

Effectiveness of Structured Teaching on Immunization Knowledge and Attitude Among Mothers of Children Under-5 years of Age at Bal Mahila Chikitsalaya, Lucknow

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Abstract

This section offers a thorough overview of the study's background, explaining the significance of vaccination, the variables affecting vaccination coverage, the role mothers play in the decision-making process regarding vaccinations, and the necessity of focused interventions to improve immunization uptake among children under five. As a fundamental component of preventive healthcare, immunization shields both individuals and communities from a variety of infectious diseases. In order to comprehensively assess changes in mothers' knowledge and attitudes about vaccinations after the structured instruction program, the study uses a quantitative research approach and to evaluate the efficacy of the intervention, data from eligible women will be gathered both before and after it is using a pretest-posttest approach. 75 mothers of children under five from the BMC Turiaganj neighbourhood in Lucknow will be chosen for the study using a systematic random sampling technique. The purpose of this study was to evaluate how well a structured training program at Bal Mahila Chikitsalaya in Turiaganj, Lucknow affected the knowledge and attitudes of mothers of children under five about vaccinations. The initiative was created to close information gaps and change negative attitudes in order to increase the number of people who have received vaccinations. The results showed that after the intervention, there had been a considerable increase in both knowledge and attitudes. Mothers had an enhanced comprehension of the significance, timeliness, and advantages of vaccination, along with particular vaccinations such as those for tuberculosis and Hepatitis B. The success of the program in improving maternal understanding and perceptions of immunization is demonstrated by the rise in correct responses and positive sentiments across the majority of survey items. Even with the generally favorable results, certain obstacles still exist. Persistent myths about serious side effects and a gender bias that favors boys over girls when it comes to vaccinations highlight the necessity for ongoing education initiatives. These results imply that although formal training programs are beneficial, they should only be used as a component of a longer-term, all-encompassing plan that also involves community involvement, continual education, and focused interventions to address particular issues.

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INTRODUCTION

Vaccination is widely acknowledged as one of the best public health measures, especially for avoiding childhood infectious illnesses. Immunization campaigns have saved millions of lives each year by drastically lowering the prevalence of vaccine-preventable illnesses (VPDs) around the world.

Despite these remarkable achievements, ensuring equitable access to immunization services and addressing gaps in knowledge and attitudes towards vaccination remain critical challenges, especially in low- and middle-income countries (LMICs). This section provides a comprehensive background to the study, elucidating the importance of immunization, factors influencing immunization coverage, the role of mothers in vaccination decision-making, and the need for targeted interventions to enhance immunization uptake among children under five years of age.

In India, the National Family Health Survey (NFHS) 2019-20 reveals a mixed picture of immunization coverage for children aged 12-23 months. While some vaccines show relatively high coverage rates, others lag behind. For instance, BCG, DPT, and polio vaccines enjoy coverage rates above 86%, indicating significant progress in vaccination efforts. However, measles and hepatitis B vaccines have lower coverage rates at 78.5% and 77.1%, respectively. Moreover, vaccines such as rotavirus and pneumococcal conjugate vaccine (PCV) exhibit coverage rates of 73.2%, signaling room for improvement. Despite these challenges, the overall full immunization coverage stands at 62.0%, reflecting both achievements and ongoing gaps in India's immunization program.

On the global front, the World Health Organization (WHO) reports that while immunization coverage for essential vaccines has progressed, it remains below targets in many regions. DTP3 coverage stands at 85%, indicating substantial but incomplete coverage (Girmay A, Dadi AF. 2019) [1]. Measles-containing vaccine (MCV) and Hepatitis B (HepB3) coverage are at 86% and 84%, respectively, showcasing strides in vaccination efforts worldwide. However, the coverage rates for vaccines like PCV3 and rotavirus vaccine (RVV1) are lower, at 47% and 43%, respectively, indicating disparities in access to these life-saving interventions. Furthermore, the COVID-19 pandemic has disrupted routine immunization services globally, leading to concerns about declining coverage and outbreaks of vaccine-preventable diseases. Efforts to maintain essential immunization services and catch-up campaigns are underway to mitigate the impact of the pandemic on global immunization efforts and prevent setbacks in the fight against vaccine-preventable diseases.

In order to protect people and communities from a variety of infectious diseases, immunization is a fundamental component of preventive healthcare. Vaccines successfully avert disease, disability, and mortality caused by vaccine-preventable diseases (VPDs), including measles, polio, diphtheria, pertussis, and tetanus, by enhancing the immune system's response to particular illnesses.

In addition to safeguarding individual health, vaccinations also impart herd immunity, which lowers the spread of infectious agents within populations and shields susceptible people who are unable to receive vaccinations for medical reasons.

The global impact of immunization is evident in the substantial reductions in morbidity and mortality from VPDs over the past century. For instance, the eradication of smallpox in 1980 stands as a testament to the power of vaccines in eliminating a deadly disease that once plagued humanity. Additionally, concerted efforts to expand immunization coverage through initiatives like the Expanded Program on Immunization (EPI) and the Global Vaccine Action Plan (GVAP) have contributed to significant declines in childhood mortality rates, particularly in LMICs.

Factors Affecting Immunization Coverage:

Despite the proven benefits of immunization, achieving and maintaining high vaccination coverage rates remains a formidable challenge in many parts of the world. Several factors contribute to disparities in immunization coverage, including:

1. *Vaccine Availability and Accessibility:* Immediate access to immunization treatments may be hampered by a lack of healthcare facilities, especially in rural and isolated locations. Additionally, stockouts of vaccines and cold chain infrastructure constraints may compromise vaccine availability, leading to missed vaccination opportunities.

