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Carer involvement with children and child-friendly book ownership in Bangladesh

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Abstract

Two early childhood development aspects: carer involvement with children, and their ownership of age-appropriate books, were evaluated. Children aged 0–4 years from Bangladesh, extracted from population-based Multiple Indicator Cluster Survey 2019, were assessed using survey adjusted logistic regression models and district-wise spatial distribution. Among 13 806 children, 11.2% had no shared activities with carers, and 60.7% had at least four shared activities. Among 22 796 children, 27.4% owned at least one book. Higher carer–child shared activities and more child-friendly books in households were observed in the Western part of Bangladesh. Children from higher socioeconomic households with educated mothers and greater exposure to media, had higher carer–child interaction and greater availability of books. These findings can aid policies targeting psychological and cognitive development of children in Bangladesh.

KEYWORDS

Child development, cognitive development, MICS, parent–child interaction, shared activities, spatial distribution

INTRODUCTION

Early childhood development requires understanding of the environment at home and in the child–primary carer relationship. Quality and quantity of stimulation and support available in the home environment are typically evaluated to measure the cognitive and socio-emotional development of a child (Craig & Mullan, 2012; Grantham-McGregor et al., 2007). Two important components of early psychological support system are carers' (primarily parents) involvement with children through shared activities, and availability of child appropriate books in the household (Curenton & Craig, 2011; Goodall & Montgomery, 2014). As the child mortality rate gradually declines in Bangladesh, importance should be placed on the quality of life of infants (Khan & Awan, 2017). For a broader discussion on the quality of life of children, this study focused on carer's involvement and learning materials for children aged 0–4 years in Bangladeshi households.

Cognitive development of children hardly takes precedence in low- and middle-income countries (LMIC) where the primary focus is on child and maternal nutrition and disease prevention (Durkin, 2002). Bangladesh, a LMIC with a good track record on public health improvements including the Millennium Development Goals (Chowdhury et al., 2013), have a lower priority on psychological aspects of children's well-being at the policy level. A nationwide survey in 2013 found that only 35% households in Bangladesh had age-appropriate books for children below 4 years (Biswas et al., 2020). However, there are no standard national estimates for carer involvement, indicating a substantial literature gap. In this study, 'carer involvement' refers to the shared activities between children and their carer, who could be mother, father or other adults (typically grandparents) in the family.

Informal learning activities for children shared with the primary carers help early cognitive development. Shared activities such as reading books or looking at pictures, singing or playing any sports introduce infants to social interactions (Adamson et al., 2012). These lead to a development of symbol formation, language acquisition, literacy emergence and social attention (Skwarchuk et al., 2014). Although studies are scarce on parent–child shared activities in Bangladesh, Aboud (2007) experimented on early childhood parenting program in rural areas which did not translate to a maternal benefit of the programs to children. In contrast, intervention from Aboud et al. (2013), where parental practices were taught including provision of play materials, led to an improved cognitive and language development in children aged <14 months. These studies showed that sociocultural and demographic factors can influence the quality of life in the early years of child development.

Previous studies have assessed the impact of reading books at home on children's language and literacy development (Blum et al., 2010; Kloosterman et al., 2011). Parental reports on children's book-related experiences such as frequency of book reading, library use and book ownership accounted for 23% of the variance in children's emergent literacy and 31% of the variance in their receptive vocabulary, which translate to better academic performances compared to their peers (Baker, 2013; Burgess, 2002; Neuman & Celano, 2001; Soh Hong, 2012; Van Kleeck et al., 2003).

The gap between cognitive and non-cognitive skills during early childhood is influenced by family environment, which persists throughout childhood and adolescence (Biswas & Kabir, 2018; Heckman, 2006). Even though a child starts to develop literacy skills at the age of 6 or 7, early childhood experiences at home contribute to the attainment of necessary precursor skills (Hindman et al., 2008). Family environments such as parents' level of education, household's purchasing capacity, exposure to information or carer's awareness of child's cognitive development and availability of reading/playing materials in the locality, contribute to early development (Baker, 2016; Baker et al., 2012; Wasik & Bond, 2001).

While reading books at an early age has a positive impact, children from low sociodemographic settings, common in countries such as Bangladesh, have limited access to suitable learning materials (Biswas et al., 2020). Cultural diversity varies across Bangladesh as districts or regions have unique cultural history and traditional festivities, which could influence reading habits among adults and subsequently among children. Thus, based on the sociodemographic factors, a vulnerable group of children could be identified, who lacked carer involvement or book ownership, inhibiting early cognitive development. There is a scarcity of research in the context of Bangladesh regarding the association of sociodemographic factors with carer–child engagement and household ownership of age-appropriate books.

To contribute to the existing literature gap in relation to early childhood development in Bangladesh, this study assessed district-wise distribution of carer involvement with children and household ownership of children's books in Bangladesh. Besides spatial variation, household sociodemographic factors were analysed to define a disadvantaged group of children at a greater risk of cognitive and socio-emotional development.

THEORETICAL FRAMEWORK

Caldwell (1967)'s Inventory of Home Stimulation (STIM) and follow-up Home Observation for Measurement of the Environment (HOME) Inventory were based on developmental theory which assessed eight criteria of child development settings including emotional and verbal responsivity of caregiver, family participation in developmentally stimulating experiences and paternal involvement with the child (Bradley et al., 1988). Based on this, the United Nations Children's Fund (UNICEF) developed the family care indicators (FCIs) questionnaire (Hamadani et al., 2010), part of which is available in the Bangladesh Multiple Indicator Cluster Survey (MICS) 2019 and has been adopted in this study.

Multiple theoretical approaches postulate the effect of environment on early childhood development including cultural-historical activity theory (Sobkin et al., 2016), transactional model (Sameroff & Chandler, 1990; Vilaseca et al., 2019), ecological theory of development (Bronfenbrenner & Morris, 1998; Baker et al., 2015) and unified theory from nature versus nurture framework (Sameroff, 2010). The current study is based on Piaget's theory of cognitive development, which constitutes both biological maturation and environmental experience (Piaget, 1976).

