

Evaluation of Information, Education and Communication (IEC) Intervention on Knowledge, Attitude and Practice Regarding Early Identification of Developmental Milestone Abnormalities Among Mothers of Infants in Rural Areas of Fatepura Taluka, Dahod District: A Pre-Experimental Study

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Abstract

Background

Developmental milestones are indicators of a child's growth and neurological maturation. Early identification of developmental abnormalities is essential for timely intervention and improved developmental outcomes. Mothers are the primary caregivers and play a crucial role in monitoring infant development. However, inadequate awareness regarding developmental milestones often delays recognition and management of developmental disorders.

Objectives

To assess the effectiveness of an Information, Education and Communication (IEC) intervention on knowledge, attitude, and practice regarding the early identification of developmental milestone abnormalities among mothers of infants.

Methodology

A pre-experimental one-group pre-test and post-test research design was adopted among 300 mothers of infants residing in selected rural areas of Fatepura Taluka, Dahod District. A structured questionnaire and attitude-practice assessment scale were used for data collection. Following pre-test assessment, an IEC intervention was administered. Post-test evaluation was conducted after seven days. Descriptive and inferential statistics were used for analysis.

Results

The mean knowledge score increased from 11.24±3.45 during pre-test to 22.68±2.91 during post-test. The mean attitude score improved from 32.45±5.62 to 42.81±4.11, while the mean practice score increased from 14.32±3.18 to 23.54±2.72. Paired t-test values indicated statistically significant improvement in all domains ($p < 0.001$).

Conclusion

The IEC intervention was highly effective in improving mothers' knowledge, attitude, and practices regarding the early identification of developmental milestone abnormalities. Community-based educational programmes should be integrated into maternal and child health services to promote early detection and intervention.

INTRODUCTION

Child development is a dynamic process involving physical, cognitive, social, emotional, and language growth. Developmental milestones serve as measurable indicators that help assess whether a child is progressing according to expected developmental norms. The first year of life is particularly critical because

rapid neurological development occurs during this period. Delays or abnormalities in developmental milestones may indicate underlying neurological, genetic, sensory, or environmental problems.

Globally, developmental disabilities affect millions of children. According to international estimates, approximately 5–10% of children experience developmental

delays requiring specialized assessment and intervention. Early detection is essential because timely therapeutic interventions significantly improve developmental outcomes and quality of life. Delayed identification often results in missed opportunities for intervention, leading to long-term educational, social, and functional difficulties.

In India, developmental disorders remain under-recognized, particularly in rural communities. Limited awareness, inadequate healthcare access, poor health literacy, and cultural misconceptions contribute to delayed diagnosis. Mothers are generally the first individuals to observe developmental changes in infants. Their knowledge and awareness regarding developmental milestones therefore become critical determinants of early identification and healthcare-seeking behavior.

Information, Education and Communication (IEC) interventions are structured educational approaches designed to improve awareness, attitudes, and health-related behaviors. IEC strategies have demonstrated effectiveness in maternal and child health programmes by enhancing knowledge retention and encouraging positive practices. Through educational materials, demonstrations, discussions, and counseling, mothers can become empowered to monitor developmental progress and recognize warning signs requiring professional consultation.

Developmental milestone abnormalities may manifest as delayed motor skills, speech impairment, poor social interaction, cognitive deficits, or behavioral concerns. Recognition of these warning signs during

infancy enables referral to pediatricians, developmental specialists, and rehabilitation services. Unfortunately, many mothers are unaware of age-appropriate developmental expectations and therefore fail to recognize deviations from normal development.

The present study was undertaken to evaluate the effectiveness of an IEC intervention on knowledge, attitude, and practice regarding early identification of developmental milestone abnormalities among mothers of infants residing in rural areas of Fatepura Taluka, Dahod District. The findings are expected to contribute to community-based child health promotion and early developmental screening initiatives.

Objectives

1. To assess pre-test knowledge regarding early identification of developmental milestone abnormalities among mothers of infants.
2. To assess pre-test attitude regarding early identification of developmental milestone abnormalities among mothers of infants.
3. To assess pre-test practice regarding early identification of developmental milestone abnormalities among mothers of infants.
4. To assess post-test knowledge, attitude, and practice after IEC intervention.
5. To determine the effectiveness of the IEC intervention.
6. To determine the association between selected demographic

variables and pre-test knowledge, attitude, and practice scores.

METHODOLOGY

Research Approach

A quantitative evaluative research approach was adopted.

Research Design

A pre-experimental one-group pre-test and post-test design was utilized.

Setting

The study was conducted in selected rural villages of Fatepura Taluka, Dahod District, Gujarat.

Population

The target population consisted of mothers having infants aged 0–12 months residing in the selected rural areas.

Sample Size

A total of 300 mothers of infants participated in the study.

Sampling Technique

A non-probability purposive sampling technique was employed to recruit participants fulfilling the inclusion criteria.

Inclusion Criteria

- Mothers having infants aged below one year.
- Mothers residing in selected rural areas.
- Mothers willing to participate.

Exclusion Criteria

- Mothers with severe illness during data collection.
- Mothers unavailable during follow-up assessment.

Research Tool

The tool consisted of four sections:

Section A: Demographic variables.

Section B: Structured knowledge questionnaire regarding developmental milestones and abnormalities.

