WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
Coden USA: WJPRAP Impact Factor 8.63
Volume 15, Issue 3, 1866-1896. Research Article ISSN 2277–7105

# IMPACT OF PHARMACIST PROVIDED EDUCATION REGARDING AWARENESS OF CHILDHOOD IMMUNIZATION AMONG PREGNANT WOMEN

**[1]*Mr. Riyaz Miya, [2]Ragini Katti, [3]Apoorva Kulkarni, [4]Gurukiran Ihiremath, Zainab Banu**

*M. PHARM

[1,2,3,4]Department of Pharmacy Practice Rajiv Memorial Education Society's College of Pharmacy Kalaburagi-585102 Karnataka 2023-2024.

Article Received on 05 Jan. 2026,
Article Revised on 25 Jan. 2026,
Article Published on 04 Feb. 2026,

https://doi.org/10.5281/zenodo.18481621

***Corresponding Author**

**Mr. Riyaz Miya**

M. PHARM, Department of Pharmacy Practice Rajiv Memorial Education Society's College of Pharmacy Kalaburagi-585102 Karnataka 2023-2024.

**How to cite this Article:** [1]*Mr. Riyaz Miya, [2]Ragini Katti, [3]Apoorva Kulkarni, [4]Gurukiran Ihiremath, Zainab Banu (2026). Impact of Pharmacist Provided Education Regarding Awareness of Childhood Immunization Among Pregnant Women. "World Journal of Pharmaceutical Research, 15(3), 1866–1896.

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## ABSTRACT

**Background:** Vaccines have thrived as one of the most successful health interventions that have diminished occurrence of infectious diseases and improved quality of life in the population. Although the vaccination coverage has been gradually increasing, the average total immunization coverage is far less than the desired outcome. Parental decisions regarding vaccination are very vital for increasing the vaccination rate and parent compliance to the immunization schedule. **Aim:** The aim of our study was to determine the impact of pharmacist provided education regarding awareness of childhood immunization among pregnant women. **Objective:** 1. To assess the awareness, attitude and practice of pregnant mothers on child's immunization and to know the factors affecting the completeness of vaccination and coverage. 2. To assess the immunization status of the children. 3. Improving childhood vaccination coverage and timeline is the key health policy objective in many developing countries.

**Methodology:** A prospective hospital based interventional study was carried out among the pregnant woman in Gulbarga Institute of Medical Sciences, Kalaburagi, Karnataka. The study has been conducted for a period of six months. The data were collected using data collection form and pre-designed questionnaire which included awareness, attitude and practice-based

questions. A baseline score has been collected after conducting a pretest on pregnant women visiting OBGYN (inpatient and outpatient) department. After a period of one-month post test was conducted and the scores were obtained. The pre and post test scores were compared and analyzed using t-test and ANOVA test. **Result:** Out of 302 pregnant women surveyed, the knowledge score of pre-tests was 22.5%, whereas post-test score was 76.5%. The attitude score of pre-tests was 32.9%, whereas post test score was 87.7% respectively. This shows a clear indication of improvement, followed by education, the practice score of pre-tests was 30.1% and post-test score was 79.4%. **Conclusion:** Although majority of pregnant women had satisfactory knowledge and positive attitude and practice towards immunization, certain factors (education status) plays a major impact in vaccination uptake. Hence efforts should be focused on improving their practice.

**KEYWORDS:** Childhood immunization, pregnant women, awareness, attitude and practice, vaccination.

## INTRODUCTION

One of the most significant contributions of the medical fraternity to mankind is the advent of vaccines. They are the most powerful, safe and cost-effective measures for prevention/control of a number of diseases.[1] According to PAHO, "Immunization is the process whereby a person is made resistant to a disease, typically by the administration of a vaccine." Vaccines stimulate the body's own immune system to protect the person against subsequent infection or disease. Immunization prevents diseases, disabilities, and deaths from vaccine-preventable diseases (VPDs), such as cervical cancer, poliomyelitis, measles, rubella, parotitis, diphtheria, tetanus, pertussis, hepatitis A and B, bacterial pneumonias, rotavirus diarrhoeal diseases and bacterial meningitis.[2]

Despite, India being a leading producer of vaccines, a significantly high number of children are still not completely immunized in India.[3] In terms of live births India stands ahead of all countries, but at the same time contributes to 20% of global child mortality. Though India is effectively organizing vaccination campaigns, a large majority of children are often left behind. The attitude and knowledge of parents regarding immunization play a major role in increasing vaccine coverage in India. This in turn depends on several factors including accessibility to grass root level health personnel, opportunity cost incurred by the parents to carry out the vaccination, and cultural practices prevailing in the area.[4]

In India, the immunization program was started in 1978 under the name of 'Expanded Program on Immunization (EPI)'. In 1985, EPI was changed and renamed "Universal Immunization Program (UIP)" to cover six VPDs (tuberculosis, diphtheria, pertussis, tetanus, polio, and measles). Across the globe, India's UIP is the largest of its kind in terms of quantity of vaccine, number of recipients, geographical spread and area covered. It caters to 27 million infants and 30 million pregnant women annually. The stated objectives of UIP are to: (i) rapidly increase immunization coverage, (ii) improve the quality of services, (iii) establish a reliable cold chain system at public health facility level, (iv) introduce a district-wide system for monitoring of performance, and (v) achieve self-sufficiency in vaccine production.[5]

The Government of India launched "Mission Indradhanush" in December 2014 to increase vaccination coverage for under – five children and pregnant women and has now launched Intensified Mission Indradhanush (IMI) to achieve full vaccination for>90% of potential beneficiaries by December 2018. New vaccines (pentavalent vaccine, oral Rota virus vaccine, injectable polio vaccine and pneumococcal vaccine) have been added to the Universal Immunization Program (UIP).[6] Government identified six high focused districts in Karnataka includes Gulbarga, Yadgir, Raichur, Bellari, Koppal, and Bangalore Urban. Launched Mission Indradhanush 1$^{st}$ phase from April 2015 to July 2015. Government launched 2$^{nd}$ phase of Mission Indradhanush from October 2015- January 2016 in remaining high focused districts. It also identified Yadgir as a high focused district due to high percentages of partial and unimmunized children and again launched the 2$^{nd}$ phase to improve the vaccination coverage.[7] As of October 2023, 12 phases have been completed and a total of 5.06 crore children and 1.25 crore pregnant women have been cumulatively vaccinated under the campaign.[8]

Non UIP vaccines- Indian Academy of Pediatrics Committee on Immunization- (IAPCOI) has suggested physicians to counsel parents regarding the efficacy and importance of following newer (special) vaccines such as Tdap, T conjucate, VI polysaccharide, IPV, Hepatitis A, Varicella Zooster Virus, Rota virus Vaccine, MMR, HPV, pneumococcal conjugate vaccine. The affordable can protect their children from above VPDs. Knowledge and awareness are being imparted to health professional by government of India and state governments by various means of Information Education and Communication (IEC).[9]

**National Family Health Survey**

**Table No. 1: Full immunization among children (age 12-23 months) by sex and NFHS rounds.**

| NFHS | Percent (C.I) | Male (C.I) | Female (C.I) | Sample |
|---|---|---|---|---|
| NFHS 1 | 35.46(34.61-36.33) | 36.84(35.58-38.11) | 34.87(33.60-36.17) | 11854 |
| NFHS 2 | 41.24(40.24-42.24) | 42.49(41.08-43.90) | 39.95(38.55-41.38) | 10076 |
| NFHS 3 | 43.54(42.59-44.49) | 45.41(44.04-46.78) | 41.89(40.45-43.34) | 10419 |
| NFHS 4 | 62.00(61.57-62.44) | 62.01(61.46-62.66) | 62.00(61.30-62.56) | 47826 |
| NFHS 5 | 76.21(75.80-76.61) | 76.77(76.22-76.32) | 75.82(75.23-76.39) | 43291 |

Table 1 shows immunization coverage among children aged 12-23 months. Full immunization coverage of children has consistently increased since 1992-93. In NFHS-1 (1992-93), a little over one-third of the children (35%) were fully vaccinated, which steadily increased to 41% in NFHS-2 (1998-99), 44% in NFHS-3 (2005-06), 62.5 in NFHS 4 (2015-16), and to over three-fourth (76%) in NFHS-5 (2019-21). The full immunization coverage gap between male and female children showed a considerable reduction from NFHS-1 to NFHS-5.[10]

**Knowledge, Attitude and Practice of parents regarding childhood immunization**

Children are considered fully immunized if they have received one dose of BCG, 3 doses of DPT and polio vaccine each and one dose of measles vaccine. The term “defaulter” refers to individuals who miss scheduled vaccinations for any reason, including health facility problems, such as cancelled sessions or vaccine stock outs. Defaulters need to be followed up and mobilized to attend the earliest available session, since the goal is to complete any missed vaccinations. Despite increased accessibility to health care services in both urban and rural India, utilization rates for these services remain quite low, hence the various predictive factors causing underutilization and increased default rates in immunization need to be addressed.[11]

Majority of the population in rural areas dependent mainly on government agencies for health care, including immunization. Immunization coverage is also associated with various socio-demographic factors. Progress towards achievements of vaccination targets can be done by evaluation of immunization coverage.[12]

Among the several factors that impact the success of immunization programs, parental decisions, knowledge, and practices regarding immunization has a key role to play. In addition, antenatal mothers have an indispensable contribution toward the child’s health as

they are primary caregivers, regular visitors to the health-care centers and reliable informants regarding child's illness.[13]

