



Study of Knowledge about the Developmental Milestones of Children in Primiparous Mothers

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Abstract

Background: Following the pivotal moment of childbirth, challenges may arise as children with developmental issues often experience delayed attention. Contributing to these delays is a lack of awareness regarding developmental milestones. Primiparous mothers, being primary caretakers, play a significant role in the timely identification. It is essential to educate them about developmental milestones enabling them to monitor their child's growth trajectory and promptly address any delays. Emphasising the importance of ruling out developmental issues during the initial stages is imperative. **Objective:** To seek knowledge regarding developmental milestones at different stages among primiparous mothers. **Materials and Methods:** 95 participants from Ahmednagar district participated in this study. The selection of study subjects was based on criteria for inclusion and exclusion and consent in written form was obtained beforehand. The research included primiparous mothers. They were interviewed using a structured questionnaire based on children's development milestones. Following that, the data was collected and appropriately analysed. **Results:** It was found that 42.11% of primiparous mothers had a good knowledge of the developmental milestones of their babies. Most of the knowledge (54.38%) was found in the initial milestones section, while the least amount (33.15%) was found in language. **Conclusion:** Among all the developmental domains, primiparous mothers have a thorough understanding of the initial milestones (54.38%) and the most limited understanding of language development (33.15%).

Keywords: Adolescent Parents, Behavioural Outcomes, Developmental Delay, Gross Motor Development, Growth Milestones, Parental Knowledge, Primiparous Mothers

1. Introduction

The early years of life are essential for lifetime learning and growth¹. The growth and development of a child are greatly influenced by the formative years of life². A child's early years play a vital role in optimal growth and development. Fetal brain development starts in the first trimester and continues throughout life³. During the initial years of life, children demonstrate swift progress in cognitive abilities, language development, motor skills, play and social interactions⁴. In infancy, a child undergoes

rapid development, marked by significant growth that distinguishes them from adults. As they age, they acquire improved motor coordination and purposefully engage with their surroundings, eventually evolving into fully integrated and autonomous individuals. The intricate process of children's behavioural growth adds complexity to their overall growth.

An infant is a person who progresses from infancy to childhood and then adolescence, traversing the lives of their parents before eventually becoming a fully developed adult with their own life and future⁵. The

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future, essence and core of our nation have perpetually resided in its children⁶. Family is a crucial part of the team when it comes to evaluating a child's growth. As a child's first teacher, parents have a critical role in a child's general growth and learning⁵. The expectations and parent-child interactions are influenced by their understanding of child development⁷. For countless women worldwide, among the most treasured moments is when they finally give birth to their child after months of waiting. Human development encompasses the physiological, cognitive and psychosocial transformations that transpire for an individual's lifespan³. Development is a term that encompasses both the notions of growth and maturation. Milestones can be described as the predicted points at which a child reaches a significant stage in their development. Development is the gradual acquisition of different skills. Milestones provide a framework for observing and monitoring a child over time⁸.

Developmental milestones include age-specific tasks or a set of functional skills that children can do at a certain age range⁹. This includes domains like gross motor, fine motor, language, social and adaptive skills. When children fail to reach milestones in development during the predicted age in comparison to their counterparts from the same demographic, they are said to have delayed developmental milestones¹⁰. This delay can stem from impairments in various domains, including gross and fine motor skills, speech and language, cognitive and performance abilities, social and psychological development, sexual development and Activities of Daily Living (ADL)³.

Skills in one domain could be impacted by delays in another¹. Skills progress from cephalic to caudal from proximal to distal and from generalised stimulus-based reflexes to specific, targeted reactions that become more precise⁸. Infants and children reach predictable milestones and later develop skills built upon earlier achievements¹. Delays can be categorised as isolated (affecting a single domain), multiple (involving two or more domains) or global (affecting most aspects of development)³. When the presence of a delay is in multiple domains of development and the child is under the age of 5 years, they are reported to experience a Global Developmental Delay (GDD)¹¹. When considered from the right perspective, childcare is crucial since kids are the future of our society.

Care involves nurturing a child's physical, mental, emotional, and social growth in addition to giving them a healthy diet and place to live. Primiparous refers to a

woman who has delivered one child after the age of viability. Mothers should be educated about the quality of handling their babies. The acknowledged factor in the delayed development of a newborn is predominantly attributed to the mother's role⁹. Mothers are recognized as the primary caretakers, capable of recognizing different changes in their children, including delays in development. Gross motor development in children has been linked to a mother's physical health before or during pregnancy¹². It has been observed that a child experiencing delayed progress in gross motor skills acquires milestones later in life, whereas certain children with enduring disabilities like cerebral palsy or any other condition are evident when the child is 5 or older. In developed nations, a mother's capacity to promote her child's development has been favourably connected with her knowledge of child development⁷.