The repeated process of activities around children shapes their early cognition and triggers socio-emotional growth. While Piaget identified four stages of development, this study will be limited to the first two stages: (a) sensorimotor (infancy: <2 years) and (b) preoperational (toddlerhood <7 years) (Huitt & Hummel, 2003). These are the two stages where children gradually develop sensory perceptions and motor activities as well as linguistic, symbolic and imaginative processes, which are generally influenced by family structure and local environment (Figure 1).

MATERIALS AND METHODS

Data overview

Nationally representative MICS 2019 of Bangladesh was used in this study (UNICEF, 2019a). The Bangladesh Bureau of Statistics (BBS) in collaboration with UNICEF Bangladesh, as part

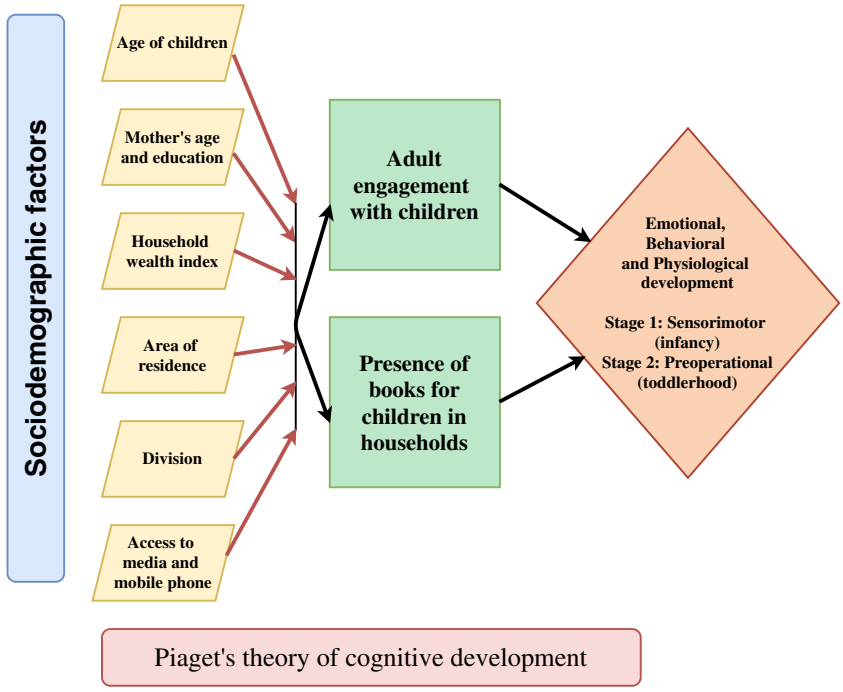

FIGURE 1 Theoretical framework for the study. [Colour figure can be viewed at wileyonlinelibrary.com]

of the Global MICS Programme, collected the data. A part of this secondary data set was used in the current study. The sampling frame was based on the Population and Housing Census 2011 (UNICEF, 2019a). Data collection was undertaken from January to June 2019, and household interviews were conducted in the native language—Bangla. A two-stage stratified cluster sampling design was utilized to collect household information from the seven divisions and 64 districts in Bangladesh, including data on women and children. The enumeration areas (EAs), a total of 3220, were considered as primary sampling units in the first stage. They were sampled from the sampling strata (64 districts) using a probability proportional to size (PPS) method. Systematic sampling of 20 households from each EA were drawn in the second stage (UNICEF, 2019b). Finally, 64 400 households were sampled, which included sampling of women in their reproductive ages (15–49 years) and infants (children aged 0–4 years). Details of the data collection can be found from data collection manual and MICS 2019 (UNICEF, 2019a).

Based on the theoretical model and review of limited literature, several sociodemographic factors and two outcome variables were identified. After removing missing information (listwise deletion), that primarily originated due to merging children's data with that of their mothers, the final sample size for households with carer involvement information was 13 806 and the sample size of households with children's books was 22 797. Here, carer refers to mother, father or any other adult member of the family who spends time with the child. In the context of Bangladesh, other adults would typically be referred to as grandparents or uncles, aunts.

Outcomes

Two binary outcome variables were considered in the study. Carer involvement or shared activities with children were based on six tasks from the father, mother or carer of the child. The tasks include reading books or looking at pictures, telling stories, singing songs, taking outside home, playing together and naming, counting or drawing something. If a carer shared any four or more tasks with a child in the last 3 days of the survey, the carer was considered to be involved or have engaged with the child UNICEF (2019b). In the study, 8383 (60.7%) of 13 806 children had carer involvement at the time of survey.

The second outcome variable was the number of age-appropriate books available per child in the household. Based on previous literature (Biswas et al., 2020), it was binarized as ownership of no books or at least one book at home. From the total sample of 22 796 children, 6236 (27.4%) owned at least one age-appropriate book.

Predictors

Eight sociodemographic factors were considered as possible predictors: children's age (continuous); mother's age (continuous); mother's education (none or below primary, primary completed, secondary or higher); wealth index (poorest, poorer, middle, richer, richest); area of residence (rural, urban); geographical division (Dhaka, Barishal, Chattogram, Khulna, Mymensingh, c, Rangpur, Sylhet); mother's exposure to media (yes, no) and mother's mobile ownership (yes, no). Mother was considered exposed to media if she read newspapers, listened to the radio, browsed the internet or watched television at least once a week. The household wealth index, predefined in the MICS 2019, was measured using principal component analysis (PCA) based on household assets (UNICEF, 2019b). For assessing spatial heterogeneity, district-wise data on outcome variables were also retained.

Statistical analysis

Survey weight adjusted bivariate distribution of sociodemographic factors across the outcome variables was quantified and primary associations through Chi-square (χ^2) tests were also assessed (Agresti & Kateri, 2011). Both outcomes were then fitted to the significant covariates from bi-variation analysis using the logistic regression models for complex survey designs (Lumley, 2011). Survey weights, cluster and strata were adjusted using *R*-package *survey* (*version* 4.0). The model provided significance, direction and effect size of each predictor fitted against the outcome. All statistical analyses were conducted in *R* (*version* 4.0.3).