The uptake of vaccination services is dependent not only on availability of and accessibility to vaccination services but also other factors including knowledge and attitude of mothers. Studies have shown that understanding the maternal perceptions and knowledge about immunization helps health planners develop effective health education programs and messages. While the reasons for low immunization coverage have been proffered in general, mitigation efforts have focused on health system factors, but little attention has been paid to maternal knowledge, perception, beliefs, and practice. Understanding mothers´ knowledge and attitudes towards immunization could guide this aspect of multi-pronged efforts to improve routine immunization coverage.[14] Since the mothers are the primary care giver and supervisor regarding the child care at Indian setting empowering the mother or women with knowledge will be the great help in prevention of communicable diseases, therefore mother should know regarding the vaccination.[15]

Studies also indicate that illiterate, poor, and superstitious mothers are less likely to follow vaccination program. Research study indicates that geographical barriers and negative publicity of vaccines may also be a reason for lack of vaccination coverage. Poor knowledge, negative attitude, and perception among parents have been identified as a reason for noncompliant toward vaccines. Community-based educational interventions are strongly needed, to improve parent's knowledge and attitude toward the government-sponsored vaccination program. The concern of childhood vaccination is often testified as one of the hallmark attainments in public and child health promotion, despite this realization, the idea has been challenged particularly due to lack of awareness among mothers.[16] Parenteral practices like unawareness of adverse effects and contraindications of vaccination, negative perceptions about vaccination in mild illness, negative attitude, for example, mother's fear of vaccination was considered as one of the major barriers to childhood vaccination.[17]

**Delay in vaccination and Vaccine hesitancy**

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. Therefore, it is crucial that vaccinations are administered on time.[18]

With delay in vaccination, the duration of susceptibility of the child is increased, which may result in disease outbreaks. Studies have suggested that various factors interplay which increase the risk of disease in children not vaccinated timely. The pre-existing conditions such as malnutrition, overcrowding, poor socio-economic status, poor health care facility and access further aggravate the situation. Thus, timely administered vaccines are cost-effective as it reduces the burden of hospitalization and deaths. Also, once delayed the chances of full immunization decreases[19] Studies show that safety concerns, fear of parents, religious beliefs and personal beliefs are few reasons for partial or non-immunization. Thus, a subset of parents either refuse to do or delay the vaccination of their children for various reasons.[20] Vaccine hesitancy has become a growing focus of attention and concern. The World Health Organization (WHO) Strategic Advisory Group of Experts (SAGE) on immunization has defined vaccine hesitancy as "delay in acceptance or refusal of vaccination despite the availability of vaccination services." Vaccine hesitancy is complex and context specific, varying across time, place, and vaccines. Vaccine hesitancy occurs along a continuum between full acceptance and outright refusal of all vaccines, i.e., when there is acceptance of some and delay or refusal of some of the recommended vaccines. It is influenced by factors such as complacency, convenience, and confidence. Vaccine hesitancy, thus, risks the public health consequences of vaccine-preventable disease outbreaks. While addressing vaccine hesitancy within a country or subgroup, an in-depth understanding of magnitude and setting of the problem is required.[21] Despite the undisputed scientific understanding that vaccines are beneficial to public health, there is no similar consensus when it comes to making individual choices. Many studies have shown that a significant number of parents and sometimes even healthcare professionals are uncertain and apprehensive about getting certain vaccines.[22]

**Role of Pharmacist in Childhood Immunization**

As per the American society of Health-system pharmacists (ASHP) Guidelines, pharmacists have a major role in disease prevention by advocating and administering vaccines. These are the activities of pharmacy practice consistent with the preventive aspects of pharmaceutical care since many decades. Many countries grant legal authority of pharmacists to administer vaccine after achieving the proficiency in all aspects of vaccine administration. But in India, pharmacists play a major role in storage and transportation rather than vaccine administration. Public awareness of vaccine safety has been increased through internet, television and other media. To maintain and improve the public confidence in national

immunization programs, all health care professionals (HCP) should be aware of vaccine errors to respond to the public about the safety of vaccines which conserves the integrity of the immunization program. As pharmacists are the easily accessible HCPs in the community, they are capable of taking the initiative of monitoring various aspects of vaccinations. The pharmacists maintain relatedness between the patient and his/her other health care professionals in primary health care settings and thus can monitor various aspects of immunization increasing the vaccine adherence.[23]

Over the last number of years, vaccination services provided by pharmacists have been on the increase, with evidence of its public health benefit from various countries. The International Pharmaceutical Federation (FIP) identified the pharmacist as *"a stakeholder in the immunization neighborhood"*, and has been advocating for this role of the pharmacist. A recent worldwide survey found that pharmacists play a role in patient education and advocacy for immunization in 34 countries (i.e. approximately half of the world's population) and in 27 countries they play an active role as vaccinators. The WHO's Health System Framework identifies equitable access to high quality, safe, efficacious and cost-effective medical products, vaccines and technologies, as one of six building blocks necessary for a well-functioning health system. This is an opportunity for pharmacists to increase their public health involvement in micro level (health promotion and disease prevention) and macro level (policy formulation, planning and management functions) activities. As such, pharmacists need to plan, prepare and position themselves to be able to contribute to enhanced primary healthcare services, including vaccination services, and Universal Health Coverage.

Although not all pharmacists may aspire to be vaccinators (i.e. physically administering vaccines), their role in vaccination is much more comprehensive. As public health advocates, pharmacists should play a crucial role in promoting the importance of vaccination in various ways, including screening of patients, patient counselling, measures to ensure safe administration of vaccines, vaccine pharmacovigilance, supply chain and cold chain management, vaccination advocacy and social mobilization, and monitoring and evaluation.

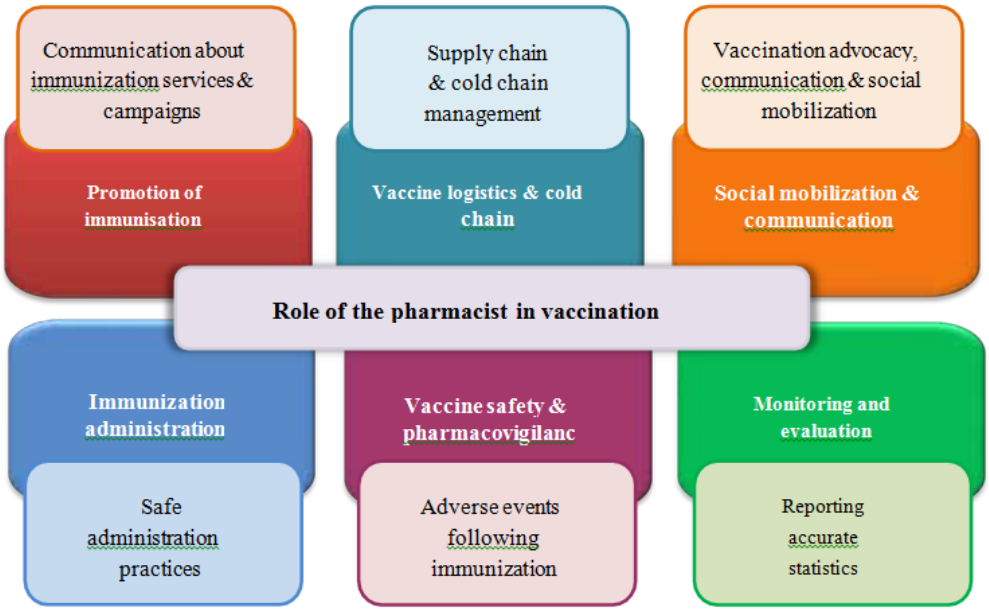


**Fig. No. 1: an overview of the comprehensive role that the pharmacist can play in vaccination.**

**Promotion of routine immunization**

Pharmacists have an important role to play in the community as they often are the first and most easily accessible point of health care and contact with the patient. They are therefore in a unique position to promote routine immunization and identify those patients who are part of the target groups for certain vaccinations. An opportunity to vaccinate a child should never be missed. Pharmacists should therefore actively screen for routine immunization as part of providing pharmaceutical care. In the case where a child has missed any of his/her routine vaccinations, these vaccines should be given immediately according to the age of the child and the recommended catch-up schedule for the particular vaccine. A child who has not been immunized at all, should receive the full schedule of immunizations, with the exception of OPV which should not be given beyond six months of age, rotavirus which should not be given to babies older than 24 weeks or 32 weeks, depending on the type of vaccine used, and BCG which should not be given beyond the age of one year.

**Safe administration of vaccines**

The safe administration of vaccines starts with checking the patient's history for contraindications and precautions for the specific vaccine that is about to be administered. Since vaccine administration is normally outside the scope of practice of pharmacists, the pharmacist's right to administer vaccines is subject to having acquired adequate skills and knowledge to do so. The vaccinating pharmacist is legally required to maintain good

pharmacy practices at all times, with special emphasis on the importance of providing the service in a professional manner, adhering to all aspects of ensuring vaccination safety, appropriate vaccine storage and transportation, meticulous record keeping, and ensuring the confidentiality of the patient's information.

**Vaccine logistics and cold chain**

An important responsibility of the pharmacist is to ensure that vaccines are available and that they are transported and stored correctly. Minimum standards for the procurement, storage and distribution of thermolabile pharmaceutical products, including vaccines, are stipulated by the Rules relating to Good Pharmacy Practice in terms of the Pharmacy Act (Act 53 of 1974). Pharmacists have a professional responsibility to ensure that vaccines and their diluents maintain their appropriate stability and potency by storing them in a dedicated vaccine fridge, which is correctly.

packed to allow for cold air circulation with the temperature maintained between 2°C and 8°C, monitored daily, and twice daily recorded on a temperature monitoring chart.

**Vaccine safety and pharmacovigilance**

Ensuring the safety of vaccines, starting from manufacturing to the time they are administered, is of paramount importance to health authorities globally. At patient level, the pharmacist should screen for contraindications and precautions before vaccinating, ensure appropriate vaccine dosing and safe administration, intervene if an AEFI occurs and document any AEFI.

