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Website: conup.org.in**A STUDY TO ASSESS KNOWLEDGE AND ATTITUDE OF MISSION INDRADHANUSH AMONG MOTHERS OF UNDER-FIVE CHILDREN IN A SELECTED RURAL AREA OF KANPUR**Alaka Goswami^{1*}, Priyanka Sachan², Juli Verma¹, Kavita¹,
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*Correspondence: ¹Post Basic B.Sc. Nursing College of Nursing, Kanpur.**ABSTRACT****Background**

Launched by the Indian Government in 2014, Mission Indradhanush is a primary immunization initiative aimed at ensuring complete vaccination for children under the age of two and for expectant mothers. Despite several execution phases, there remain significant gaps in both awareness and vaccination rates, especially in rural settings.

Objective

The goal is to evaluate the understanding and perceptions of Mission Indradhanush among mothers who have children below five years old in a chosen rural locality in Kanpur, along with exploring the relationship between their knowledge and specific socio-demographic factors.

Methods

A quantitative, descriptive, cross-sectional approach was utilized for the research. The study involved 50 mothers of children under five years selected via a non-probability convenience sampling method from a rural area in Kanpur. A structured knowledge assessment questionnaire and a 5-point Likert scale for attitudes were employed for data collection. Both descriptive and inferential statistical analyses were conducted, utilizing the chi-square test to identify associations.

Results

Out of the 50 participants, 22 (44%) displayed sufficient knowledge, 25 (50%) showed moderately sufficient knowledge, whereas 3 (6%) had insufficient knowledge. The average knowledge score recorded was 18.74 ± 4.68 . In terms of attitude, 32 (64%) exhibited a positive outlook, 16 (32%) maintained a neutral perspective, and 2 (4%) had a negative viewpoint. A statistically significant correlation was identified between knowledge levels and educational attainment ($p = 0.001$) as well as with monthly family income ($p = 0.011$).

Conclusion

The mothers showed moderately sufficient knowledge and largely positive attitudes towards Mission Indradhanush. The levels of knowledge were significantly affected by educational background and income, underscoring the essential need for targeted health education programs within the community.

Keywords: Mission Indradhanush, immunization, knowledge, attitude, mothers, under-five children, rural health

INTRODUCTION

Immunization stands out as one of the most cost-efficient public health measures for lowering childhood illness and mortality on a global scale.

It has played a crucial role in decreasing the incidence of diseases that can be prevented through vaccines, such as measles, diphtheria, whooping cough, tuberculosis, and polio. Despite

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progress made, incomplete and partial vaccination remains a significant public health issue, particularly in low- to middle-income nations. According to the World Health Organization (WHO), immunization saves between 3.5 to 5 million lives each year worldwide; however, millions of children are still not fully vaccinated due to various systemic, social, and behavioral obstacles (WHO, 2023) [1].

India, despite being home to one of the largest immunization initiatives worldwide with its Universal Immunization Programme (UIP), still struggles with achieving full vaccination coverage. The National Family Health Survey-5 (NFHS-5) indicates that the complete vaccination rate among children aged 12 to 23 months in the country is around 76.4%, highlighting ongoing service delivery and uptake issues (IIPS & ICF, 2021) [2]. These challenges are more evident in rural areas and among socioeconomically vulnerable groups, where issues such as lack of awareness, problems with access, cultural misunderstandings, and insufficient health system outreach continue to obstruct effective vaccine usage.

To tackle these issues, the Indian Government initiated Mission Indradhanush in 2014 through the Ministry of Health and Family Welfare. This initiative was designed to swiftly enhance full immunization rates by focusing on children younger than two years and expecting mothers who had not received vaccinations or were only partially vaccinated. The mission prioritizes the identification of districts with high-risk populations and the execution of intensified immunization campaigns utilizing a structured and time-sensitive methodology (MoHFW, 2014) [3]. Later iterations such as Intensified Mission Indradhanush (IMI) 2.0 and 3.0 were launched to speed up efforts to reach over 90% full immunization rates across India (MoHFW, 2019) [4].

