



Original Research Article

Study of knowledge, attitude and practice of mothers of children under 5 years on immunisation status attending a tertiary care hospital: A cross sectional study

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ABSTRACT

Introduction: Childhood Immunization almost guarantees protection from many major diseases. Immunization is regarded as one of the most successful and cost effective public health interventions which averts about 3 million deaths annually and has the potential, if coverage improves, of saving the lives of an additional 1.5 million children annually.

Aim & Objectives: To study the knowledge, attitude and practice among the mothers (studied up to class 10th) of children under 5 years regarding immunization status attending a tertiary care hospital during study period.

Materials and Methods: The study was conducted in the department of pediatrics, SCB Medical College, Cuttack from September 2019 to October 2021. It is a cross sectional study.

Observation: 94.9% mothers had received information from health personnel, 0.9% from family and friends, 1.2% from media or literature and 3.1% from previous births. There is a significant correlation between education and caste and religion with immunization status. 85% of mothers who had studied high school had completely immunized their children, emphasizing the importance of education in immunization. Educated mothers and those who delivered in the hospital have better knowledge, attitude and practice towards immunization.

Conclusion: Regular orientation programmes on immunization for women may be arranged by health providers to educate women and share their information to appropriate levels of knowledge of each mother's understanding to compensate communication gap.

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1. Introduction

Millions of lives have been saved and microbes stopped in their tracks before they could have a chance to wreak havoc. In short, the vaccine represents the single greatest promise of biomedicine: disease prevention.¹ Childhood Immunization almost guarantees protection from many major diseases. Immunization is regarded as one of the most successful and cost effective public health interventions

which averts about 3 million deaths annually² and has the potential, if coverage improves, of saving the lives of an additional 1.5 million children annually. Vaccines can protect many children than most other strategies. Almost one third of deaths among children under five are preventable by vaccines.³ yet every 20seconds, a child dies from a vaccine preventable disease.⁴

In 2012, nearly one in five infants worldwide, 22.6 million children, missed out on the basic vaccines needed to stay healthy. Many children live in remote rural regions and impoverished areas of cities in developing countries

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are not being vaccinated. More than 70% of the world's unimmunized children live in 10 countries, mainly in Africa and Asia.⁴

India also has the largest number of infants who reach their first birthday neither timely immunized as per schedule nor fully immunized. In India, Immunization has been a central goal of the health care system from the 1970s, first through the Expanded Programme on Immunization (EPI) in 1978, and later with the universal Immunization programme (UIP) since 1985. UIP became a part of Child Survival and Safe Motherhood Programme in 1992. Since, 1997, Immunization activities have been an important component of National Reproductive and Child Health Programme and is currently one of the key areas under National Rural Health Mission (NRHM) since 2005. Under the Universal Immunization Programme, Government of India is providing vaccination to prevent 12 diseases: -tuberculosis, diphtheria, pertussis (whooping cough), tetanus, poliomyelitis, measles, hepatitis B, diarrhea, Japanese encephalitis, rubella, pneumonia (*Haemophilus Influenzae* Type B) and Pneumococcal diseases (Pneumococcal pneumonia and meningitis). Hepatitis B and pneumococcal diseases were added to the UIP in 2007 and 2017, respectively.^{5,6} The other additions in UIP through the way are IPV, rotavirus vaccine (RVV), and measles-rubella (MR) vaccine. Four new vaccines have been introduced into the country's UIP, including injectable polio vaccine, an adult vaccine against Japanese encephalitis and pneumococcal conjugate vaccine (PCV). Constitutionally, health care is on the State's list of responsibilities and is financed by the State and centre. The UIP is an exception; it is one of the few 100 per cent centrally sponsored family welfare programmes and provides support for vaccine storage, training of medical and paramedical staff, and all infrastructure needs specific to delivering Immunization to infants at the village level.⁷

Expanded programme on Immunization (EPI) target diseases are one of the leading causes of high childhood morbidity and mortality as evidenced by high IMR (Infant mortality rate) in developing countries⁸. Immunization is a timely step for prevention of mortality and morbidity due to communicable diseases in the 0-5 years of age group.⁹ The delivery systems of the Immunizations have many inherent problems to which another addition may be made by the people themselves, with their prejudices, conclusions and apathy.⁹ Reasons of underlying poor coverage have been studied by many researchers worldwide and besides other factors, parental knowledge and beliefs have been documented to influence Immunization uptake.^{10,11} The challenge for Immunization service providers, therefore, is to offer parents balanced and comprehensive information about the risks as well as the benefits of Immunization during counseling sessions.

