



Maternal Knowledge regarding Early Childhood Development in Bangladesh

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Abstract

Background: Early childhood development (ECD) forms the foundation for lifelong health, learning, and well-being. Mothers, as primary caregivers, play a pivotal role in recognizing developmental milestones and supporting optimal child growth. However, limited evidence exists regarding maternal knowledge of ECD in Bangladesh.

Methods: This cross-sectional study, conducted from April to September 2024, assessed maternal knowledge of ECD and its socio-demographic determinants among 208 mothers of children under five years, recruited from Mallika Kindergarten in Barisal, Bangladesh. Data were collected using a structured self-administered questionnaire comprising socio-demographic items and 28 dichotomous questions assessing knowledge across gross motor, fine motor, speech and language, and social-emotional domains. Data analysis was performed using SPSS version 26 with descriptive statistics, t-tests, ANOVA, and Pearson's correlation.

Results: The participants' mean age was 30.25 ± 5.78 years; most were college or university educated (73.6%), urban residents (86.1%), and from nuclear families (84.1%). The mean ECD knowledge score was 21.75 ± 2.61 out of 28 ($77\% \pm 9.3\%$), reflecting good understanding. Knowledge was highest in the gross motor domain (mean = 0.82 ± 0.15) and lowest in social-emotional development (mean = 0.75 ± 0.15), with only 37.5% identifying stranger recognition as a milestone. Weak but significant correlations were found between mothers' age ($r = 0.139$, $p = 0.044$), number of children ($r = 0.143$, $p = 0.039$), and knowledge scores.

Conclusion: Overall, mothers exhibited good ECD knowledge with notable gaps in social-emotional awareness. Strengthening maternal education through targeted programs may enhance early identification of developmental delays and promote better child health outcomes in Bangladesh.

Keywords: *Early childhood development, maternal knowledge, developmental milestones, Bangladesh, child health, socio-demographic factors.*

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Introduction:

Early childhood development (ECD) is a critical determinant of a child's long-term health, well-being, and potential (Haq et al., 2021). It represents the foundational period of human growth, characterized by a rapid and continuous process through which a child progressively acquires more complex skills in movement, cognition, language, emotion, and social interaction (Siddiqy, 2016). This comprehensive concept encompasses the physical, cognitive, socio-emotional, and linguistic development of young children from the prenatal stage until their transition into primary education (Britto et al., 2017; Siddiqy, 2016). The brain develops with remarkable speed during this time, reaching 90% of its adult size within the first five years, making this period exceptionally crucial for establishing the architecture for future health, learning, and behavior (Theirworld, 2018).

The first 1,000 days of life from conception to age two are universally recognized as a period of unparalleled opportunity. This phase is particularly vital for brain development and immune system strengthening, with the brain growing more rapidly than at any other time (Currie & Vogl, 2012; Demas et al., 2019). Before the age of one, brain development is especially intense and highly vulnerable to environmental influences, including nutrition, quality of caregiving, stimulation, and interaction (Tinajero & Loizillon, 2010). It is well-established that optimal ECD during this critical window establishes the foundation for lifelong positive outcomes in health, education, economic productivity, and overall well-being (Britto et al., 2017; Demas et al., 2019). To reach their full potential, children require responsive care, balanced nutrition, a nurturing and safe environment, and opportunities for early learning (Nurturing Care for Early Childhood Development, 2018).

However, global challenges persist, with approximately 20% of children under five experiencing delayed development, often compounded by issues of undernutrition (Demas et al., 2019). In Bangladesh, the understanding and promotion of ECD face significant hurdles, including widespread poverty, a shortage of qualified educators and health professionals, and inadequate funding (Sikder & Banu, 2018). These challenges underscore the importance of leveraging existing structures, particularly the family unit, to support ECD.

Within this context, mothers, who are typically the primary caregivers, play an indispensable role. It is widely acknowledged that a strong foundation in early childhood, particularly in the first five years, sets the stage for a child to become a productive member of society (Boelsma et al., 2021). Therefore, mothers must possess sufficient and up-to-date knowledge to monitor their child's growth and development effectively (Joshi et al., 2019). Maternal knowledge of developmental milestones is crucial for evaluating typical growth, detecting potential delays, and cultivating realistic, age-appropriate expectations for their children's behavior (KCD, 2016). This understanding empowers mothers to support their children's development through positive interactions, appropriate disciplinary practices, and the creation of cognitively stimulating environments (Rehman et al., 2016). Such knowledge enables the early recognition of developmental challenges, facilitating prompt interventions and improving long-term outcomes (Joshi et al., 2019).