Research indicates that the involvement of the community and maternal understanding are vital in enhancing vaccine uptake. Mothers, as primary caregivers, are key in making decisions about child health, and their level of knowledge, attitudes, and practices (KAP) greatly affects vaccination adherence. Studies have repeatedly

demonstrated that factors like maternal education, socioeconomic conditions, access to health information, and communication with healthcare professionals significantly influence immunization patterns (Singh et al., 2018) [5].

In rural areas of India, obstacles such as low literacy rates, economic hardship, insufficient knowledge about vaccination schedules, anxiety regarding potential side effects, and adherence to traditional beliefs contribute to inadequate vaccination rates. Moreover, practical issues such as the distance to healthcare facilities, inconsistent outreach efforts, and workforce shortages further complicate the situation. These obstacles are particularly pronounced in regions like Uttar Pradesh, where a large segment of the population resides in rural areas with inconsistent access to healthcare.

Research findings from India show that maternal awareness of immunization programs is inadequate in both rural and peri-urban areas. A study in northern India revealed that while there was moderate awareness of routine immunization, detailed knowledge about government programs like Mission Indradhanush was scarce (Kumar & Rao, 2021) [6]. Another research pointed out that even when mothers lack sufficient knowledge, they can still demonstrate favorable attitudes towards immunization, indicating that initiatives aimed at increasing awareness can significantly enhance vaccine adoption (Sharma & Singh, 2025) [7].

The Health Belief Model (HBM) serves as an effective theoretical framework for examining health behaviors of mothers related to immunization. Per HBM, a person's choice to engage in preventive health actions is shaped by their perceived risk, perceived seriousness, perceived advantages, perceived obstacles, prompts to take action, and self-efficacy. In terms of immunization, mothers who regard childhood illnesses as serious and vaccines as beneficial are more inclined to adhere to immunization schedules. Educational programs can positively impact these perceptions and encourage compliance (WHO, 2023) [1].

Consequently, health education is a vital element of immunization initiatives. Evidence shows that enhancing maternal knowledge through organized

counseling, media outreach, and community engagement greatly boosts vaccination uptake. Frontline healthcare workers such as Accredited Social Health Activists (ASHAs) are essential in conveying health messages and fostering community involvement in rural settings.

While Mission Indradhanush has been operational for nearly a decade, there continues to be significant gaps in awareness and acceptance within rural populations. Kanpur's rural regions exemplify a typical environment where diverse socioeconomic factors, moderate literacy rates, and limited health awareness collectively impact child health results. Understanding maternal perceptions and knowledge regarding Mission Indradhanush is vital for recognizing deficiencies and creating specific interventions. Thus, this study was carried out to evaluate the awareness and attitudes of mothers with children under five about Mission Indradhanush in a particular rural region of Kanpur. Moreover, the research aimed to explore the relationship between knowledge levels and various socio-demographic factors. The results are anticipated to support the enhancement of community-based health education initiatives and the increase of immunization rates in rural communities.

MATERIALS AND METHODS

Study Design

This research utilized a quantitative method with a descriptive cross-sectional study format to evaluate the awareness and attitudes regarding Mission Indradhanush among mothers of young children in a defined rural location in Kanpur. The study was structured around the Modified Rosenstock Health Belief Model, which highlights how personal beliefs and perceptions affect preventive health actions.

Study Setting

The research took place in the rural operational area of the Primary Health Centre (PHC) Bairi, located in Kalyanpur, Kanpur, Uttar Pradesh. The chosen location is supported by governmental healthcare providers that offer routine immunization services as part of the Universal Immunization Programme (UIP) and Mission Indradhanush.

Study Population

The focus group included mothers who had

children aged below five years living in the designated rural area during the data collection phase.