According to the National Family Health survey (NFHS-3), in India only 44% of children aged 1-2 years have received the basic package.¹⁰ As per NFHS-3 full Immunization coverage in Odisha was 52% and no Immunisation 9%.¹⁰ Significant percentage of 79% of children age 12-23 months have received all basic vaccinations against six major childhood illnesses in Odisha state, which is more than the national average (62%) NFHS-3.¹¹ Overall, there has been a substantial increase in coverage of all basic vaccinations in the past 10 years since NFHS-3 (52%).¹¹⁻¹³

Immunization coverage surveys are conducted to monitor the existing coverage and identify problems faced by the service recipients. Literacy rate of women (64.01%) of Odisha is lying little below the national level (65.46%) out of which majority have never studied up to college level. The knowledge, attitude and practices differ from rural area and urban area based on education and economic status. It is very much essential to have adequate knowledge for timely immunization as per NIS and adoption of uniform practices throughout the state. Similarly there is also need of positive attitude of mothers towards implementing immunization practices for vaccine preventable diseases. In the past there is no much study has been done in this aspect of immunization practices in Odisha. Hence it is intended to find out the knowledge, attitude and practices adopted by women of Odisha in rearing up their children.

2. Aims

To study the knowledge, attitude and practice among the mothers (studied up to class 10th) of children under 5 years regarding immunization status attending a tertiary care hospital during study period.

3. Objectives

1. To assess the immunization status of children under 5 years attending tertiary care hospital.
2. To identify and explore the factors such as mother's age, level of education, socio-economic status, religion, caste, parity, place of delivery, gender of the child on the immunization status.
3. To assess mother's knowledge, attitude and practice regarding immunization.

4. Materials and Methods

After obtaining the clearance from institutional ethical committee, the study was conducted in the department of pediatrics, SCB Medical College, Cuttack from September 2019 to October 2021. It is a cross sectional study. A total of 350 samples were taken of under 5 children.

4.1. Inclusion criteria

Mothers of Children under 5 years of age those who studied up to class 10th.

4.2. Exclusion criteria

1. Mothers not willing for survey
2. Mothers those who studied beyond class 10th

4.3. Study tools and techniques

4.3.1. Method of data collection

Informed consent was taken as per annexure 1 from the mothers who got education up to 10th class irrespective of caste and religion. A single face-to-face interview using a standardized questionnaire was conducted in Odia language.

The questionnaire as per annexure 2 included data about maternal age, caste, religion, residence, education, occupation, monthly family income, parity, place of delivery, sex of the child, immunization status and knowledge, attitude and practices of mothers with regard to immunization.

Information regarding the vaccination status was obtained from the immunization card and on recall basis by the respondents in case of non-availability of the card.

All the data obtained was entered into the proforma designed for the study for further analysis.

Health education was given to all the mothers interviewed regarding Immunization.

4.4. Statistical analysis

Statistical analysis was done as appropriate after collecting the data in tabular form using SPSS software version 26. Data were expressed as percentages or proportions. Tests of proportions were done with Chi-square wherever deemed necessary and a $p < 0.05$ was considered as statistically significant.

4.5. Operational definition

Knowledge: Refers to information about immunization which is known by the mothers.

Attitude: Refers to the way of thinking or opinion about immunization.

Practice: Refers to act of mothers getting their child immunized.

Immunization status is defined as below:

Fully immunized: Children who had received three doses of diphtheria, tetanus, pertussis (DPT), and OPV each and single dose of BCG and measles vaccine. In children below 1 year those who were received vaccines as per age were included under this.

Partially immunized: Those who had received one or more doses of these vaccines, but not all doses.

Unimmunized: Those who had not received single dose of any vaccine.

