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KNOWLEDGE AND ATTITUDE REGARDING CHILDHOOD IMMUNIZATION AMONG PREGNANT WOMEN: A COMMUNITY STUDY

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ABSTRACT

Background: Pregnant mothers' knowledge and attitude about immunization is an important predictor factor for their children's immunization status. This study was initiated in the context of WHOs report on major disruption of childhood immunization programs and services around the world due to COVID-19 pandemic. **Aim and Objective:** The aim of the study was to analyse the knowledge and attitude of pregnant women towards childhood immunization and the objective is to evaluate the factors influencing it, to determine the misconceptions and to improve the awareness and compliance towards vaccination. **Material and Methods:** Community based prospective educational study was conducted among pregnant women in selected areas of Kalaburagi. The data's were collected using data collection form and questionnaires. After a gap of 14 days followed by education post test scores were taken. The pre and post data were compared using student's t- test. **Result:** Out of 130 pregnant women surveyed, the knowledge score of pre-test was 72.11%, whereas post-test the score was 89.0%. The attitude score of pre-test was 82.0%, while the post-test score was 97.8% respectively. This shows a clear indication of improvement, followed by education. Our study demonstrated that certain factors (education status (p=0.027), residence area (p=0.041), trimesters of pregnancy (p=<0.001)) had an influence on Immunization. **Conclusion:** Although majority of pregnant women's had satisfactory knowledge and positive attitude towards immunization, certain factors (Educational status, Residential areas and Trimesters of pregnancy) plays a major impact in vaccination uptake. Hence efforts should be focused on improving their practice.

KEYWORDS: Childhood Immunization, Pregnant Women, Knowledge and Attitude.

INTRODUCTION

Immunization has greatly reduced the burden of infectious disease. It is one of the most cost effective public health intervention and largely responsible for reduction of under-five mortality rate.[1] Childhood immunization guarantees protection from many major infectious diseases, it prevents almost 2 million deaths per year worldwide and is widely considered to be 'overwhelmingly good' by the scientific community.[2] The word immunity refers to the body's capacity to defend itself against a particular disease or infection. It is the procedure whereby a person is made immune or opposed to an infectious diseases and different type of maladies; typically by the direction of a vaccination. Vaccination arouses the body's own immune system to defend the individual against the following communicable diseases such as diphtheria, pertussis, measles, tetanus, Hepatitis B, polio and tuberculosis.[3]

WHO defines vaccines as -'A vaccine is a biological preparation that improves immunity to a particular disease. We now have vaccines to prevent more than 20 life-threatening diseases, helping people of all ages live longer, healthier lives.[4]

Though India is effectively organizing vaccination campaigns, a large majority of children are often left behind.[5]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, misconceptions, opportunity cost incurred by the parents to carry out the vaccination, and cultural practices prevailing in the area.[6]

As part of tackling globally increasing prevalence of infectious diseases in children, World Health Organization (WHO) started the Expanded Programme on Immunization (EPI) in India by 1978. This program covered vaccines like BCG, DPT and OPV.[7] In 1985, Government of India initiated the Universal Immunization Program (UIP). From then the immunization schedule expanded with measles vaccination, vitamin A supplementation from 1990, and the Hepatitis B vaccination piloted in 2002 and universalized in 2011.[7,8] The Government of India recently launched the Mission Indradhanush to expand immunization coverage to all children, across India by the year 2020.[8] Despite the government and WHO funded programs, in 2015, about 1.2 million deaths of children under five were reported to be due to vaccine preventable diseases alone.[9] In spite of being one of the leading producers

and exporters of vaccines, India still has a huge percentage of unvaccinated or partially immunized children across the nation, which is a real setback in the development of the country.[10]

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.[11]

Given the extensive benefits of immunization, any inequities in Knowledge, Attitude and Practices are a cause of serious policy concern. Even more dismal is the situation in rural areas as compared to urban areas. The parental knowledge attitude beliefs have been documented to influence immunization uptake.[12] The challenge for immunization services providers therefore, is to offer parents balanced and comprehensive information about the risks as well as benefits of immunizations.[13]

With this background this study was conducted at rural areas of Kalaburagi, Karnataka, to assess pregnant women's knowledge and attitude so as to identify the existing gaps that need to be fulfilled in order to achieve the immunization targets.

MATERIALS AND METHODS

An institutional review board clearance was obtained.