**Advocacy, communication and social mobilization**

Pharmacists can engage in a number of advocacy and communication activities to promote vaccination, increase access to vaccines and instill confidence in the immunization programme. Misinformation leading to distrust in vaccines can compromise the health of individual patients, their families and the public at large. Many misconceptions about vaccines exist, with an increasing amount of misinformation on vaccines and vaccination being available on the internet and other social media platforms. Pharmacists and other healthcare workers can be instrumental in providing patients with relevant and correct information about the benefits of vaccination for their children as well as themselves, and build trust in the immunization programme. Through building a trusting relationship, they can ease the fears of many patients. Providing accurate information and facts about the significant

risks associated with not being vaccinated, can help to debunk common misconceptions. Healthcare workers, including pharmacists, should however equip themselves, to ensure they have sufficient knowledge about vaccine misinformation, have good communication skills and dedicate sufficient time towards listening and responding to parents' concerns.

**Monitoring and evaluation**

Surveillance plays a crucial role in the control, elimination and eradication strategies for VPDs.[68] Public health intervention programs, like the EPI, are assessed partially through surveillance.[68] For this purpose, health professionals working in the community, including pharmacists, are essential in the detection of acute flaccid paralysis (AFP), neonatal tetanus (NNT), measles and AEFIs.[68] All healthcare workers should therefore be trained and knowledgeable on simple case definitions of AFP, NNT, measles and AEFIs to ensure detection and referral of these cases to district public health authorities for active surveillance.[24]

| Age | Vaccines required | Indications |
|---|---|---|
| Birth | Bacillus Calmette Guerin (BCG), Oral Polio Vaccine (OPV)-0 dose, Hepatitis B birth dose | **BCG**-Tuberculosis, Leprosy<br>**OPV**-Polio<br>**Hep B**-Hepatitis B |
| 6 weeks | OPV-1, Pentavalent-1, Rotavirus Vaccine (RVV)-1, Fractional dose of Inactivated Polio Vaccine (fIPV)-1, Pneumococcal Conjugate Vaccine (PCV) -1* | **Pentavalent:**<br>Haemophilus influenza b-Hib induced Meningitis, Pneumonia & Pericarditis Hepatitis B Diphtheria Tetanus Pertussis-Whooping Cough<br>**RVV**-Rotavirus induced Gastroenteritis<br>**PCV**-Pneumonia |
| 10 weeks | OPV-2, Pentavalent-2, RVV-2 | |
| 14 weeks | OPV-3, Pentavalent-3, fIPV-2, RVV-3, PCV-2* | |
| 9-12 months | Measles & Rubella (MR)-1,JE-1,** PCV-Booster* | **MR**-Measles & Rubella<br>**JE**-Japanese Encephalitis |
| 16-24 months | MR-2, JE-2**, Diphtheria, Tetanus & Pertussis (DTP)-Booster-1, OPV – Booster | |
| 5-6 years | DPT-Booster-2 | |
| 10 years | Tetanus & adult Diphtheria (Td) | |
| 16 years | Td | |

* PCV in selected states/districts: Bihar, Himachal Pradesh, Madhya Pradesh, Uttar Pradesh (selected districts) and Rajasthan; in Haryana as state initiative

** JE in endemic districts only

*** One dose if previously vaccinated within 3 years.

This study was initiated in the context of WHO's report on the major disruption of childhood immunization programs and services around the world. With this background, this study was conducted at Gulbarga Institute of Medical Sciences, Kalaburagi, Karnataka, to assess pregnant women's awareness, attitude and practice so as to identify the existing gaps that need to be fulfilled in order to achieve the immunization targets.

## METHODOLOGY

### PLAN OF THE STUDY

Duration of Study: Study has been carried out for a period of six months.
(March to August)
Study Site: The study has been conducted on pregnant women in
Gulbarga Institute of Medical Sciences Hospital, Kalaburagi city.
Study Design : Hospital based prospective interventional study.
Source of Data:

(i) Socio-demographic details of the participants along with their maternity status.
(ii) Pre-designed questionnaire comprising of awareness attitude and practice-based questions.

### INCLUSION CRITERIA

Pregnant women are included in the study.
Women from urban and rural population.
Pregnant women who are willing and able to participate in all aspects of intervention.

### EXCLUSION CRITERIA

Pregnant women who are unwilling to participate in the study.
Pregnant women who are having medical background (health professionals) were excluded.

### STUDY PROCEDURE

A prospective hospital based interventional study has been conducted in Gulbarga Institute of Medical Sciences Hospital Kalaburagi, Karnataka. The study has been initiated after getting the approval from the Institutional Review Board (IRB) and Institutional Ethics Committee (IEC). All the patients were given Informed Consent Form (ICF) which will be in English and local language. The pregnant women meeting the study criteria and agreeing to be a part of the study and the pregnant women who are enrolled in the study have been given ICF. The

ICF that is duly signed by the participants are enrolled in our study.

The information was collected using data collection form, consisting of two parts. Part 1 comprising of Socio-demographic details of the participants along with their maternity status and part 2 comprising of pre-designed questionnaire which includes the awareness, attitude and practice based questions.

A baseline score will be taken (pre-test) by interviewing the pregnant women's who are attending the OBGYN department (inpatients and outpatients) using questionnaire of all two domains.

Than the pregnant women were educated by using counseling aids (Information leaflet, videos, PPT…) regarding immunization and its importance, specific vaccine against particular disease, routine immunization schedule.

After the gap of 1 month, we repeated the procedure to collect the scores for post- test. Finally, the data has been analyzed and interpreted by using proper statistical analysis.

## OBSERVATION AND RESULTS

**Table No. 2: Age wise distribution of pregnant women.**

| AGE IN YEARS | NUMBER OF PREGNANT WOMEN | PERCENTAGE |
|---|---|---|
| 18-22 | 68 | 22.5 |
| 23-27 | 133 | 40 |
| 28-32 | 77 | 25.5 |
| 33-37 | 21 | 7 |
| 38-42 | 3 | 1 |
| Total | 302 | 100 |
| Mean±SD | 26.15±4.23 | |

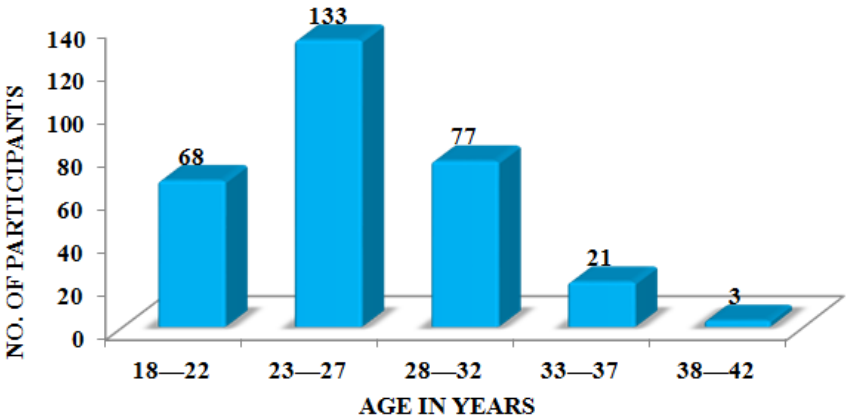


**Fig. 2: age wise distribution of pregnant women (participants).**

DESCRIPTION: Study observed that; out of 302 participants (pregnant women); majority of pregnant women 133 (44.0%) belongs to the age group of 23—27 years, followed by 77 (25.5%) of pregnant women belongs to the age group of 28—32 years, 68 (22.5%) of pregnant women belongs to the age group of 18—22 years and 21 (7.0%) of pregnant women belongs to the age group of 33—37 years. The mean age of pregnant women was 26.15 years.

**Table No. 3: Educational status wise distribution of pregnant women.**

| EDUCATION STATUS OF MOTHER | NUMBER OF PREGNANT WOMEN | PERCENTAGE |
|---|---|---|
| Illiterate | 116 | 38.4 |
| Primary education | 87 | 28.8 |
| Secondary education | 45 | 14.9 |
| PUC/Diploma | 37 | 12.3 |
| Graduate | 17 | 5.6 |
| Total | 302 | 100 |

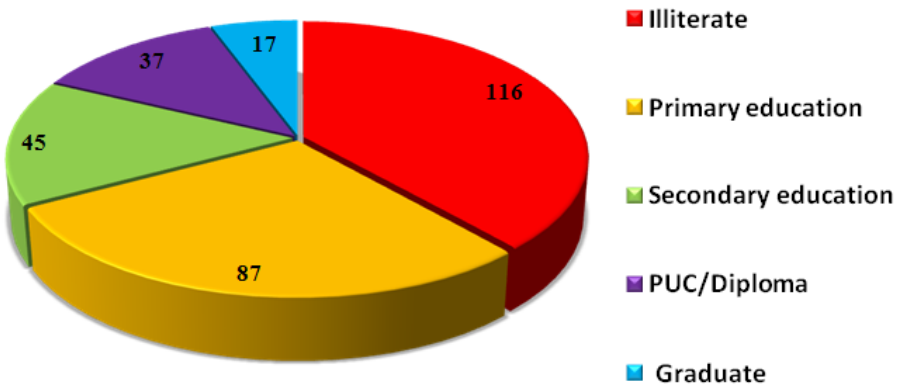


**Fig. 3: Educational status wise distribution of pregnant women.**

DESCRIPTION: In the present study; majority of pregnant women's 116 (38.4%) educational qualification was illiterate, followed by 87 (28.8%) of pregnant women's educational qualification was primary education, 45 (14.9%) of pregnant women's educational qualification was secondary education 37 (12.3%) of pregnant women's educational qualification was PUC and diploma, 17 (5.6%) of pregnant women's educational status was graduate.