Given the lack of previous findings on carer involvement and book ownership in Bangladesh, the p-value threshold of 0.005 for new discoveries was set as the level of significance criteria in the study (Benjamin et al., 2018). Thus, a predictor was only considered to be significantly associated if p-value $<.005$ and consistent with the relevant confidence interval. Multicollinearity for both models was assessed, and generalized variance inflation factor (GVIF) scores were ≤ 2 for all variables, which suggested no multicollinearity in the models.

RESULTS

Out of the 13 806 children sampled for carer involvement, 1551 (11.2%) children had no shared activities with carers; that is, they did not play, sing or read together with any carer. However, 31.5% children had six shared activities with their carers. The maximum number of activities surveyed, with mean shared activities was 3.81 (SD = 2.08) across the total sample. The district-wise distribution of carer involvement with children, presented in Figure 2, showed that households in the Western part of Bangladesh had a higher interaction between carers and children, particularly in Satkhira, Jashore, Faridpur, Naogaon, Joypurhat, Dinajpur, Narayanganj, Gazipur and Feni districts. In contrast, the lowest interaction was observed at Bandarban in the Southeast part of Bangladesh.

Among 22 796 children, only 466 (2.0%) children surveyed owned five or more books in their households. Over 72% (N = 16 560) children did not own any books with a sample mean of 0.56 (SD = 1.22) books per children. Children from a number of districts in the southwest part of Bangladesh, namely Satkhira, Khulna, Bagerhat and Barishal, as well as Gazipur in the central part of the country owned above the average number of books per children, while the number of child appropriate books in the households of the Eastern part of Bangladesh was scarce (Figure 3).

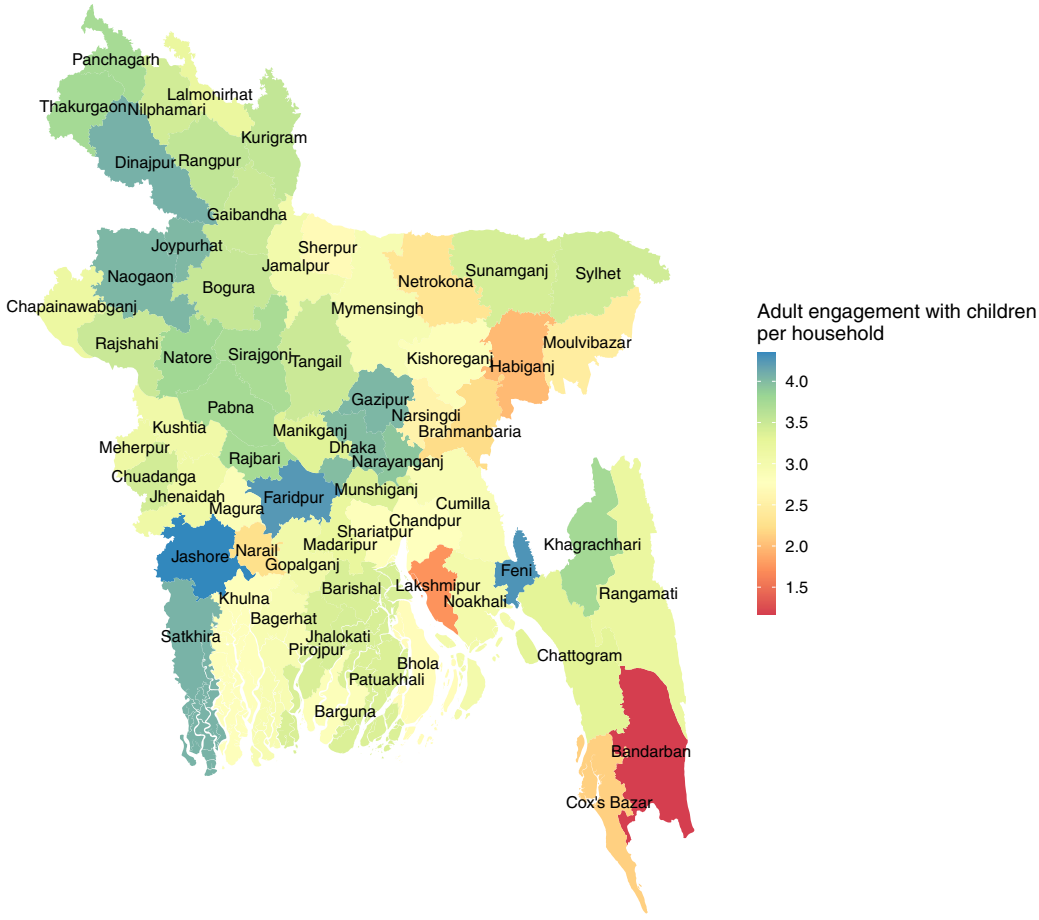

FIGURE 2 District-wise distribution of average number of activities shared between carer and child. [Colour figure can be viewed at wileyonlinelibrary.com]

