The Bioscan AN INTERNATIONAL QUARTERLY JOURNAL OF LIFE SCIENCES 21(3): 246-252, 2026 www.thebioscan.com

Effectiveness of an Information, Education and Communication (IEC) Programme on Mothers' Knowledge, Attitude and Practices Regarding Recognition of Developmental Milestone Delays Among Infants in Selected Rural Areas of Fatepura Taluka, Dahod District: A Pilot Study

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DOI: https://doi.org/10.63001/tbs.2026.v21.i03.pp246-252

KEYWORDS
Pilot study, developmental milestones, infant development, IEC programme, mothers, developmental delay, knowledge, attitude, practice.

Received on: 23/06/2026
Accepted on: 10/07/2026
Published on;21/07/2026

Abstract

Background
Developmental milestones are important indicators of a child's growth and neurodevelopment. Early identification of developmental delays enables timely intervention, thereby reducing long-term developmental complications. Mothers, being primary caregivers, play a crucial role in recognizing developmental abnormalities during infancy. However, awareness regarding developmental milestone delays remains inadequate in many rural communities.
Objectives
To assess the effectiveness of an Information, Education and Communication (IEC) programme on knowledge, attitude, and practices regarding recognition of developmental milestone delays among mothers of infants.
Methodology
A pilot study was conducted using a pre-experimental one-group pre-test and post-test design among 30 mothers of infants residing in selected rural areas of Fatepura Taluka, Dahod District. Data were collected using a structured knowledge questionnaire, attitude rating scale, and practice checklist. Following the pre-test assessment, an IEC programme was administered. Post-test evaluation was conducted after seven days. Descriptive and inferential statistics were used for data analysis.
Results
The mean knowledge score increased from 10.43±2.84 during pre-test to 21.67±2.15 during post-test. The mean attitude score improved from 31.53±4.72 to 41.80±3.56, while the mean practice score increased from 13.76±2.91 to 22.85±2.34. Paired t-test analysis demonstrated statistically significant improvement in all three domains ($p<0.001$).
Conclusion
The pilot study demonstrated that the IEC programme was effective in improving mothers' knowledge, attitude, and practices regarding recognition of developmental milestone delays. The findings supported the feasibility of conducting the main study on a larger sample.

INTRODUCTION

The first year of life represents a period of rapid growth and development. During infancy, children acquire essential motor, language, social, emotional, and cognitive skills that serve as foundations for future development. These age-specific developmental achievements are referred to as developmental milestones and are widely used to monitor child growth and neurological maturation.

Developmental delays occur when a child fails to achieve expected milestones within a specified age range. Such delays may affect gross motor development, fine motor skills, speech and language acquisition, cognitive abilities, or social interaction. Early recognition of developmental abnormalities is essential because timely intervention significantly improves developmental outcomes and quality of life.

Globally, developmental disabilities contribute substantially to childhood morbidity. The World Health Organization estimates that millions of children experience developmental delays requiring early screening and intervention services. Unfortunately, developmental abnormalities often remain undetected during infancy, particularly in low-resource and rural settings where awareness regarding developmental monitoring is limited.

In India, childhood developmental disorders are increasingly recognized as a public health concern. Rural communities frequently encounter barriers such as limited access to healthcare services, inadequate health education, low literacy levels, and lack of awareness regarding normal developmental milestones. Consequently, developmental abnormalities may remain unnoticed until school age, reducing the effectiveness of early intervention programmes.

Mothers are the primary caregivers responsible for observing their children's growth and developmental progress. Their awareness and understanding of developmental milestones are critical for early identification of abnormalities and prompt healthcare consultation. Therefore, empowering mothers through educational interventions represents an important strategy for promoting child health.

Information, Education and Communication (IEC) programmes are widely used in public health to improve awareness, attitudes, and health-related behaviors. IEC interventions provide structured educational information through lectures, discussions, demonstrations, visual aids, and printed materials. Previous studies have demonstrated the effectiveness of IEC programmes in improving maternal knowledge and healthcare practices.