**Table No. 4: Educational status wise distribution of father.**

| EDUCATION STATUS OF FATHER | NUMBER OF PARTICIPANTS | PERCENTAGE |
|---|---|---|
| Illiterate | 15 | 5 |
| Primary education | 91 | 30.1 |
| Secondary education | 121 | 40 |
| PUC/Diploma | 46 | 15.3 |
| Graduate | 29 | 9.6 |
| Total | 302 | 100 |

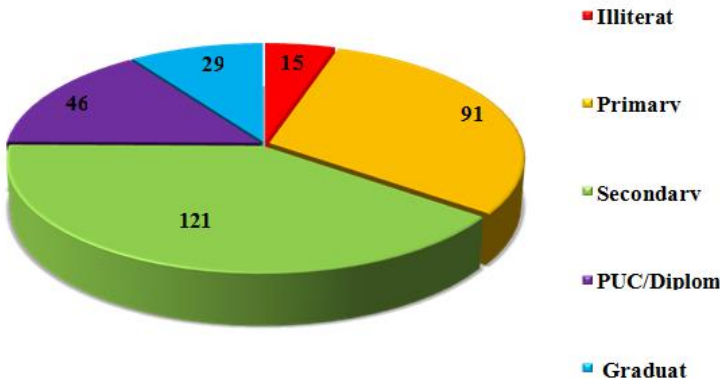


**Fig. 4: educational status wise distribution of father.**

## DESCRIPTION

In the present study; majority of father's 121 (40.0%) educational qualification was secondary education, followed by 91 (30.1%) of father's educational qualification was primary education, 46 (15.3%) of father's educational qualification was PUC and diploma education, 29 (9.6%) of father's educational qualification was graduate and 15 (5.0%) of father's education status was illiterate.

**Table No. 05: Occupation wise distribution of pregnant women.**

| OCCUPATION | NUMBER OF PREGNANT WOMEN | PERCENTAGE |
|---|---|---|
| House wife | 155 | 51.3 |
| Agriculture | 31 | 10.3 |
| Self-employed | 81 | 26.8 |
| Pvt. Service | 23 | 7.6 |
| Student | 12 | 4 |
| Total | 302 | 100 |

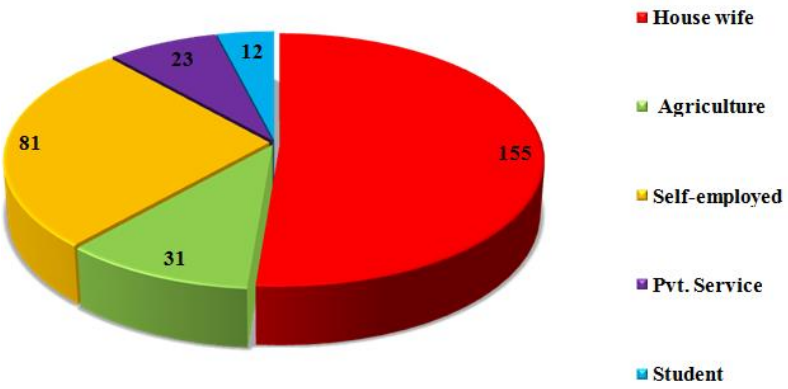


**Fig. 5: occupation wise distribution of pregnant women.**

## DESCRIPTION

Study observed that; majority of pregnant women 155 (51.3%) occupation was house wife, followed by 81 (26.8%) of pregnant women were self- employed, 31 (10.3%) of pregnant women occupation was agriculture and 12 (4.0%) of pregnant women were students.

**Table No. 06: Socio-economic status wise distribution of pregnant women.**

| SOCIO-ECONOMIC STATUS | NUMBER OF PREGNANT WOMEN | PERCENTAGE |
|---|---|---|
| Upper class | 0 | 0 |
| Upper middle class | 0 | 0 |
| Middle class | 90 | 29.8 |
| Lower middle class | 125 | 41.4 |
| Lower class | 87 | 28.8 |
| Total | 302 | 100 |

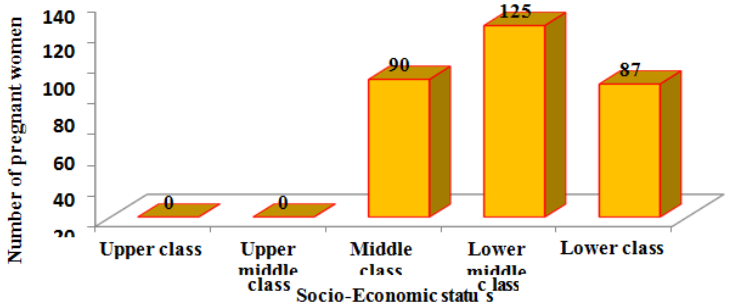


**Fig. 6: socio-economic status wise distribution of pregnant women.**

**DESCRIPTION:** Study observed that; out of 302 pregnant women; 125 (41.4%) of pregnant women were from lower middle class, 90 (29.8%) of pregnant women were observed middle class and had 87 (28.8%) of pregnant women were from lower class. Upper class and upper middle class pregnant women had not seen in the study.

**Table No. 07: Distribution of pregnant women according to type of family.**

| TYPE OF FAMILY | NUMBER OF PREGNANT WOMEN | PERCENTAGE |
|---|---|---|
| Nuclear family | 175 | 57.9 |
| Joint family | 127 | 42.1 |
| Total | 302 | 100 |

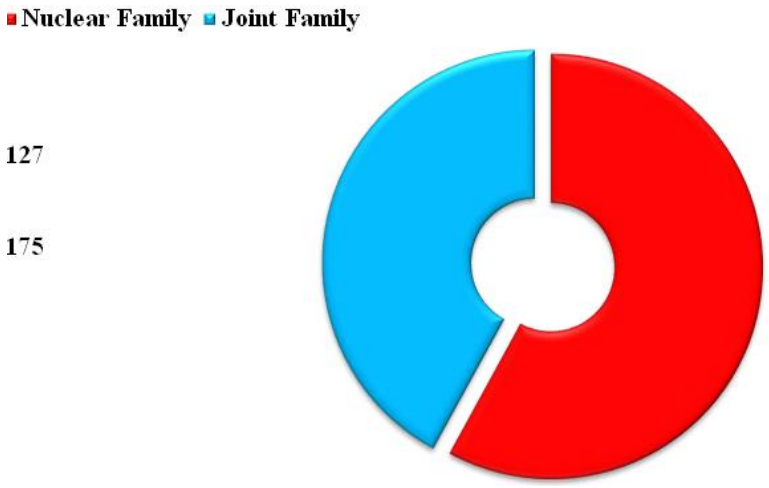


**Fig. 7: type of family wise distribution of pregnant women.**

**DESCRIPTION:** Study observed that; out of 302 pregnant women; 175 (57.9%) of pregnant women belongs to nuclear family and 127 (42.1%) of pregnant women belongs to joint family.

**Table No. 08: Distribution of pregnant women based on number of children.**

| PARITY | CATEGORIES | FREQUENCY | PERCENTAGE |
|---|---|---|---|
| Primi | No child | 129 | 42.7 |
| Multi gravida | 1 Child | 125 | 41.4 |
| | 2 Children | 44 | 14.6 |
| | >2 Children | 4 | 1.3 |
| Total | ---- | 302 | 100 |

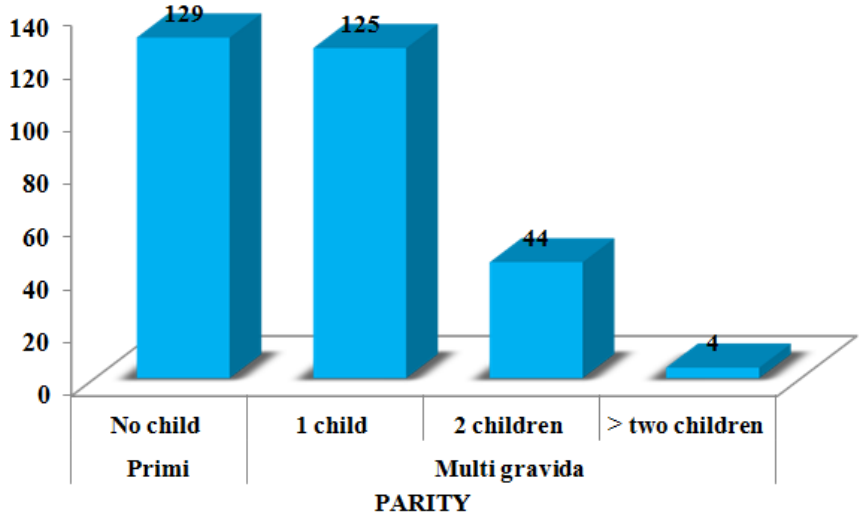


**Fig. 8: number of children wise distribution of women.**

**DESCRIPTION:** Study observed that; out of 302 pregnant women; 129 (42.7%) of pregnant women parity were primi and 173 (57.3%) of pregnant women parity were multi gravida; among them 125 (41.4%) of pregnant women had 1 child, 44 (14.6%) of pregnant women had 2 children and 4 (1.3%) of pregnant women had more than 2 children.