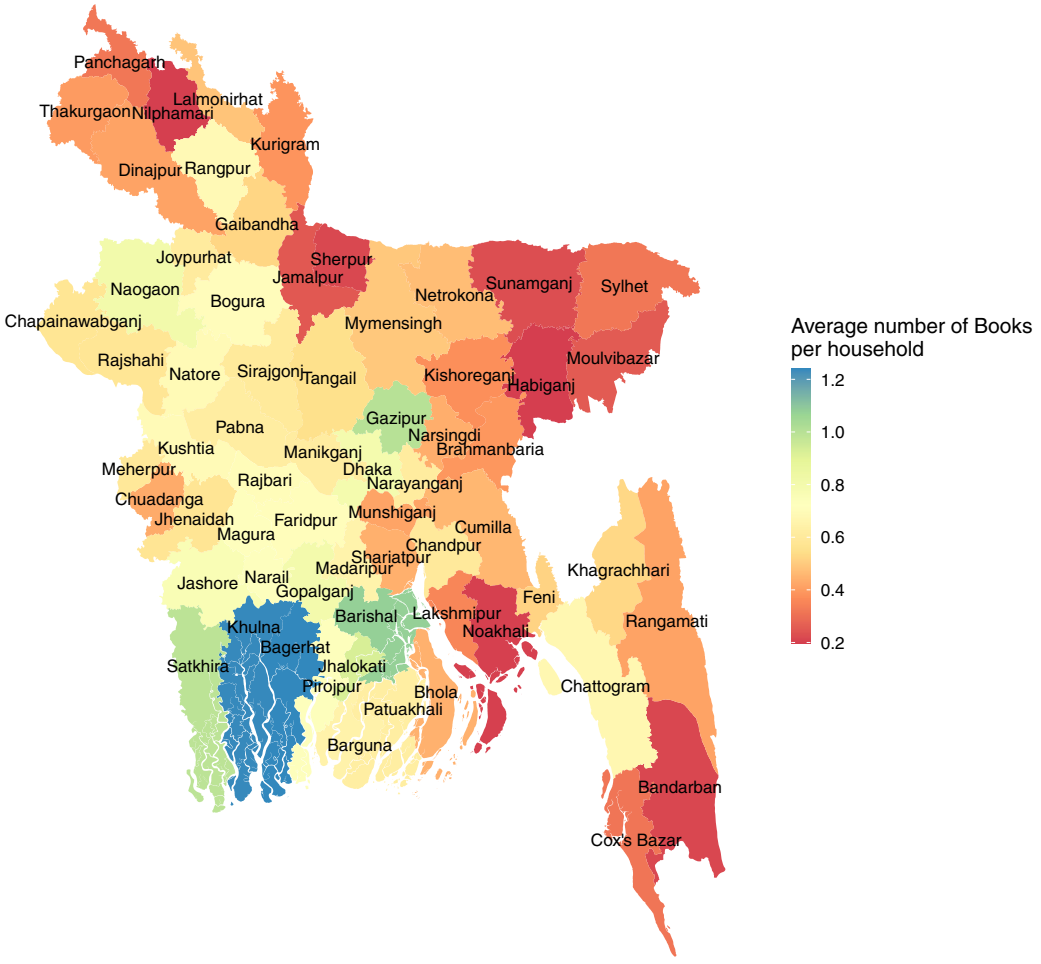

FIGURE 3 District-wise distribution of average number of books owned by children. [Colour figure can be viewed at wileyonlinelibrary.com]

All the sociodemographic factors were found to be significantly associated with both outcome variables in the bivariate analysis (Table 1). Distribution of mother's education across carer involvement showed that 81% ($N = 1664$) of mothers with higher secondary education shared activities with their children compared to 45% ($N = 711$) of mothers with primary education. Over 60% of carers with at least four shared activities with children were observed in middle class or richer households. Urban and rural households had 72.5% and 60.5% carer–child engagement respectively. Over 70% of carer–children engagement was observed in Dhaka, Rajshahi and Rangpur divisions, and more than 65% mothers exposed to media or owning mobile phones belonged to households with carer–child interaction.

The average age of children who owned at least one book was higher compared to those who did not (Table 1). Children owned at least one book in 39.7% ($N = 1448$) of households where women were highly educated. Over 30% of richer households had age-appropriate books for children and so did urban households. At least 30% households had age-specific books for their children in Barishal, Khulna and Rajshahi divisions. However, no books for children were observed in households where mothers were unexposed to media (79.6%) or did not own mobile phones (79.1%).

TABLE 1 Survey weight adjusted distribution of adult engagement with children and number of children book in households across selected sociodemographic factors

	Adult engagement with children [*N* (%)]		Number of children's books [*N* (%)]	
Variables	**Not engaged**	**Engaged**	**None**	**At least one**
Child's age[a]	2.94 (0.01)	3.03 (0.01)	1.58 (0.01)	3.15 (0.01)
p-value[b]	<.001		<.001	
Mother's age[a]	28.64 (0.10)	27.84 (0.08)	27.22 (0.06)	27.47 (0.09)
p-value[b]	<.001		<.001	
Mother's education				
None or pre-primary	866 (54.93)	711 (45.07)	2059 (85.58)	347 (14.42)
Primary	1557 (46.85)	1766 (53.15)	4301 (80.00)	1076 (20.00)
Secondary	2240 (33.31)	4485 (66.69)	7819 (70.11)	3334 (29.89)
Higher secondary+	389 (18.97)	1664 (81.03)	2195 (60.26)	1448 (39.74)
p-value	<.001		<.001	
Household wealth index				
Poorest	1588 (52.56)	1433 (47.44)	3999 (81.30)	920 (18.70)
Poorer	1159 (42.46)	1570 (57.54)	3364 (76.34)	1043 (23.66)
Middle	892 (35.65)	1610 (64.35)	3002 (71.61)	1190 (28.39)
Richer	834 (31.30)	1831 (68.70)	3039 (68.88)	1373 (31.12)
Richest	579 (20.98)	2180 (79.02)	2972 (63.91)	1678 (36.09)
p-value	<.001		<.001	
Area of residence				
Rural	4256 (39.48)	6525 (60.52)	13 101 (73.82)	4647 (26.18)
Urban	796 (27.49)	2100 (72.51)	3274 (67.78)	1557 (32.22)
p-value	<.001		<.001	
Division				
Dhaka	954 (29.44)	2288 (70.56)	3852 (71.59)	1529 (28.41)
Barishal	342 (44.12)	433 (55.88)	853 (67.16)	417 (32.84)
Chattogram	1443 (47.95)	1566 (52.05)	3684 (74.74)	1245 (25.26)
Khulna	503 (35.74)	904 (64.26)	1465 (63.40)	846 (36.60)
Mymensingh	464 (46.13)	542 (53.87)	1359 (79.65)	347 (20.35)
Rajshahi	483 (29.14)	1174 (70.86)	1687 (62.73)	1002 (37.27)
Rangpur	410 (28.05)	1051 (71.95)	1874 (77.15)	555 (22.85)
Sylhet	454 (40.47)	669 (59.53)	1602 (85.90)	263 (14.10)
p-value	<.001		<.001	
Media exposure				
No	2096 (48.10)	2262 (51.90)	5781 (79.62)	1480 (20.38)
Yes	2953 (31.70)	6361 (68.30)	10 586 (69.16)	4720 (30.84)
p-value	<.001		<.001	

(Continues)

TABLE 1 (Continued)

	Adult engagement with children [*N* (%)]		Number of children's books [*N* (%)]	
Variables	**Not engaged**	**Engaged**	**None**	**At least one**
Mobile phone ownership				
No	1399 (48.31)	1497 (51.69)	3918 (79.13)	1034 (20.87)
Yes	3652 (33.88)	7127 (66.12)	12457 (70.68)	5167 (29.32)
p-value	<0.001		<0.001	

[a]Mean and standard deviation.

