International Journal of Contemporary Pediatrics
Dharmalingam A et al. Int J Contemp Pediatr. 2017 May;4(3):783-789
http://www.ijpediatrics.com
pISSN 2349-3283 | eISSN 2349-3291

DOI: http://dx.doi.org/10.18203/2349-3291.ijcp20171488

Original Research Article

Immunization knowledge, attitude and practice among mothers of children from 0 to 5 years

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Received: 10 March 2017
Accepted: 17 March 2017

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ABSTRACT

Background: Vaccination is one of the most cost-effective child survival interventions which is practiced throughout the world. All countries in the world have an immunization programme to deliver selected vaccines to the targeted beneficiaries, specially focusing on pregnant women, infants and children, who are at a high risk of diseases preventable by vaccines. In India, six vaccines for preventable diseases (VPD) to reduce childhood mortality & morbidity ie. BCG, DPT, OPV, TT was coming into practice in 1978, after WHO immunization programme that was launched in 1974. The purpose of this study was to determine the Knowledge, Attitude and Practice (KAP) of mothers regarding their understanding of immunization in rural areas in and around Pondicherry through the questionnaire is prepared in English and Tamil.

Methods: Five hundred and one mothers of children from 0 to 5 years of age were included in the study. Questionnaire was carried out in mothers to assess the following parameters; The age of the mother, educational status, socioeconomic status, awareness and knowledge of immunization in previous siblings, knowledge about newer vaccines.

Results: Out of 501 mothers included in the study, the mean age of the mother whose child undergoing vaccination is 25.88+4 years. The predominant mothers have completed higher education and mean annual income was 86,682.00. Birth order of the child showed no significance. Majority of children (62.6%) included in the study were born at Aarupadai Veedu Medical College and Hospital. The results were analyzed through chi square test and they were significant for role of education (p value = 0.000), effect on maternal age (p value = 0.000) and not significant with birth order. Finally, correlating the effect of Delivery Place on antenatal vaccine awareness, Children who were born at ACMCH, showed higher significance rate in the knowledge of Antenatal Vaccine (p value = 0.000), proper dosage to be given (p value = 0.034), primary vaccination (p value = 0.000). Also, they were not aware of special vaccination (p value = 0.025) and the risk of not immunizing their children (p value = 0.016).

Conclusions: Vaccination is the cost-effective preventive intervention carried out by the government to completely eliminate the preventable diseases by vaccines. There is a 100% immunization coverage up to 18 months were recorded for children born at our hospital. This is because of the incentive schemes practiced at our institute. The knowledge and awareness of antenatal vaccination is approximately 70-80 % of the mother's. Over all 30% of mothers are not aware that immunization can be done during minor ailments and after minor adverse reactions. Health professionals play a major role in creating both Immunization awareness and administration in prescribed date to mothers. In spite of awareness through various sources, knowledge on special vaccination to mothers is yet very poor. Initiative programme has to be taken to overcome this.

Keywords: Awareness, Children, Immunization, Mothers, Newer vaccines

INTRODUCTION

Every year nearly 2 million children are dying before they reach 5th birthday in low and middle income group.[1] Immunization is the cost effective safest and efficient health investments of saving millions of lives and averting morbidity, mortality and disability by vaccine preventable diseases.[2] WHO has launched in 1974, an expanded Programme of immunization (EPI) against 6 vaccine preventable diseases (VPD) to reduce childhood mortality and morbidity i.e. BCG, DPT, OPV, TT was came into practice in India by 1978.

In 1985, Universal Immunization Program (UIP) introduced by Government of India (GOI) and single disease surveillance started by 1997 to find out the impact of pulse polio immunization, (PPI) on polio eradication. National technical advisory group of immunizations (NTAGI) in 2002 to 2003 recommended introducing hepatitis B at birth, second dose of measles at 15-18 months[3]. DTwP-Hep B, Haemophilus influenzae type b (HiB Vaccination - Pentavac) as pilot project of India which covered more than 85% childen. Tamilnadu started Penta Vaccine from October 2011.