**Table No. 09: Religion wise distribution of pregnant women**

| RELIGION | NUMBER OF PREGNANT WOMEN | PERCENTAGE |
|---|---|---|
| Hindu | 180 | 59.6 |
| Muslim | 67 | 22.2 |
| Christian | 55 | 18.2 |
| Total | 302 | 100 |

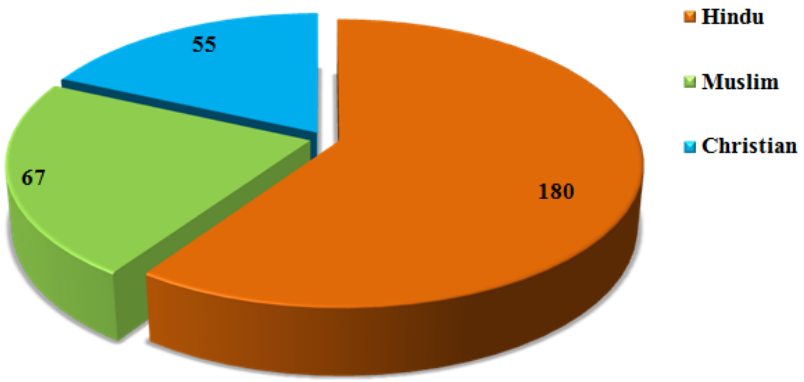


**Fig. 9: religion wise distribution of pregnant women.**

**DESCRIPTION:** In the study; 180 (59.6%) of pregnant women were belongs to Hindus, 67

(22.2%) of pregnant were Muslim and 55 (18.2%) of pregnant were Christian.

**Table No. 10: Trimester wise distribution of pregnant women.**

| TRIMESTER | NUMBER OF PREGNANT WOMEN | PERCENTAGE |
|---|---|---|
| First | 103 | 34.1 |
| Second | 87 | 28.8 |
| Third | 112 | 37.1 |
| Total | 302 | 100 |

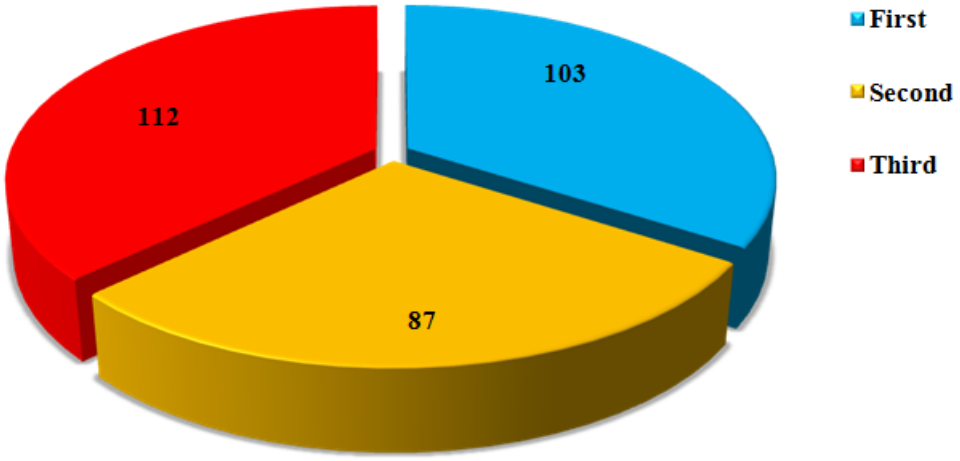


**Fig. 10: trimester wise distribution of pregnant women.**

DESCRIPTION: In the study; out of 302 participants, 112 (37.1%) of pregnant women's maternity status was third trimester. Followed by first trimester 103 (34.1%) and second trimester were 87 (28.8%).

**Table No. 11: Distribution of pregnant women according to source of information**

| SOURCE OF INFORMATION | NUMBER OF PREGNANT WOMEN | PERCENTAGE |
|---|---|---|
| Family and friends | 246 | 81.5 |
| Health care professionals | 56 | 18.5 |
| Total | 302 | 100 |

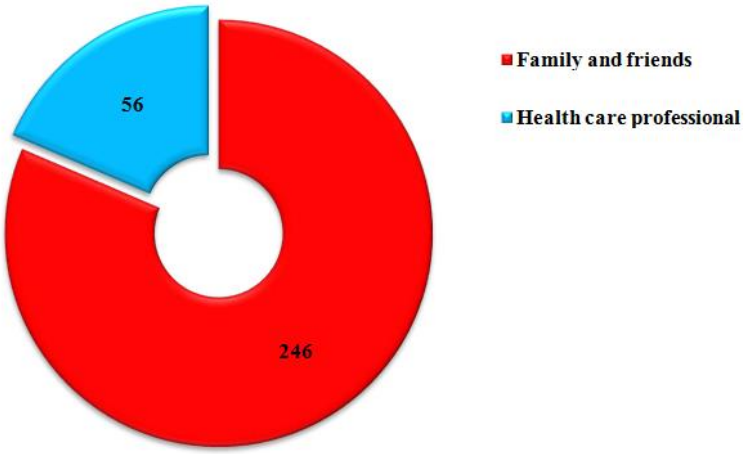


**Fig. 11: source of information wise distribution of pregnant women.**

**DESCRIPTION:** Study observed that; out of 302 pregnant women; 175 (81.5%) of pregnant women's source of information was family and friends and 56 (18.5%) of pregnant women's source of information was health care professional.

**Table No. 12: Comparison of awareness of childhood immunization among pregnant women between pre and post test.**

| STATEMENTS | OPTIONS | NO. OF WOMEN | | $X^2$-Test & |
|---|---|---|---|---|
| | | Pre-Test | Post-Test | P-value |
| **1. Do you know vaccination should be given to baby at birth?** | a) Yes | 122 | 280 | **$X^2$ = 185.68** |
| | b) No | 180 | 22 | **P= 0.001, HS** |
| **2. How did you come to know about the vaccination?** | a) Doctor | 74 | 143 | |
| | b) House wife | 81 | 91 | **$X^2$ = 84.73** |
| | c) Family | 66 | 47 | **P= 0.001, HS** |
| | d) Neighbors | 22 | 21 | |
| | e) Don't know | 59 | 0 | |
| **3. Have you seen information regarding vaccination via media?** | a) Yes | 78 | 76 | **$X^2$ = 0.872** |
| | b) No | 224 | 226 | **P= 0.943, NS** |
| **4. Do you know if unvaccinated child can get diseases?** | a) Yes | 81 | 272 | **$X^2$ = 74.31** |
| | b) No | 221 | 30 | **P= 0.001, HS** |
| **5. Do you know that there are different types of vaccines?** | a) Yes | 41 | 205 | **$X^2$ = 134.21** |

| | | | | |
|---|---|---|---|---|
| | b) No | 261 | 97 | **P= 0.001, HS** |
| **6. Do you know that vaccination is given for free by government?** | a) Yes | 235 | 281 | **$X^2$ = 28.146** |
| | b) No | 67 | 21 | **P= 0.001, HS** |
| **7. Against what diseases vaccination is present?** | a) Tuberculosis | 30 | 32 | |
| | b) Polio | 95 | 121 | **$X^2$ = 67.93** |
| | c) Hepatitis | 1 | 5 | **P= 0.001, HS** |
| | d) All of above | 3 | 99 | |
| | e) Don't know | 173 | 45 | |

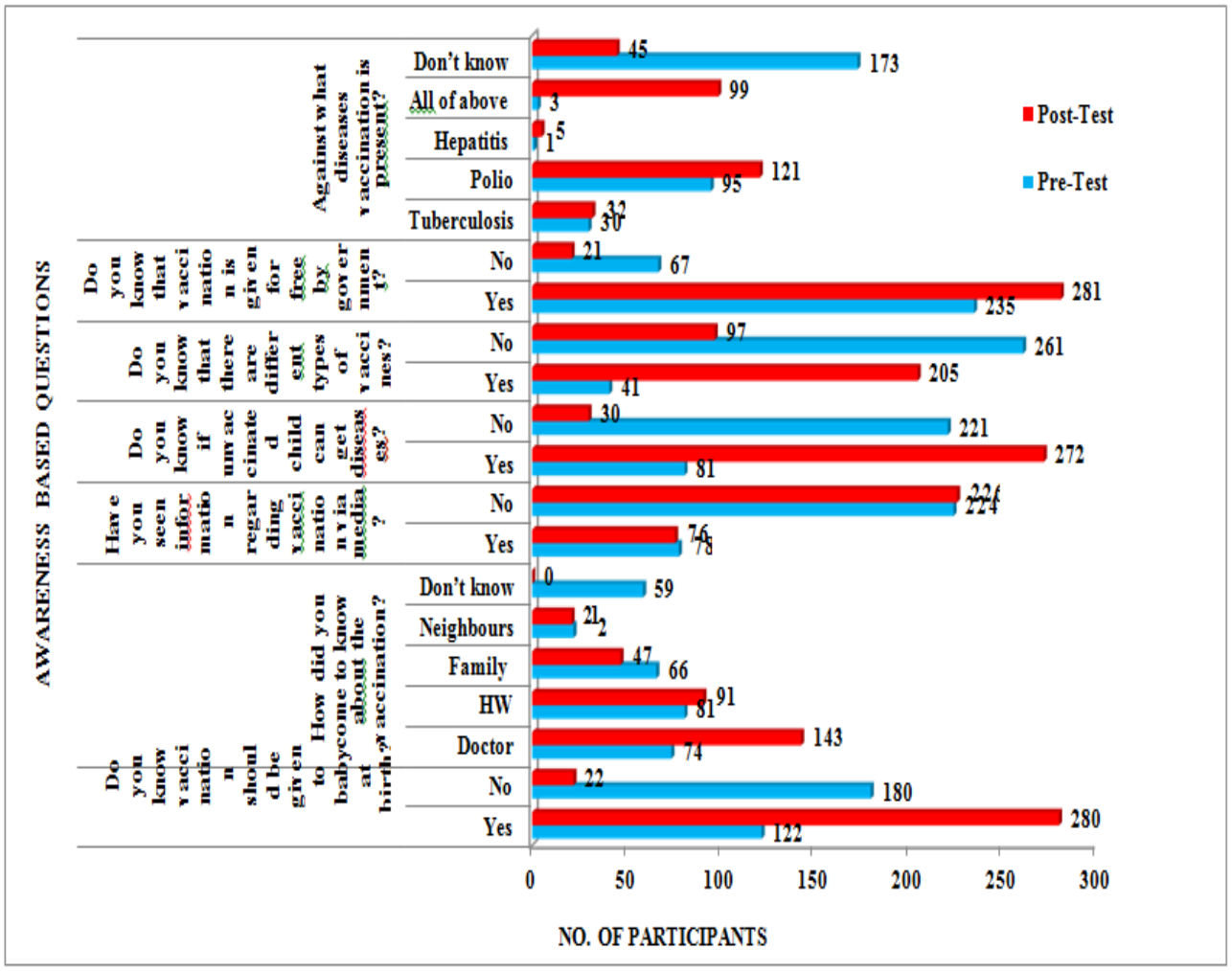


**Fig. 12: response of awareness based questions of pregnant women**.

## OBSERVATION AND RESULTS

**ESCRIPTION:** Study reveals that; there was statistically highly significant differences of knowledge on awareness among pregnant women on childhood immunization between pre and post- test of most of statements of 1, 2, 4, 5, 6 and 7 (P<0.001). The knowledge on