Sample Size and Sampling Technique

A total of 50 mothers with children under five years old were chosen through a non-probability convenience sampling method. The number of participants was decided based on what was practical for the study and the availability of subjects during the data gathering phase.

Inclusion Criteria

Mothers having at least one child below five years of age.

Mothers residing in the selected rural area.

Mothers willing to participate in the study.

Mothers available during the period of data collection.

Exclusion Criteria

Mothers who were seriously ill during data collection.

Mothers unwilling to participate.

Mothers unable to communicate effectively in Hindi.

Development of Research Tool

The instrument for data gathering was created following a thorough examination of both national and international studies concerning childhood vaccinations and Mission Indradhanush. This tool was organized into three distinct parts:

Section A: Socio-demographic Variables

This segment gathered details about the mother's age, the child's age, religious affiliation, level of education, family structure, job status, monthly income of the family, and sources of immunization information.

Section B: Structured Knowledge Questionnaire

A comprehensive questionnaire featuring 30 multiple-choice queries was crafted to evaluate knowledge related to Mission Indradhanush. The questions encompassed the program's aims, vaccination timetable, diseases preventable by vaccines, advantages of immunization, and awareness of governmental efforts.

Knowledge scores were categorized as follows:

Knowledge Level	Score
Adequate Knowledge	21–30
Moderately Adequate Knowledge	11–20
Inadequate Knowledge	0–10

Section C: Attitude Scale

Attitude regarding Mission Indradhanush was assessed using a 10-item five-point Likert scale. Responses ranged from strongly agree to strongly disagree. Positive statements were scored from 5 to 1 and negative statements were reverse scored.

Attitude scores were categorized as:

Attitude Level	Score
Positive Attitude	38–50
Neutral Attitude	25–37
Negative Attitude	10–24

Validity and Reliability

The validity of the content of the instrument was verified by a group of seven specialists, which included experts in Community Health Nursing, Child Health Nursing, Community Medicine, and Public Health. Recommendations made by the specialists were integrated into the instrument. The reliability of the knowledge questionnaire was assessed using the Split-Half technique along with the Spearman-Brown Prophecy Formula. The reliability coefficient ($r = 0.82$) suggested a high level of internal consistency. The attitude scale achieved a Cronbach's alpha coefficient of 0.84, indicating satisfactory reliability.

Pilot Study

A preliminary study was carried out with 10 mothers of children under the age of five living in a nearby rural locality. This pilot study confirmed the practicality and effectiveness of the research methodology and tools. The participants from the pilot study were not included in the final research.

Data Collection Procedure

Official permission for data collection was secured from the relevant authorities before beginning the process. Written informed consent was acquired from every participant. The objectives of the study were clarified, and confidentiality was promised. Data were gathered via face-to-face interviews employing the structured questionnaire. Each interview took about 20 to 25 minutes.

Statistical Analysis

The collected data were coded, tabulated, and

analyzed using descriptive and inferential statistics.

Descriptive statistics included: Frequency,

Percentage, Mean, Standard deviation

Inferential statistics included: Chi-square test

A p-value less than 0.05 was considered

statistically significant.

RESULTS

Socio-Demographic Characteristics of Participants

The demographic characteristics of the study participants are presented in Table 1.

Table 1. Frequency and Percentage Distribution of Mothers According to Socio-Demographic Variables (N = 50)

Variable	Category	Frequency (f)	Percentage (%)
Age of Mother	21–25 years	23	46
	26–30 years	24	48
	≥31 years	3	6
Age of Child	0–28 days	3	6
	1 month–1 year	22	44
	2–3 years	14	28
	4–5 years	11	22
Religion	Hindu	26	52
	Muslim	24	48
Educational Status	Illiterate	4	8
	Primary	16	32
	Secondary	20	40
	Graduate & Above	10	20
Type of Family	Nuclear	11	22
	Joint	36	72
	Extended	3	6
Occupation	Homemaker	37	74
	Private Employee	12	24
	Self-employed	1	2
Monthly Income	<₹10,000	11	22
	₹10,000–20,000	28	56
	₹20,000–30,000	9	18
	>₹30,000	2	4
Source of Information	Mass Media	4	8
	Healthcare Personnel	45	90
	Family Members	1	2

The findings revealed that the majority of mothers (48%) belonged to the age group of 26–30 years. Most participants (72%) belonged to joint families, and 74% were homemakers. Healthcare personnel were identified as the primary source of information regarding Mission Indradhanush by 90% of the respondents.

