motorbike in household	702	0.350	0.477	0	1
rice cooker in household	702	0.813	0.390	0	1
Wardrobe in household	702	0.511	0.500	0	1
Working computer/Laptop in household	702	0.050	0.218	0	1
at least one-quarter room per person	702	0.101	0.302	0	1
Attend early childhood education (1=yes)	702	0.083	0.276	0	1
Availability of children's books (3 or more)	702	0.202	0.402	0	1
Support for learning (> 4 activities)	702	0.783	0.412	0	1
Availability of playthings (2 or more)	702	0.856	0.351	0	1
Child being left alone (1=yes)	702	0.030	0.170	0	1
FIES Mild (=1)	702	0.241	0.428	0	1
FIES Moderate (=1)	701	0.133	0.339	0	1
FIES Severe (=1)	701	0.066	0.248	0	1
Stunted (=1)	695	0.177	0.382	0	1
DIETARY DIVERSITY Children 7 food groups (24 hours)	702	3.923	1.267	0	7
Inadequate diet diversity 7 food group (< 4 food groups)	702	0.406	0.491	0	1
Nutrition knowledge score	702	3.738	1.881	0	10
Aspiration for schooling-female children	686	16.165	2.125	1	19
Mild Depression Severity	702	0.252	0.435	0	1
moderate Depression Severity	702	0.066	0.248	0	1
severe Depression Severity	702	0.014	0.119	0	1
Patient Health Questionnaire (PHQ-9) score	702	4.244	4.607	0	27
Controls/keeps money earned	702	0.366	0.482	0	1
Income shock between Jan 20-Sept 23	702	0.786	0.410	0	1
migration shock between Jan 20-Sept 23	702	0.225	0.418	0	1
high level of physical insecurity	698	0.069	0.253	0	1

Source: Author's calculation on RUFSS follow-up survey, October –November 2023.

Table A. 2. Percentage of children aged 24-29 months (n=29) with positive response in CREDI items

Domain	CREDI Items	24-29 months (n=29)
Motor	Can the child jump with both feet leaving the ground?	93.1%
	Can the child dress him/herself (e.g., put on his/her pants and shirt without help)?	17.2%
Language	Can the child say ten or more separate words (e.g., names like "Mama" or objects like "ball")?	89.7%
	Can the child speak using sentences of three or more words that go together (e.g., "I want water" or "The house is big")?	82.8%
	Can the child correctly use any of the words "I," "you," "she," or "he" (e.g., "I go to store," or "He eats rice")?	79.3%
	If you point to an object, can the child correctly use the words "on," "in," or "under" to describe where it is (e.g., "The cup is on the table" instead of "The cup is in the table.")?	93.1%
	Can the child talk about things that have happened in the past using correct language (e.g., "Yesterday I played with my friend" or "Last week she went to the market")?	62.1%
Cognitive	Can the child correctly ask questions using any of the words "what," "which," "where," or "who"?	75.9%
	Can the child sing a short song or repeat parts of a rhyme from memory by him/herself?	82.8%
	Can the child count up to five objects (e.g., fingers, people)?	51.7%
	Can the child identify at least one color (e.g., red, blue, yellow)?	20.7%
	If you show the child two objects or people of different size, can he/she tell you which one is the big one and which is the small one?	82.8%
	Can the child explain in words what common objects like a cup or chair are used for?	75.9%
	If you show the child an object he/she knows well (e.g., a cup or animal), can he/she consistently name it?	93.1%
	Does the child ask "why" questions (e.g., "Why are you tall?")?	65.5%
	If you ask the child to give you three objects (e.g., stones, beans), does the child give you the correct amount?	79.3%
	Can the child say what others like or dislike (e.g., "Mama doesn't like fruit," "Papa likes football")?	93.1%
Socio-emotional	Does the child ask about familiar people other than parents when they are not there (e.g., "Where is the neighbor?")?	72.4%
	Does the child often kick, bite, or hit other children or adults? *	13.8%
	Does the child become extremely withdrawn or shy in new situations? *	51.7%