Study Design: A prospective community based educational study

Study Site: Selected areas of Kalaburagi Karnataka

Study Duration: 06 Months

INCLUSION CRITERIA

- Pregnant Women's of all the trimesters were included in this study.
- Pregnant Women's who were willing and able to participate in all aspects of intervention.

EXCLUSION CRITERIA

- Pregnant women who are mentally challenged and chronically sick were excluded.
- Pregnant women who are having medical background (health professionals) were excluded.

SOURCE OF DATA

The data was collected by using data collection form consisting of two parts:

1. Socio-demographic details of the participants along with their trimesters of pregnancy.
2. Pre-designed questionnaire comprising of knowledge and attitude based questions.

SAMPLE SIZE: 130 Participants.

STUDY PROCEDURE

The study was conducted in selected areas of Kalaburagi, Karnataka, to find out the knowledge and attitude towards childhood immunization among pregnant women. After obtaining Institutional Ethical Committee clearance, all the pregnant women's were screened through house-to-house visit. The informed consent forms were duly signed by the participants, were enrolled into our study.

The information was collected by using data collection form, consisting of two parts. Part 1 comprised of socio-demographic details (name, age, qualification etc…) of the participants along with their maternity status and part 2 consisted of knowledge and attitude based questionnaire. A baseline score was taken (pre-test) by interviewing the pregnant women's using questionnaire of all two domains. Then the participants were educated by counselling aids (Information leaflet) regarding immunization and its importance, specific vaccine against particular disease and routine immunization schedule. Post-test has been taken after 14 days of education by means of same questionnaires.

STATISTICAL ANALYSIS

Data were entered into Microsoft Excel, compiled and analysed using IBM SPSS 20.0 version software. Then the Pre and Post intervention data were compared by using paired student's t- test for statistical significance. If P value is <0.05, it is considered as significant.

RESULTS

A total number of 130 pregnant women included in the study were analyzed for knowledge and attitude regarding childhood immunization.

Socio-Demographic Details

The socio-demographic details of the study populations shows that most of the participants had degree (59%) as their educational qualification. (Figure 1).

A maximum number of pregnant women (63%) belonged to rural areas and (36.9%) of women belonged to urban areas. (Figure 2).

Out of total participants, 58 (44.6%) of pregnant women were Hindus, 40 (30.8%) of women in the study were Muslims and 32 (24.6%) of women were Christians. (Figure 3).

Most of the pregnant women responded that their source of information regarding childhood immunization were from doctors and nurses/health workers. (Figure 4).

Most of the subjects belonged to 2nd trimester (43%) followed by 3rd and 1st trimester. (Figure 5).

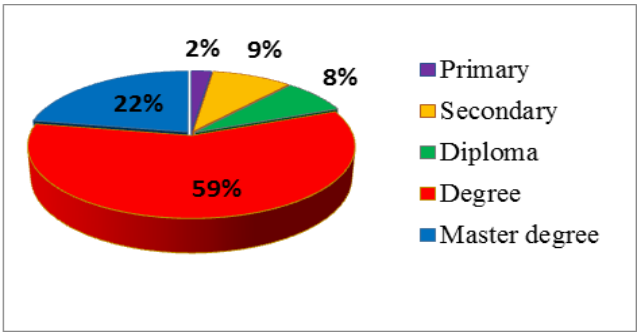

Figure 1: Education qualification of pregnant women.

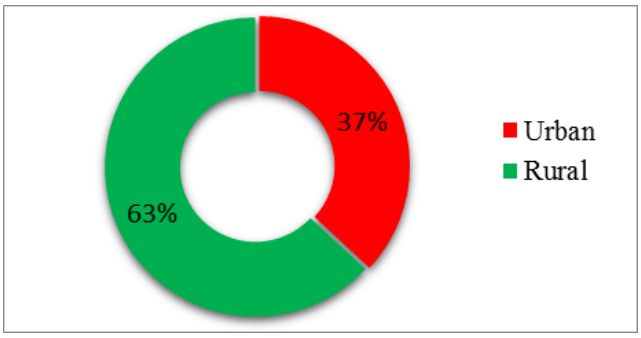

Figure 2: Figure representing residential area wise distribution of pregnant women.

