

Original Article

A CROSS-SECTIONAL STUDY TO ASSESS IMMUNIZATION COVERAGE AND KNOWLEDGE, ATTITUDE and PRACTICE OF MOTHERS REGARDING IMMUNIZATION IN SEEPAT BILASPUR

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ABSTRACT

Objective: To assess immunization coverage in up to 23 mo old children with respect to economic status and Knowledge, Attitude and Practice of mothers regarding immunization.

Methods: A cross-sectional study was conducted, including 125 mothers who had children aged grouped between 0-23 mo from 7 fully functional anganwadis. The data was collected using a semi-structured questionnaire and analyzed using Microsoft Excel. The chi-square test/Fisher exact test was applied, and results were presented in the form of tables. Findings were compared against standards and/or findings from similar studies and discussed.

Results: Immunization coverage was found to be 79%. Almost 85% of mothers believe that the vaccine prevents communicable diseases, and 82.4% agree that immunization at birth is important. The majority of mothers (92%) agreed that their children should be vaccinated as soon as possible. Related to the attitude of mothers towards immunization, a maximum (93.6%) percent of mothers believed that even a healthy child should be fully immunized for protection from diseases, and 86% had no fear related to vaccinating their child. More than half (72.8%) of mothers informed that they would contact anganwadi workers for the next dose of vaccine. Almost 62% of mothers agreed to breastfeed their children after an oral vaccine, and 87.2% of mothers said that they would take their children for regular vaccination. No association ($P>0.05$) was found between the child's immunization status and the socioeconomic status of the family.

Conclusion: The study concludes immunization coverage is 79% and there is a positive attitude towards immunization, but less knowledge is related to the age appropriate vaccine. So services focusing on immunization education and provision need to be improved.

Keywords: Immunization, Attitude, Knowledge, Mothers

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INTRODUCTION

Immunization is the process by which a person becomes immune to or resistant to an infectious disease, usually by receiving immunizing substances such as vaccines, antibodies, and immunoglobulins [1]. A vaccine is an immune-biological substance designed to produce specific protection against a given disease through the production of protective antibodies [2]. They can be divided into four categories: live, killed, cellular fragments, toxoids, or combinations. Immunization is one of the most economically advantageous interventions ever created for preventing the suffering caused by avoidable illness, disability, and mortality. One of the most important factors in infant survival programmes around the globe is the immunization strategy, and the World Health Organization (WHO) designates the last week of April as Immunization Week each year.

WHO introduced its "Expanded Programme on Immunization" (EPI) against six preventable childhood illnesses (measles, tetanus, polio, diphtheria, and pertussis), which was called "Universal Child Immunization" (UCI) by UNICEF in 1985 [2].

BCG (1965) was the first immunization made available in India as part of the National Tuberculosis Programme [2]. With the goal of immunizing 85% of children by 1990, the Indian government introduced EPI (1978) and then relaunched it (1985) it as Universal Programme of Immunization (UPI) [2]. The National Family Health Survey (NFHS), NFHS-2, and NFHS-3 [3-5]. Have revealed that immunisation coverage increased (35.4% in 1992-1993, 42% in 1998-99, and 43.5% in 2005-2006), indicating a rise in vaccination prevalence over time. The most recent NFHS-4 study, performed in 2015-16, found that Chhattisgarh [6] had an 80% vaccination rate

compared to India's 62%. The numbers obtained, however, fall far short of the 85% goal. To increase regular immunization coverage, Mission Indradhanush (MI) started in December 2014, aiming to fully immunize all children under the age of two and pregnant women with every vaccine currently available. Its intensified phase (IMI) began in October 2018 with the goal of increasing immunization rates in a few districts and towns so that by December 2018, more than 90% of the population would be fully immunized. IMI 2.0, for complete immunization coverage, began from December 2019 to March 2020 [7].

Immunization campaigns are crucial for fostering herd immunity, which lowers newborn and child mortality and boosts the quality of life. The timing of immunization is one of the main determining variables because frequent and early immunization can interfere with the immune system's response and reduce the duration of protection [8, 9]. Therefore, it is crucial that vaccinations are administered on time. A healthy child is the result of a mother's tireless efforts and sleepless nights, and studies have shown that mothers' literacy, employment status [10-13], utilization of health services [10], and misperception of vaccines [14] are some of the factors contributing to poor coverage and dropout rates. This emphasises the need for further research and development in the field of childhood immunization.