Many studies suggest that a mother's degree of knowledge plays an essential part in dealing with healthcare issues for the child. In summary, primiparous mothers' awareness of children's developmental milestones has a substantial influence on the child's growth and development. Over the past two decades, there has been an increasing curiosity about comprehending and articulating parental awareness of child development⁴. Parental awareness regarding their child's development and growth, in addition to having explicit and reasonable expectations for their child's behaviour, are also vital components of effective parenting, as evidenced by improved child outcomes⁷. Children born to adolescent parents have an increased risk of experiencing behavioural and developmental problems¹³. Lack of warm, pleasant interaction with an adult or insufficient adult supervision might raise the chance of social or behavioural difficulties in children⁷.

Society's future depends on its children's welfare. To support their development and socialisation, society must create a smooth and comprehensive system of care. This requires cooperation between family members and medical practitioners committed to delivering child care¹⁴. A child's intellectual advancement may advance more rapidly than their emotional or social maturation¹⁵. Alternatively, inadequate knowledge can lead to misguided expectations and an overestimation of developmental progress, often resulting in impatience or intolerance towards the child's behavior¹⁶. Maternal education influences knowledge of child development, while maternal characteristics impact both knowledge

and behavior¹⁷⁻¹⁹. Specific biological and environmental factors can serve as predictors of developmental delays, facilitating the implementation of timely and targeted interventions^{20,21}. This study was driven by inconsistent evidence on parents' understanding of child growth and development and a scarcity of data on other adults' expertise. In conclusion, understanding child development appears to be an important component of effective parenting and optimal child development⁷. The study aims to evaluate primiparous mothers' awareness regarding the developmental milestones of children.

2. Materials and Method

Study design: It was a cross-sectional study.

Participants: For this study, (n = 95) primiparous mothers of all age groups residing in the Ahmednagar district, both employed and unemployed who depend on external assistance, were included in the study. Multiparous women were excluded from the study.

Outcome measure: The survey was conducted using a self-made questionnaire which was validated by doctors. The offline survey was conducted and a prior written consent of the participants was taken before the study.

Sample Size: The determination of sample size was based on previous research findings, specifically a study conducted by Deepika David and Mrs. Khushlata⁶. In their investigation on mothers' knowledge of developmental milestones in infants, the overall mean percentage for different aspects of childhood development was 53% in a selected hospital in Ludhiana, Punjab. Given this, the predicted level of understanding for child phases of development among mothers was established at 53%. Consequently, the size of the sample (n) was calculated using the formula $n = Z^2pq/L^2$, where $p = 53\%$ and $q = 47\%$, resulting in $n = 95$. Therefore, the sample size for the current study was determined to be 95.

The research respondents were chosen via convenience sampling and the study was conducted across Ahmednagar district.

3. Result

It was a cross-sectional study conducted in various locations in Ahmednagar.

3.1 Findings Concerning Knowledge of Mothers

Table 1. Frequency and percentage distribution of mothers' level of knowledge about children's developmental milestones

Knowledge Score			
Level of Knowledge	Score	Frequency	Percentage
Excellent	11-14	6	6.32%
Good	7-10	40	42.11%
Average	4-6	36	37.89%
Below Average	0-3	13	13.68%

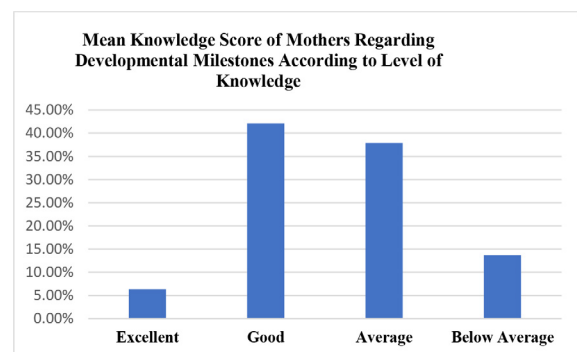


Figure 1. Mean knowledge score of primiparous mothers regarding developmental milestones of children according to level of knowledge.

Table 1 and Figure 1 depict that out of 95 primiparous mothers, 42.11% had good knowledge, 37.89% had average, 13.68% had below average and 6.32% had excellent knowledge score.

Thus, it may be inferred that 42.11% of primiparous mothers had a good level of knowledge about the developmental milestones of their children.