2. *Healthcare Infrastructure:* Inadequate healthcare infrastructure, including insufficient numbers of trained healthcare providers, lack of vaccination equipment, and poor record-keeping systems, can impede the delivery of immunization services and undermine program effectiveness.
3. *Socioeconomic Status:* Socioeconomic factors such as poverty, low education levels, unemployment, and inadequate housing can impact families' ability to access and afford healthcare services, including vaccinations. Disparities in immunization coverage often reflect broader inequalities in access to healthcare.
4. *Parental Knowledge and Attitudes:* Parental knowledge, attitudes, beliefs, and perceptions regarding vaccines significantly influence vaccination decision-making. Misinformation, vaccine hesitancy, and cultural beliefs may contribute to vaccine refusal or delay, undermining immunization efforts.
5. The unwillingness or refusal to receive a vaccination despite the availability of vaccinations is known as vaccine hesitancy, and it has been identified as a major obstacle to reaching the highest possible rate of immunization coverage. Factors contributing to vaccine hesitancy include concerns about vaccine safety, perceived risks of adverse events, distrust in healthcare providers or government authorities, and misinformation propagated through social media and other channels.

Role of Mothers in Immunization

Mothers play a central role in ensuring their children receive timely and complete immunizations. As primary caregivers, mothers are responsible for making healthcare decisions for their children, including vaccination. Maternal knowledge, attitudes, beliefs, and behaviors regarding immunization profoundly influence vaccination uptake and compliance. Studies have consistently shown that maternal education, awareness, and positive attitudes toward vaccination strongly predict childhood immunization status.

Mothers' decision-making regarding immunization is influenced by various factors, including access to information, social networks, cultural norms, and interactions with healthcare providers. Effective communication and education strategies targeted at mothers are essential for promoting immunization awareness, addressing misconceptions, and fostering confidence in vaccination. Engaging mothers as partners in immunization programs can enhance community acceptance and support for vaccination efforts, ultimately contributing to improved vaccination coverage and public health outcomes.

Despite the critical role of immunization in preventing childhood morbidity and mortality, disparities in immunization coverage persist, particularly in marginalized and underserved communities. Addressing these disparities requires multifaceted interventions that target the underlying determinants of low immunization uptake. Specifically, targeted interventions aimed at enhancing maternal knowledge and attitudes toward immunization can yield significant improvements in vaccination coverage among children under five years of age.

Structured teaching programs represent an effective approach to health education and behavior change, providing participants with structured information and skills to promote positive health outcomes. Structured teaching programs can enable women to make knowledgeable decisions about the health and welfare of their children by providing them with correct information about vaccines, diseases that can be prevented by vaccines, and the significance of immunization (Agide FD et al. 2018) [2]. Furthermore, dispelling myths and raising doubts regarding the efficacy and safety of vaccines might reduce vaccine apprehension and boost vaccination confidence. Children are the future of the nation. Every parent wishes their child's childhood to be joyful and healthy. As they encounter new things, their lifestyles ought to progressively mature. Since every child is an individual, the forces that shape their early years will have an impact on how they live their life, whether positively or negatively.

One child will grow up to be a benefit to others, a source of delight for parents and God. One more will mature and turn into a threat to the community. Many others will lead reasonably fulfilling lives.

Any society's future is dependent on its youth. The foundation of a child's life is laid by their parents. Thus, parents have a crucial duty and chance to support their children's health. Youngsters who get their vaccinations on schedule have better health

Immunization

Immunization is a process that strengthens an organism's defenses against infection by increasing its response to antigen. Any material (such as an enzyme or toxin) that induces the synthesis of antibodies is an antigen.

Immunization, also known as vaccination, is a method of developing immunity against specific diseases by administering tiny doses of a live bacterium that has been destroyed or rendered less potent.

One of the most economical public health initiatives, vaccination has a significant positive influence on people's health. It is really lucky that immunizations save the lives of over a million people worldwide each year, particularly very young children.

Importance of Immunization among 0–5-year children

Childhood malnutrition is exacerbated by infections because they stunt growth. As a result, it becomes crucial to protect kids from infections so they can develop normally. Immunization is a vital tactic in the fight against issues with public nutrition and one of the most economical ways to avoid illnesses (American Psychological Association 2019) [3].

Immunizations prevent a number of serious illnesses by boosting the body's defenses against them. Immunization thereby stops the spread of:

- Physical and mental impairments can last a lifetime.
- Demise due to feared illnesses.

Immunization is an unquestionable human right and an essential part of primary healthcare. It shields almost 3/4 of kids from serious infections that affect kids. As part of a regular immunization schedule, there are a number of diseases that are easily preventable with prompt vaccination.

All children are entitled to receive the necessary modern and traditional immunizations that can save their lives. Every mother wants her children to grow up healthy, and medical professionals want every child to be protected against diseases that can be prevented by vaccination.

The government aims to keep youngsters safe from illnesses that worsen with time. Most newborns and toddlers, however, do not receive the bulk of immunizations. Reductions in patient compliance, cost-effectiveness, and awareness all contribute significantly to the limited effectiveness of vaccinations.

Babies are naturally or passively immune to some diseases from birth because antibodies from the mother have been transferred to the fetus through the placenta. Breastfed babies continue to benefit from extra antibodies in breast milk after birth. However, the protection in both situations is only momentary. By employing minute quantities of a dead or severely compromised live bacterium that causes the specific disease, vaccinations (also known as immunizations) can develop immunity against a number of illnesses. Microorganisms can be either bacteria or viruses, such pneumococcus or the polio virus. Vaccines trigger the immune system to respond as though there were an actual infection; the body fights off the "infection" and retains memory of the organism for when it re-enters the body.

One of the safest and most efficient public health measures to stop major illness and death is vaccination. Due to the increased use of vaccinations, the incidence of diseases that can be prevented by vaccination has decreased, and as a result, stakeholders are becoming more aware of the possible

side effects of the vaccines themselves. Immunization defends against risks from vaccine-preventable diseases for the health, communities, and economy.