awareness among pregnant women was shows highly significant change in post-test as compared to pre-test, therefore the intervention of standardized structured teaching programme on childhood immunization to pregnant women was significantly effective of 6 statements of knowledge on awareness. Whereas, there was statistically no significant difference of knowledge on awareness among pregnant women on childhood immunization between pre and post- test of 3rd statement (P>0.05).

**Table No. 13: Comparison of attitude of childhood immunization among pregnant women between pre and post-test or intervention.**

| STATEMENTS | OPTIONS | ATTITUDE TOWARD CHILDHOOD IMMUNIZATION | | X2-Test, Fisher exact test & P-value |
|---|---|---|---|---|
| | | Pre-Test | Post-Test | |
| 1. Are you in favour of vaccination? | a) Yes | 116 | 264 | $X^2$ = 155.42 |
| | b) No | 186 | 38 | P= 0.001, HS |
| 2. Do you think vaccination is harmful? | a) Yes | 197 | 31 | $X^2$ = 194.14 |
| | b) No | 105 | 271 | P= 0.001, HS |
| 3. If vaccination is harmful, from where have you got the information? | a) Friends | 32 | 3 | P = 0.001, HS |
| | b) Relatives | 107 | 20 | |
| | c) parents | 56 | 4 | |
| | d) Not answered | 107 | 275 | |
| 4. Do you think vaccination prevents diseases? | a) Yes | 78 | 261 | $X^2$ = 225.16 |
| | b) No | 224 | 41 | P= 0.001, HS |
| 5. What do you think are the hurdles against vaccination? | a) Lack of funds | 8 | 9 | |
| | b) Promotion through media | 31 | 34 | $X^2$ = 0.267 |
| | c) Lack of awareness | 147 | 147 | P= 0.966, NS |
| | d) fear | 116 | 112 | |

## OBSERVATION AND RESULTS

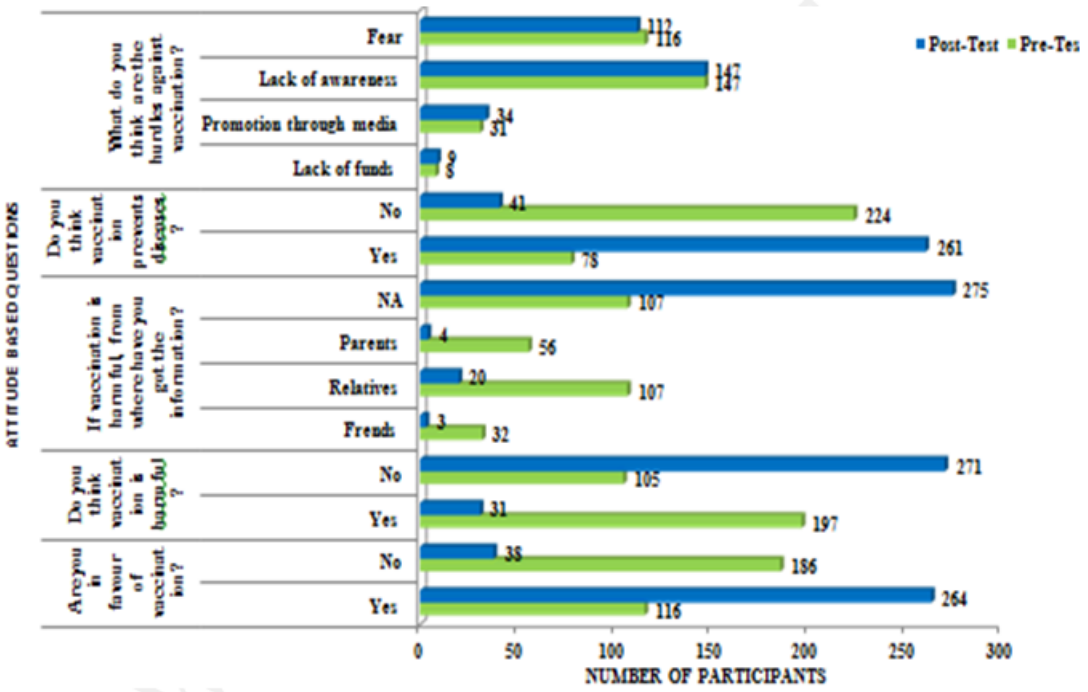


**Fig. 13: comparison of attitude of childhood immunization among pregnant women between pre and post-test or intervention.**

**DESCRIPTION:** Study reveals that; there was statistically highly significant difference in attitude of pregnant women on childhood immunization between pre and post-test of most of statements of 1, 2, 3 and 4 ($P<0.001$). The attitude of pregnant women shows highly significant change in post-test as compared to pre-test, therefore the intervention of standardized structured teaching programme on childhood immunization to pregnant women was significantly effective of 4 statements of attitude.

Whereas, there was statistically no significant difference of attitude in pregnant women on childhood immunization between pre and post- test of 5 statement ($P>0.05$).

**Table No. 14: Comparison of practice of childhood immunization among pregnant women between pre and post-test or intervention.**

| STATEMENTS | OPTIONS | PRACTICE OF CHILDHOOD IMMUNIZATION | | $X^2$-TEST, FISHER EXACT TEST & P-VALUE |
|---|---|---|---|---|
| | | PRE-TEST | POST-TEST | |
| 1. Will you vaccinate your baby at birth? | a) Yes | 118 | 269 | $X^2 = 163.991$ |
| | b) No | 184 | 33 | P= 0.001, HS |
| 2. Will you recommend vaccination to others? | a) Yes | 61 | 206 | $X^2 = 141.13$ |
| | a) No | 241 | 96 | P= 0.001, HS |
| 3. Will you follow the | a) Yes | 94 | 245 | $X^2 = 153.301$ |

| | | | | |
|---|---|---|---|---|
| schedule told by the doctor? | a) No | 208 | 57 | P= 0.001, HS |
| 4. If you have a child, have you immunized him/her? | a) Yes | 142 | 152 | |
| | i) Completely | 8 | 13 | $X^2$ = 2.842 |
| | ii) partially | 134 | 139 | P= 0.473, NS |
| | b) No | 160 | 150 | |
| 5. Do you have an immunization card for the previous child? | a) Yes | 157 | 157 | $X^2$ = 0.00 |
| | b) No | 145 | 145 | P= 1.000, NS |

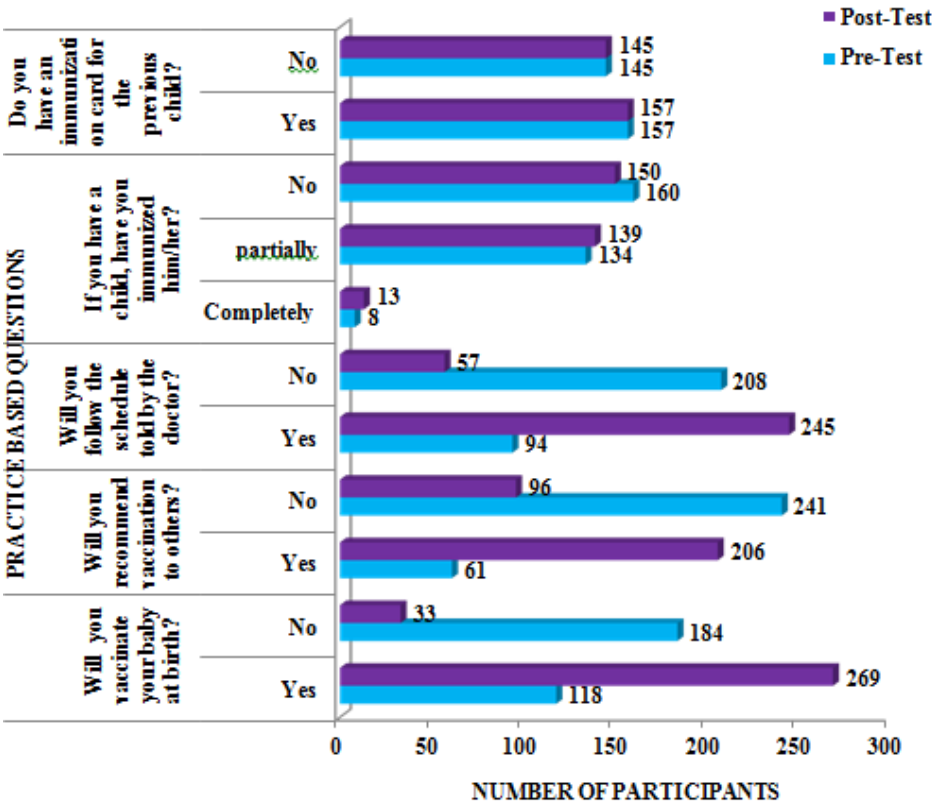


**Fig. 14: comparison of practice of childhood immunization among pregnant women between pre and post-test or intervention.**

**DESCRIPTION:** Study reveals that; there was statistically highly significant difference in practice of pregnant women on childhood immunization between pre and post- test of most of statements of 1, 2 and 3 (P<0.001). The practice of pregnant women shows highly significant change in post-test as compared to pre-test, therefore the intervention of standardized structured teaching programme on childhood immunization to pregnant women was significantly effective of 3 statements of practice. Whereas, there was statistically no significant difference of practice of pregnant women on childhood immunization between pre and post- test of 2 statements (4 and 5) (P>0.05).