[b]*p*-values from *t*-test, rest from Chi-square.

Apart from area of residence, other sociodemographic factors were associated with carer engagement and book ownership of households (Table 2). As the age of children increased by 1 year, they were 21% and 32% more likely to have higher interaction with their carers and own books respectively. Secondary and tertiary educated mothers were 1.75 and 2.78 times more likely (*p*-value <.001) to engage with their children or other household members to interact with children respectively compared to mothers with no education. The richer the household, the higher the likelihood of interaction of children with their carers at home. Children of households residing in Chittagong, Barishal and Mymensingh divisions had less interaction with their carers compared to children residing in Dhaka division, whereas children in Rajshahi and Rangpur divisions were 33% and 56% more likely to share at least four activities with their carers respectively. Mothers' exposure to media (OR = 1.16, 95% CI = 1.04, 1.28) and owning mobile phones (OR = 1.36, 95% CI = 1.22, 1.51) led to increased carer–child interaction.

Mother's education was significantly associated (*p*-value <.001) with book ownership of the child. Households from the highest two wealth quantiles, that is, richer and richest, were 1.61 and 1.21 times more likely to own child appropriate books than poorest households. Children from households in Barishal, Khulna and Rajshahi divisions were 86%, 74% and 100% more likely to own at least one book compared to children residing in the households of Dhaka division. Similar to carer involvement, children from households whose mothers were exposed to media (OR = 1.19, 95% CI = 1.07, 1.32) and owned mobile phones (OR = 1.19, 95% CI = 1.07, 1.33) were more likely to own age-appropriate books.

DISCUSSION

The MICS 2019, survey representing all districts of Bangladesh, showed that children of households in the Western part of the country, particularly districts neighbouring Barishal and Khulna, had higher carer–child shared activities and more child-friendly books. Children from higher sociodemographic households spent more time with their carers and owned more books. These included richer households with educated mothers who had greater exposure to information and media. On average, less than four activities in last 3 days of the survey were shared between children–carer and 72% children had no age-appropriate books at home nationwide, which draws a disquieting picture of the quality of life of children in Bangladesh.

TABLE 2 Binary logistic model with binary outcome is fitted to adult engagement with children and number of children book in households for sociodemographic factors adjusting for survey weights, and cluster- and strata-wise variations

	Adult engagement with children		Number of children's books	
Variables	**AOR (95% CI)**	***p*-value**	**AOR (95% CI)**	***p*-value**
Child's age[a]	1.21 (1.16, 1.28)	<.001	3.32 (3.20, 3.45)	<.001
Mother's age[a]	0.99 (0.98, 0.99)	<.001	0.97 (0.96, 0.98)	<.001
Education (ref: None or pre-primary)				
Primary	1.20 (1.04, 1.39)	.014	1.52 (1.28, 1.81)	<.001
Secondary	1.75 (1.51, 2.02)	<.001	2.62 (2.21, 3.10)	<.001
Higher secondary+	2.78 (2.29, 3.38)	<.001	4.78 (3.92, 5.82)	<.001
Wealth index (ref: Poorest)				
Poorer	1.18 (1.04, 1.34)	.010	1.14 (1.00, 1.31)	.055
Middle	1.58 (1.38, 1.82)	<.001	1.47 (1.28, 1.70)	<.001
Richer	1.70 (1.47, 1.98)	<.001	1.61 (1.37, 1.89)	<.001
Richest	2.56 (2.13, 3.08)	<.001	2.11 (1.76, 2.52)	<.001
Area of residence (ref: Rural)				
Urban	1.12 (0.99, 1.26)	.077	1.02 (0.90, 1.16)	.714
Division (ref: Dhaka)				
Barishal	0.75 (0.63, 0.88)	.001	1.86 (1.56, 2.21)	<.001
Chattogram	0.47 (0.41, 0.53)	<.001	0.81 (0.70, 0.94)	.006
Khulna	0.82 (0.70, 0.96)	.014	1.74 (1.50, 2.03)	<.001
Mymensingh	0.70 (0.58, 0.85)	<.001	0.77 (0.61, 0.96)	.020
Rajshahi	1.33 (1.13, 1.56)	.001	2.00 (1.71, 2.33)	<.001
Rangpur	1.56 (1.33, 1.84)	<.001	0.86 (0.72, 1.03)	.101
Sylhet	0.87 (0.73, 1.03)	.103	0.41 (0.33, 0.50)	<.001
Media exposure (ref: No)				
Yes	1.16 (1.04, 1.28)	.006	1.19 (1.07, 1.32)	.002
Mobile phone ownership (ref: No)				
Yes	1.36 (1.22, 1.51)	<.001	1.19 (1.07, 1.33)	.002

Abbreviations: AOR, Adjusted odds ratio; CI, confidence interval.

aContinuous variable.

Apart from the sociodemographic factors, which partially explain the reason for some households having greater carer–child engagement and increased children's book ownership, sociocultural factors could explain the spatial heterogeneity for these two issues in Bangladesh. The Western part of Bangladesh, particularly areas adjacent to Rajshahi and Jashore, is influenced by the West Bengal culture of India (Amin et al., 2002; Datta, 2004). The cultural activity in these parts of the country is noticed by various cultural festivals and historically contributed to the local heritage, which inherently gave rise to many scholars, singers and writers with larger diversity compared to other parts of Bangladesh (Alam, 2015; Liton, 2013; Rahman, 2014). There is a possibility that traditions of western part of Bangladesh and regular festivities along with the culture-centric lifestyle may generate a book-friendly environment where children grow up

around reading material, participate in various traditional galas and can have the opportunity to spend more time with their carers or usually parents.