Non UIP vaccines - Indian Academy of Pediatrics Committee on Immunisation - (IAPCOI) has suggested physicians to counsel parents regarding the efficacy and importance of following newer (Special) vaccines such as Tdap, Typhoid conjucate, VI polysaccharide, IPV, Hepatitis A, Varicella Zooster Virus, Rota virus Vaccine, MMR, HPV, pneumoccal vaccine.[4] The affordable can protect their children from above VPD's. 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).

This study is conducted to know the knowledge, attitude and practice (KAP) of mothers regarding their understanding of immunization in rural areas in and around Pondicherry.

The objective of this study was to know about the Immunization knowledge, attitude and practice among mothers at Rural places in and around Pondicherry and to evaluate the mother's knowledge of immunization in general and to special vaccines in rural areas of Pondicherry.

METHODS

This is a cross sectional study involving the mothers who attend the Well Baby Clinics, immunization Clinics, of Pediatric department of Aarupadai Veedu Medical College, Pondicherry. These mothers are mostly delivered in this hospital and to some extent delivery conducted in other areas of Tamil Nadu and Pondicherry. We have included 0 to 5 years of age in our study. Questionnaire is prepared in vernacular language i.e. Tamil and in English. Most of the mothers are Tamil speaking so the Tamil format is chosen for our study to assess the mother's knowledge of immunization in general and to special vaccines. About 501 children's Mothers are taken in this Study and the assessment is carried out on confrontation basis in the immunization clinic of pediatric Department, on all days except Sundays, from 9 AM to 4PM. The mothers attending well baby clinics, immunization clinics and outpatient department of AVMC hospital are assessed individually on all mothers on confrontation basis and the data is collected. After assessing them, Importance of special vaccines, their usefulness, efficacy, and safety are discussed with mothers.

Questionnaire were made to assess the role of following parameters to understand the knowledge, attitude and practice (KAP) of mothers regarding immunization such as age of the mother, qualification of the parent, birth order of the child, income of the parent, name of vaccine given, dose of vaccine, delivery place, continue vaccination after immunization reaction, advise of vaccination was given by doctors/ paramedicals, was immunization done on correct date, special vaccines were given or not.

Mothers of children from 0 to 5 years of age were included in the study were as Children more than 5 years, as they are very less in attending this hospital for immunization. And children debarred from routine immunization i.e. Atypical febrile fits, Immunocompromised children, HIV infected children etc. were excluded in the study. All statistical analysis was carried out using SPSS16.0 software.

RESULTS

Statistical analysis was carried out to determine the knowledge, attitude and practice of immunization among mothers of children from 0 to 5 years (Table 1, Table 2).

The mean age of the mother whose child undergoing vaccination is 25.88+4 years. The predominant mothers have completed higher education and mean annual income was 86,682.00. Birth order of the child showed no significance. Majority of children (62.6%) included in the study were born at Aarupadai Veedu Medical College and Hospital. The effect of education on antenatal vaccine awareness was analyzed through chi square test and they were significant. (Role of education: 1. Antenatal Vaccine; p value = 0.000, 2. Antenatal vaccine dosage p value = 0.015, 3. special vaccine p value = 0.015) (Table 3).

In analyzing the effect of birth order on antenatal vaccine awareness, whatever be the birth order awareness on vaccination was not significant (Table 4). Similarly studying the effect of maternal age on antenatal vaccine awareness, the parents of previous child were much aware about the vaccination and the results were

significant; p value= 0.000 (Table 5). Understanding the role of income on antenatal vaccine awareness through chi square test, higher degree of significance was seen. (Role of education: 1. Antenatal Vaccine; p value= 0.042, 2. Antenatal vaccine dosage p value= 0.041, 3. special vaccine p value= 0.001) (Table 6).