5. Observation and Result

Table 1: Age and gender wise distribution of children

Age	Number of cases	Percentage	Male	Female
<1 year	133	38%	81(60.9%)	52(39.1%)
1-2 year	71	20%	48(67.6%)	23(32.4%)
2-3 year	60	17%	41(68.3%)	19(31.7%)
3-4 year	41	12%	23(56.1%)	18(43.9%)
4-5 year	45	13%	29(64.4%)	16(35.6%)
Total	350	100%	222(100%)	128(100%)

Above table shows 38% of children are <1 year (60.9% males and 39.1% females), 20% are between 1-2 years (67.6% males and 32.4% females), 17% are between 2-3 years (68.3% males and 31.7% females), 12% are between 3-4 years (56.1% males and 43.95% females) and 13% are between 4-5 years (64.4% males and 35.6% females). Table 1

Table 2: Source of information regarding immunisation

Source	Number of cases	Percentage
Health personnel	332	94.8%
Family or friends	3	0.9%
Media or literature	4	1.2%
Previous experience	11	3.1%
Total	350	100%

In this study 332 (94.9%) mothers had received information from health personnel, 3 (0.9%) told to have received advice from family or friends, 4 (1.2%) from media or literature and 11(3.1%) from previous experience. Table 2

Table 3: Immunisation status of children

Immunisation status	Number of cases	Percentage
Completed as per age	277	79.1%
Partial/defaulters	61	17.4%
Not immunised	12	3.4%
Total	350	100%

Out of 350 children 277 (79.1%) were immunized as per schedule, 61 (17.4%) were partially immunized /defaulter due to various causes and 12 (3.4%) were not immunized at all. Table 3

In this study there is no significant relationship between mother's age and immunization status.

Table 4: Comparison between different category of issues and immunisation status

Table 4: Comparison between different category of issues and immunisation status							
C ategory	Immunisation status			Total	P value	Significance	
	Complete	Partial/ Defaulter	Not immunised				
1. Mother's AGE	<20	6(67%)	3(33%)	-	9	0.055	Not significant
	20-25	145(80%)	28(15%)	9(5%)	182		
	26-30	104(79%)	25(19%)	3(3%)	132		
	>30	22(81%)	5(19%)	-	27		
	Total	277(79.1%)	61(17.4%)	12(3.4%)	350		
2.Mothers education	Illiterate	19(70.3%)	7(26%)	1(3.7%)	27	0.012	significant
	Primary school	26(60.4%)	15(35%)	2(5%)	43		
	Middle school	37(72.5%)	10(20%)	4(8%)	51		
	High school	195(85%)	29(13%)	5(2%)	229		
	Total	277(79.1%)	61(17.4%)	12(3.4%)	350		
3.Socio-economic status	Class 1	197(82.4%)	36(15%)	6(2.6%)	239	0.082	Not significant
	Class 2	68(72.3%)	22(23.4%)	4(4.25%)	94		
	Class 3	9(69.2%)	3(23%)	1(7%)	13		
	Class 4	3(75%)	-	1(25%)	4		
	Total	277(79.1%)	61(17.4%)	12(3.4%)	350		
4.Caste	General	103(86.5%)	15(12.6%)	1(.8%)	119	<0.001	significant
	OBC	64(83.1%)	12(15.6%)	1(1.2%)	77		
	SC	63(75%)	19(22.6%)	1(2.4%)	84		
	ST	23(62.1%)	12(32.4%)	2(5.4%)	37		
	Total	277(79.1%)	61(17.4%)	12(3.4%)	350		
5.Religion	Hindu	247(80%)	55(18%)	6(2%)	308	0.04	significant
	Muslim	24(72.7%)	3(9%)	6(18.18%)	33		
	Christian	6(67%)	3(33%)	-	9		
	Total	277(79.1%)	61(17.4%)	12(3.4%)	350		
	Primi	153(80.5%)	28(14.7%)	9(3%)	190		
6.Parity	Multi	124(77.5%)	33(21%)	3(2%)	160	0.396	Not significant
	Total	277(79.1%)	61(17.4%)	12(3.4%)	350		
7.Place of delivery	Outside hospital	6(60%)	4(40%)	-	10	0.126	Not Significant
	Hospital	271(80%)	57(16.7%)	12(3.5%)	340		
	Total	277(79.1%)	61(17.4%)	12(3.4%)	350		
8.Gender	Male	171(77%)	41(18.4%)	10(4.5%)	222	0.571	Not Significant
	Female	106(82.8%)	20(15.6%)	2(1.6%)	128		
	Total	277(79.1%)	61(17.4%)	12(3.4%)	350		

In the present study, immunization status varies with the level of education of mother. Higher the level of education, the greater is the immunization coverage. It is significant ($p < 0.05$). ‘

Above table shows that in this study there is no association between socio-economic status and immunization status ($p > 0.05$).