**Statistical data analysis:** Statistical data was analysed by IBM SPSS 25.0 version software. Collected data were spread on excel sheet and prepared master chart. Through the master chart tables

and graphs were constructed. Percentages were calculated for qualitative data analysed with chi-square test and Fisher exact tests were applied. For quantitative data analysis t-test and ANOVA tests were applied for statistical significant, If P-value was less than 0.05 considered as significant.

## RESULTS

The study was conducted among 302 pregnant women (participants) maximum number of pregnant women 133 (44.0%) belonged to age group of 23-27 years, majority of participants were Hindu by religion 180 (59.6%) and majority of population were in nuclear family 175 (57.9%). Greater number of participants were illiterate that is 116 (38.4%) of all. Maternity status of major participant was 3rd trimester 112 (37.1%). For the population, the major source of information about immunization was acquired by family and friends 246 (81.5%).

## DEMOGRAPHIC CHARACTERISTICS OF STUDY POPULATION

| SOCIO-ECONOMIC VARIABLES | | NUMBER | PERCENTAGE |
|---|---|---|---|
| **Age** | **18-22** | **68** | **22.5** |
| | **23-27** | **133** | **44** |
| | **28-32** | **77** | **25.5** |
| | **33-37** | **21** | **7** |
| | **38-42** | **3** | **1** |
| **Children** | **No child** | **129** | **42.7** |
| | **1** | **125** | **41.4** |
| | **2** | **44** | **14.6** |
| | **>2** | **4** | **1.3** |
| **Religion** | **Hindu** | **180** | **59.6** |
| | **Muslim** | **67** | **22.2** |
| | **Christian** | **55** | **18.2** |
| **Family types** | **Joint** | **175** | **175** |
| | **Nuclear** | **127** | **127** |
| **Maternity status** | **1st trimester** | **103** | **34.1** |
| | **2nd trimester** | **87** | **28.8** |
| | **3rd trimester** | **112** | **37.1** |

### Regarding awareness

Study reveals that; there was statistically highly significant difference of knowledge on awareness among pregnant women on childhood immunization between pre and post- test of most of statements of 1, 2, 4, 5, 6 and 7 ($P<0.001$). The knowledge on awareness among pregnant women was shows highly significant change in post-test as compared to pre-test, therefore the intervention of standardized structured teaching program on childhood immunization to pregnant women was significantly effective of 6 statements of awareness. Whereas, there was statistically no significant difference of knowledge on awareness among pregnant women on childhood immunization between pre and post- test of 3rd statement ($P>0.05$). Therefore, the intervention on information of health

education regarding awareness of immunization was given to the pregnant women was significantly effective.

**Regarding attitude**

Study reveals that; there was statistically highly significant difference in attitude of pregnant women on childhood immunization between pre and post-test of most of statements of 1, 2, 3 and 4 ($P<0.001$). The attitude of pregnant women was shows highly significant change in post-test as compare to pre-test, therefore the intervention of standardized structured teaching program on childhood immunization to pregnant women was significantly effective of 4 statements of attitude. Whereas, there was statistically no significant difference in attitude of pregnant women on childhood immunization between pre and post- test of 5 statement ($P>0.05$). Therefore, the intervention on information of health education regarding attitude of immunization was given to the pregnant women was significantly effective.

**Regarding practice**

Study reveals that; there was statistically highly significant difference in practice of pregnant women on childhood immunization between pre and post-test of most of statements of 1, 2 and 3 ($P<0.001$). The practice of pregnant women shows highly significant change in post-test as compare to pre-test, therefore the intervention of standardized structured teaching program on childhood immunization to pregnant women was significantly effective of 3 statements of practice. Whereas, there was statistically no significant difference in practice of pregnant women on childhood immunization between pre and post-test of 2 statements (4 and 5) ($P>0.05$). Therefore, the intervention on information of health education regarding practice of immunization was given to the pregnant women was significantly effective.

## DISCUSSION

The **World Health Organization (WHO)** has emphasized the importance of maternal education in improving childhood immunization rates, especially in countries like India, where disparities in healthcare access and information are prevalent. National programs such as the **Universal Immunization Program (UIP)** and **Mission Indradhanush** have made significant strides toward increasing vaccine coverage, but there remains a critical need to bridge the knowledge gap at the community level. This is where healthcare professionals, particularly pharmacists, can play a pivotal role. Pharmacists, being highly accessible in community settings, have the potential to provide vital education and dispel common myths about vaccines. In this study, a pharmacist-led intervention demonstrated substantial improvements in knowledge and attitudes about childhood immunization

among pregnant women, showcasing the power of healthcare education in driving positive health behaviors. The results of this study indicate that pharmacist involvement could be a valuable strategy in expanding immunization awareness, addressing vaccine hesitancy, and ultimately improving vaccine coverage.

The findings of this study show that a structured educational program delivered by pharmacists significantly improved the knowledge, attitudes, and practices regarding childhood immunization among pregnant women. The results of the post-test indicate a sharp increase in awareness, with 76.5% of the participants achieving moderately good knowledge scores, compared to only 22.5% in the pre-test. Moreover, 20.2% of participants reached a good level of knowledge post-intervention, a dramatic rise from the 1.3% seen pre-intervention. These changes reflect the effectiveness of the pharmacist-led educational intervention.

The post-test results also revealed a significant improvement in attitudes towards immunization. In the pre-test, only 38.4% of participants were in favor of vaccination, and a majority, 65.2%, believed it to be harmful. However, after the educational intervention, 87.4% supported vaccination, and only 10.3% continued to view it as harmful. This indicates that education significantly dispelled fears and misconceptions regarding vaccines.

Similarly, improvements in immunization practices were evident. Before the intervention, 39.1% of women indicated they would vaccinate their baby at birth, but post-intervention, this figure jumped to 89.1%. The number of participants willing to follow the immunization schedule recommended by a doctor rose from 31.1% to 81.1%. These findings show that the structured educational program not only enhanced knowledge and attitudes but also encouraged behavior change in terms of adherence to immunization practices.

**Comparison with Previous Studies**

The positive impact of pharmacist-led educational interventions seen in this study is consistent with previous research on health education and immunization awareness. Similar studies have demonstrated the role of healthcare providers in improving vaccination knowledge and coverage.

**Knowledge Gaps in Immunization Awareness**

A study by **Srivastava et al. (2017)**, conducted in rural India, found that lack of awareness and vaccine hesitancy were significant barriers to full immunization.

Their research emphasized the need for targeted educational programs to bridge knowledge gaps,

which aligns with the current study's results. Similarly, **Alves et al. (2017)** highlighted the importance of parental awareness in ensuring high immunization coverage rates, particularly in communities where healthcare access is limited. The magnitude of change in knowledge and attitudes observed in this study underscores the effectiveness of early educational interventions, particularly during pregnancy.

**Role of Community Health Figures**

Another relevant study by **Patel et al. (2020)** found that vaccine hesitancy among pregnant women could be substantially reduced through community-based educational programs. Patel's work showed that involving trusted community health figures, such as pharmacists, can foster a greater level of trust in vaccination programs. This aligns with the findings of this study, where pharmacist-led interventions dramatically increased the percentage of women in favor of vaccination from 38.4% to 87.4%.

**Influence of Healthcare Provider Recommendations**

A **systematic review by Brown et al. (2018)** demonstrated that healthcare provider recommendations were one of the most powerful motivators for vaccination. The review concluded that educational interventions delivered by pharmacists and other healthcare professionals could improve both vaccine uptake and adherence to schedules. The current study supports this conclusion by showing significant increases in participants' willingness to follow immunization schedules (rising from 31.1% to 81.1%).

**Combating Misinformation**

Lastly, **Dube et al. (2019)** discussed the role of misinformation in vaccine hesitancy, particularly in low-resource settings. They argued that misinformation often stems from a lack of credible information sources, a gap that pharmacists are well-positioned to fill. The current study's post-intervention results showed a marked decrease in misconceptions about vaccines being harmful (from 65.2% to 10.3%), further emphasizing the importance of reliable, face-to-face health education.

**Contributions of This Study**

These studies collectively reinforce the idea that pharmacist-led educational interventions can significantly improve immunization awareness, correct misconceptions, and positively impact vaccination behavior, especially in underserved communities. This study adds to the existing literature by focusing on pregnant women, ensuring they are informed early enough to impact the timely immunization of their children after birth.

