



## **A comparative study to assess the knowledge of mothers regarding developmental milestones among their under-five children in selected urban and rural areas of Haridwar**

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### **Abstract**

Early childhood development is a critical phase in a child's life. Monitoring developmental milestones is essential for identifying delays and ensuring timely interventions. This study aims to compare the knowledge of mothers from urban and rural Haridwar regarding developmental milestones of their under-five children. Using a cross-sectional descriptive research design, data were collected from 200 mothers (100 urban, 100 rural) using structured questionnaires. The findings revealed a significant disparity in knowledge levels, with urban mothers demonstrating greater awareness compared to their rural counterparts. The study emphasizes the urgent need for community-based awareness programs, especially in rural settings, to promote child health and early development.

**Keywords:** Developmental milestones, early childhood, under-five children, maternal knowledge, urban-rural comparison, Haridwar, child development

### **Introduction**

Development during early childhood sets the foundation for lifelong health, learning, and well-being. Developmental milestones are functional skills or age-specific tasks that most children can do at a certain age range. These milestones include physical, cognitive, language, social, and emotional domains (CDC, 2023). Mothers, being the primary caregivers, play a pivotal role in observing and supporting their children's development. India, with its vast rural population, exhibits significant disparities in maternal knowledge and child health outcomes. Despite government interventions like the Integrated Child Development Services (ICDS), knowledge gaps persist, particularly in rural areas. Haridwar, a district in Uttarakhand, reflects this dual reality—housing both rapidly urbanizing sectors and deep-rooted rural settings.

This study seeks to evaluate and compare the knowledge of mothers in selected urban and rural regions of Haridwar concerning developmental milestones of under-five children.

### **Review of Literature**

Several studies have underscored the importance of maternal awareness in child development:

1. Kaur *et al.* (2020) <sup>[2]</sup> found that only 35% of rural mothers had adequate knowledge of early childhood developmental stages.
2. Sharma & Thomas (2021) <sup>[6]</sup> emphasized that early

detection of developmental delays hinges on maternal observations.

3. WHO (2019) <sup>[3]</sup> states that children under five are at a critical phase for brain development and require informed caregiving.
4. Bhattacharya & Banerjee (2020) <sup>[1]</sup> report urban mothers in India score significantly higher in knowledge tests than rural counterparts.
5. Kumari *et al.* (2018) <sup>[7]</sup> identify a lack of health education as a key factor in poor rural maternal knowledge.
6. Singh *et al.* (2022) <sup>[8]</sup> show correlation between maternal education and awareness of motor and cognitive developmental stages.
7. Madhuri & Das (2019) <sup>[9]</sup> found that exposure to healthcare services improves knowledge of growth indicators.
8. Patel & Reddy (2021) <sup>[10]</sup> link increased antenatal check-ups with better understanding of developmental cues.
9. Rao *et al.* (2020) <sup>[11]</sup> highlight that media and mobile health apps are effective in improving urban maternal knowledge.
10. ICMR (2020) <sup>[12]</sup> report outlines the lack of uniform guidelines for educating mothers across socio-economic strata.
11. Bhatia *et al.* (2021) <sup>[13]</sup> suggest that gender roles also influence child-rearing practices and parental

knowledge.

12. Mehta & Singh (2022) <sup>[14]</sup> recommend community-based interventions to bridge the knowledge gap.
13. Choudhury & Sharma (2018) <sup>[15]</sup> advocate the involvement of ASHA workers in maternal education.
14. National Family Health Survey-5 (2021) <sup>[4]</sup> indicates disparities in child development indicators between rural and urban Uttarakhand.
15. NIPCCD (2019) <sup>[16]</sup> stresses need for local language-based IEC materials for effective rural communication.
16. Ghosh & Dutta (2020) <sup>[17]</sup> point to the role of paternal involvement in enhancing maternal awareness.
17. UNICEF India (2022) <sup>[5]</sup> advocates the inclusion of developmental milestone awareness in the Poshan Abhiyan.
18. Nair *et al.* (2021) <sup>[18]</sup> link maternal stress and poor awareness to suboptimal early childhood development.
19. Kapoor *et al.* (2019) <sup>[19]</sup> show that mothers often confuse physical growth with developmental milestones.
20. Bali & Nanda (2023) <sup>[20]</sup> conclude that structured parenting workshops increase mothers' capacity to detect and respond to delays.

### Objectives of the Study

1. To assess the knowledge of mothers in urban Haridwar regarding developmental milestones of under-five children.
2. To assess the knowledge of mothers in rural Haridwar regarding the same.
3. To compare the knowledge levels between urban and rural mothers.
4. To identify the socio-demographic variables influencing maternal knowledge.

### Methodology

#### Research Design

A descriptive, cross-sectional comparative research design was adopted.

#### Study Area

Urban (Haridwar city wards) and rural (Laksar and Bhagwanpur blocks) areas of Haridwar district, Uttarakhand.

#### Sample and Sampling Technique

Sample size: 200 mothers (100 from urban, 100 from rural areas)

Sampling technique: Stratified random sampling

Inclusion criteria: Mothers having at least one child under the age of five, willing to participate.

The bar chart titled "Maternal Knowledge of Developmental Milestones - Urban vs. Rural Areas of Haridwar" illustrates the comparative knowledge levels of mothers regarding child development across four categories: Poor, Average, Good, and Excellent.