In the present study there is significant relationship between caste of the child and immunization status ($p < 0.05$).

In the present study there is significant relationship between religion of the child and immunization status ($p < 0.05$).

In the study there is no significant difference in the immunization status in relation to parity. It is not significant

($p > 0.05$).

The above table shows that there is no association between immunization status and place of delivery ($p > 0.05$).

The above table shows that the immunization status is not associated with gender of the child. The immunization status in the present study is not influenced by whether the child is a male or female. It is not significant ($p > 0.05$). Table 4

Maternal knowledge regarding immunisation

Above table suggests that better the knowledge among mothers regarding why to immunize their child, higher is the immunization status. It is highly significant ($p < 0.05$).

Questionnaire were framed like A: Substance that produce protection against disease, B: Substance used to kill an organism, C: Substance that induce death of tissue,

Table 5: Knowledge about importance of vaccination

Importance of vaccination	Immunisation status			Total
	Complete	Partial/defaulters	Not immunised	
A	29(90.6%)	3(8.6%)	-	32
B	98(89%)	12(11%)	-	110
C	110(76.3%)	28(19.4%)	6(4.1%)	144
D	40(62.5%)	28(19.4%)	6(9.3%)	74
Total	277(79.1%)	61(17.4%)	12(3.4%)	350
P value	0.002			
significance	significant			

Questionnaire were framed like A: Induce immunity against specific disease, B: Prevent occurrence of a specific disease, C: Both, D: Don't Know

Table 6: What is a vaccine

What is a Vaccine	Immunisation status			Total	P value	Significance
	Complete	Partial/defaulters	Not immunised			
A	120(83.9%)	19(13.28%)	4(2.8%)	143	0.073	Not significant
B	116(78.3%)	28(18.9%)	4(2.7%)	148		
C	1 (50%)	1(50%)	-	2		
D	40(70.1%)	13(22.8%)	4(7.01%)	57		
Total	277(79.1%)	61(17.4%)	12(3.4%)	350		

D: Don't Know. Table 6

Above table suggests that better the knowledge among mothers regarding what a vaccine is, higher is the immunization status.

Mothers who have heard about vaccine related problems have a poorer attitude towards immunization but it is statistically not significant. Table 7

There is no significant correlation between the knowledge of the mothers regarding when to start immunizing the child and immunization status ($p > 0.05$). Table 8

There is no association between knowledge regarding optional vaccine among mothers studied and immunization status ($p > 0.05$). Table 9

Majority of mother have good attitude towards vaccination (99.4%). Table 10

The majority of the mother do follow good practice regarding immunization. Table 11

6. Discussion

Our study revealed 38% of children were <1 year (60.9% males and 39.1% females), 20% were between 1-2 years (67.6% males and 32.4% females), 17% were between 2-3 years (68.3% males and 31.7% females), 12% were between 3-4 years (56.1% males and 43.95% females) and 13% were between 4-5 years (64.4% males and 35.6% females). Study done by Adefolalu et al¹⁴ in Nigeria in 2019 showed 74.4% of children were <1 year, 19.6% were between 1-3 year and 6% between 3-5 year. A study done by Perla Matta et al¹⁵ in Lebanon in 2020 among 1m to 15 years children revealed 34.3% were males and 63.1% females, Boffaraj et al¹⁶ in Libya in 2008 showed (56.5%) were females and 87(43.5%)

were males, similarly Adefolalu et al¹⁴ in Nigeria in 2019 showed 42.4% were males and 57.6% were females not coinciding with our study. Whereas M.M. Angadi et al¹⁷ in India in 2013 revealed 50.32% were males and 49.68% were females.