Despite the clear importance of maternal knowledge for child outcomes, there is a scarcity of research specifically focused on maternal knowledge regarding ECD in Bangladesh. This gap in the literature limits the development of targeted educational interventions and supportive policies. Consequently, this study aimed to fill this critical gap by assessing maternal knowledge of early childhood development in Bangladesh. The findings from this research are expected to help identifying the specific areas where mothers may lack adequate knowledge or awareness. This information is essential for guiding targeted educational programs to empower mothers, improve child health and developmental outcomes, inform national policy and programs, and ultimately contribute to the global understanding of maternal and child health in a low-resource setting. By enhancing maternal knowledge, this country can strengthen the foundational support for the nation's children, shaping a healthier and more prosperous future for Bangladesh.

Methodology:

A cross-sectional study was conducted from April to September 2024 to assess maternal knowledge regarding early childhood development (ECD) in Bangladesh. The study participants were mothers of children under five years of age, recruited from Mallika Kindergarten in Barisal. The minimum sample size was calculated as 177 using the World Health Organization's formula ($n = Z^2pq/d^2$), with a prevalence (p) of mothers' good knowledge score set at 13.3%, based on a previous study (Joshi et al., 2019). Accounting for a 15% attrition rate, the final sample size was determined to be 208 participants. A convenient sampling technique was employed to recruit mothers who met the inclusion criteria: having a child aged 0-5 years, providing consent to participate, and being available for the interview.

Data were collected using a structured, self-administered questionnaire developed by the researcher through an extensive review of the literature (Lorina, 2015; Language Developmental Milestones, 2019; Shaw, 2022; Lopchan & Dangol, 2021). The instrument consisted of two parts: a socio-demographic section with 12 items (e.g., maternal age, occupation, family income) and a knowledge assessment section with 28 dichotomous (Yes/No) items addressing various aspects of ECD. Each correct answer was scored 1, and an incorrect answer was scored 0, with a higher total score indicating better knowledge. Prior to data collection, ethical approval was obtained from the Institutional Review Board (IRB) of Sher-e-Bangla Medical College, Barishal, and permission was secured from the kindergarten. Written and verbal informed consent was obtained from all participants, ensuring confidentiality, anonymity, and the right to withdraw at any time.

Following collection, data were checked for completeness and analyzed using the Statistical Package for the Social Sciences (SPSS) version 26. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize the socio-demographic characteristics and knowledge scores. Inferential statistics, specifically Independent sample t-tests, Analysis of Variance (ANOVA), and Pearson's product-moment correlation, were employed to examine the relationships between participants' socio-demographic characteristics and their knowledge of early childhood development.

Results:

This chapter presents the study's findings on participants' demographic profiles and their knowledge of early childhood development. The results are organized under three main sections: (1) socio-demographic characteristics of the participants, (2) their knowledge related to early childhood development, and (3) the relationship between socio-demographic factors and participants' level of knowledge on early childhood development.

Table 1: Socio-demographic characteristics of the participants (n=208).

| Variables | Categories | n | % | Mean±SD |
|---------------------------------|--------------------|-----|-------|-------------|
| Age (in years) | Range (18-42)years | | | 30.25±5.776 |
| Religion | Muslim | 158 | 76% | |
| | Hindu | 45 | 21.6% | |
| | Christian | 5 | 2.4% | |
| Marital Status | Stay with husband | 195 | 93.8% | |
| | Divorce | 6 | 2.9% | |
| | Single | 3 | 1.4% | |
| | Widow | 4 | 1.9% | |
| Mothers' Education Level | School | 55 | 26.4% | |
| | College | 75 | 36.1% | |
| | University | 78 | 37.5% | |
| Mothers' Occupation | Service holder | 101 | 48.6% | |
| | Worker | 6 | 2.9% | |
| | Housewife | 101 | 48.6% | |
| Fathers' Education Level | School | 16 | 7.7% | |
| | College | 31 | 14.9% | |
| | University | 161 | 77.4% | |
| Fathers' Occupation | Service Holder | 174 | 83.7% | |
| | Worker | 16 | 7.7% | |
| | Businessman | 18 | 8.7% | |
| Family type | Nuclear | 175 | 84.1% | |
| | Joint | 33 | 15.9% | |
| Residential Area | Rural | 29 | 13.9% | |
| | Urban | 179 | 86.1% | |
| Number of children (1-5) person | | | | 1.92±.734 |
| Sources of information | TV | 194 | 93.3% | |
| | Internet | 5 | 2.4% | |
| | Social media | 7 | 3.4% | |
| | Newspaper/ Book | 2 | 1% | |