One key difference between the Western and Eastern part of Bangladesh is the economic philosophy. While households in the Eastern part, particularly Sylhet and Chittagong, focus more on the monetary aspects of life, people in the West are considered unsophisticated and more unpretentious (Hill & Genoni, 2019). As opposed to the growing individualistic modern lifestyle in the Eastern part with higher structural growth, people from the Western part of Bangladesh are more family oriented in agriculture-based livelihoods and inclined to spend more time at home (Hill & Genoni, 2019), which could be a possible reason for carers residing in Rajshahi and Rangpur divisions giving more time to children compared to other parts of Bangladesh. While these arguments are extracted from literature and cannot be validated from the survey results, these opposing lifestyles could be an avenue for future qualitative studies.

The presence of libraries also impacts reading habits and subsequent ownership of books. Projects such as mobile libraries administered by the World Literature Centre, where buses carrying books regularly visit designated places, help children build reading habits (The Daily Star, 2019). According to the data of 2015 from the British Council - Bangladesh and others (2015), the highest density of libraries per square kilometres was in Dhaka division (8.1%) followed by Rangpur (6.9%), Khulna (6.8%) and Rajshahi (6.5%), which supports the findings of current study presented as a district-wise mapping of book ownership. The greater availability of books in these regions coupled with typical parent–child interactions might lead to household book ownership including age-appropriate books for children.

Higher education of mothers and greater affluence leads to more carer–child shared activities and child appropriate books in the household. There could be three possible reasons for these, supported by literature. First, a mother with limited educational qualification is less likely to be aware of the need for greater interaction with children or reading books to children in promoting child development and instead focus more on physical aspects such as nutrition and growth of the child (Baker, 2014, 2016; Baker et al., 2012). Second, a lack of education, which is often associated with poverty, is more likely to discourage mothers from purchasing literacy materials such as books that are considered 'luxury' items or not necessary in early childhood. Third, in developing countries such as Bangladesh, the government or NGOs have various schemes to provide books or similar materials at primary schools for free, which may lead to parental complacency in relation to purchasing books outside academic curriculum during preschool years (Aboud, 2006; Chowdhury et al., 2003; Guo & Harris, 2000; Wasik & Bond, 2001).

Mothers without exposure to media such as newspapers, radio, television or ownership of mobile phones, will be unaware of the proximal processes such as shared parent–child book activities and its developmental benefits on children (Haque et al., 2012). Education, purchasing capacity and awareness suggest a twofold problem: first, the early linguistic development of children by reading or listening to age-appropriate books may be compromised; and second, lack of shared activities shrinks parent–child interaction time and hampers children's emotional growth and subsequently affects the quality of their life (Aboud et al., 2008; Haider et al., 2001).

Focusing on child development should be a priority for Bangladesh considering the global agendas. For example, seven Sustainable Development Goals (SDGs) are associated with UNICEF, of which two are relevant to the current research (SDGs for Children – UNICEF Data, 2022). First, these goals ensure minimum proficiency levels in reading and mathematics for children and youths. Second, they increase psychosocial well-being, which includes emotional skills, social skills, internalizing behaviour and externalizing behaviour of children aged 24–59 months of age. These developmental indices require both carer involvement at young age as well as access to

learning materials such as books, as theoretically discussed previously. Policy interventions targeting these goals by the stakeholders are important for psychological and cognitive development of children in Bangladesh, a country where the quality of life of children need to be prioritized.

This study, while identifying the disadvantaged group of children, has a number of limitations. First, the number of shared activities does not reflect the amount of time spent by a carer with children, and unfortunately, a measure on the interaction period was not available in the MICS 2019. Additionally, missing values in different households would require careful generalization of the findings. Second, quality of life assessment of a child requires a detailed measurement (Ravens-Sieberer et al., 2006) along with qualitative data, which was lacking in MICS and in this study. Third, information on demand and supply of children's books in the markets of Bangladesh would have shed greater insight on the book ownership capacity in households. Fourth, future studies could consider multilevel modelling to assess neighbourhood and regional effects. The current study was limited to using a part of national level household survey, but studies in future may be able to target children and their carers and consider designing their research based on specific research questions. Finally, cross-sectional data were used in the analysis, which restricted a causal interpretation of the findings. Future studies with adequate funding could consider designing longitudinal studies to derive the true effect of greater carer involvement or ownership of higher number of children's books at households.

The evidence presented in this paper demonstrates that improving the current status quo on psychological aspects of child development in Bangladesh is imperative. Community engagement can be an avenue for focus. Previous public health campaigns, both door-to-door and mass media, were shown to have a positive impact on ... (Biswas et al., 2020). Such programs can be undertaken to make both parents and community leaders aware of carer involvement and how that can contribute to children's cognitive development. Greater accessibility of libraries in peripheral areas and availability of books in rural markets for children of all ages can inspire reading habits. Most importantly, achievable goals with specific indices (such those of SDGs) are needed as well as a road map for implementation of interventions and regular monitoring at the highest policy level for overall child development in Bangladesh.

CONCLUSION

As child mortality rate in Bangladesh decreases, quality of life takes precedence. Households from lower sociodemographic settings have shown limited shared activities between carer and children, and have restricted the purchase of child-friendly books. Households in the Eastern part of Bangladesh seemed to be more compromised with children's cognitive and socio-emotional development. These findings defined a particular group of children who are the most disadvantaged. As psychological and cognitive development have been gradually attracting attention in Bangladesh, it is important to design public health interventions to inform parents and other carers about the necessity of interaction with children and the provision of appropriate learning materials, including child-friendly books.

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CONFLICT OF INTEREST

There was no conflict of interest among the authors. All authors read the final manuscript and approved it.

ETHICAL CLARENCE

This study was based on analysis of a secondary survey data from UNICEF, where all the personal identifiable information of participants had been removed. Informed consent was taken from participants before participating in the survey by the national statistical office, Bangladesh Bureau of Statistics (BBS) and UNICEF. The data are available online: http://mics.unicef.org/surveys.

DATA AVAILABILITY STATEMENT

This study was based on analysis of a secondary survey data from UNICEF, where all the personal identifiable information of participants had been removed. Informed consent was taken from participants before participating in the survey by the national statistical office, Bangladesh Bureau of Statistics (BBS) and UNICEF. The data are available online: http://mics.unicef.org/surveys.