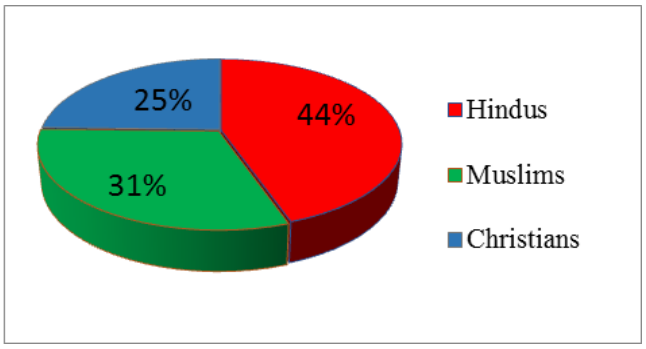

Figure 3: Religion wise distribution of pregnant women.

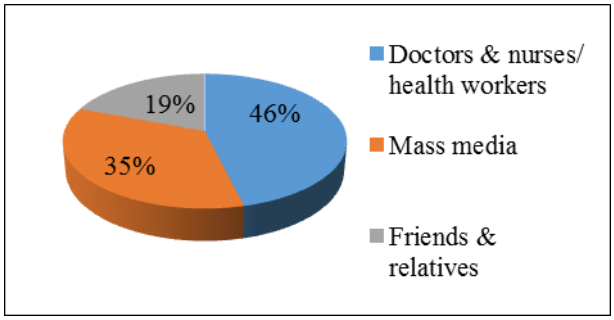

Figure 4: Figure representing the source of information regarding vaccination.

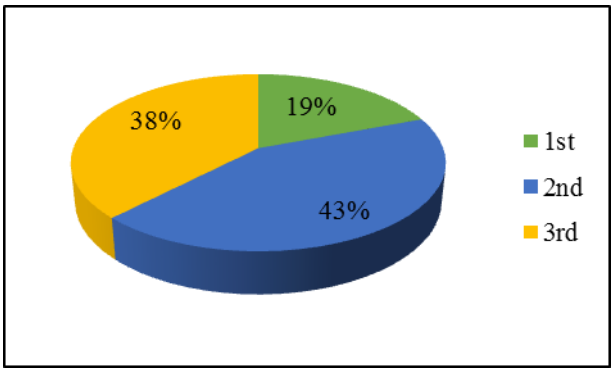

Figure 5: Trimester wise distribution of pregnant women.

Table 1: Table depicting Comparison of knowledge on childhood immunization with demographical profiles.

Demographical profiles		Knowledge score Mean ± SD	Test value	P-value and significance
Educational status	Primary	5.03 ± 1.63	F = 5.32	P = 0.027 S
	Secondary	6.23 ± 1.28		
	Diploma	6.43 ± 1.41		
	Degree	8.41 ± 1.35		
	Master degree	8.62 ± 1.17		
Residence	Urban	8.03 ± 1.38	t = 2.42	P = 0.041 S
	Rural	5.97 ± 1.67		
Religion	Hindus	7.45 ± 1.31	F = 1.89	P = 0.214 NS
	Muslims	6.23 ± 1.89		
	Christians	7.85 ± 1.06		
	Joint	7.98 ± 1.73		

NS= not significant, S=significant, HS=highly significant, VHS=very highly significant

The study reveals that there was a statistical significant difference in mean knowledge scores on childhood immunization with demographical profiles of educational status and residential area (P<0.05). Higher educational status pregnant women had significantly better knowledge. Urban pregnant women had significantly better knowledge. There was no statistically significant difference in mean knowledge scores on childhood immunization with

demographical profiles of religion and type of family. (Table 1).

Table 2: Table depicting comparison of attitude on childhood immunization with demographical profiles.

Demographical profiles		Attitude score Mean ± SD	Test value	P-value and significance
Educational status	Primary	7.12 ± 1.53	F = 6.41	P = 0.021 S
	Secondary	7.93 ± 2.23		
	Diploma	8.16 ± 1.83		
	Degree	10.17 ± 1.78		
	Master degree	10.08 ± 1.82		
Residence	Urban	8.74 ± 1.92	t = 1.82	P = 0.089 NS
	Rural	7.82 ± 1.47		
Religion	Hindus	8.17 ± 2.19	F = 1.97	P = 0.197 NS
	Muslims	8.01 ± 2.37		
	Christians	9.14 ± 1.39		
	Joint	7.98 ± 2.73		

NS= not significant, S=significant, HS=highly significant, VHS=very highly significant

The study reveals that there was statistically significant difference in mean attitude scores on childhood immunization with demographical profiles of educational status (P<0.05). Higher educational status pregnant women had significantly better attitude regarding childhood immunization.