History of Immunization in India

The process of using vaccination to develop immunity in a person against an infectious agent or organism is known as immunization. The Expanded Programme of Immunization (EPI), which was formally introduced by the World Health Organization (WHO) in May 1974, aims to immunize every child worldwide against six illnesses that can be prevented by vaccination: measles, polio, tetanus, whooping cough, diphtheria, and TB. In 1985, the Universal Immunization Programme (UIP) was launched in 31 Indian districts with the goal of expanding to more districts. By March 1990, the coverage aim was to protect all pregnant women and 85 percent of all babies against six vaccine-preventable diseases. Beginning on January 1, 1991, the immunization program was made geographically universal, and its goal was raised to include all babies (WHO 2002) [4].

New vaccines made available as part of the Universal Immunization Program:

The Indian government started the Universal Immunization Programme (UIP) in 1985 as a vaccination campaign. It was included in the Child Survival & Safe Motherhood program in 1992, and since 2005, it has been one of the main focuses of the National Health Mission. Vaccinations against 12 diseases are currently included in the program: rubella, measles, hepatitis B, poliomyelitis, TB, diphtheria, pertussis (whooping cough), tetanus, poliomyelitis, measles, Japanese encephalitis, rubella, pneumonia (*Haemophilus influenza* type B), and pneumococcal diseases (pneumococcal pneumonia and meningitis). Pneumococcal illness and hepatitis B were added to UIP in 2007 and 2017, respectively.

The rotavirus vaccine (RVV), the measles-rubella vaccine (MR), and the inactivated polio vaccine (IPV) are the further additions to UIP along the route. The nation's Universal Immunization Programme (UIP) now includes four new vaccines: the injectable polio vaccine, the adult Japanese encephalitis vaccine, the pneumococcal conjugate vaccine, and others.

The introduction of four new, life-saving vaccines will be crucial in lowering the nation's rates of infant and child mortality as well as morbidity. For individuals who can afford them, several of these immunizations are currently accessible through private practitioners. Now, regardless of social or economic standing, the government will make sure that the advantages of immunization reach every segment of the population (Burton A et al. 2009) [5].

The Union Ministry of Health and Family Welfare has been distributing the UIP Measles-Rubella vaccination since February 2017.

Objectives of The Study

1. To evaluate moms of children under-five's pretest level of immunization knowledge and attitude using a standardized knowledge questionnaire and attitude scale
2. To evaluate moms of children under-five's post-test knowledge and attitude about vaccinations using a standardized knowledge questionnaire attitude scale
3. To assess the impact of a systematic education program on mothers of children under-five's knowledge and attitude about vaccinations in terms of the percentage increase in post-test knowledge and attitude scores.
4. To determine the relationship between mothers of children under five and their attitudes and knowledge about vaccinations

Hypotheses

1. Mothers of children under five do not significantly alter in their levels of vaccine knowledge between the pretest and posttest.

2. Mothers of children under five show no discernible difference in their attitudes toward vaccination between the pretest and posttest periods.

REVIEW OF LITERATURE

Immunization is universally acknowledged as one of the most effective public health interventions, particularly in preventing infectious diseases among children under five. The following review of literature explores the importance of immunization, factors influencing immunization coverage, the role of mothers in vaccination decision-making, and previous studies on interventions aimed at improving maternal knowledge and attitudes regarding immunization.

Importance of Immunization

Immunization plays a pivotal role in preventing vaccine-preventable diseases (VPDs) and reducing childhood morbidity and mortality. The World Health Organization (WHO) estimates that vaccinations avert two to three million deaths globally each year. Vaccines such as the measles vaccine have contributed to a significant reduction in measles-related deaths by 73% globally between 2000 and 2018 (World Health Organization, 2009) [6]. Furthermore, vaccine campaigns have nearly completely eradicated polio and smallpox in many regions of the world, demonstrating the significance of vaccination for public health.

Factors Affecting Immunization Coverage

Despite the proven benefits of immunization, several factors influence vaccination coverage rates, particularly in low- and middle-income countries (LMICs). Access to immunization services, including geographical accessibility, availability of vaccines, and the quality of healthcare infrastructure, significantly impacts vaccination uptake (Rainey et al., 2011) [7]. Socioeconomic factors such as poverty, low education levels, and lack of awareness about the importance of vaccination contribute to disparities in immunization coverage. Moreover, vaccine hesitancy, driven by concerns about vaccine safety and efficacy, misinformation, and distrust in healthcare systems, poses a significant challenge to achieving optimal vaccination coverage (Dubé et al., 2015) [8].

Role of Mothers in Immunization

Mothers play a crucial role in ensuring their children receive timely and complete immunizations. Maternal knowledge, attitudes, and beliefs regarding vaccination strongly influence vaccination decision-making and adherence to immunization schedules (Odusanya et al., 2008) [9]. Studies have shown that mothers with higher education and awareness about vaccines are more likely to vaccinate their children and adhere to recommended vaccination schedules (VJ J. 2005) [10]. Effective communication and educational interventions targeted at mothers are essential for improving immunization coverage and addressing vaccine hesitancy (Binagwaho et al., 2012) [11].

Previous Studies on Immunization Knowledge and Attitude

Previous research has examined the effectiveness of various interventions aimed at improving maternal knowledge and attitudes regarding immunization. Structured teaching programs, community-based interventions, and targeted communication strategies have been shown to enhance maternal awareness and promote positive attitudes toward vaccination (Merten et al., 2015) [12]. However, the impact of these interventions may vary depending on contextual factors, including socio-cultural norms, healthcare infrastructure, and vaccine-related policies. Evaluating the effectiveness of such interventions in diverse settings is essential for informing evidence-based strategies to improve immunization coverage and maternal awareness.