Table 1: Descriptive statistics.

Parameter	Group	Code	Frequency	Mean±SD	Median	IQ Range	Mode
Age of mother (Years) N=501	≤ 20	1	42	25.88±4.08	25	23 - 29	22
	21-25	2	216				
	26-30	3	177				
	31-35	4	60				
	>35	5	06				
Education N=501	Uneducated	1	53	3.32±1.333	3	2 - 4	3
	Primary School	2	80				
	High school	3	158				
	Higher Secon.	4	91				
	Degree/Diploma	5	103				
	Master degree	6	16				
Annual income (In Indian Rupee) N=501	≤50000	1	193	86682.63	65000	36000 - 120000	65000
	50001 to ≤100000	2	148				
	100001 to ≤150000	3	102				
	150001 to ≤200000	4	28				
	200001 to ≤250000	5	30				
Birth order N=501	1st Child	1	250	1.62±1.08	2	1 - 2	1
	2nd Child	2	214				
	>2 Child	3	37				
Delivery Place code	AVMC	1	314	1.37±0.484	1	1 - 2	1
	Others	2	187				

Table 2: Descriptive statistics.

Parameter	Samples	Mean±SD	Median	IQ range	Mode
Knowledge on antenatal vaccination (Yes-2/No- 1)	501 (1- 430; 2-71)	1.14±0.349	1	1 - 1	1
Knowledge on number of doses (Yes -2 /No - 1)	501 (1-18; 2-483)	1.96±0.186	2	2 - 2	2
Knowledge on DBT (Yes -2 /No - 1)	501 (1-90; 2-411)	1.82±0.384	2	2 - 2	2
Knowledge on HiB (Yes -2 /No - 1)	501 (1-118; 2-383)	1.76±0.425	2	2 - 2	2
Knowledge on Measles (Yes -2 /No - 1)	501 (1-155; 2-346)	1.69±0.463	2	1 - 2	2
Knowledge on adverse reaction to vaccination (Yes -2 /No - 1)	501 (1-102; 2-399)	1.80±0.403	2	2 - 2	2
Knowledge on vaccination during minor illness (Yes -2 /No - 1)	501 (1-338; 2-163)	1.33±0.469	1r	1 - 2	1
Awareness on Vaccination given by (Coded refer text)	501 (0 = 10; 1 =45, 2 = 282, 3 = 164)	2.2±0.677	2	2 - 3	2
Knowledge on correct date of vaccination (Yes -2 /No - 1)	501 (1-71; 2-430)	1.86±0.349	2	2 - 2	2
Knowledge on Special Vaccine administration (Yes -2 /No - 1/Don't know-0)	501 (0-18; 1-441, 2-42)	1.05±0.343	1	1 - 1	1
Reason for not giving special vaccine (Coded refer text)	501 (0-18; 1-434; 2-7)	0.98±0.232	1	1-1	1
Willingness to give special vaccine (Yes-2, No-1)	501 (1-354; 2-105)	1.23±0.420	1	1-1	1
Knowledge on importance of Vaccination (Yes-2, No-1)	501 (1-49; 2-452)	1.90±0.297	2	2-2	2
Knowledge on dangers of non-vaccination (Yes-2, No-1)	501 (1-37; 2-464)	1.93±0.262	2	2-2	2
Status of Immunization of the previous child (0-Dont know, 1-No, 2-Yes)	252 (0-2; 1-22; 2-228)	1.90±0.330	2	2-2	2

Table 3: Effect of Education on antenatal vaccine awareness.