Active immunization can prevent many under-five deaths due to vaccine-preventable diseases and achieve the Sustainable Development Goal of ending preventable child deaths by 2030. So, this research was conducted to evaluate immunization coverage in children up to 23 mo old with respect to economic status and mothers' knowledge, attitude, and practices regarding immunization.

MATERIALS AND METHODS**Study site**

Study site is Seepat, Masturi Tehsil of Bilaspur district.

Study design

A cross-sectional study was conducted from July 2019 to November 2019. Seepat has 10 Anganwadi centres, out of which 7 are fully functional and were included.

Study participants**Inclusion criteria**

Mothers who had children between 0 to 23 mo and were present at the time of data collection and consented to participate.

Exclusion criteria

Mothers who had children older than 23 mo and did not consent to participate in the study.

Study process

A semi-structured questionnaire was made to assess the role of the following parameters regarding immunization-age, and gender of the child, education of the mother, family type, socio-demographic variables, and immunization status of the child. The questionnaire also had questions to assess mothers' knowledge, attitude, and practice (KAP) of immunization.

Definitions used

Full immunization: A child was considered fully immunized if he/she has received one dose of BCG and measles; three doses of DPT, and the polio vaccine (apart from the zero dose given at birth).

Partial immunization: Those who have received one dose of vaccine for their age as per schedule.

Unimmunized: Those who received no vaccine.

Sample size

Using the convenient sampling method, a total of 125 mothers who had children between 0 and 23 mo, were present at the time of data collection and gave consent were included in the study population. Randomly, 15-20 mothers with children between 0-23 months of age were selected from each Anganwadi centre and their immunization status was noted from either written records at the Anganwadi or from the immunization card they brought with themselves (The immunization status was noted on the basis of the last dose received before the current visit).

Statistical analysis

The data was analysed using Microsoft Excel, and all categorical variables were expressed in percentages. The Chi-square test/Fisher exact test was applied to determine the association between dependent and independent factors (categorical variables). Results were presented in the form of tables, and findings were compared against standards and/or findings from similar studies and discussed.

RESULTS

The socio-demographic profile showed the maximum number of children was 9-16 mo (53.6%), followed by 17-24 mo (40.8%). It was found that males and females were almost equal in number (52.8% and 47.2%). Most of the mothers (48%) were primary educated, and very few (8.8%) had higher education. Nuclear families (59%) were common, and 28% of the study population belonged to the lower middle-class group and 20% to the upper class (table 1).

Table 1: Sociodemographic characteristics of the study population (N=125)

| Variables | Categories | Frequencies (%) |
|--------------------------|------------------|-----------------|
| Age of child | 1-8 mo | 7(5.6%) |
| | 9-16 mo | 67(53.6%) |
| | 17-24 mo | 51(40.8%) |
| Gender of child | Male | 66(52.8%) |
| | Female | 59(47.2%) |
| Education level (mother) | Illiterate | 8(6.4%) |
| | Primary | 60(48%) |
| | Middle | 21(16.8%) |
| | Higher | 16(12.8%) |
| | Higher secondary | 11(8.8%) |
| Type of family | Graduation | 9(7.2%) |
| | Nuclear | 72(59.2%) |
| | Joint | 51(40.8%) |
| Socio economic status | Upper | 1(0.8%) |
| | Upper middle | 25(20%) |
| | Middle | 29(23.2%) |
| | Lower middle | 35(28%) |
| | Lower | 35(28%) |

Table 2: Immunization-related knowledge of mothers (N=125)

| Knowledge of mothers | Response of the study participant | | |
|---|-----------------------------------|-----------|------------|
| | Yes | No | Don't Know |
| Age of vaccination at different intervals? | 33(26.4%) | 35(28%) | 46(36.8%) |
| Does it prevent communicable disease? | 106(84.8%) | 16(12.8%) | 3(2.4%) |
| Should Vaccination be given from birth? | 103(82.4) | 14(11.2%) | 8(6.4%) |
| Are vaccines harmful to children? | 27(21.6%) | 96(76.8%) | 2((1.6%) |
| Can a child with common cold be vaccinated? | 70(56%) | 49(39.2%) | 6(4.8%) |
| Can a child with fever be vaccinated? | 67(53.6%) | 45(36%) | 13(10.4%) |
| Can a child with diarrhoea be vaccinated? | 71(56.8%) | 40(32%) | 14(11.2%) |
| If vaccination is missed, should child be vaccinated as soon as possible? | 115(92%) | 7(5.6%) | 3(2.4%) |
| About the side effects of vaccination? | 107(85.6%) | 7(5.6%) | 11(8.8%) |
| About side effects resolving within 24 h? | 90(72%) | 15(12%) | 20(16%) |