3.2 To Evaluate the Deficit Areas of Knowledge

Table 2. Mean, mean percentage and rank order of knowledge score of primiparous mothers regarding the developmental milestones of children according to areas of knowledge

Knowledge Score			
Areas of Knowledge	Max. Score	Mean Score	Mean%
Initial Milestones	3	1.63157895	54.38%
Gross motor	3	1.51578947	50.52%
Fine motor	2	0.81052632	40.52%

Language	2	0.66315789	33.15%
Social	4	1.86315789	46.58%

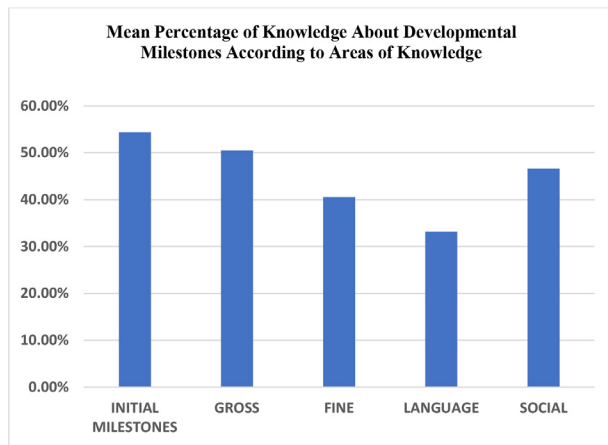


Figure 2. Mean percentage of knowledge score of primiparous mothers regarding the developmental milestones of children.

Table 2 and Figure 2 indicate that according to areas of knowledge of primiparous mothers regarding the developmental milestones of children, the mean percentage of knowledge score was highest (54.38%) in initial milestones followed by (50.52%) in gross motor development, (46.58%) in social development, (40.52%) in fine motor development and least (33.15%) in language development respectively.

It may be stated that primiparous mothers have the most understanding of initial milestones, followed by gross motor development and social development, fine motor development. Mothers had the least knowledge in the area of language development. Therefore, it can be inferred that there is a necessity to enhance mothers' comprehension of language, fine motor and gross motor development.

4. Discussion

This study aimed to explore the knowledge of developmental milestones among first-time mothers. Among 95 participants, 42.11% exhibited good knowledge, 37.89% had an average understanding, 13.68% scored below average and 6.32% demonstrated excellent knowledge. Delving deeper into specific categories, the average scores were highest for initial milestones (54.38%), followed by gross motor development (50.52%), social development

(46.58%), fine motor development (40.52%) and lowest for language development (33.15%).

The current study's findings were consistent with Devanshi Soni *et al.*, indicating a lack of sufficient knowledge about child developmental milestones. These mothers were most knowledgeable about biological development (53%) but least informed about cognitive development (28%)⁵. Additionally, Deepika David's *et al.*, study on maternal knowledge of developmental milestones found that the majority of mothers (53%) had a good understanding of infant milestones, with the highest knowledge score in the introduction (63%) and the lowest in social development (21%)⁶.

This delay in reporting concerns is due in part to a lack of understanding of the stages of development. Informing primiparous mothers about these milestones is crucial, given their significant role as primary caregivers. This knowledge empowers them to effectively monitor their first child's distinctive growth trajectory and facilitates the early identification of any developmental delays. Educating primiparous mothers establishes a foundation for proactive intervention, ensuring the earliest possible identification and addressing of developmental concerns in their children. According to Rikhy *et al.*, parents were most likely to use doctors, paediatricians, books and nurses as resources⁷. A study conducted by Neha Lohia *et al.*, highlighted a significant lack of awareness among mothers in rural areas regarding gross motor milestones. Education levels were identified as a contributing factor to awareness, with notable associations observed across various milestones, except for walking. Conversely, in urban areas, mothers exhibited greater awareness of these milestones compared to their rural counterparts¹².

Therefore, in primiparous mothers, it was discovered that knowledge of various developmental milestones was inadequate. This inadequacy may be caused by several factors and early identification of these problems may help avoid mistakes resulting from incomplete knowledge. The goal of this research was to increase the knowledge of first-time mothers on various facets of child development, growth and health. This proactive approach ensures a promising and healthy future for both mother and child by preventing preventable errors, a matter of great importance when identified early.

5. Conclusion

There is a lack of sufficient awareness regarding the developmental milestones of children among first-time mothers. Among the various developmental domains, they exhibit a notable understanding of initial milestones (54.38%) while possessing the least knowledge about language development (33.15%).