2% of mothers were below 20 years, 52% were between 20-25 years, 38% were between 26-30 years and 8% of mothers were more than 30 years. Study done by Fad KH et al¹⁸ from Sudan in 2017 revealed 42% of mothers were between 18-25 years similar to Study by M.M. angadi et al¹⁷ in Bijapur, Karnataka, India in 2013 which showed 20.65% mothers were below 20 years, 55.48% were between 21-25 years, 17.42% were between 26-30 years and only 6.45% were above 30 years which coincides with our study. Whereas study by Adefolalu et al¹⁴ in Nigeria in 2019 showed 2.8% of mothers were below 20 years, 16.4% were between 21-25 years, 32.8% were between 26-30 years and 48% were above 30 year which does not coincide with our study may be due to delayed marriage and sociocultural differences.

Caste wise distribution of mothers revealing 34% of mothers belonged to general category, 22% belonged to other backward caste (OBC), 24% belonged to scheduled caste (SC) and 10.6% belonged to scheduled tribe (ST) may be due to better education, urban residency and more accessible to health care system by mothers belonging to general category. 88% of mothers were Hindus, 9.4% were Muslims and 2.6% were Christians which roughly matches with the population distribution of Odisha state as per 2011 census. M.M Angadi et al¹⁷ in Bijapur, Karnataka, India in 2013, Kapoor R et al¹⁹ in Ahmedabad, India in 2010, Nath B et al²⁰ in Lucknow, India in 2008 showed 53%, 65% and 69% were Hindus in their studies respectively. Study

Table 7: Have you ever heard child having problem related with vaccination.

ProblemWith Vaccination	Complete	Immunisation status Partial/defaulters	Not immunised	Total	P value	Significance
A	14(70%)	5(25%)	1(5%)	20	0.561	Not significant
B	263(79.6%)	56(16.9%)	11(3.3%)	330		
Total	277(79.1%)	61(17.4%)	12(3.4%)	350		

A: Yes , B: No

Table 8: Knowledge regarding when to start immunising the child

When to start Immunising	Complete	Immunisation status Partial/defaulters	Not immunised	Total	P value	Significance
At birth	266(78.9%)	60(17.8%)	11(3.2%)	337	0.336	Not significant
At 6 week	6(85.7%)	1(13.35%)	-	7		
Any time	5(83.3%)	-	1(16.7%)	6		
Total	277(79.1%)	61(17.4%)	12(3.4%)	350		

Table 9: Knowledge about optional vaccine and immunisation status

Optional Vaccine	Complete	Immunisation status Partial/defaulters	Not immunised	Total	P value	Significance
Yes	10(48.8%)	6(35%)	1(5.8%)	17	0.080	Not significant
No	267(80%)	55(15.5%)	11(3.3%)	333		

Table 10: 10: Attitude about immunisation

Attitude		No of cases	%
Do you think vaccination is important?	Yes	348	99.4
	No	2	0.6
Do you think completing vaccination according to the schedule is important?	Yes	341	97.3
	No	9	2.7
Where do you prefer to receive vaccine?	Health facility	149	42.57
	From campaign	208	59.42
What do you think about a child receiving vaccines from campaign, after he/she completing routine immunization schedule?	Important	278	79.4
	Not important	72	20.6
Did you think the side of vaccine	Yes	43	12.3
	No	307	87.7

by Joseph J²¹ showed 37.5% as Muslims and 62.5% as Hindus which coincides with our study. Study done by K.K. Lamiya et al²² in Kerala, India in 2017 showed 68.5% were Muslims, 26% were Hindus and 5.5% were Christians. Similarly study by Mereena et al²³ in Mangalore, India in 2014 showed 54% were Muslims. Boffaraj et al¹⁶ in Libya in 2008 showed 72% were Muslims. Adefolalu et al¹⁴ in Nigeria in 2019 showed 63.6% were Christians, 35.2% were Muslims. This may be due to local differences of respective religions.