In order to evaluate the knowledge of ever-married women on maternal and child health and the gap between awareness and practice levels of nursing moms among 283 ever-married women in reproductive age, research carried out on a community-based cross-sectional study in India.

The second dose of the MMR vaccine (MMR2) is scheduled at 4 years in Australia and the USA, but earlier in several European nations, according to a study by Wood JG et al. (2015) from the National Centre for Immunization Research and Surveillance of Vaccine-Preventable Diseases in Sydney, Australia [13].

Linkins RW et al. (2006) [14] carried out a study to determine how parents of children who have received vaccinations and those who have not felt the need to support immunization registries; laws that authorize registries and require provider reporting; the financial value and accountability of registry development and implementation strategies; A case-control study was carried out on parents of 1630 completely vaccinated children and 815 children who were exempt from school vaccination requirements. Parents were given surveys that inquired about their opinions on registries as well as their perceptions of the benefits and safety of immunizations. Findings: Of the 56.1% of respondents who completed the surveys, less than 10% of parents were aware that their communities had immunization registries.

Faisal UA et al. (2017) came to the conclusion that mothers' awareness about the Expanded Program on Immunization (EPI) vaccination in Karachi's peri-urban area was relatively low and had little bearing on the EPI coverage of their offspring [15]. However, there was a strong correlation between mothers' "educational status" and their children's coverage. This result showed that a mother with greater education had better health-seeking behavior.

A study on the knowledge and practices of doctors and nurses on vaccinations was carried out by Ibrahim HK et al. in 2014 [16]. Employees at 50 MOH PHCs in Riyadh City were given a self-administered questionnaire containing 50 statements about vaccination knowledge and practice.

The answers of doctors and nurses were not substantially correlated with prior vaccination experience or formal vaccination instruction. Despite the study's limitations, it is reasonable to say that primary care physicians who were polled had strong general knowledge and practices regarding kid vaccines. There are still large gaps. This emphasizes how important it is for healthcare professionals who work with children's vaccinations to receive ongoing training and monitoring.

A study was carried out by Mathew JL et al. (2002) on 500 children under the age of five who belonged to a low-income group. All of them were visiting a sizable teaching hospital's pediatric outpatient clinic in New Delhi, India [17].

In order to find statistically significant differences, a study was done to evaluate the vaccine coverage level of children living in rural and urban areas. The study included children who were between the ages of 19 and 35 months and were enrolled in the 1999 National Immunization Survey. For both individual vaccinations and vaccine series, statistically significant disparities in immunization coverage were found between the rural and urban populations. Findings: In total, 18% of the kids in the 1999 NIS were from rural areas, 46% were from suburban areas, and 36% were from urban areas.

In the Wardha district, 142 children aged 12-59 months were chosen for a study by Singh MC et al. (1994). Of these, 100 mothers and 122 children could be contacted for the purpose of evaluating immunization coverage and gauging maternal knowledge and practice regarding immunization.

RESEARCH METHODOLOGY

Immunization stands as a vital pillar in public health, particularly for children under five, protecting them from various vaccine-preventable diseases. Even with vaccinations readily available, there are still obstacles to reaching the highest possible immunization coverage, which need for focused interventions to improve mothers' attitudes and knowledge about vaccination. This study aims to assess the effectiveness of a structured teaching program on maternal knowledge and attitudes regarding

immunization among mothers of children under five in Bal Mahila Chikitsalaya, Turiaganj, Lucknow. The research design, approach, sampling, sample size, population, variables, data collection tools, and techniques used are outlined below.

Research Design

The study adopts a quantitative research design to systematically evaluate changes in maternal knowledge and attitudes regarding immunization following the structured teaching program. A pretest-posttest design will be employed, wherein data will be collected from eligible mothers before and after the intervention to assess its effectiveness.

Research Approach

The research approach is analytical and descriptive, aiming to analyze data quantitatively to evaluate the impact of the intervention on maternal knowledge and attitudes regarding immunization.

Sampling

The study will utilize systematic random sampling to select 75 mothers of children under five from the locality of BMC Turiaganj, Lucknow. This sampling technique ensures the representation of the target population while balancing cost and time constraints.

Sample Size

A sample size of 75 mothers is deemed adequate to detect significant changes in maternal knowledge and attitudes following the intervention. This sample size is selected based on statistical power and feasibility considerations.

Population

The population of interest comprises mothers of children under five who visit Bal Mahila Chikitsalaya for routine immunization services. These mothers represent the target audience for the structured teaching program and are crucial stakeholders in promoting childhood immunization.

Variables of the Study

The key variables of the study include:

1. *Independent variable*: Organized vaccination education program
2. *Dependent variables*: Maternal knowledge and attitudes regarding immunization

Tools Used for Data Collection

The primary tool used for data collection is a semi-structured questionnaire administered to eligible mothers before and after the intervention. The questionnaire includes items assessing maternal perceptions of immunization significance, religious beliefs, timing of vaccinations, and factors influencing immunization practices.

Source of Data (Primary and Secondary)

Primary data will be collected directly from eligible mothers through the administration of the questionnaire. Secondary data will be obtained from books, published and unpublished dissertations, journals, and internet sources to supplement primary findings and provide contextual insights into immunization practices.

Method of Data Collection

Data collection will involve two main phases: pretest and post-test. During the pretest phase, baseline data will be collected from eligible mothers using the questionnaire. Following the structured teaching program, posttest data will be collected using the same questionnaire to assess changes in maternal knowledge and attitudes regarding immunization.