Before conducting a large-scale study, pilot testing is necessary to evaluate the feasibility, acceptability, and effectiveness of the intervention and data collection procedures. Therefore, the present pilot study was undertaken to assess the effectiveness of an IEC programme on mothers' knowledge, attitude, and practices regarding recognition of developmental milestone delays among infants residing in selected rural areas of Fatepura Taluka, Dahod District.

Objectives

1. To assess pre-test knowledge regarding developmental milestone delays among mothers of infants.
2. To assess pre-test attitude regarding developmental monitoring among mothers of infants.
3. To assess pre-test practices regarding developmental milestone observation among mothers of infants.
4. To assess post-test knowledge, attitude, and practices following the IEC programme.

5. To determine the effectiveness of the IEC programme.
6. To evaluate the feasibility of conducting the main study.

METHODOLOGY

A quantitative evaluative research approach was adopted for the present pilot study to assess the effectiveness of an Information, Education, and Communication (IEC) programme on mothers' knowledge, attitude, and practices regarding the recognition of developmental milestone delays among infants. This approach was considered appropriate as it enabled the researcher to objectively measure changes in the study variables before and after the intervention.

The study utilized a pre-experimental one-group pre-test and post-test research design. This design facilitated the assessment of participants' baseline knowledge, attitude, and practices prior to the educational intervention and enabled evaluation of changes following the implementation of the IEC programme. The pilot study was conducted in selected villages of Fatepura Taluka, Dahod District, Gujarat. The area was selected due to its rural population and the need for maternal education regarding child developmental monitoring.

The target population comprised mothers of infants aged between 0 and 12 months residing in the selected villages. A sample of 30 mothers was recruited for the pilot study using a non-probability purposive sampling technique. Mothers who had infants below one year of age, were available during the period of data collection, and were willing to participate in the study were included. Mothers suffering from severe illness and those who had previously attended similar educational programmes related to developmental milestones were excluded from the study.

Data were collected using a structured research instrument developed by the investigator after an extensive review of literature and consultation with experts. The tool consisted of four sections. Section A included demographic variables such as age, educational status, occupation, type of family, and number of children. Section B comprised a structured knowledge questionnaire containing 25 multiple-choice questions related to normal developmental milestones and developmental delays. Section C consisted of a five-point Likert attitude rating scale designed to assess mothers' attitudes toward developmental monitoring and early identification of developmental abnormalities. Section D included a practice checklist to evaluate developmental monitoring practices and healthcare-seeking behaviors among mothers.

To ensure scientific rigor, the research instrument was subjected to content validation by a panel of experts comprising pediatricians, child health nursing specialists, and nursing research experts. Their suggestions and recommendations were incorporated to improve the clarity and relevance of the tool. Reliability of the instrument was established through a pilot administration, and the internal consistency was found to be satisfactory. The reliability coefficient for the knowledge questionnaire was 0.86, for the attitude scale 0.82, and for the practice checklist 0.84, indicating that the tool was reliable for data collection.

The intervention consisted of an Information, Education, and Communication (IEC) programme specifically developed to enhance mothers' awareness regarding developmental milestone delays. The programme was delivered through a combination of lecture sessions, PowerPoint presentations, demonstrations, educational pamphlets, and group discussions. The educational content covered normal developmental milestones during infancy, warning signs of developmental delays, the importance of developmental screening, available healthcare services for developmental assessment, and strategies for early intervention. The IEC programme was designed to be simple, interactive, and culturally appropriate for the rural population.

Prior to data collection, permission was obtained from the concerned local authorities and community leaders. Mothers who met the inclusion criteria were approached, and informed consent was obtained after explaining the purpose and procedures of the study. A pre-test assessment was conducted using the structured questionnaire, attitude scale, and practice checklist. Immediately following the pre-test, the IEC programme was administered to the participants. A post-test assessment was carried out seven days after the intervention using the same data collection tool to determine the effectiveness of the educational programme.