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REFERENCES

Aboud, F. E. (2006). Evaluation of an early childhood preschool program in rural Bangladesh. *Early Childhood Research Quarterly*, *21*, 46–60.

Aboud, F. E. (2007). Evaluation of an early childhood parenting programme in rural Bangladesh. *Journal of Health, Population, and Nutrition*, *25*, 3.

Aboud, F. E., Hossain, K., & O'Gara, C. (2008). The succeed project: Challenging early school failure in Bangladesh. *Research in Comparative and International Education*, *3*, 295–307.

Aboud, F. E., Singla, D. R., Nahil, M. I., & Borisova, I. (2013). Effectiveness of a parenting program in Bangladesh to address early childhood health, growth and development. *Social Science & Medicine*, *97*, 250–258.

Adamson, L. B., Bakeman, R., Deckner, D. F., & Nelson, P. B. (2012). Rating parent–child interactions: Joint engagement, communication dynamics, and shared topics in autism, down syndrome, and typical development. *Journal of Autism and Developmental Disorders*, *42*, 2622–2635.

Agresti, A., & Kateri, M. (2011). Categorical data analysis. In M. Lovric (Ed.), *International encyclopedia of statistical science* (pp. 206–208). Springer. https://doi.org/10.1007/978-3-642-04898-2_161

Alam, F. (2015). Tagore and national identity formation in Bangladesh. In *Rabindranath Tagore in the 21st Century* (pp. 225–241). Springer.

Amin, S., Basu, A. M., & Stephenson, R. (2002). Spatial variation in contraceptive use in Bangladesh: Looking beyond the borders. *Demography*, *39*, 251–267.

Baker, C. E. (2013). Fathers' and Mothers' Home Literacy Involvement and Children's Cognitive and Social Emotional Development: Implications for Family Literacy Programs. *Applied Developmental Science*, *17*, 184–197. https://doi.org/10.1080/10888691.2013.836034

Baker, C. E. (2014). Parenting and Cultural Socialization as Predictors of African American Children's Science and Social Studies Achievement. *Journal of African American Studies*, *18*, 92–107. https://doi.org/10.1007/s12111-013-9257-2

Baker, C. E. (2016). African American and Hispanic Fathers' Work Characteristics and Preschool Children's Cognitive Development. *Journal of Family Issues*, *37*, 1514–1534. https://doi.org/10.1177/0192513X15576198

Baker, C. E., Cameron, C. E., Rimm-Kaufman, S. E., & Grissmer, D. (2012). Family and Sociodemographic Predictors of School Readiness Among African American Boys in Kindergarten. *Early Education and Development*, *23*, 833–854. https://doi.org/10.1080/10409289.2011.607359

Baker, C. E., Vernon-Feagans, L., Investigators, F. L. P., et al. (2015). Fathers' language input during shared book activities: Links to children's kindergarten achievement. *Journal of Applied Developmental Psychology*, *36*, 53–59.

Benjamin, D. J., Berger, J. O., Johannesson, M., Nosek, B. A., Wagenmakers, E. J., Berk, R., Bollen, K. A., Brembs, B., Brown, L., Camerer, C., Cesarini, D., Chambers, C. D., Clyde, M., Cook, T. D., De Boeck, P., Dienes, Z., Dreber, A., Easwaran, K., Efferson, C., ... Johnson, V. E. (2018). Redefine statistical significance. *Nature Human Behaviour*, *2*, 6–10.

Biswas, R. K., & Kabir, E. (2018). A macro-level approach to assess the early developmental vulnerabilities of children in Australia: A local government area-based analysis. *Children and Youth Services Review*, *93*, 161–169.

Biswas, R. K., Sarker, E. B., Kabir, E., & Senserrick, T. (2020). Presence of books for children in the households of Bangladesh: a district-wise distribution. *Reading & Writing Quarterly*, *36*, 65–79.

Blum, I. H., Koskinen, P. S., Bhartiya, P., & Hluboky, S. (2010). Thinking and talking about books: Using prompts to stimulate discussion. *The Reading Teacher*, *63*, 495–499. https://doi.org/10.1598/rt.63.6.6

Bradley, R. H., Caldwell, B. M., Rock, S. L., Hamrick, H. M., & Harris, P. (1988). Home observation for measurement of the environment: Development of a home inventory for use with families having children 6 to 10 years old. *Contemporary Educational Psychology*, *13*, 58–71.

British Council - Bangladesh and others. (2015). *A Library Landscape Assessment of Bangladesh*. https://www.britishcouncil.org.bd/en/programmes/society/library-landscape-assessment-bangladesh

Bronfenbrenner, U., & Morris, P. (1998). *The ecology of developmental processes*. Hoboken, NJ: John Wiley & Sons Inc.

Burgess, S. (2002). *Shared reading correlates of early reading skills* (p. 5). Reading Online. Retrieved from http://readingonline.org/articles/burgess/index.html

Caldwell, B. M. (1967). Descriptive evaluations of child development and of developmental settings. *Pediatrics*, *40*, 46–54.

Chowdhury, A. M. R., Bhuiya, A., Chowdhury, M. E., Rasheed, S., Hussain, Z., & Chen, L. C. (2013). The Bangladesh paradox: Exceptional health achievement despite economic poverty. *The Lancet*, *382*, 1734–1745.

Chowdhury, A. M. R., Nath, S. R., & Choudhury, R. K. (2003). Equity gains in Bangladesh primary education. *International Review of Education*, *49*, 601–619.

Craig, L., & Mullan, K. (2012). Shared parent–child leisure time in four countries. *Leisure Studies*, *31*, 211–229.

Curenton, S. M., & Craig, M. J. (2011). Shared-reading versus oral storytelling: associations with preschoolers prosocial skills and problem behaviours. *Early Child Development and Care*, *181*, 123–146.

Datta, P. (2004). Push-pull factors of documented migration from Bangladesh to West Bengal: A perception study.

Durkin, M. (2002). The epidemiology of developmental disabilities in low-income countries. *Mental Retardation and Developmental Disabilities Research Reviews*, *8*, 206–211.

Goodall, J., & Montgomery, C. (2014). Parental involvement to parental engagement: A continuum. *Educational Review*, *66*, 399–410.