The majority of mothers (36.8%) are not aware of the various age-appropriate vaccines. While 82.4% of mothers believed that immunization at birth was crucial, 84.8% of mothers thought that vaccines helped to prevent communicable diseases. Mothers, who made up 76.8% of respondents, thought immunizations were good for kids. Despite having a cold (56%), or moderate fever (53%), or diarrhoea (56.8%), mothers agreed to have their child immunized. Vaccinations should be given to children as soon as feasible, according to 92% of parents, while 85.6% of mothers were aware of the potential negative effects. Mothers were (72%) aware that vaccine-related side effects go away after a day (table 2).

Related to the attitude of mothers towards immunization, the study found that most of the mothers (70.4%) will recommend vaccines to other children. 44.8% of mothers informed that they were encouraged by experts' advice for vaccination, while 93.6% of mothers believed that even a healthy child should be fully immunized for protection. Maximum study participants (90.4%) agreed that even if there are side effects due to immunization, they will follow the vaccination schedule. The majority of mothers (96%) informed that they are being encouraged to get their children immunized and 86% of mothers have no fear related to vaccinating their child (table 3).

Table 3: Immunization-related attitude of mothers (N=125)

| Attitude of mothers | Response of the study participant | | |
|---|-----------------------------------|------------------|---------------|
| | Strongly recommended | Only if they ask | No comments |
| Will you recommend vaccine to other children? | 88(70.4%) | 37(29.6%) | NA |
| Who encourages you to give vaccination? | Government | Expert advice | Advertisement |
| | 32(25.6%) | 56(44.8%) | 37(29.6%) |
| Does a healthy child need vaccination? | Yes | No | Don't know |
| | 117(93.6%) | 8(6.4%) | NA |
| Will you follow immunization schedule after your child gets side effects from previous one? | 113(90.4%) | 12(9.6%) | NA |
| Are you encouraged to give vaccination to your child? | 120(96%) | 5(4%) | NA |
| Do you have fear regarding immunization? | 13(10.4%) | 108(86.4%) | 4(3.2%) |

A majority (85.6%) of mothers said that medicine is required for vaccine-related fever, while 72.8% would like to contact an Anganwadi worker if their child missed a dose of vaccination or to know the

schedule of the next dose. Mothers (62.4%) agreed to breastfeed their child after an oral vaccine, and 87.2% of mothers said that they would take their child for a regular vaccination (table 4).

Table 4: Immunization-related practice followed by mothers (N=125)

| Practice of mother | Response of the study participant | | |
|--|-----------------------------------|-------------|------------------|
| | No medicine | Medicine | Stop vaccination |
| What will you do if there is fever following vaccination? | 16(12.8%) | 107(85.6%) | 2(1.6%) |
| If your child missed a dose of vaccine, whom will you contact? | Doctor | Grandmother | AWW* |
| | 29(23.2%) | 5(4%) | 91(72.8%) |
| Whom will you contact for next vaccine? | 28(22.4%) | 8(6.4%) | 89(71.2%) |
| | Yes | No | Don't Know |
| Do you breastfed your child after oral vaccine? | 78(62.4%) | 26(20.8%) | 21(16.8%) |
| Do you take your child for vaccination regularly? | 109(87.2%) | 2(1.6%) | 14(11.2%) |

*Anganwadi worker

Study participants were divided into two groups according to socio-economic status: upper (consisting of upper class, upper middle 2, and middle class) and lower group (lower middle class and lower class). 52 children were immunized in the upper-class group and 73 children in the lower-class group. It was found that both upper and lower-class groups were equally aware of the importance of getting

their children immunized, as more than half (78.8% and 79.5%) of children were fully immunized for their age, and only 21% in the upper-class and 20% in the lower class were partially immunized. The study found that there was no statistically significant relationship between socioeconomic status and the immunization status of the child (table 5).