Parameter	Effect of education		
	Chi Square Value	df	P Value
Antenatal vaccine	25.468	5	0.000 *
Antenatal vaccine dosage	14.072	5	0.015 *
At birth vaccine			
DBT	0.990	5	0.963
HiB	0.937	5	0.967
Measles	0.858	5	0.973
Reaction	5.694	5	0.337
Child not well	9.899	5	0.078
Who advised	37.017	5	0.001*
Correct date	3.096	5	0.685
Special vaccine	43.856	5	0.000*
Why no special vaccine	11.684	10	0.307
Special vaccine willingness	17.972	5	0.003
Why immunisation	15.447	5	0.009
Danger of not immunising	4.285	5	0.509
Previous child immunisation	6.854	10	0.739

Finally, correlating the effect of Delivery Place on antenatal vaccine awareness, Children who were born at ACMCH, showed higher significance rate in the knowledge of Antenatal Vaccine (p value = 0.000), proper dosage to be given (p value = 0.034), primary vaccination such as Pentavac (DBT, Hib, Hep B), Measles (p value = 0.000). Also, they were not aware of special vaccination (p value = 0.025) and the risk of not immunizing their children (p value = 0.016).

Table: 4 Effect of birth order on antenatal vaccine awareness.

Parameter	Effect of birth order		
	Chi square value	df	P Value
Antenatal vaccine	16.923	3	0.001*
Antenatal vaccine dosage	2.851	3	0.421
At birth vaccine			
DBT	7.455	3	0.059
HiB	3.811	3	0.283
Measles	2.567	3	0.463
Reaction	2.026	3	0.567
Child not well	0.871	3	0.832
Who advised	16.255	9	0.062
Correct date	3.078	3	0.380
Special vaccine	6.556	6	0.364
Why no special Vaccine	4.648	6	0.590
Special vaccine willingness	9.328	3	0.025
Why immunisation	4.142	3	0.247
Danger of not immunising	3.726	3	0.293
Previous child immunisation	2.748	6	0.840

DISCUSSION

Totally 501 of mothers of children from 0-5 years were studied. A cross sectional study on KAP of mothers of under 5 children was carried out in Ahamedabad by Nath et al, showed immunization coverage in 14 districts was >85% where in remaining 15 districts (including Bijapur District) had poor coverage.[5]

In a study by Singh et al, 52.5% children were fully immunized and 45.1% were partially immunized in Wardha district.[6]

The children born in our hospital, the immunization coverage is 100% upto first booster dose till 18 months as the management encouraged mothers with incentive schemes (1st installment after 3 doses of primary vaccination, 2nd installment after Measles i.e. after 9 months and 3rd after 1st Booster at the end of 18 months.

Table 5: Effect of Maternal Age on antenatal vaccine awareness.

Parameter	Effect of birth order		
	Chi square value	dF	P Value
Antenatal vaccine	0.985	4	0.912
Antenatal vaccine dosage	2.190	4	0.701
At birth vaccine			
DBT	1.974	4	0.741
HiB	5.466	4	0.243
Measles	13.116	4	0.011
Reaction	3.720	4	0.445
Child not well	1.817	4	0.769
Who advised	12.483	12	0.408
Correct date	1.342	4	0.854
Special vaccine	27.508	8	0.001
Why no special vaccine	9.950	8	0.269
Special vaccine willingness	4.845	4	0.304
Why immunisation	5.089	4	0.278
Danger of not immunising	7.744	4	0.101
Previous child immunisation	33.823	8	0.000*

Table 6: Effect of Income on antenatal vaccine awareness.

Parameter	Effect of birth order		
	Chi square value	dF	P Value
Antenatal vaccine	9.898	4	0.042*
Antenatal vaccine dosage	9.964	4	0.041*
At birth vaccine			
DBT	3.933	4	0.415
HiB	2.976	4	0.562
Measles	2.078	4	0.721
Reaction	3.651	4	0.455
Child not well	7.452	4	0.114
Who advised	21.815	12	0.040*
Correct date	0.627	4	0.960
Special vaccine	26.941	8	0.001*
Why no special vaccine	9.382	8	0.311
Special vaccine willingness	14.601	4	0.006
Why immunisation	5.814	4	0.213
Danger of not immunising	4.443	4	0.349
Previous child immunisation	6.111	8	0.635

Jose et al., conducted a study on Awareness on Immunization among Mothers of under five Children in selected hospital at Mangalore.[1] 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 is no significant association between knowledge score and selected demographic variables such as age of mother ($\chi 2$= 1.28), educational status ($\chi 2$= 7.03), monthly income ($\chi 2$= 0.65). There was no significant association between knowledge and immunization among mothers of under five children.