Tools and Techniques Used

The Statistical Package for the Social Sciences (SPSS) version 22.0 will be used to analyze the data collected from the study. To compile demographic data and questionnaire responses, descriptive statistics including frequencies, percentages, means, and standard deviations will be calculated. Inferential statistical techniques, including t-tests and correlation analysis, will be employed to examine the effectiveness of the structured teaching program and explore relationships between maternal knowledge and attitudes regarding immunization.

DATA ANALYSIS AND INTERPRETATION DEMOGRAPHIC DATA

Summary of Demographic Characteristics

The majority of babies in the sample were aged between 0-24 months, with the largest group being 13-24 months (33.33%) as shown in Table 1. The sample was nearly evenly split by sex, with a slight majority of males (53.33%) as shown in Table 2. Most mothers were aged between 26-35 years, comprising 60% of the sample as shown in Table 3. A significant majority of the mothers identified as Hindu (65.33%) and were homemakers (60%) as shown in Table 4 and Table 5. The education levels varied, with the highest proportion of mothers having secondary education (40%) as shown in Table 6.

Table 1. Age Representation of Baby.

Age Group	Frequency	Percentage
0-6 months	20	26.67%
7-12 months	15	20.00%
13-24 months	25	33.33%
25-36 months	10	13.33%
37-48 months	5	6.67%
Total	75	100%

Table 2. Sex of Baby.

Sex	Frequency	Percentage
Male	40	53.33%
Female	35	46.67%
Total	75	100%

Table 3. Age Representation of Mother.

Age Group	Frequency	Percentage
20-25 years	15	20.00%
26-30 years	25	33.33%
31-35 years	20	26.67%
36-40 years	10	13.33%
41-45 years	5	6.67%
Total	75	100%

Table 4. Religion of the mother.

Religion	Frequency	Percentage
Hindu	49	65.33%
Muslim	20	26.67%
Sikh	4	5.33%
Chrisitan	2	2.67%
Total	75	100%

Table 5. Occupation of the mother

Occupation	Frequency	Percentage
Employed	30	40.00%
Homemaker	45	60.00%
Total	75	100%

Table 6. Education Level of the mother

Education Level	Frequency	Percentage
Illiterate	5	6.67%
Primary education	25	33.33%
Secondary education	30	40.00%
Undergraduate	15	20.00%
Total	75	100%

KNOWLEDGE-BASED QUESTIONNAIRE

The post-test responses show a significant increase in the number of mothers correctly identifying the definition of immunization (from 55 to 70). There is also a decrease in the number of mothers who were unsure (from 15 to 2), indicating improved knowledge following the structured teaching program as shown in above Table 7.

Table 7. Questionnaire on immunization knowledge assessment.

1. Immunization is-	Pre-Test Responses	Post-Test Responses
a. Child get doses of vaccines administer either by injection or by oral drops against infectious diseases.	55	70
b. Any other	5	3
c. Don't know	15	2

Table 8. Questionnaire on Impact of Mothers' Awareness for Timely Vaccination.

2. Does timely vaccination important for children-	Pre-Test Responses	Post-Test Responses
a. Yes	70	73
b. No	5	2

The majority of mothers recognized the importance of timely vaccination both before and after the intervention. However, there was a slight increase in the number of mothers who acknowledged the importance (from 70 to 73), suggesting a reinforcement of this critical knowledge as shown in Table 8.

Table 9. Questionnaire on Recommended Age for Starting Child Immunization.

3. At what age should immunization start for any child-?	Pre-Test Responses	Post-Test Responses
a. At birth or as soon as possible	60	68
b. Within 15 days	5	4
c. At 6th week	5	2
d. At 9th week	5	1

Post-test responses indicate an increase in the number of mothers who correctly identified that immunization should start at birth or as soon as possible (from 60 to 68) as shown in Table 9. Incorrect

responses decreased, demonstrating an improved understanding of the appropriate timing for starting immunization.

Table 10. Questionnaire on Necessity of Immunization for Infants

4. Immunization is essential for-	Pre-Test Responses	Post-Test Responses
Every Infant	75	75

All mothers correctly identified that immunization is essential for every infant in both pre-test and post-test responses, showing consistent awareness as shown in Table 10.

Table 11. Questionnaire on Benefits of Immunization.

5. What are the benefits of Immunization-	Pre-Test Responses	Post-Test Responses
a. All of the above	65	70
b. Vaccination may protect us from many life-threatening diseases.	5	3
c. Immunization prevents the spread of diseases from one person to another.	3	2
d. Vaccination may decrease the severity of the disease.	2	0

There was an increase in the number of mothers who recognized all benefits of immunization (from 65 to 70) as shown in Table 11. This indicates that the structured teaching program effectively conveyed the comprehensive benefits of immunization.

Table 12. Questionnaire on Timing of Hepatitis B Vaccine Administration in Newborns.

6. Do you know Hepatitis – B vaccine is given to child at the time of birth or within 24 hours after birth-	Pre-Test Responses	Post-Test Responses
a. Yes	50	65
b. No	20	7
c. Don't Know	5	3

Post-test responses show an increase in the number of mothers who are aware that the Hepatitis-B vaccine should be given at birth or within 24 hours (from 50 to 65) as shown in Table 12. The number of mothers who were unaware or unsure decreased, indicating enhanced knowledge.

Table 13. Questionnaire on Awareness of Tuberculosis Vaccine Availability.

7. Any vaccine available to prevent the spread of tuberculosis-	Pre-Test Responses	Post-Test Responses
a. Yes	45	60
b. No	15	8
c. Don't know	15	7

There was a notable increase in the number of mothers who correctly identified that a vaccine is available to prevent tuberculosis (from 45 to 60) as shown in Table 13. The structured teaching program effectively reduced misinformation and uncertainty.

Table 14. Questionnaire on Common Reactions in Children After Vaccination.