There was no statistically significant difference of mean attitude scores on childhood immunization with demographical profiles of the residential area, religion and type of family. (Table2).

Regarding Knowledge

Table 3: Immunization related knowledge of pregnant women.

Questions	Responses	Pre-Test (No.)	Post-Test (No.)
Why vaccination is important?	Cure disease	5	1
	Prevent disease	78	128
	Both	42	1
	Don’t know	5	0
Name the diseases against which child is immunized	Polio	125	130
	Tuberculosis	71	129
	Hepatitis B	75	128
	Tetanus	68	130
	Measles	71	120
	Whooping cough	52	121
	Diphtheria	66	127

	Meningitis	40	121
What are the temporary reactions occurs after vaccination?	Fever	124	130
	Rash/itchiness	31	6
	Pain/swelling	57	128
	Pus/scar	10	5

Regarding Attitude

Table 4: Immunization related attitude of pregnant women.

Variables	Trimesters	Pre-Test		Post-Test		% of Diff. scores	t-test, P-value
		Mean ± SD	% of score	Mean ± SD	% of score		
Attitude	1st	6.19 ± 1.49	61.9%	9.68 ± 0.72	96.8%	34.9%	t = 10.78 P =0.000, VHS
	2nd	8.42 ± 1.40	84.2%	9.73 ± 0.54	97.3%	13.1%	t = 7.015 P =0.000, VHS
	3rd	9.04 ± 1.23	90.4%	9.89 ± 0.37	98.9%	8.5%	t = 4.541 P =0.000, VHS
ANOVA-test & P-value	F = 37.01 P =0.000 VHS			F = 1.559 P =0.214 NS			---

Table 5 reveals that there was a statistically very highly significant difference in mean knowledge scores on childhood immunization among trimesters of pregnant women in the pre-test and post-test (P<0.001). 3rd and 2nd trimesters pregnant women had significantly good knowledge as compare to 1st trimester pregnant women in both pre-test and post-test.

TRIMESTER WISE COMPARISON OF KNOWLEDGE

Table 5: Table depicting comparison of knowledge scores on childhood immunization among trimesters of pregnant women between pre and post-test.

Variables	Trimesters	Pre-Test		Post-Test		% of Diff. scores	t-test, P-value
		Mean ± SD	% of score	Mean ± SD	% of score		
Knowledge	1st	5.96 ± 1.74	59.6%	7.61 ± 0.92	76.1%	16.5%	t = 5.744 P =0.000, VHS
	2nd	7.07 ± 1.43	70.7%	8.05 ± 0.92	80.5%	9.8%	t = 6.798 P =0.000, VHS
	3rd	7.34 ± 1.13	73.4%	8.25 ± 0.78	82.5%	9.1%	t = 6.755 P =0.000, VHS
ANOVA-test & P-value	F = 8.242 P =0.000 VHS			F = 3.941 P = 0.026 S			---

There was a statistically very highly significant difference of mean knowledge scores on childhood immunization among pregnant women between pre-test and post-test scores in all 1st, 2nd, and 3rd trimesters (P<0.001). (Table 5).

TRIMESTER WISE COMPARISON OF ATTITUDE

Table 6: Table depicting comparison of attitude scores on childhood immunization among trimesters of pregnant women between pre and post-test.

Immunization related attitude of pregnant women			
Questions	**Responses**	**Pre-Post (No.)**	**Post-Test (No.)**
Does immunization is more beneficial than harmful?	Yes	106	129
	No	24	1
Are you following any gender preference in vaccination?	Yes	13	2
	No	117	128
Is compliance to immunization schedule is important?	Yes	107	129
	No	23	1
Does healthy child also need vaccination?	Yes	117	130
	No	13	0

The study reveals that there was a statistically very highly significant difference in mean attitude scores on childhood immunization among trimesters of pregnant women in the pre-test ($P<0.001$). 3rd and 2nd trimesters pregnant women had significantly good attitude as compared to 1st trimester pregnant women in the pre-test. Whereas there was no statistically significant difference in mean attitude scores on childhood immunization among trimesters of pregnant women in the post-test ($P>0.05$). There was a statistically very highly significant difference in mean attitude scores on childhood immunization among pregnant women between pre-test scores in all 1st, 2nd and 3rd trimester ($P<0.001$). (Table 6)