6. References

- Scharf RJ, Scharf GJ, Stroustrup A. Developmental milestones. *Pediatrics In Review*. 2016; 37(1):25-38. <https://doi.org/10.1542/pir.2014-0103> PMID:26729779.
- Arora A, Domadia P. Comparative analysis of developmental milestones in normal children in the age group of 6 months to 36 months from low-income group and high-income group: A pilot study. *Indian Journal of Physiotherapy and Occupational Therapy*. 2019; 13(4):10. <https://doi.org/10.5958/0973-5674.2019.00123.0>
- Khan I, Leventhal BL. *Developmental delay*. In: Treasure Island (FL): StatPearls, StatPearls Publishing; 2023. PMID: 32965902.
- Tamis-Lemonda CS, Shannon J, Spellmann M. Low-income adolescent mothers' knowledge about domains of child development. *Infant Mental Health Journal: Official Publication of the World Association for Infant Mental Health*. 2002; 23(1-2):88-103. <https://doi.org/10.1002/imhj.10006>
- Soni DJ, Srinivasan A. A study on primigravida mothers of rural Karad taluka, Maharashtra in acknowledging the child developmental milestones. *Journal of Ecophysiology and Occupational Health*. 2021; 17:52-5 <https://doi.org/10.18311/jeoh/2021/25859>
- David D, Toppo KJ, Saini K. A study to assess the knowledge of mothers regarding developmental milestones of infants. *Int J Curr Res*. 2014; 6(07):7524-8p.
- Rikhy S, Tough S, Trute B, Benzies K, Kehler H, Johnston DW. Gauging knowledge of developmental milestones among Albertan adults: A cross-sectional survey. *BMC Public Health*. 2010; 10(1):1-9. <https://doi.org/10.1186/1471-2458-10-183> PMID:20377910 PMCid: PMC2859399
- Gerber RJ, Wilks T, Erdie-Lalena C. Developmental milestones: Motor development. *Pediatrics In Review*. 2010; 31(7):267-77. <https://doi.org/10.1542/pir.31-7-267> PMID:20595440.
- Varghese SS, Joseph M, Gohil R, Thomas S, Jose SM, Lukose P, Johnson AR. How aware are mothers about early childhood developmental milestones? A cross-sectional study at a maternity hospital in rural South India. *Indian Journal of Child Health*. 2020; 44:1-5. <https://doi.org/10.32677/IJCH.2020.v07.i11.003>
- Gupta A, Kalaivani M, Gupta SK, Rai SK, Nongkynrih B. The study on achievement of motor milestones and associated factors among children in rural North India. *Journal of family medicine and primary care*. 2016; 5(2):378. <https://doi.org/10.4103/2249-4863.192346> PMID:27843845 PMCid: PMC5084565.
- Choo YY, Agarwal P, How CH, Yeleswarapu SP. Developmental delay: Identification and management at primary care level. *Singapore Medical Journal*. 2019; 60(3):119. <https://doi.org/10.11622/smedj.2019025> PMID: 30997518 PMCid: PMC6441684.
- Lohia N, Tomar US, Gupta N, Mattu S. Awareness of gross motor milestones among mothers in rural and urban areas: A survey. *Journal of Disability Management and Rehabilitation*. 2020; 111-6.
- Reich S. What do mothers know? Maternal knowledge of child development. *Infant Mental Health Journal: Official Publication of the World Association for Infant Mental Health*. 2005; 26(2):143-56. <https://doi.org/10.1002/imhj.20038> PMID:28682521
- Bagheri M, Tafazoli M, Sohrabi Z. Effect of education on the awareness of primigravida couples toward infant care. *Iranian Journal of Neonatology*. 2016; 7(4).
- Ruffin NJ. *Human growth and development - A matter of principles*. Blacksburg, VA: Virginia Cooperative Extension; 2019.
- Darsoni JG, Shehri NA. Milestones: Are mothers aware? *International Journal of Advanced Community Medicine*. 2020; 3(4):09-14. <https://doi.org/10.33545/comed.2020.v3.i4a.169>
- Ertem IO, Atay G, Dogan DG, Bayhan A, Bingoler BE, Gok CG, Ozbas S, Haznedaroglu D, Isikli S. Mothers' knowledge of young child development in a developing country. *Child: Care, Health and Development*. 2007; 33(6):728-37. <https://doi.org/10.1111/j.1365-2214.2007.00751.x> PMID:17944782.
- Benasich AA, Brooks-Gunn J. Maternal attitudes and knowledge of child-rearing: Associations with family and child outcomes. *Child development*. 1996; 67(3):1186-205. <https://doi.org/10.1111/j.1467-8624.1996.tb01790.x> PMID:8706517.
- Arnott B, Brown A. An exploration of parenting behaviours and attitudes during early infancy: Association with maternal and infant characteristics. *Infant and Child Development*. 2013; 22(4):349-61. <https://doi.org/10.1002/icd.1794>
- Edited by Paul VK, Bagga A. *Ghai essential paediatrics*. CBS Publishers and Distributors Pvt Ltd; 2019.
- Sachdeva S, Amir A, Alam S, Khan Z, Khalique N, Ansari MA. Global developmental delay and its determinants among urban infants and toddlers: A cross-sectional study. *The Indian Journal of Pediatrics*. 2010; 77:975-80. <https://doi.org/10.1007/s12098-010-0151-9> PMID:20734165.