8. Do you know the usual reactions that child developed after vaccination-	Pre-Test Responses	Post-Test Responses
a. All of the above	60	70
b. Redness and swelling where shot is given	10	5
c. Loss of appetite	5	2
d. Feeling tired	0	1
e. Mild fever	0	0

Post-test results show an increase in mothers recognizing all usual reactions after vaccination (from 60 to 70) as shown in Table 14. The responses indicate improved comprehensive awareness of vaccination side effects due to the teaching program.

Table 15. Questionnaire on Actions Taken in Response to Post-Vaccination Reactions.

9. What will you do where there is a reaction after vaccination-	Pre-Test Responses	Post-Test Responses
a. Home remedies	25	10
b. Take medicines prescribed during vaccination	40	55
c. Any other	10	5

There was a significant increase in the number of mothers who would take prescribed medicines if a reaction occurred after vaccination (from 40 to 55) as shown in Table 15. This change reflects improved understanding and appropriate response measures post-intervention.

Table 16. Questionnaire on Administration of Polio Drops to Children.

10. Do you give polio drops to your child-	Pre-Test Responses	Post-Test Responses
a. Yes	70	72
b. No	5	3
c. Any other	0	0

The majority of mothers already gave polio drops to their children before the intervention. Post-test responses show a slight increase in affirmative responses (from 70 to 72), suggesting a marginal improvement in adherence to polio vaccination as shown in Table 16.

Table 17. Questionnaire on Purpose of Oral Polio Vaccine Administration

11. Oral polio vaccine is given towards-	Pre-Test Responses	Post-Test Responses
a. Poliomyelitis (To prevent paralysis)	70	74
b. Measles	2	1
c. Tuberculosis	3	0
d. Any other	0	0

The post-test responses show an increase in the correct identification of the purpose of the oral polio vaccine (from 70 to 74) as shown in Table 17. The decrease in incorrect responses indicates improved knowledge due to the structured teaching program.

Table 18. Questionnaire on Awareness of Vaccine for Preventing Severe Diarrhea

13. A vaccine is available to prevent the severity of Diarrhea, Do you know about it-	Pre-Test Responses	Post-Test Responses
a. Yes	40	55
b. No	35	18

There was a significant increase in the number of mothers who are aware of a vaccine to prevent the severity of diarrhea (from 40 to 55) as shown in Table 18. This suggests enhanced knowledge following the intervention.

Table 19. Questionnaire on Awareness of New Vaccines in Universal Immunization Schedule

14. Few new vaccines (like JE, MR, and Pentavalent) are introduced in Universal Immunization schedule. Are you aware of it-	Pre-Test Responses	Post-Test Responses
a. Yes	35	60
b. No	25	12
c. Don't know	15	3

Post-test responses indicate a substantial increase in awareness of new vaccines like JE, MR, and Pentavalent (from 35 to 60) as shown in Table 19. The decrease in "No" and "Don't know" responses highlights the effectiveness of the teaching program.

Table 20. Questionnaire on Understanding of Whooping Cough as Infectious or Congenital

15. Whooping cough / Pertussis (Kaali khaasi) is an -	Pre-Test Responses	Post-Test Responses
a. Infectious disease	70	75
b. Congenital disease	2	0

The increases in the correct identification of whooping cough as an infectious disease (from 70 to 75) and the elimination of incorrect responses demonstrate improved understanding post-intervention as show in Table 20.

Table 21. Questionnaire on Knowledge of Measles Etiology.

16. Measles (Choti Maata) caused by -	Pre-Test Responses	Post-Test Responses
a. Microorganism	70	72
b. Sin/God's play	2	0
c. Don't know	3	3

Post-test responses show a slight increase in correct identification of the cause of measles (from 70 to 72) and the elimination of the belief that it is caused by sin or God's play, reflecting improved scientific understanding as shown in Table 21.

Table 22. Questionnaire on Understanding of Neonatal Tetanus Cause.

17. Causes of neonatal tetanus-	Pre-Test Responses	Post-Test Responses
a. All of the above (Microorganism, Sin/God's Play)	60	68
b. Don't know	5	2

The increase in the number of mothers who correctly identified all causes of neonatal tetanus (from 60 to 68) and the decrease in those who did not know (from 5 to 2) indicate better knowledge post-intervention as shown in Table 22.

Table 23. Questionnaire on Availability of Vaccine for Japanese Encephalitis

18. Is there any vaccine available for Japanese Encephalitis (Dimagi Bukhaar) -	Pre-Test Responses	Post-Test Responses
a. Yes	40	58
b. No	20	12
c. Don't know	15	5

The post-test responses show an increase in awareness of the vaccine for Japanese Encephalitis (from 40 to 58) and a decrease in uncertainty, indicating improved knowledge as shown in Table 23.

Table 24. Questionnaire on Familiarity with Night Blindness

19. Have you ever heard about night blindness-	Pre-Test Responses	Post-Test Responses
a. Yes	50	65
b. No	25	8

There was a significant increase in the number of mothers who had heard about night blindness (from 50 to 65), suggesting enhanced awareness following the structured teaching program as shown in Table 24.

Table 25. Questionnaire on Benefits of Vitamin A Supplement

20. Vitamin A supplement protects against -	Pre-Test Responses	Post-Test Responses
a. Yes	65	70
b. Night blindness	5	3

Post-test responses show an increase in the number of mothers recognizing all benefits of Vitamin A supplements (from 65 to 70) and a decrease in partial knowledge, indicating improved comprehensive understanding as shown in Table 25.

Table 26. Questionnaire on Response to Delay in Child Vaccination.

21. What should be done if there is a delay in getting the child vaccinated-	Pre-Test Responses	Post-Test Responses
a. Consultation with doctor and healthcare providers then administer vaccine according to their advice	60	72
b. Don't know	10	3
c. Skip that vaccine	5	0

There was an increase in the correct action of consulting healthcare providers for delayed vaccination (from 60 to 72) and a decrease in uncertainty and incorrect actions, reflecting improved decision-making knowledge post-intervention as shown in Table 26.