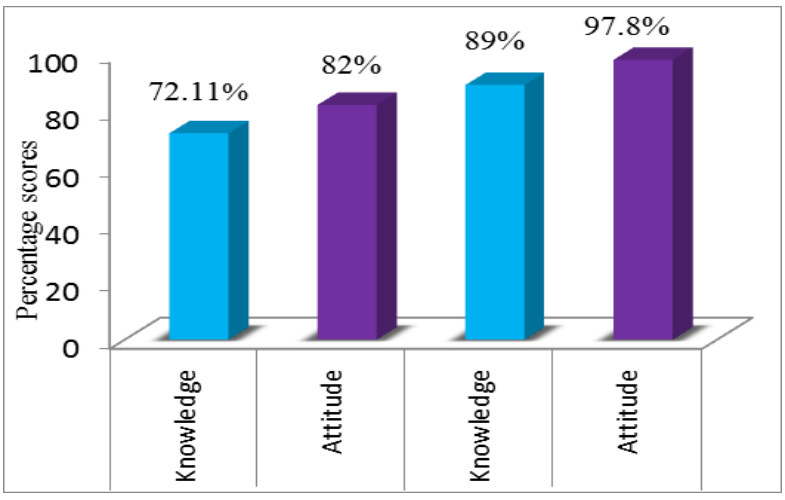

Figure 6: Representing Knowledge and Attitude scores on childhood immunization among pregnant women in the pre and post intervention.

In this study, the knowledge score of childhood immunization among pregnant women in the pre-test was 72.11%, in the post-test knowledge score was 89%. The attitude score of

childhood immunization among pregnant women in the pre-test was 82%, in the post-test attitude score was 97.8%. (Figure 6).

DISCUSSION

- To our knowledge, this is the first educational intervention study of its kind in India that used to improve pregnant women knowledge and attitude towards childhood immunization. The relevance of this study is in its attempt to reveal the knowledge and attitude of pregnant women regarding vaccination and to get an insight into misconceptions and the existing levels of awareness among pregnant women.
- Our study observed that out of 130 study subjects (pregnant women) most of them completed degree 76 (58.5%), some were having master degree 29 (22.3%), followed by secondary education 12 (9.2%), diploma 10 (7.7%) and primary education 3 (2.3%). This study reveals that there was a statistically significant difference in mean knowledge (p=0.027) and attitude (p=0.021) scores on childhood immunization with educational status. Many studies reported similar findings and significant associations, a study conducted by **Joseph J et al., 2015** shows that the educational status of mothers was found to be significant (p=<0.05) in childhood immunization[14] and other by **Mugada V. et al.,2017** concorded the same.[15] These findings are also lined up by **Chris et al., 2015.**[16]
- In our study, a maximum number of pregnant women 82 (63.1%) belonged to the rural areas and 48 (36.9%) of women belonged to urban areas. In this study layout, there was a statistically significant difference of mean knowledge (p=0.041) of pregnant women with residence area. Similar findings by **Danish et al., 2014** point out that residential area has significant (p=0.0006) impact on childhood immunization.[17] **AH Ibnouf et al., 2007** also concluded (p=≤0.001) the same.[18]
- Our study observed that, 58 (44.6%) were Hindus, 40 (30.8%) were Muslims and 32 (24.6%) were Christians. There was no statistically significant (p= ≥ 0.05) difference in mean knowledge and attitude scores on childhood immunization. On the other hand, our findings have no significance, with the similar study conducted by **Joseph J et al., 2015** which shows a significant (p=<0.05) association.[14] **Shrivastwa N et al., 2015** demonstrated the same finding.[19]
- The present study observed that 60 (46.2%) of women got the information regarding childhood immunization from doctors and nurses/health workers, 45 (34.6%) of women through mass media and 25(19.23%) of women got the information from friends and

relatives. The finding of another study carried out by **Ahmed A et al., 2019** is also in consonance with the finding of our study.[20]

- The study observed that a minimum number of 25 (19.2%) belonged to 1st trimester followed by a maximum of 56 (43.1%) were 2nd trimester and 49 (37.7%) belonged to 3rd trimester. Our study reveals that there was a statistically very high significant difference of mean knowledge and attitude (p=0.001) scores on childhood immunization among trimesters of pregnancy.
- As we analyzed the study scores of pre & post Test among pregnant women, pre-test shows that knowledge score of childhood immunization among pregnant women was 72.11%, whereas in post-test, the score was 89.0%. In Attitude related questionnaires, pre-test score of childhood immunization among pregnant women was 82.0%, whereas in post-test the score was 97.8% respectively. This shows a clear indication of improvement, following education regarding immunization.