#### 1. Poor Knowledge (Score 0-5)

Urban Mothers: Only 8% fall in this category, indicating that very few urban mothers have minimal awareness of developmental milestones.

Rural Mothers: A striking 32% have poor knowledge,

highlighting a serious gap in early childhood development awareness in rural areas.

#### 2. Average Knowledge (Score 6-10)

Urban Mothers: 26% of urban mothers showed moderate awareness.

Rural Mothers: 45%, nearly half, fall in this range, suggesting that while some awareness exists, it is still not sufficient to ensure proper developmental tracking.

#### 3. Good Knowledge (Score 11-15)

Urban Mothers: A majority (52%) have good knowledge, showing active understanding and possibly better engagement with healthcare or educational resources.

Rural Mothers: Only 21% fall in this category, reflecting the limited penetration of child development education.

#### 4. Excellent Knowledge (Score 16-20)

Urban Mothers: 14% achieved high scores, showing excellent awareness and possibly strong support from healthcare or digital media.

**Rural Mothers:** Only 2% reached this level, indicating a severe lack of high-quality information and intervention in rural communities.

### Key Takeaways

The urban mothers consistently outperform rural mothers across all knowledge levels.

The "Poor" and "Average" categories dominate in rural areas, whereas urban mothers tend to cluster in the "Good" and "Excellent" categories.

This urban-rural divide strongly correlates with factors such as education, access to healthcare, digital literacy, and socio-economic conditions.

### Implication

This chart visually confirms that there is a significant knowledge gap between rural and urban mothers regarding developmental milestones. Intervention programs, awareness campaigns, and maternal education efforts are urgently needed in rural Haridwar to bridge this gap and ensure early detection and intervention for developmental delays in children.

#### Tool for Data Collection

A structured, pre-validated questionnaire covering domains such as:

Gross motor skills

Fine motor skills

Language and communication

Social and emotional development

#### Data Collection Procedure

Data were collected through home visits and face-to-face interviews. Informed consent was obtained from all participants.

#### Data Analysis

Data were analyzed using SPSS 25. Descriptive and inferential statistics were applied, including t-tests and chi-square tests.

## Results

Socio-Demographic Characteristics

Variable	Urban (n=100)	Rural (n=100)
Average Age (Years)	27.6	28.3
Literate (%)	92%	68%
Working Mothers (%)	36%	14%
Income above ₹10,000	74%	28%
No. of Children (Avg)	1.6	2.3

Knowledge Score Distribution

Knowledge	Level Urban (%)	Rural (%)
Poor (0-5)	8%	32%
Average (6-10)	26%	45%
Good (11-15)	52%	21%
Excellent (16-20)	14%	2%

t-test Result: The difference in mean knowledge scores was statistically significant ( $p < 0.001$ ).

### Association with Socio-Demographic Variables

Significant association found between knowledge scores and maternal education, antenatal care visits, and access to health workers ( $p < 0.05$ ).

No significant association with family size or religion.

## Discussion

The findings affirm the hypothesis that urban mothers possess better knowledge regarding developmental milestones compared to rural mothers. This aligns with the studies by Kaur *et al.* (2020) [2] and Bhattacharya & Banerjee (2020) [1]. Urban mothers often have better access to education, healthcare facilities, digital media, and structured parenting guidance.

The knowledge gap is particularly wide in domains related to language development and social-emotional skills, indicating a need for targeted educational interventions. Limited interaction with pediatric services in rural areas further exacerbates the knowledge divide.

Another significant observation was the role of community health workers like ANMs and ASHAs, which was underutilized in rural areas. This points to a potential area for policy intervention and capacity building.

## Conclusion

This study concludes that there exists a statistically significant disparity in the knowledge of developmental milestones between mothers residing in urban and rural areas of Haridwar. Urban mothers, on average, demonstrated higher levels of awareness regarding physical, cognitive, language, and social-emotional developmental stages in their under-five children when compared to their rural counterparts. This disparity can be largely attributed to various socio-demographic factors, including but not limited to, educational attainment, household income levels, access to healthcare services, antenatal and postnatal care, and exposure to media and information. Education, in particular, emerged as a strong determinant in shaping maternal understanding of child development. Mothers with higher levels of education were more likely to recognize age-appropriate milestones and respond to developmental concerns in a timely manner. Bridging this knowledge gap

is not only important from a developmental perspective but is also critical for the timely identification, referral, and management of developmental delays, which, if left unaddressed, can lead to long-term cognitive, emotional, and behavioral impairments. Strengthening maternal awareness is therefore essential in promoting holistic child health, achieving national goals of early childhood development, and ensuring that every child—regardless of geographic location—gets an equitable start in life.

## Recommendations

- 1. Strengthen Health Education:** Incorporate milestone checklists into ANC/PNC sessions.
- 2. Community Mobilization:** Leverage ASHA and Anganwadi workers to educate mothers in rural regions.
- 3. Mobile Apps & Media Campaigns:** Promote vernacular digital tools in rural Haridwar.
- 4. Parenting Workshops:** Periodic sessions in both urban and rural community centers.
- 5. Policy Integration:** Include developmental milestone tracking in national programs like ICDS and Poshan Abhiyaan.

## Conflict of Interest

Not available

## Financial Support

Not available

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