Attitude Scale Regarding Immunization

The analysis of pre-test and post-test responses on the attitude scale regarding immunization shows significant positive changes in mothers' attitudes following the structured teaching program. Most

questions indicated increased agreement with pro-vaccination statements and reduced uncertainty and disagreement, suggesting that the program effectively enhanced mothers' knowledge and attitudes toward immunization. However, some areas, such as concerns about severe side effects and gender biases, still require further education and intervention to address lingering misconceptions and promote equitable healthcare practice as shown in Table 27 and Figure 1.

Table 27. Attitudes and Beliefs Regarding Vaccination.

S.N.	Questions	Pre-Test			Post-Test		
		Disagree	Uncertain	Agree	Disagree	Uncertain	Agree
1.	Vaccination is important	10	5	60	5	2	68
2.	Vaccines have severe side effects	45	20	10	30	10	35
3.	Infants can be infected with the disease which they are immunized against	5	15	55	2	8	65
4.	Vaccination side effects can cause death	60	10	5	35	5	35
5.	Vaccination is more important for boys than girls	8	20	47	3	15	57
6.	Have you recommended others to vaccinate their children?	55	10	10	45	5	25
7.	Vaccination saves the community (e.g., Polio, Influenza)	5	15	55	2	10	63
8.	Tetanus vaccine is important for infant and mothers' health	20	25	30	10	20	45
9.	Vaccines prevent mortality & morbidity	8	15	52	3	12	60

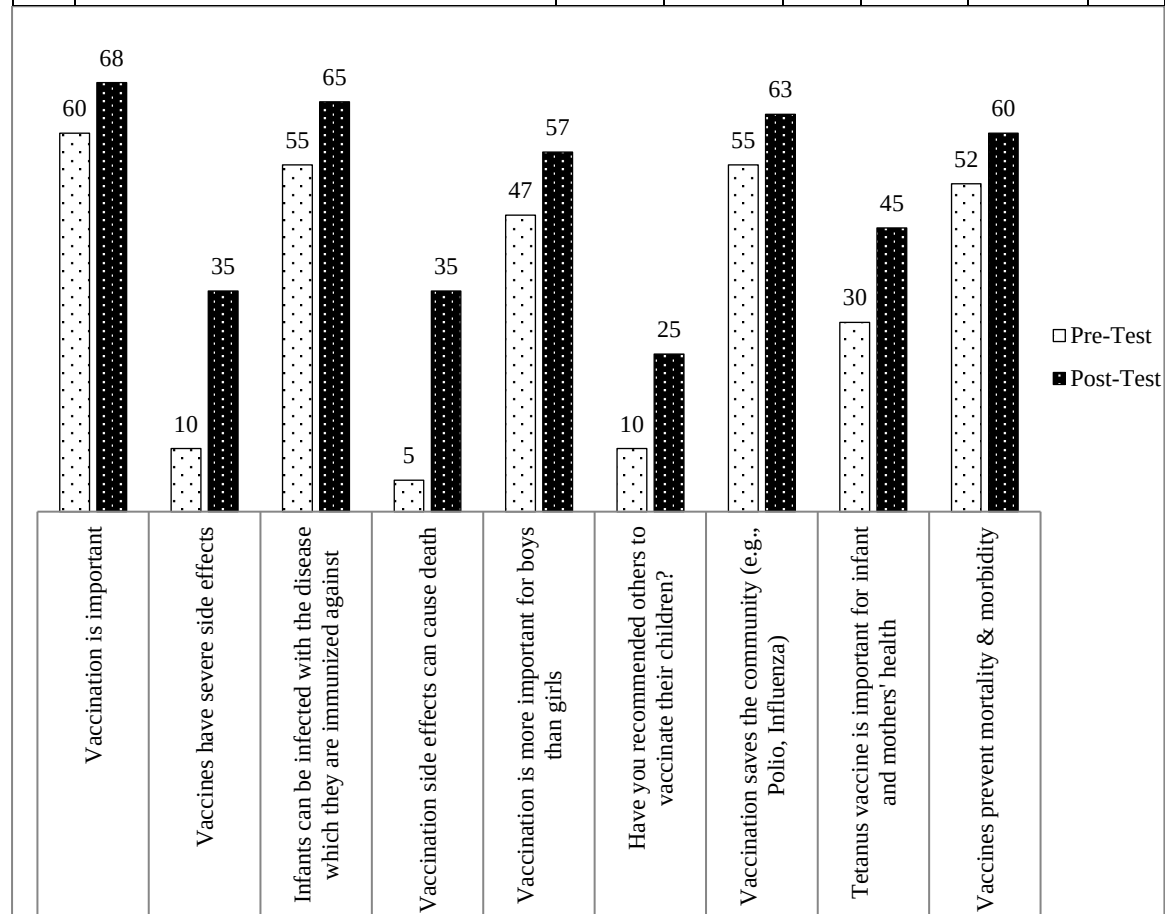


Figure 1. Attitude Of Mothers Regarding Immunization.

SUMMARY OF FINDINGS

The study aimed to evaluate the effectiveness of a structured teaching program on mothers' knowledge and attitude levels regarding immunization for children under 5 years of age at Bal Mahila Chikitsalaya, Turiaganj, Lucknow. The pre- and post-test results of 75 moms were compared using a paired t-test as shown in Table 28.

Table 28. Descriptive Statistics and Paired t-Test Results for Knowledge and Attitude Levels Before and After the Structured Teaching Program.