Section C: Attitude rating scale assessing perceptions toward developmental monitoring.

Section D: Practice checklist evaluating developmental observation and healthcare-seeking behaviors.

Validity and Reliability

Content validity was established through expert review by pediatricians, nursing experts, and child development specialists. Reliability was determined using Cronbach's alpha coefficient and found acceptable (>0.80).

Pilot Study

A pilot study was conducted among 30 mothers from a similar population. The findings demonstrated feasibility of the study and appropriateness of the research instruments.

Data Collection Procedure

Permission was obtained from relevant authorities. Informed consent was secured from participants before data collection. Pre-test assessment was conducted using structured questionnaires. Following pre-test evaluation, the IEC intervention was administered through lectures, visual aids, pamphlets, demonstrations, and interactive discussions.

The educational programme covered:

- Normal developmental milestones.
- Developmental red flags.
- Importance of developmental screening.
- Healthcare-seeking behavior.
- Early intervention services.

Post-test assessment was conducted seven days after the intervention using the same tools.

RESULTS

Table 1: Distribution of Mothers According to Demographic Characteristics (N=300)

Variable	Frequency	Percentage
Age 18–25 years	138	46.0
Age 26–30 years	102	34.0
Age >30 years	60	20.0
Primary Education	98	32.7
Secondary Education	132	44.0
Higher Education	70	23.3

Most mothers (46%) belonged to the age group of 18–25 years and 44% had secondary education.

Table 2: Comparison of Knowledge Scores

Assessment	Mean	SD
Pre-test	11.24	3.45
Post-test	22.68	2.91

Ethical Considerations

Ethical clearance was obtained from the Institutional Ethics Committee. Confidentiality, anonymity, voluntary participation, and the right to withdraw were ensured throughout the study.

Statistical Analysis

Data were analyzed using:

- Frequency and percentage.
- Mean and standard deviation.
- Paired t-test.
- Chi-square test.

A significance level of $p < 0.05$ was considered statistically significant.

The mean knowledge score increased substantially after IEC intervention.

Table 3: Comparison of Attitude Scores

Assessment	Mean	SD
Pre-test	32.45	5.62
Post-test	42.81	4.11

Positive attitudes toward developmental monitoring improved following intervention.

Table 4: Comparison of Practice Scores

Assessment	Mean	SD
Pre-test	14.32	3.18
Post-test	23.54	2.72

Practice scores demonstrated marked improvement after the educational programme.

Table 5: Effectiveness of IEC Intervention

Variable	t-value	p-value
Knowledge	29.84	<0.001
Attitude	18.65	<0.001
Practice	25.42	<0.001

Paired t-test results showed statistically significant improvements in knowledge, attitude, and practice following the IEC intervention.

Association Analysis

Significant associations were observed between pre-test knowledge scores and educational status ($p < 0.05$). Mothers with higher education demonstrated better baseline knowledge regarding developmental milestones.

DISCUSSION

The present study evaluated the effectiveness of an IEC intervention on

mothers' knowledge, attitude, and practice regarding early identification of developmental milestone abnormalities. Findings revealed substantial improvements across all study variables following implementation of the educational programme.

The pre-test findings indicated inadequate baseline knowledge among mothers. This observation is consistent with studies conducted in rural communities where awareness regarding developmental milestones was generally limited. Mothers often relied on informal information sources and lacked systematic

understanding of developmental monitoring.

Following the IEC intervention, knowledge scores increased significantly. The improvement suggests that structured educational programmes are effective in enhancing awareness regarding normal developmental milestones and developmental warning signs. The use of visual materials, demonstrations, and interactive discussions may have contributed to better understanding and retention of information.

Attitude scores also improved considerably. Prior to intervention, several mothers demonstrated uncertainty regarding the importance of developmental screening and professional consultation. After exposure to educational content, participants expressed greater confidence in developmental monitoring and stronger commitment toward seeking healthcare services when abnormalities were suspected.

Practice scores exhibited significant improvement. Mothers reported increased observation of developmental behaviors, maintenance of child health records, and readiness to consult healthcare professionals regarding developmental concerns. Improved practices are particularly important because behavioral changes directly influence early identification and intervention.

The statistically significant paired t-test results confirm the effectiveness of the IEC intervention. Similar findings have been reported in maternal education studies demonstrating that community-based educational programmes enhance maternal competence in child health management.

The association between educational status and knowledge indicates that literacy plays a crucial role in health awareness. Mothers with higher educational attainment were better equipped to understand developmental concepts. This finding highlights the importance of tailoring educational materials to suit varying literacy levels.

The study underscores the significance of incorporating developmental milestone education into routine maternal and child health services. Community health nurses, Anganwadi workers, and primary healthcare professionals can play a pivotal role in disseminating developmental health information among rural populations.

Conclusion

The study concluded that mothers of infants had inadequate baseline knowledge, moderately favorable attitudes, and limited practices regarding early identification of developmental milestone abnormalities. The IEC intervention significantly improved knowledge, attitude, and practice scores among participants. Educational interventions delivered at community level can strengthen maternal capacity for developmental monitoring and facilitate early identification of developmental disorders. Integration of developmental milestone education into existing maternal and child health programmes is strongly recommended.

Conflict of Interest

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

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