## CONCLUSION

- The structured pharmacist-led educational program resulted in a major increase in knowledge, with 76.5% of participants scoring moderately good post-intervention, compared to just 22.5% pre-intervention. This demonstrates the effectiveness of educational programs in increasing immunization awareness among pregnant women.
- Before the intervention, 65.2% of participants believed vaccines were harmful.
  Post-intervention, this figure dropped to just 10.3%, reflecting a substantial reduction in vaccine hesitancy.
- The willingness to vaccinate at birth improved dramatically from 39.1% to 89.1% post-intervention. Furthermore, the number of women willing to follow the doctor-recommended immunization schedule rose from 31.1% to 81.1%. These findings indicate that educational interventions not only influence knowledge and attitudes but also translate into behavioral intentions.
- The study highlights the potential for pharmacists to be actively involved in public health initiatives. With most participants obtaining information from family and friends (81.5% in pre-test), pharmacists can serve as reliable, science-based sources of immunization information, improving public health outcomes.

Future studies should include long-term follow-up to monitor whether participants adhere to vaccination schedules after childbirth. Additionally, expanding the sample to include a broader demographic representation and multiple geographic regions will provide more generalizable results. Investigating how different sources of information (e.g., healthcare professionals versus family) affect immunization practices could also yield useful insights

## ACKNOWLEDGEMENT

We sincerely express our deep sense of gratitude to our guide Mr. Riyaz for his valuable guidance, constant encouragement, and support throughout the course of this project. We are thankful to the Principal and Head of the Department of Pharmacy Practice, Rajiv Memorial Education Society's College of Pharmacy, Kalaburagi, for providing the necessary facilities to carry out this work. We also extend our heartfelt thanks to all the participants who willingly took part in this study. Finally, we are grateful to our family and friends for their continuous support and motivi.

## BIBLIOGRAPHY

1. Srivastava AK, Shankar G, A study of immunization coverage and its determinants among under five children residing in urban field practice area of S.N. Medical College,

Bagalkot, Karnataka, India, Indian J of Forensic and Community Med., 2017; 4(1): 48-52. https://www.paho.org/en/topics/immunization

2. Singh R, Alves V, Pathak R et.al., Assessment of Parents' Knowledge, Attitude and Practice about Child Vaccination Rural areas, J Pharm Research, 2017; 16(3): 229.
3. Abraham SB, Thomas T, Mary R et.al., Knowledge and perceptions regarding immunization among mothers of under five children: a community study from South Kerala, Int J of Contemp Pediatr, 2020; 7(1): 66-71.
4. Singh S, Sahu D, Agrawal A et.al., Ensuring Childhood Vaccination among slums dwellers under the National Immunization Program in India – Challenges and opportunities, Preventive Med., 2018; 112: 54-60.
5. Choudhary ST, Reddy SN, Apte A, et.al., Delayed vaccination and its predictors among children under 2 years in India: Insights from the national family health survey-4, vaccine, 2019; 37: 2331-339.
6. R C, Basagoudar SS, Hatnoor S, et.al., Socio-demographic profile and reasons for previous partial and unimmunization among children attending Mission Indradhanush session: a cross sectional study, Int J Community Med and Public Health, 2018; 5(12): 5392-5396.
7. https://vikaspedia.in/health/nrhm/national-health-programmes-1/mission-indhradhanush
   Dharamlingam A, Raghupathy SN, Sowmiya M et.al., Immunization knowledge, attitude and practice among mothers of children from 0 to 5 years, Int J Contemp Pediatr, 2017; 4(3): 783-789. https://in.docworkspace.com/d/sIOSd7tBC9t3FtwY
8. Srikanth J, Kumar P, Upadhya GK et.al., A comparative study on vaccination default rates among children aged 9-24 months attending a static immunization clinic in urban and rural area of Bangalore, Int J of Community Med and Public Health, 2019; 6(1): 248-252.
9. Pandey S, Ranjan A, Singh MC et.al., Socio-demographic determinants of childhood immunization coverage in rural population of Bhojpur district of Bihar, India, J of Family Med Primary care, 2019; 8(7): 2484-2489.
10. Ramlingam R, Ajay J, Chetty S, Assessment of knowledge, attitude and practice of antenatal mothers on child's immunization in Raichur district, Karnataka, Indian J Child Health, 2017; 4(1): 57-60.
11. Adedire BE, Ajumobi O, Bolu O et.al., Maternal knowledge, attitude and perception about childhood routine immunization program in Atakumosa-West Local Government Area, Osun State, Southwestern Nigeria, Pan African Med J., 2021; 40(supp 1): 1-5.
12. D'Souza R, John R, Maben SS et.al., A Study on Vaccine Related Knowledge among Antenatal Women in Selected Setting to Prepare an Informational Pamphlet', Int J of Health Sci and Res.,

2018; 8(5): 204-208.

13. Badgujar S, Govindan NS, Ansari TN et.al., Assessment of knowledge and attitude among postnatal mothers towards childhood vaccination in Malaysia, HUMAN VACCINES AND IMMUNOTHERAPEUTICS, 2019; 15(11): 2544- 2551.
14. Mughda V, Chandrabhotla S, Kaja SD et.al., Knowledge towards childhood immunization among mothers and reasons for incomplete immunization, J App Pharm Sci., 2017; 7(10): 157-161.
15. Badkur D, Singh S, A CROSS-SECTIONAL STIDY TO ASSESS IMMUNIZATION COVERAGE AND KNOWLEDGE, ATTITUDE and PRACTICE OF MOTHERS REGARDING IMMUNIZATION IN SEEPAT BILASPUR, Int J of Pharm and Pharmaceutical Sci., 2023; 15(8): 9-13.
16. Singh MC, Mishra A, Agarwal N et.al., Timeliness of Childhood Vaccination and its Decisive Factors in Bihar: A Community- Based Study, J of Clinical and Diagnostic Res, 2020; 14(2): 5-9.
17. John NN, John SN, Doodayya H et.al., Child immunization: Knowledge among mothers in a North Karnataka Hospital, J of Drug Delivery and Therapeutics., 2022; 12(1): 33-35.
18. Dasgupta P, Bhattacherjee S, Mukherjee A et.al., Vaccine Hesitancy for Childhood Vaccinations in Slum Areas of Siliguri, India, Indian J of Public Health, 2018; 62(4): 253-258.
19. Galagali MP, Kinikr AA, Kumar SV, Vaccine Hesitancy: Obstacles and Challenges, Current Pediatr Reports, 2022; 10: 241-248.
20. Dr. Dyarapogu DS, Dr. Pattan KA, Dr. Lavanya A et.al., EVALAUTAION OF VACCINE ADHERENCE AND ROLE OF A CLINICAL PHARMACIST IN PAEDIATRIC VACCINATION, World J Adv Healthcare Res.,2020; 4(6): 16-20.
21. Mayer JC, Khosa LA, Nhira S et.al., Childhood vaccination and the role of pharmacist, S Afr Pharm J., 2018; 85(4): 26-39.
22. Kumar TRP, Kavinprasad M, A study to assess the parent's knowledge and attitudes on childhood immunization, Int J of Community Med and Public Health, 2018; 5(11): 4845-4848.
23. Francis RM, Nuorti PJ, Kompithra ZR et.sl., Vaccination coverage and the factors influencing routine childhood vaccination uptake among communities experiencing disadvantage in Vellore, southern India: A mixed-method study, BMC Public Health, 2021; 21: 2-14.
24. Anusha, Shashidhara NY, Jeyalakshmi K, Vaccination Coverage and Perceived Barriers to Immunization as Identified by Mothers of Under Five Children in Rural Areas of Udupi District, Karnataka, India, J of Clinical and Diagnostic Res., 2018; 12(8): 15-18.
25. Suresh H, Ahmed M, A Study on Immunization Coverage among Children in Hosakote, Mysuru, J of Clinical and Diagnostic Res., 2021; 15(3): 13-16.
26. Angadi MM, Jose PA, Udgiri R et.al., A Study of Knowledge, Attitude and Practices on

Immunization of Children in Urban Slums of Bijapur City, Karnataka, India, J of Clinical and Diagnostic Res., 2013; 7(12): 2803-2806.

27. VV, Mother's knowledge on immunization schedule of her child: A descriptive survey, Manipal J of Nursing and Health Sci., 2016; 2(2): 41-45.
28. Mukherjee R, Arora M, Kotwal A et.al., Awareness and attitudes of mothers towards new vaccines in the childhood vaccination programme in Delhi state: a cross sectional study, Int J of Community Med and Public Health, 2017; 4(10): 3859-3863.
29. Kamble SM, Shelke CS, Patavegar B, A Cross-Sectional Study on Immunization Status among Anganwadi Children in an Urban Community of Pune, Indian J of Forensic and Community Med., 2015; 2(3): 150-153.
30. Marskole P, Rawat R, Chouhan P et.al., Knowledge, Attitude, and Practices on Vaccination among Mothers of under-5 Children, Attending Immunization Out Patients Department at Gwalior, Madhya Pradesh, Int J of Scientific Study, 2016; 3(12): 235-237.
31. Kulkarni S, Thampi V, Deshmukh D et.al., Trends in Urban Immunization Coverage in India: A Meta-Analysis and Meta-Regression, Indian J of Pediatr, 2023; 90(1): 38-48.
32. Kaur S, Prajapat S, Rawat CH, A Study of Knowledge, Attitude and Practices on Immunization of Children age 0-2 years in Slums of Amritsar City, Punjab, Int J of Health Sci and Res., 2020; 10(7): 63-69.
33. Mathew LJ, Inequity in Childhood Immunization in India: A Systemic Review, Indian Pediatr, 2012; 49: 203-223.
34. Tambe HS, Borade N, LPG et.al., Awareness of parents regarding immunization of their children in slum areas of Nanded city, MedPlus Int J of Pediatr, 2018; 6(1): 22-26. https://main.mohfw.gov.in https://mohfw.gov.in/sites/default/files/216846291201489665182.pdf