Reverse coding was applied to these items to account for behaviors that may negatively impact child development

Table A. 3. Percentage of children aged 30+ months (n=663) with positive response in CREDI items

Domain	CREDI Items	30-35 months (n=88)	36-41 months (n=546)	42+ months (n=29)	Total 30+ (n=663)
Motor	Can the child jump with both feet leaving the ground?	96.6%	98.5%	96.6%	98.2%
	Can the child dress him/herself (e.g., put on his/her pants and shirt without help)?	42.0%	50.1%	65.5%	49.7%
Language	Can the child say ten or more separate words (e.g., names like "Mama" or objects like "ball")?	97.7%	99.3%	96.6%	98.9%
	Can the child speak using sentences of three or more words that go together (e.g., "I want water" or "The house is big")?	95.5%	98.4%	96.6%	97.9%
	Can the child correctly use any of the words "I," "you," "she," or "he" (e.g., "I go to store," or "He eats rice")?	89.8%	96.5%	96.6%	95.6%
	If you point to an object, can the child correctly use the words "on," "in," or "under" to describe where it is (e.g., "The cup is on the table" instead of "The cup is in the table.")	89.8%	93.4%	93.1%	92.9%
	Can the child talk about things that have happened in the past using correct language (e.g., "Yesterday I played with my friend" or "Last week she went to the market")?	69.3%	79.5%	86.2%	78.4%
	Can the child correctly ask questions using any of the words "what," "which," "where," or "who"?	95.5%	96.9%	96.6%	96.7%
	Can the child sing a short song or repeat parts of a rhyme from memory by him/herself?	92.0%	96.5%	96.6%	95.9%
	Can the child count up to five objects (e.g., fingers, people)?	67.0%	76.3%	86.2%	75.5%
	Can the child identify at least one color (e.g., red, blue, yellow)?	35.2%	54.6%	65.5%	52.5%
	If you show the child two objects or people of different size, can he/she tell you which one is the big one and which is the small one?	80.7%	86.8%	93.1%	86.2%
Cognitive	Can the child explain in words what common objects like a cup or chair are used for?	92.0%	95.1%	96.6%	94.7%
	Does the child ask "why" questions (e.g., "Why are you tall?")?	72.7%	82.8%	89.7%	81.7%
	If you ask the child to give you three objects (e.g., stones, beans), does the child give you the correct amount?	83.0%	86.3%	93.1%	86.1%
	Can the child say what others like or dislike (e.g., "Mama doesn't like fruit," "Papa likes football")?	88.6%	95.2%	96.6%	94.4%
	Does the child ask about familiar people other than parents when they are not there (e.g., "Where is the neighbor?")?	86.4%	92.1%	93.1%	91.4%
	Does the child often kick, bite, or hit other children or adults? *	17.0%	21.8%	10.3%	20.7%
	Does the child become extremely withdrawn or shy in new situations? *	29.5%	38.5%	24.1%	36.7%
	Does the child frequently act impulsively or without thinking (e.g., running into the street without looking)? *	22.7%	31.2%	37.9%	30.4%
Socio-emo- tional					

*Reverse coding was applied to these items to account for behaviors that may negatively impact child development.

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ACKNOWLEDGEMENTS

This work was undertaken as part of the CGIAR Research Program on Policies, Institutions, and Markets (PIM) led by the International Food Policy Research Institute (IFPRI). Funding support for this study was provided by the United States Agency of International Development (USAID). This Working Paper has not gone through IFPRI's standard peer-review procedure. The opinions expressed here belong to the authors, and do not necessarily reflect those of PIM, IFPRI, or CGIAR.

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Funding support for the Myanmar Strategy Support Program is provided by the Australian Centre for International Agricultural Research (ACIAR), the Australian Department of Foreign Affairs and Trade (DFAT), and the Livelihoods and Food Security Fund (LIFT).



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