Table 5: Association between socioeconomic status and immunization status (N=125)

| Socio-economic group | Partial immunized | Completely immunized | Total | X ² | P-value |
|----------------------|-------------------|----------------------|----------|----------------|---------|
| Upper* | 11 (21.2) | 41 (78.8) | 52 (100) | 0.007 | 0.9 |
| Lower** | 15 (20.5) | 58 (79.5) | 73 (100) | | |
| Total | 26 | 99 | 125 | | |

Fig. in parentheses indicate the percentage of the row total. p-value<0.05 (sig)* Result was statistically significant by chi-squared analysis and Fisher exact test (#). *UPPER includes Upper class, Upper middle 2, and Middle class. **LOWER includes Lower middle class and Lower class.

DISCUSSION

The study involved 125 children overall, ranging in age from 0 to 23 mo, along with their mothers. More than half (79%) of the study group had received all recommended vaccinations, whereas only 21% were partially vaccinated. Out of those who had received partial immunization, 12% of children were under the legal age limit

for receiving full immunization, while 9% were above that age. Research from India has found variation in immunization coverage (51%-100%) [15-20]. The study site, which was an Anganwadi (the current study) as opposed to a hospital [15, 18-20] or community-based study [16, 17, 19], may have contributed to the difference in immunization coverage. It can be said that the percentage of immunization coverage is high in hospital-based studies, which may

be because people who visit paediatric clinics or well-baby clinics are the ones who want to get their child immunized, increasing the percentage of immunization coverage. These people are also the ones who are more aware of the benefits of the vaccination and will be motivated to follow the schedule, as well as having the power to influence others. Other variables, such as study design, study population, sample size, and cultural and geographic characteristics that may have a significant impact on immunization coverage, may also contribute to the disparity in coverage percentage. While lower immunization coverage reported by studies from Pakistan 51.3% [21] and Iraq 56.3% [22]. International immunization standards and local cultural norms may differ, which would explain this variance.

The current study found that few mothers (36.8%) had knowledge about the different age intervals of vaccination, while Kumar PT *et al.* [23] reported that a large proportion (73%) of mothers had good knowledge of immunization. The reason for the difference in knowledge can be due to the study settings, i.e., mothers coming to immunization clinics by default are aware of the benefits of the vaccination and so, in turn, are more acquainted with the pros and cons of immunization. The majority of mothers were (84.8%) aware that vaccines prevent communicable diseases, and 76.8% of mothers believed that they are beneficial for children, so they should be started at birth (82.4%), while studies [17, 24] have concluded that mothers had fair knowledge regarding the need for immunization but knowledge related to diseases prevented and doses of vaccine was poor. This discrepancy can be due to study settings and awareness programmes being run in the area. A majority of mothers agreed that the common cold, mild fever, and diarrhoea are not contraindications for a child's immunization, though studies [17] have reported them as contraindications for vaccination. More than half of the mothers (85.6%) knew about vaccine-related side effects, and 72% of mothers were aware that they resolve within 24 h.

Maximum mothers (96%) showed a positive attitude towards the immunization of their children and informed that they were encouraged by experts (doctors, nurses, paramedical) for vaccination and that they would contact Anganwadi workers if their child missed the dose or needed the next dose of vaccine. Similar findings are reported by studies. [17, 18, 24, 25] Some studies [26, 27] have concluded that relatives and friends serve as major sources of information, followed by healthcare workers. 85.6% of mothers said that vaccine-related fever can be treated by medicine. 67.4% of mothers said that they will breastfeed their child after the oral vaccine, and 87.2% of mothers said that they will take their children for regular immunization.

The present study found no association between the immunization status of the child and the socioeconomic status of the family, while research has concluded that socioeconomic status is an independent predictor of immunization status [28]. This change in the scenario probably occurred due to the improved awareness programmes to access immunization services and the social mobilization of the health workers, which have helped to tackle barriers to immunization. But still, the immunization coverage needs to be 100%, and for that, measures need to be taken.

LIMITATIONS OF THE STUDY

Only those mothers were included who consented to participate, so selection bias can arise. As it is a cross-sectional study and the sample included a small number of participants, generalizing study results is difficult.

CONCLUSION

The study concludes that immunization coverage is 79%, with a positive attitude towards immunization but less knowledge related to the age-appropriate vaccine. So, services focusing on immunization education and provision need to be improved.

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AUTHORS CONTRIBUTIONS

Dr. Suchita Singh has planned and designed the concept of the study, conducted the research, and co-drafted manuscript, and Dr. Deepika Badkur collected reference articles, drafted and reviewed the manuscript.

CONFLICT OF INTERESTS

Declared none

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