Paternal literacy has an inconsistent positive relationship with infant vaccination access to health services and other infrastructure, is associated with better vaccination coverage of infants as per the study conducted Mathew.[7] In Mabrouka et al., study on knowledge, attitude and practices of mothers regarding immunization of infants and preschool children at Al-Beida City, Libya concerning the effect of the education status of the

mothers the percentage of complete immunization was 71.41% for highly educated mothers while for the illiterates it was 88.23% but, the difference was not statistically significant.[8]

Table 7: Effect of delivery place on antenatal vaccine awareness.

Parameter	Effect of birth order		
	Chi square value	dF	P Value
Antenatal vaccine	14.751	1	0.000*
Antenatal vaccine dosage	4.515	1	0.034*
At birth vaccine			
DBT	22.225	1	0.000*
HiB	34.658	1	0.000*
Measles	43.104	1	0.000*
Reaction	6.451	1	0.007
Child not well	0.314	1	0.575
Who advised	56.350	3	0.000*
Correct date	2.965	1	0.085
Special vaccine	5.616	2	0.060
Why no special vaccine	7.344	2	0.025*
Special vaccine willingness	9.388	1	0.002
Why immunization	0.507	1	0.477
Danger of not immunizing	5.786	1	0.016*
Previous child immunization	2.119	2	0.347

Angelillo et al, conducted a study Mothers and vaccination: knowledge, attitudes and behaviour in Italy.[9] The study evaluates knowledge, attitudes, and behaviour of mothers regarding the immunization of 841 infants who attended public kindergarten in Cassino and Crotone, Italy. Overall, 57.8% of mothers were aware about all four mandatory vaccinations for infants (poliomyelitis, tetanus, diphtheria, hepatitis B). The results showed that knowledge was significantly greater among mothers with a higher education level. In our study educated mother showed high degree of significance (p value = 0.000). In a study conducted by Rahman et al, the results indicate that even in the presence of maternal illiteracy, educating mothers about the vaccines and vaccine preventable diseases may be highly effective in increasing the immunization coverage.[10]

In a study carried out by Rachna et al, the Mean age of the mothers were 28.4 years and in our study, the mean age of the mother whose child undergoing vaccination is 25.88+4 years.[11]

CONCLUSION

Vaccination is the cost-effective preventive intervention yet the benefits of immunization is not reaching to many children who are at the maximum risk of the diseases preventable by these vaccines. The mothers delivered at our hospital has excellent knowledge on immunization of their children up to 1st booster. The reason for 100% immunization coverage up to 18 months is because of the incentive schemes. The knowledge on antenatal vaccination was fair but there is need to create awareness to others regarding vaccines such as DPT, Hib, measles. Approximately 70-80% of the mothers are aware of vaccination and the need for protection of the child whereas rest of mothers needs awareness. Over all 30% of mothers are not aware that immunization can be done during minor ailments such as common cold, fever, mild diarrhea etc. and after minor adverse reactions such as fever, swelling, etc. Health professionals play a major role in creating both Immunization awareness and administration in prescribed date to mothers. In spite of awareness through various sources, knowledge on special vaccination to mothers is yet very poor. Initiative programme has to be taken to overcome this.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Dharmalingam A, Raghupathy NS, Sowmiya M, Amudharaj D, Jehangir HM. Immunization knowledge, attitude and practice among mothers of children from 0 to 5 years. Int J Contemp Pediatr 2017;4:783-9.