7.7% of mothers were illiterate, 12.3% were studied up to primary school, 14.6% studied up to middle school and 65.4% were entered high school. Most of them were high school drop outs. Study performed by Adefolalu et al¹⁴ in Nigeria in 2019 showed 0.8% were illiterate, 6.4% received primary education, 51.2% received secondary education and 41.6% beyond that similar to Lamiya et al²¹ in Kerala, India in 2019 which showed 0.9% were studied upper primary, 40.9% were studied up to high school

and 37.9% beyond high school. A study done by Matta et al¹⁵ in Lebanon in 2020 showed 1.5% were illiterate, 7.1% completed primary education, 16.1% complementary education 24.1% secondary education and 51.1% received education at university does not coincide with our study as our study involved those who were studied up to class 10th. Study done by M.M. Angadi et al¹⁷ in Karnataka, India in 2013 showed 50.32% were illiterate, 7.1% were received primary and 40.65% were received secondary education. Study conducted by Rabannie Tariq Wani et al²⁴ in Kashmir, India in 2017 revealed 28.30% were illiterate, 61.60% completed primary school and only 0.1% completed secondary study. This difference may be due to more awareness regarding education in our state.

Our study revealed 68.3% of the mothers belonged to class I, 26.9% to class II, 3.7% to class III, 1.1% to class IV in socio-economic group as per modified B.G. PRASAD CLASSIFICATION 2020. Different studies used different method to classify socioeconomic status. Dharma lingam

Table 11: Practice towards immunisation

Practice		No of cases	%
Have you vaccinated your child?	Yes	338	96.6
	No	12	3.4
Obstacles	Lack of information about vaccination	4	1.1%
	Distance from PHC	1	0.3%
	Sick child	7	2%
Did the child complete vaccination according to the schedule?	Yes / Fully immunized	277	79.1%
	NO / Defaulter	61	17.4%
	Too far from vaccination site	1	0.3%
Did the child complete vaccination according to the schedule? If no why ?	Child was sick	58	16.6%
	Mother is sick	2	0.6%
	Time inconvenience	1	0.3%
	Unaware of the need to return for repeated vaccine dose	3	0.9%
	Forget to go for repeated dose	2	0.6%
Have you ever seen side effect of a vaccine while children's have vaccinated?	change in place of vaccination	1	0.3%
	Yes	251	71.7%
	No	99	28.3%
Have you ever seen side effect of a vaccine while children's have vaccinated? If yes, Describe	Fever	250	71.42%
	Swelling, pain, redness at the site of injection	59	16.85%
	Loss of appetite	1	0.3%
Does the provider tell you about the importance of immunization?	Yes	252	72%
	No	98	28%
Do you have a card that you immunize your child?	Yes	345	98.5%
	No	5	1.5%
Do you have a card that you immunize your child? If no	Torn by children	2	0.6%
	Lost	3	0.9%

et al²⁵ in Pondicherry, India in 2017 used annual income to classify it and used codes for it. Joseph j et al²¹ used monthly family income like <10,000, 10,000-20,000 and > 20,000 .M.M. Angadi et al¹⁷ used modified B.G. Prasad classification (2011) in Karnataka, India in 2013 and found 0% in class I, 10.97% in class II, 18.06% in class III, 55.48% in class IV and 15.48% in class V which doesn't coincide our study may be due to they conducted study only in slum area and gradual increase in standard of living with time and with development of country.

In our study 54.3% mothers were primipara and 45.7% as multipara. Study by Joseph J et al²¹ in Bengaluru, India in 2015 showed 59 % as primipara and 41% as multipara similar to study by Dharma lingam et al²⁵ in Pondicherry, India in 2017 which showed 49.9% as primipara and 51.1% as multipara which matches our study. Study performed by Adefolalu et al¹⁴ in Nigeria in 2019 showed 14% as primipara and 86% as multipara which doesn't match our study may be due to sociocultural differences.

97.1% of the deliveries conducted in hospital and only 2.9% of the deliveries were conducted at home.

Study done by shifera Birhanu et al²⁶ in Ethiopia in 2013 and Adefolalu et al¹⁴ in Nigeria in 2019 showed 7% of deliveries conducted at home and 93% were institutional and 4% home deliveries, 86.8% institutional and 9.2%

at places other than hospital/home like religious places respectively. There are more institutional deliveries in our study may be due to more awareness among our women.