The socio-demographic characteristics of the 208 participating mothers are presented in Table 1. The cohort had a mean age of 30.25 years (± 5.78), with the majority being Muslim (76.0%) and married (93.8%). A high level of educational attainment was observed, with most

mothers (73.6%) having attended college or university, and an even greater proportion of fathers (92.3%) having achieved this level of education. Occupationally, mothers were almost equally divided between being service holders (48.6%) and housewives (48.6%), while the vast majority of fathers were service holders (83.7%). The sample was predominantly from urban areas (86.1%) and lived in nuclear family structures (84.1%). The average number of children per mother was 1.92 (± 0.73). When asked about their sources of information on child development, an overwhelming majority (93.3%) reported television as their primary source, with digital media (internet and social media combined at 5.8%) and print media (1.0) being significantly less common.

Table 2: ECD Knowledge score among participants

| SL/No. | Items | Yes (1) | No (0) | Mean±SD |
|---|---|------------|-----------|-----------|
| | | n(%) | n(%) | |
| Total mean of Gross motor | | .82±.149 | | |
| 1. | Turns head to side while on back | 204(98.1%) | 4(1.9%) | .98±.138 |
| 2. | Kicks and extends legs | 204(98.1%) | 3(1.9%) | .99±.120 |
| 3. | Sitting independently | 190(91.3%) | 18(8.7%) | .91±.282 |
| 4. | Start to walk with support | 154(74%) | 54(26%) | .74±.439 |
| 5. | Begins to sit without support at six month | 149(71.6%) | 59(28.4%) | .72±.439) |
| 6. | May crawl – backwards first | 122(58.7%) | 86(41.3%) | .59 ±.494 |
| Total mean of Fine motor | | .77±.160 | | |
| 7. | Transfer objects one hand to another hand | 179(86.1%) | 29(13.9%) | .86±.320 |
| 8. | Brings hands to mouth | 184(88.5%) | 24(11.5%) | .88±.320 |
| 9. | Holds small object in hand | 176(84.6%) | 32(15.4%) | .85±.362 |
| 10. | Reaches for toys with both arms | 174(84.6%) | 34(16.3%) | .84±.371 |
| 11. | Starting to have the ability to pick up small foods like Cheerios | 152(73.1%) | 56(26.9%) | .73±.445 |
| 12. | Able to release an object voluntarily | 139(66.8%) | 69(33.2%) | .67±.472 |
| 13. | Holds objects with crude grasp from palm | 117(56.3%) | 91(43.8%) | .56±.497 |
| Total mean of speech and language development | | .783±.162 | | |
| 14. | Start to cooing | 197(94.7%) | 11(5.3%) | .95±.224 |
| 15. | Begins to babble | 187(89.9%) | 21(10.1%) | .90±.302 |
| 16. | Says words like mama, dada and uh-oh | 181(87%) | 27(13%) | .87±.337 |
| 17. | Communicate by gesture, wave bye-bye | 159(76.4%) | 49(23.6%) | .76±.425 |

| | | | | |
|---|---|--------------------|------------|----------|
| 18. | Speak bi-syllabus | 127(61.1%) | 81(38.9%) | .61±.489 |
| 19. | Start to recognize own name | 127(61.1%) | 81(38.9%) | .61±.489 |
| Total mean of social and emotional development | | .749±.152 | | |
| 20. | Begins to smile in response to their caregivers | 183(88%) | 25(12%) | .88±.326 |
| 21. | shows excitement as parent prepared to feed | 172(82.7%) | 36(17.3%) | .83±.379 |
| 22. | Develops more facial and body expressions | 171(82.2%) | 37(17.8%) | .82±.383 |
| 23. | Child recognize his/her mother | 178(85.6%) | 30(14.4%) | .86±.352 |
| 24. | Make eye contact and looks at people while interacting | 161(77.4%) | 47(22.6%) | .77±.419 |
| 25. | Child cry when mother leave for work | 151(72.6%) | 57(27.4%) | .73±.447 |
| 26. | Recognizes familiar people and stretches arms to be picked up | 143(68.8%) | 65(31.3%) | .69±.465 |
| 27. | Child recognize strangers | 78(37.5%) | 130(62.5%) | .38±.485 |
| 28. | Happy to see faces they know | 164(78.8%) | 44(21.2%) | .79±.409 |
| Total mean | | 21.75±2.611 | | |
| Mean of total mean | | .77±.093 | | |