	N	Mean	SD	T-statistics	p-value	Result
Pre-Test	75	60.48	10.34	5.45	0.001	Significant
Post Test	75	70.62	9.76			

The descriptive statistics showed that the mean pre-test score was 60.48 (SD = 10.34), and the mean post-test score was 70.62 (SD = 9.76). A statistically significant rise in scores from the pre-test to the post-test was found using the paired t-test ($t(74) = 5.45$, $p < .001$), suggesting that the mothers' knowledge and attitudes regarding immunization were much enhanced by the structured training program.

We reject the null hypothesis (H_0) since the p-value is smaller than the significance level of .05. This finding bolsters the alternative hypothesis (H_1), indicating that the mothers' attitudes and knowledge toward vaccination were improved by the structured instruction program.

DISCUSSION

The structured teaching program demonstrated a significant impact on both the knowledge and attitudes of mothers regarding immunization. The increases in correct responses and positive attitudes across most questions indicate that the program was successful in enhancing understanding and altering perceptions about immunization.

1. *Improved Knowledge:* The program effectively increased mothers' knowledge about critical aspects of immunization, including the definition, timing, importance, benefits, and specific vaccines like Hepatitis-B and tuberculosis. The decrease in the number of mothers who were unsure or held incorrect beliefs highlights the program's success in addressing knowledge gaps.
2. *Shift in Attitudes:* Positive shifts in attitudes were observed, particularly regarding the importance of vaccination and its community benefits. However, some attitudes, such as concerns about severe side effects and gender biases, require ongoing education to ensure mothers fully understand the safety and necessity of vaccines for all children.

CHALLENGES AND LIMITATIONS

While the program showed overall success, several challenges and limitations were noted:

1. *Persistent Misconceptions:* Despite the improvement, some misconceptions persisted, particularly regarding the severity of side effects and the belief that vaccination is more important for boys. These findings suggest that additional, targeted educational efforts are necessary to address these specific concerns.
2. *Sample Size and Generalizability:* 75 mothers served as the study's relatively small sample size, and it was carried out at a single healthcare facility. Although encouraging, the results might not apply to all groups. To validate the results, larger and more varied sample sizes should be taken into account in future research.
3. *Cultural and Socioeconomic Factors:* Attitudes on vaccination can be greatly influenced by social and cultural variables. The results might have been impacted by the high proportion of homemakers and the majority of Hindu participants. Comprehending and mitigating cultural and socioeconomic obstacles is crucial for the efficacy of vaccination campaigns.

RECOMMENDATIONS FOR FUTURE PROGRAMS

Based on the findings, several recommendations can be made to enhance the effectiveness of future immunization education programs:

1. *Continuous Education:* Ongoing educational initiatives are necessary to address persistent misconceptions and reinforce the benefits of immunization. These initiatives ought to be inclusive and attentive to cultural differences.
2. *Community Engagement:* Involving influential people and community leaders can aid in disseminating factual information and dispelling falsehoods. Programs for organized instruction can be enhanced by community-based interventions.
3. *Targeted Interventions:* Specific concerns, such as the perceived severity of vaccine side effects and gender biases, should be addressed through targeted educational efforts. Providing evidence-based information and addressing individual fears and concerns can help build trust and acceptance.
4. *Broader Outreach:* Expanding the reach of educational programs to include a broader range of healthcare facilities and communities can improve immunization coverage. Wider information transmission can be facilitated by cooperation with governmental and non-governmental groups.
5. *Monitoring and Evaluation:* Regular monitoring and evaluation of educational programs are essential to assess their effectiveness and make necessary adjustments. Participant feedback gathering and analysis can yield insightful information for ongoing development.

CONCLUSION

The Bal Mahila Chikitsalaya structured education program in Turiaganj, Lucknow, was successful in enhancing mothers' attitudes and knowledge about immunizing their under-five children. The program led to significant increases in correct responses and positive attitudes, indicating enhanced understanding and perception of immunization.

However, the persistence of some misconceptions and biases highlights the need for ongoing education and targeted interventions. Addressing these challenges and expanding the reach of educational programs can improve immunization coverage and ultimately enhance child health outcomes.

The findings of this study underscore the importance of educational initiatives in promoting immunization and suggest that structured teaching programs can be a valuable tool in public health efforts to increase vaccine uptake and protect communities from preventable diseases.

This study aimed to assess the effectiveness of a structured teaching program on the knowledge and attitude levels of mothers of children under five years of age regarding immunization at Bal Mahila Chikitsalaya, Turiaganj, Lucknow. The program's goals were to close information gaps and change people's attitudes in order to increase vaccination rates.

The findings demonstrated significant improvements in both knowledge and attitudes post-intervention. Mothers exhibited a better understanding of the importance, timing, and benefits of immunization, as well as specific vaccines such as Hepatitis B and those for tuberculosis. The increase in correct responses and positive attitudes across most survey items highlights the program's success in enhancing maternal understanding and perceptions of immunization.

Despite the overall positive outcomes, some challenges remain. Persistent misconceptions about severe side effects and a gender bias favoring boys for vaccination underscore the need for continued educational efforts. These findings suggest that while structured teaching programs are effective, they must be part of an ongoing, comprehensive strategy that includes continuous education, community engagement, and targeted interventions to address specific concerns.

The study also emphasized how crucial social and cultural factors are in determining how people feel about vaccinations. Tailoring educational content to address these factors and expanding outreach to include more diverse populations can further improve the program's effectiveness.

In conclusion, the structured teaching program significantly enhanced the knowledge and attitudes of mothers regarding immunization. By continuing to address persistent misconceptions and expanding the reach of such programs, healthcare providers can further improve immunization rates, ultimately leading to better health outcomes for children. These findings reinforce the critical role of education in public health initiatives and provide a foundation for future efforts to promote immunization and protect communities from preventable diseases.

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