Regarding Knowledge

- Table No.3 depicts the knowledge of pregnant women regarding childhood immunization. The unequivocal parental knowledge regarding immunization is important in its uptake. Among the total 130 subjects who were interviewed, the majority of them had basic knowledge, that vaccination can prevent illness.
- Questions pertained to the knowledge about vaccines and diseases prevented by vaccination showed that 100% know that Polio is prevented by vaccination, 99% know that Tb is prevented by BCG and 92% knows Measles can be prevented by vaccination. Awareness regarding pentavalent vaccine was known by 94% to prevent Hepatitis B, Haemophilus Influenza Infections, Diphtheria, Pertussis and Tetanus. Another Scholar **Sunny A et al., 2018** reported that 99% know about polio, unfortunately, none of the participants was aware of Pentavalent vaccination.[2] A similar study conducted by **N Navaneetha et al.,2020** shows 64%,76% of participants know about Tb and measles respectively.[6]
- Our study data regarding the temporary reactions occur after vaccination, almost all the respondents reported fever 130(100%) and pain/swelling 128(98.5%) as common, whereas only a few were reported regarding rash/itchiness 6 (5%) and pus/scar 5(4%). The present study was supported by **Hamid S et al., 2012**, who found that 80% of the vaccinated child may experience fever, only 20% were aware of other reactions.[12] Anyhow, the benefits of vaccination far outweighed the risks.

Regarding Attitude

- Table no. 4 shows attitude of pregnant women regarding childhood immunization. A majority of 129(99.2%) of participants responded that immunization is more beneficial than harmful, while only 1(0.8%) responded obverse. A similar study conducted by **Kumar PRT et al., 2018** identified that 94% of participants responded that immunization was more beneficial than hazardous.[1]
- The study observed that a majority 128(98.5%) of the participants had no gender preference in the matter of child immunization, the residual respondents 2(1.5%) had somewhat views about gender preference in adoption of immunization. However, in our study -there is no statistical significance (p=0.05). These findings were contrary to the studies conducted by **Joseph J et al., 2015**[14] and **Asim M et al., 2012**[3] which show that gender preference has an influence on the immunization status of children.
- In our study almost all the parents 129(99.2%) believe that compliance to the immunization schedule is important, which shows a statistically very high significant (p=0.003) difference of mean attitude scores on childhood immunization. This percentage is higher compared to studies conducted by **Shaheen A et al., 2019**[21], **Kumar PRT et al., 2018**[1] and **Joseph J et al., 2015.**[14]
- Our study also concluded that almost all of the participants were aware, that healthy children also need immunization. This is in agreement with other studies conducted by **Joseph J et al., 2015**[14] and **Awadh A I et al., 2014.**[22]

CONCLUSION

Knowledge and attitude of pregnant women towards Immunization is an important predictor factor for their children's immunization status. This study reflects upon the idea that knowledge moulds attitude and attitude drives proper practice. Even though in this study, the majority of pregnant women's had satisfactory knowledge and a positive attitude towards immunization, certain factors plays a major impact on vaccination uptake. However, the acceptance of Immunization is associated with Socio-cultural values (belief, misconception, fear.) but in our study these factors were insignificant.

Despite all the efforts taken by the Government of India and certain other agencies a huge percentage of unvaccinated or partially immunized children are left behind across the nation. We now need to strengthen all elements of UIP(Immunization schedule, delivery and monitoring and VPD / AEFI Surveillance) and there is a dire need to arrange for health

education program sessions for all pregnant women regarding the importance of complete adherence to vaccination among children.

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None.

CONFLICT OF INTEREST

There is no conflict of interest between the authors.

ABBREVATIONS

BCG Bacillus Calmette Guerin

DPT Diptheria, Pertussis &Tetanus

EPI Expanded Programme of Immunization

FIP International Pharmaceutical Federation

OPV Oral polio vaccine

SPSS Statistical Package for the Social Science

UIP Universal Immunization Programme

WHO World health organization

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