The assessment of maternal knowledge across various early childhood development (ECD) domains is presented in Table 2. The overall mean knowledge score was 21.75 ± 2.61 out of a possible 28, corresponding to a mean percentage score of 77% ($\pm 9.3\%$), indicating a generally good level of overall understanding. Knowledge was highest in the gross motor domain (mean score: 0.82 ± 0.15), with near-universal recognition of milestones like turning the head (98.1%) and kicking legs (98.1%). However, knowledge was less consistent for finer distinctions, such as crawling backwards first (58.7%). The fine motor (0.77 ± 0.16), and speech and language (0.78 ± 0.16) domains also showed strong performance, particularly for early milestones like cooing (94.7%) and bringing hands to the mouth (88.5%). In contrast, the social and emotional development domain had the lowest aggregate score (0.75 ± 0.15), with a notable knowledge gap in identifying stranger recognition as a milestone, which only 37.5% of mothers answered correctly.

Table 3: Association between socio-demographic characteristics and ECD knowledge of participants

| Variables | Categories | t/F/r | Sig (P) | Mean±SD |
|---------------------------------|--------------------|--------------|-------------|-------------|
| Age (years) | Range (18-42)years | .139* | .044 | |
| Religion | Muslim | .796 | .114 | 21.96±2.594 |
| | Non-Muslim | | | 21.28±2.726 |
| Marital Status | Married | .164 | .920 | 21.81±2.663 |
| | Divorce | | | 22±1.414 |
| | Single | | | 21.33±4.619 |
| | Widow | | | 21±1.414 |
| Mothers' Education Level | School | .553 | .576 | 22.09±2.724 |
| | College | | | 21.6±2.365 |
| | University | | | 21.77±2.828 |
| Mothers' Occupation | Service holder | .366 | .694 | 21.72±2.530 |
| | Worker | | | 22.67±3.141 |
| | Housewife | | | 21.79±2.727 |
| Fathers' Education Level | School | .654 | .521 | 22.44±2.502 |
| | College | | | 21.94±2.702 |
| | University | | | 21.7±2.641 |
| Fathers' Occupation | Service Holder | .154 | .858 | 21.8±2.592 |
| | Worker | | | 21.5±3.033 |
| | Businessman | | | 22±2.828 |
| Family type | Nuclear | -.706 | .481 | 21.74±2.672 |
| | Joint | | | 22.06±2.488 |
| Residential Area | Rural | .151 | .880 | 21.86±2.924 |
| | Urban | | | 21.78±2.595 |
| Number of children (1-5) person | | .143* | .039 | |
| Sources of information | TV | .144 | .933 | 21.81±2.551 |
| | Internet | | | 21.6±4.037 |
| | Social media | | | 21.29±3.498 |
| | Newspaper/ Book | | | 22.5±6.364 |

The analysis of the association between socio-demographic characteristics and ECD knowledge scores is detailed in Table 3. A statistically significant, albeit weak, positive correlation was found between the mother's age and their ECD knowledge score ($r = 0.139$, $p = .044$). Similarly, a weak positive correlation was also observed between the number of children a mother had and their knowledge score ($r = 0.143$, $p = .039$). In contrast, no other socio-demographic variable demonstrated a significant association with knowledge scores. Specifically, maternal knowledge was not significantly influenced by religion ($p = .114$), marital status ($p = .920$), maternal or paternal education level ($p = .576$ and $p = .521$, respectively), maternal or paternal occupation ($p = .694$ and $p = .858$, respectively), family type ($p = .481$), residential area ($p = .880$), or primary source of information ($p = .933$).

Discussion:

The present descriptive cross-sectional study aimed to assess the level of maternal knowledge regarding Early Childhood Development (ECD) among mothers in Bangladesh. The findings provide insight into the socio-demographic characteristics of mothers and their knowledge about child development, along with the relationships between these variables.

In this study, the mean age of the participants was 30.25 years ($SD = 5.776$), with an age range of 18 to 42 years. This result is inconsistent with the findings of Begum (2019), where the participants' ages ranged between 18 and 40 years, with an average of 25 years. The higher average age in the current study may reflect variations in sampling settings and maternal demographics across regions. Age is often considered an influential factor in knowledge acquisition, as older mothers may gain more experience and exposure to child development practices over time.

Regarding educational attainment, the findings show that 36.1% of mothers had completed college-level education, while 37.5% had completed university-level education. This differs from the study by Karuppannan et al. (2020), where only 29.3% of mothers were graduates, and an equal percentage (29.3%) had completed secondary school education. Such differences may be attributed to the growing accessibility of higher education for women in Bangladesh, which might contribute to enhanced awareness of child health and developmental needs.