Grantham-McGregor, S., Cheung, Y. B., Cueto, S., Glewwe, P., Richter, L., Strupp, B., Group, I. C. D. S., et al. (2007). Developmental potential in the first 5 years for children in developing countries. *The Lancet*, *369*, 60–70.

Guo, G., & Harris, K. M. (2000). The mechanisms mediating the effects of poverty on children's intellectual development. *Demography*, *37*, 431–447. https://doi.org/10.1353/dem.2000.0005

Haider, S. J., Ali, M., Chowdhury, S., Kabir, M., Akhter, R., Islam, N., Sultana, N., Islam, A., & Paul, D. (2001). *Baseline survey of caregivers kap on early childhood development in Bangladesh*. Research Evaluation Associates for Development (READ) for UNICEF Bangladesh.

Hamadani, J. D., Tofail, F., Hilaly, A., Huda, S. N., Engle, P., & Grantham-McGregor, S. M. (2010). Use of family care indicators and their relationship with child development in Bangladesh. *Journal of Health, Population, and Nutrition*, *28*, 23–33.

Haque, S. E., Rahman, M., Mostofa, M. G., & Zahan, M. S. (2012). Reproductive health care utilization among young mothers in Bangladesh: Does Autonomy Matter? Women's Health Issues, *22*, e171–e180. https://doi.org/10.1016/j.whi.2011.08.004 https://linkinghub.elsevier.com/retrieve/pii/S104938671100199X

Heckman, J. J. (2006). Skill formation and the economics of investing in disadvantaged children. https://doi.org/10.1126/science.1128898

Hill, R., & Genoni, M. E. (2019). Bangladesh Poverty Assessment: Facing Old and New Frontiers in Poverty Reduction. Technical Report. The World Bank.

Hindman, A. H., Connor, C. M., Jewkes, A. M., & Morrison, F. J. (2008). Untangling the effects of shared book reading: Multiple factors and their associations with preschool literacy outcomes. *Early Childhood Research Quarterly*, *23*, 330–350. https://doi.org/10.1016/j.ecresq.2008.01.005

Huitt, W., & Hummel, J. (2003). Piaget's theory of cognitive development. *Educational Psychology Interactive*, *3*, 1–5.

Khan, J. R., & Awan, N. (2017). A comprehensive analysis on child mortality and its determinants in Bangladesh using frailty models. *Archives of Public Health*, *75*, 58.

Kloosterman, R., Notten, N., Tolsma, J., & Kraaykamp, G. (2011). The effects of parental reading socialization and early school involvement on children's academic performance: A panel study of primary school pupils in The Netherlands. *European Sociological Review*, *27*, 291–306. https://doi.org/10.1093/esr/jcq007

Liton, H. A. (2013). Folk songs of pagla kanai: A critique of non-sectarianism. Language in India 13.

Lumley, T. (2011). *Complex surveys: A guide to analysis using R. volume 565*. John Wiley & Sons.

Neuman, S. B., & Celano, D. (2001). Access to print in lowincome and middleincome communities: An ecological study of four neighborhoods. *Reading Research Quarterly*, *36*, 8–26. https://doi.org/10.1598/rrq.36.1.1

Piaget, J. (1976). Piaget's theory. In B. Inhelder, H. H. Chipman, & C. Zwingmann (Eds.), *Piaget and his school*. Springer Study Edition (pp. 11–23). Springer. https://doi.org/10.1007/978-3-642-46323-5_2

Rahman, U. (2014). *Bangladesh-Culture Smart!: The Essential Guide to Customs & Culture*. Kuperard.

Ravens-Sieberer, U., Erhart, M., Wille, N., Wetzel, R., Nickel, J., & Bullinger, M. (2006). Generic health-related quality-of-life assessment in children and adolescents. *PharmacoEconomics*, *24*, 1199–1220.

Sameroff, A. (2010). A unified theory of development: A dialectic integration of nature and nurture. *Child Development*, *81*, 6–22.

Sameroff, A., & Chandler, M. (1990). Transactional regulation and early intervention. In S. J. Meisels & J. P. Shonkoff (Eds.), *Handbook of early childhood intervention*. Cambridge University Press.

SDGs for Children – UNICEF Data, 2022, https://data.unicef.org/sdgs/

Skwarchuk, S. L., Sowinski, C., & LeFevre, J. A. (2014). Formal and informal home learning activities in relation to childrens early numeracy and literacy skills: The development of a home numeracy model. *Journal of Experimental Child Psychology*, *121*, 63–84.

Sobkin, V. S., Veraksa, A. N., Yakupova, V. A., Bukhalenkova, D. A., Fedotova, A. V., & Khalutina, U. A. (2016). The connection of socio-demographic factors and child-parent relationships to the psychological aspects of children's development. *Psychology in Russia*, *9*, 59–122.

Soh Hong, S. S. (2012). Supporting children's language and literacy skills: The effectiveness of shared book reading intervention strategies with parents. https://eprints.qut.edu.au/60975/1/Soh{_}Hong{_}Sim{_}Thesis.pdf

The Daily Star. (2019. *On the road to enlightenment (07 February 2019)*. https://www.thedailystar.net/frontpage/news/the-road-enlightenment-1698580

UNICEF. (2019a). *unicef MICS surveys*. http://mics.unicef.org/surveys

UNICEF. (2019b). Multiple indicator cluster survey 2012–2013: Progotir pathey Bangladesh. Bangladesh Bureau of Statistics (BBS) and UNICEF Bangladesh.

Van Kleeck, A., Stahl, S. A., & Bauer, E. B. (2003). On reading books to children: Parents and teachers. https://doi.org/10.4324/9781410607355

Vilaseca, R., Rivero, M., Bersab'e, R. M., Cantero, M. J., Navarro-Pardo, E., Valls-Vidal, C., & Ferrer, F. (2019). Demographic and parental factors associated with developmental outcomes in children with intellectual disabilities. *Frontiers in Psychology*, *10*, 872.

Wasik, B. A., & Bond, M. A. (2001). Beyond the pages of a book: Interactive book reading and language development in preschool classrooms. *Journal of Educational Psychology*, *93*, 243–250. https://doi.org/10.1037/0022-0663.93.2.243

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