Knowledge Regarding Mission Indradhanush

The distribution of knowledge scores among mothers is presented in Table 2.

Table 2. Distribution of Participants According to Knowledge Level (N = 50)

Knowledge Level	Frequency (f)	Percentage (%)
Adequate Knowledge	22	44
Moderately Adequate Knowledge	25	50
Inadequate Knowledge	3	6
Total	50	100

The mean knowledge score was 18.74 with a standard deviation of 4.68, indicating an overall moderate level of knowledge regarding Mission Indradhanush among mothers.

Attitude Regarding Mission Indradhanush

Table 3 presents the attitude levels of participants.

Table 3. Distribution of Participants According to Attitude Level (N = 50)

Attitude Level	Frequency (f)	Percentage (%)
Positive Attitude	32	64
Neutral Attitude	16	32
Negative Attitude	2	4
Total	50	100

The majority of mothers (64%) demonstrated a positive attitude towards Mission Indradhanush, while only 4% exhibited a negative attitude.

Association Between Knowledge and Demographic Variables

The chi-square analysis identified a significant statistical relationship between the level of knowledge and both educational attainment ($\chi^2 = 23.82$, $p = 0.001$) as well as monthly family income ($\chi^2 = 16.62$, $p = 0.011$). However, no significant statistical relationship was found regarding knowledge in relation to age, religion, family type, occupation, or information sources ($p > 0.05$).

These results imply that a mother's educational background and economic situation are crucial factors influencing their understanding of Mission Indradhanush.

DISCUSSION

This study evaluated the knowledge and attitudes of mothers with children under five years old concerning Mission Indradhanush in a chosen rural region of Kanpur, while also investigating the relationship between knowledge and specific socio-demographic factors. The results indicated that most mothers possessed a moderate level of knowledge and tended to have a positive outlook toward the immunization program, notably highlighting significant connections between

knowledge, maternal education, and family financial status.

The research found that 50% of mothers had moderate knowledge, 44% had adequate knowledge, and merely 6% had insufficient knowledge about Mission Indradhanush. This illustrates a moderate awareness level among mothers in rural settings. Similar findings have emerged from other studies in rural India that indicate a general awareness of immunization efforts but a limited understanding of specific government initiatives (Singh et al., 2018) [5]. This suggests that while the cultural acceptance of immunization is prevalent, detailed understanding of organized government programs is still developing.

A substantial portion of mothers (64%) showed a favorable attitude toward Mission Indradhanush. This outcome is promising and suggests growing confidence in governmental health programs and healthcare personnel. The influence of community health workers, particularly Accredited Social Health Activists (ASHAs), is essential in shaping mothers' attitudes. Evidence from reports by the WHO illustrates that involvement of community health workers considerably enhances vaccine uptake and diminishes hesitancy in settings with limited resources (WHO, 2023) [1].

The research revealed that healthcare workers served as the key source of information for 90% of the participants. This underscores the significant role of the healthcare system in spreading knowledge related to immunization. Comparable conclusions have been noted in research where direct communication with health workers was shown to be more effective than mass media in enhancing immunization awareness among rural communities (Kumar & Rao, 2021) [6].