In terms of occupation, the present study found that 48.6% of mothers were housewives, while an equal proportion (48.6%) were service holders. This finding contrasts with the results of Karuppannan et al. (2020), where 83.3% of mothers were homemakers and only 16.6% were employed. Similarly, Lopchan and Dangol (2021) reported that 95.8% of mothers were housewives. The higher employment rate among mothers in this study could be related to urbanization, increased female participation in the workforce, and economic necessity, all of which may influence mothers' knowledge acquisition through diverse social networks and access to information.

A significant finding of the current study is the statistically significant positive relationship between maternal age and knowledge regarding early childhood development ($r = .139$, $p = 0.044$). This suggests that older mothers possess greater knowledge of ECD, potentially due to accumulated life experience and parenting exposure. However, this finding is inconsistent with that of Karuppannan et al. (2020), who found no significant association between maternal age and knowledge of child development markers. Similarly, other studies by Saleh et al. (2023), Chand and Uma Devi Ranjitkar (2023), and Lopchan and Dangol (2021) also reported no significant correlation between maternal age and ECD knowledge. The inconsistency could stem from contextual variations such as differences in socio-economic conditions, educational levels, and exposure to awareness programs across countries.

The present study also identified a statistically significant positive relationship between the number of children and maternal knowledge regarding early childhood development ($r = .143$, $p = 0.039$). This finding indicates that mothers with more children tend to have greater knowledge about child development, possibly due to experiential learning from child-rearing practices. However, this result diverges from several previous studies that reported no significant relationship between the number of children and mothers' knowledge about child development (Karuppannan et al., 2020; Joshi et al., 2019; Chand & Uma Devi Ranjitkar, 2023; Lopchan & Dangol, 2021). This difference may be explained by cultural and educational variations in how mothers learn about child development through parenting experiences.

The current study further revealed no significant association between several socio-demographic variables—such as religion, marital status, mothers' and fathers' education levels, mothers' and fathers' occupations, family type, residential area, and sources of information—and maternal knowledge regarding early childhood development. This finding aligns with the results of Karuppannan et al. (2020), who also reported no significant association between maternal knowledge of child development markers and mothers' education or occupation. Similarly, Lopchan and Dangol (2021) found no statistically significant association between knowledge of developmental milestones and variables such as education, occupation, family income, or family type. These findings suggest that maternal knowledge of ECD may depend more on individual exposure and awareness rather than solely on demographic characteristics.

However, the findings of Joshi et al. (2019) contrast with the current study, as they reported significant associations between religion, education, employment, and mothers' knowledge of developmental milestones. These discrepancies may be attributed to contextual and methodological differences across studies, such as sample size, geographic settings, or measurement tools used to assess knowledge. In contrast, the results of Saleh et al. (2023) were consistent with the present study, as they found no statistically significant associations between mothers' knowledge about child development and factors such as age, education, employment status, source of information, and husband's education. Likewise, Chand and Uma Devi Ranjitkar (2023) also reported no significant associations between respondents' knowledge and their religion, education, occupation, or family type.

Overall, the findings of the present study reinforce the understanding that while certain demographic factors like maternal age and number of children may have a modest influence on ECD knowledge, other socio-demographic factors show little to no effect. This suggests that interventions aimed at improving maternal knowledge about early childhood development should not rely solely on demographic targeting. Instead, strategies should focus on enhancing access to credible information, community-based education programs, and practical training sessions that reach mothers across different socio-economic backgrounds.

Conclusion:

The present study adds to the growing body of literature on maternal knowledge regarding early childhood development in Bangladesh. It highlights the importance of experiential learning and age-related maturity in improving mothers' understanding of developmental milestones. However, the inconsistent findings across studies emphasize the need for more in-depth, multi-site research to explore contextual factors influencing maternal knowledge and to design effective, culturally sensitive interventions for improving early childhood outcomes.

Acknowledgment:

The authors express their gratitude to the authorities of Mallika Kindergarten, Barisal and Sher-e-Bangla Medical College, Barisal, for their sincere support in completing this study on time. In addition, the authors are indebted to the mothers who helped with their time and knowledge to complete the data.

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How to cite this article:

Baral, N., Gharami, T., Akter, H., & Nasrin, M. (2026). Maternal Knowledge regarding Early Childhood Development in Bangladesh. *GPH-International Journal of Health Sciences and Nursing*, 9(1), 16-27. <https://doi.org/10.5281/zenodo.18242141>