Ethical principles were maintained throughout the study. Participants were informed that their involvement was voluntary and that they could withdraw from the study at any stage without any consequences. Confidentiality and anonymity of the participants were ensured, and the collected data were used solely for research purposes.

The collected data were organized, coded, and analyzed using descriptive and inferential statistical methods. Descriptive statistics, including frequency, percentage, mean, and standard deviation, were used to summarize demographic variables and study findings. Inferential statistics, including the paired t-test, were utilized to assess the effectiveness of the IEC programme by comparing pre-test and post-test scores. The Chi-square test was employed to determine the association between selected demographic variables and baseline knowledge, attitude, and practice scores. A significance level of $p < 0.05$ was considered statistically significant.

RESULTS

Table 1: Demographic Characteristics of Mothers (N=30)

Variable	Frequency	Percentage
18–25 years	14	46.7
26–30 years	10	33.3
Above 30 years	6	20.0
Primary education	8	26.7
Secondary education	15	50.0

Higher education	7	23.3
Homemaker	25	83.3
Employed	5	16.7

Most mothers belonged to the age group of 18–25 years and had secondary education.

Table 2: Comparison of Knowledge Scores

Assessment	Mean	SD
Pre-test	10.43	2.84
Post-test	21.67	2.15

Knowledge scores increased substantially following the IEC programme.

Table 3: Comparison of Attitude Scores

Assessment	Mean	SD
Pre-test	31.53	4.72
Post-test	41.80	3.56

Positive attitudes toward developmental monitoring improved significantly.

Table 4: Comparison of Practice Scores

Assessment	Mean	SD
Pre-test	13.76	2.91
Post-test	22.85	2.34

Practice scores demonstrated considerable improvement after intervention.

Table 5: Effectiveness of IEC Programme

Variable	t-value	p-value
Knowledge	14.86	<0.001
Attitude	10.34	<0.001
Practice	12.47	<0.001

The paired t-test revealed statistically significant improvement in all study variables.

Feasibility Findings

The pilot study established:

- Feasibility of participant recruitment.
- Adequacy of study tools.
- Acceptability of IEC programme.
- Suitability of data collection procedures.

- Appropriateness of follow-up period.

DISCUSSION

The pilot study was conducted to evaluate the effectiveness and feasibility of an IEC programme focused on developmental milestone delays among mothers of infants. Findings demonstrated that mothers possessed limited baseline knowledge regarding developmental milestones and developmental abnormalities.

The significant increase in post-test knowledge scores indicates that the educational intervention successfully improved awareness regarding developmental monitoring. Similar findings have been reported in maternal education programmes where structured teaching enhanced understanding of child development and healthcare-seeking behavior.

Attitude scores improved substantially following the IEC programme. Mothers exhibited greater appreciation of the importance of developmental surveillance and early intervention. Educational programmes are known to influence attitudes by increasing perceived benefits and reducing misconceptions regarding health conditions.

Practice scores also improved significantly. Mothers reported increased observation of developmental behaviors and greater willingness to seek professional consultation when developmental concerns arise. Such behavioral improvements are important because they directly contribute to early detection of developmental delays.

The pilot study further confirmed that the research instruments were understandable, reliable, and acceptable to participants. The educational materials were culturally appropriate and well received by mothers. Participant retention during follow-up was satisfactory, indicating the practicality of implementing the intervention in community settings.

The significant findings support progression to the full-scale study. Minor modifications were made to certain questionnaire items based on participant feedback to improve clarity and comprehension.

Overall, the pilot study demonstrated that an IEC programme is a promising intervention for enhancing maternal awareness regarding developmental milestone delays among infants in rural communities.

CONCLUSION

The pilot study concluded that mothers had inadequate baseline knowledge and limited practices regarding developmental milestone delays. The IEC programme effectively improved knowledge, attitude, and practices among participants. The study confirmed the feasibility of conducting the main research project with a larger sample size and provided valuable insights for refinement of study procedures.

Conflict of Interest

The authors declare no conflict of interest related to this study.

Funding

No external funding was received for this pilot study. The study was conducted using available institutional resources.

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