A notable correlation was found between maternal education and knowledge levels. Mothers with more education exhibited a better understanding of Mission Indradhanush. This observation aligns with NFHS-5 data, which demonstrates that maternal education is a strong factor influencing child immunization rates in India (IIPS & ICF, 2021) [2]. Enhanced education boosts health literacy, enhances understanding of

vaccination timelines, and improves decision-making abilities regarding the health of children. Likewise, there was a significant link between family income and levels of knowledge. Mothers from families with higher incomes possessed a greater understanding compared to those from families with lower incomes. Socioeconomic status affects access to health information, healthcare resources, and engagement in health promotion initiatives. Research consistently indicates that poverty correlates with lower awareness of immunization and reduced vaccination rates (Sharma & Singh, 2025) [7].

Notably, other socio-demographic factors like age, religion, family type, occupation, and sources of information (except for education and income) did not present statistically significant relationships with knowledge. This implies that awareness may be more influenced by structural factors like education and economic conditions rather than purely demographic elements.

The results of this study align with the Health Belief Model, which proposes that health behaviors are shaped by perceived advantages and knowledge. Mothers who have a clearer understanding of the benefits of immunization are more likely to adopt a favorable stance and ensure their children receive vaccinations on schedule (WHO, 2023) [1]. Thus, enhancing maternal knowledge is crucial for improving immunization rates.

The study emphasizes the need for targeted health education programs in rural regions. While attitudes were generally positive, there remain knowledge deficits, especially among less educated and lower-income mothers. Enhancing awareness through community initiatives, visual materials, and frequent counseling sessions can significantly boost knowledge and adherence.

The dependence on healthcare workers as the primary source of information reflects the success of direct communication but also points to the necessity of diversifying information channels like mass media, mobile health platforms, and community outreach efforts. Utilizing a variety of communication methods may facilitate more extensive and consistent sharing of immunization information.

The results further highlight the critical need to

reinforce the implementation strategies of Mission Indradhanush. Even though the program has considerably increased immunization rates nationally, disparities remain at the rural level. Bridging these gaps necessitates not only improvements in service delivery but also ongoing efforts in behavioral change communication.

CONCLUSION

The current research evaluated the understanding and perspectives related to Mission Indradhanush among mothers with children under five living in a chosen rural district of Kanpur. The results indicated that around fifty percent of the mothers had a moderately sufficient level of knowledge, while almost forty percent showed adequate understanding of the program. Additionally, a significant majority of the mothers held a favorable attitude towards both childhood vaccinations and Mission Indradhanush.

Maternal education and family income were recognized as critical elements affecting knowledge levels. Mothers who had higher levels of education and improved financial circumstances displayed increased awareness about immunization services and government vaccination programs.

The results highlight the necessity of enhancing community-driven health education initiatives to raise maternal awareness and secure complete immunization coverage. Healthcare providers, especially ASHAs, ANMs, and community health nurses, should maintain their proactive involvement in sharing precise information regarding vaccination schedules and their advantages.

In general, Mission Indradhanush has been favorably received by mothers in rural areas; however, ongoing educational efforts are essential to fill persistent gaps in knowledge and to boost immunization rates among children.

LIMITATIONS OF THE STUDY

The research was limited to one rural area in Kanpur, restricting the ability to generalize the findings.

The sample size was relatively limited (N = 50).

The use of convenience sampling may have led to biased selection.

Data collection relied on self-reported answers,

which could introduce recall bias.

The cross-sectional nature of the study did not allow for assessing changes in knowledge and attitude over time.

Verification of actual vaccination practices and records was not conducted.

RECOMMENDATIONS

Further research should involve larger populations across various rural and urban locations.

Experimental studies could be conducted to examine the impact of educational interventions on maternal knowledge and immunization practices.

Healthcare workers should organize ongoing community awareness initiatives focused on Mission Indradhanush.

Targeted educational campaigns should be directed towards mothers with lower levels of literacy and financial hardship.

Mass media and online health communication channels should be leveraged to enhance understanding of immunization services.

Future investigations should explore the connection between maternal knowledge and the rates of completed immunizations.

Longitudinal studies could be performed to track changes in maternal awareness and attitudes as a result of health education efforts.

Conflict of Interest

The authors declare no conflict of interest.

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