Among the 350 mothers interviewed, there was multiple sources of information but majority got information regarding immunization from health personnel (94.8%) followed by previous experience (3.1%), media and literature (1.2%) followed by family or friends (0.9%). Study done by K.K. Lamiya et al²² in Kerala, India in 2017 showed health workers (77.4) as source of knowledge. Study by Boffaraj et al¹⁶ in Libya in 2008 showed the most common source of information about the immunization of under five children was para medical workers (90%). Similar studies carried out in Karachi Pakistan, North India, Rishikesh, Saudi Arabia and Bangladesh where 62.2%, 52.0%, 88%, 96%, 77%, and 80.18% of the respondents, respectively stated that the commonest source of information about the immunization of under five children was through health workers which matches our study. M.M. Angadi et al¹⁷ in Karnataka, India in 2013 showed sources of information regarding immunization amongst majority of the respondents were family members and relatives (42.48%), followed by health workers such as ANMs or AWWs (34.19%) and doctors (17.42%). Nafila A.K²⁷ in 2019 revealed the primary source of

information regarding vaccination for 56% mothers was the immunization card, 36% was the immunization provider and remaining 8% was through newspaper and friends. Adefolalu et al¹⁴ in Nigeria in 2019 showed at the antenatal clinics (46.8%). This is also contrary to a study carried out in Egypt where the television (54.6%) was the most common source of information about immunization of under five children. So health care personnel are key source of immunization and they should be encouraged.

79.1% of children were completely immunized as per schedule, 17.4% were partially immunized/defaulters and 3.4% were not immunized at all. Study done by K.K. Lamiya et al²² in Kerala, India in 2017 showed (87.7%), Nath B et al²⁰ in Lucknow, India in 2008 showed (44.1%), Boffaraj et al¹⁶ in Libya in 2008 showed (81.1%), Adefolalu et al¹⁴ in Nigeria in 2019 showed (86.4%), Nafila A.K²⁷ in 2019 revealed (93%), Joseph J²¹, Bengaluru in 2015 showed (86%), Rabannie Tariq Wani et al²⁴ in Kashmir, India in 2017 revealed (90%) were fully immunized.

7. Knowledge Regarding Immunisation

81.7% of mothers know the importance of vaccination but only 9.1% were able to tell that it induces immunity against specific disease, 31.4% told that it prevents occurrence of a specific disease and 41.4% told the answer as both, 18.3% don't know the importance. Study done by Fad KH et al¹⁸ from Sudan in 2017 revealed 40% of mothers had good knowledge about vaccine preventive diseases, this result similar with study which done in Fad KH et al¹⁸ in 2017 proved that 52% of mothers had good knowledge about vaccine preventive diseases and more than half of mothers (52%) had poor knowledge about number of the routine doses which given to the child less than two years. Jose et al²⁸, conducted a study on Awareness on Immunization among Mothers of under five Children in selected hospital at Mangalore. Overall result had shown that 30% of mothers had poor knowledge, 43.4% of mothers had average knowledge, 23.4% of mothers had good knowledge and 3.33 mothers had excellent knowledge. There was no significant association between knowledge and immunization among mothers of under five children. Study by Joseph J et al²¹ revealed one of the important factors which can affect the parental practice is their knowledge regarding vaccination. A study conducted by Favin et al²⁹ showed that lack of knowledge about the importance of vaccines has been one of the main barrier to immunization and 70% of respondents believed that immunization prevents some infectious diseases, rest one-third of parents did not know this fact.

8. Conclusion

From the present study clearly highlights the importance of educating the women on the importance of immunisation and the knowledge may be imparted even at the school

level. There is a need to focus more on educating less educated women on this aspect, hence regular orientation programmes on immunization for women may also be arranged by health providers to educate women on these aspects and share their information to appropriate levels of knowledge of each mother's understanding to compensate communication gap. Women organizations too, need to be associated for active dissemination of information on immunization to educationally deprived women. There is still a need for implementation of special programmes, which support and encourage immunization at a primary level, focusing more on younger women and those less well educated especially tribal and backward classes.

9. Authors Contribution

All authors were involved in research design, data analysis, and manuscript preparation and editing.

10. Conflict of Interest

There are no conflicts of interest in this article.

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