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Assessment of knowledge, attitude and perception among mothers towards immunization in a tertiary care teaching hospital

Sarfaraz Md.¹*, Athira A.², Lakshmi Mani Deepa Thotamsetty², Sree Anoohya Ravilla², Naresh Nadikudi², H. Doddayya¹

¹Department of Pharmaceutics, ²Department of Pharmacy Practice, NET Pharmacy College, Raichur, Karnataka, India

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*Correspondence: Dr. Sarfaraz Md.,

E-mail: sarfindia@gmail.com

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ABSTRACT

Background: The knowledge, attitude and perception (KAP) of parents is an important factor for better immunization coverage. Previous studies showed misconceptions on parent's knowledge towards childhood immunization. This study aimed at promoting the childhood immunization by providing information and knowledge to mothers regarding immunization.

Methods: A prospective interventional study was conducted on 103 mothers for a period of six months in a tertiary care teaching hospital, Karnataka. The study was divided into Pre-intervention and post-intervention phases and was performed using a KAP questionnaire.

Results: 103 mothers were enrolled in the study, of which 77 (74.75%) mothers were uneducated which was the main reason for lack of knowledge on immunization. Most of the mothers in pre-intervention phase got score in the range of 2-4 and in post-intervention phase they got score in the range of 10-12. A significant difference was observed in the Pre and Post-intervention scores which indicated that level of knowledge among mothers was improved after counseling session. Chi-square test was used to analyse the pre and post-intervention scores and was found to be significant (p<0.01). Out of 103 mothers who had attended counseling session on immunization 80 (77.66%) children were immunized, 23 (22.66%) were partially immunized and no one was unimmunized.

Conclusions: It was therefore suggested that proper health education and health promotion interventions be taken as measures to improve knowledge, attitude and perception of mothers towards immunization as a disease prevention tool.

Keywords: Counselling, Immunization, Paediatrics, Vaccines, Questionnaire

INTRODUCTION

Vaccination is a means of producing immunity against pathogens, such as viruses and bacteria, by the introduction of live, killed, or altered antigens that stimulate the body to produce antibodies against more dangerous forms. Vaccination has eradicated smallpox worldwide and prevents diseases such as cholera, rabies, and typhoid fever. Vaccines work with the immune

system's ability to recognize and destroy foreign proteins (antigens) that it determines are "nonself". The World Health Organization (WHO) has defined immunization as the process where by a person is made immune or resistant to an infectious disease, typically by administration of a vaccine. Immunization therefore depicts the ability to develop immunity. Immunity being the state of having sufficient biological defense to avoid infection, disease, or other unwanted biological invasion.

WHO also stated that immunization is a proven tool for controlling and eliminating life threatening infectious disease and has been estimated to alleviate 2 to 3 million deaths each year. WHO further stated that although global vaccination coverage is holding steady but an estimated 22 million infants worldwide are still missing out on basic vaccines.³

Every year more than 10 million children in low and middle-income countries die before they reach their fifth birthdays. Most die because they do not assess effective interventions that would combat common and preventable childhood illness. 4 Vaccine preventable diseases remain the most common cause of childhood mortality with an estimated three million death each year.⁵ The WHO Expanded Programme on Immunization (EPI) recommends that all children receive one dose of BCG, three doses of diphtheria-pertussis-tetanus vaccine (DPT), three doses of oral polio vaccine (OPV), three doses of hepatitis B vaccine and one dose of measles vaccine. The coverage for these major vaccinepreventable diseases has risen significantly since EPI began in 1974 when the global vaccination coverage was only 5%. Despite this progress, an estimated 1.5 million children worldwide die each year of diseases that can be readily be prevented by these vaccines. 6 Receiving three doses of DPT is considered one of the key indicators of childhood vaccine coverage. By this metric, in 2013, India accounted for the single largest number of partially vaccinated children in the world. Of the 21.8 million children worldwide who did not receive three doses of DPT, 6.9 million were from India. According to the District level household and facility survey (2008; DLHS-3), 53.5% of children aged between 12 and 23 months in India were fully immunised for the six vaccine preventable diseases (hepatitis B not included), while 4.6% of children were not immunised at all. Among children living in Urban areas complete vaccination coverage was 63.1%.8 The coverage estimates from the Rapid Survey on Children (RSOC) undertaken by the Ministry of Women and Child Development and UNICEF between November 2013 and May 2014 shows some encouraging trends with 65.3% of children (12-23 months) fully immunised for the country as a whole and 72% coverage among those living in urban areas.⁹

The knowledge of parents is an important factor for better immunization coverage. Mother's educational status and knowledge was clearly associated with coverage of immunization. Less knowledge among mothers bring negative attitude and fear which leads to effect immunization status of their children. Pharmacists are also in a unique position to identify those patients who are in target groups for certain vaccinations. They also may be able to ease the fears of many patients by providing them with the facts as well as the risk associated with vaccination. Since the need to improve the knowledge of mothers regarding immunization is necessary for better health care of children.

In this context, the proposed research entitled "Assessment of knowledge, attitude and perceptions among mothers towards immunisation in a tertiary care teaching hospital" was undertaken.

METHODS

A prospective interventional study was carried out in Navodaya Medical College Hospital & Research Center (NMCH & RC), Raichur, Karnataka, India, a 1000 bedded multi-specialty tertiary care teaching hospital. The study was done for a period of 6 months from November 2016 to April 2017. The children were mostly accompanied by their mothers rather than fathers, so study subjects were all mothers of children upto 5 years of age attending out-patient (OPD) and in-patient department (IPD) of Paediatrics of NMCH & RC, Raichur. Mothers who satisfied the inclusion criteria were included in the study. In adequately filled questionnaires/ mothers not willing to participate/children above 5 yrs were excluded from the study. The study was approved by Institutional Ethics Committee of NMCH & RC by issuing ethical clearance certificate.

Data collection

Data was collected using a self-structured questionnaire adopted from the World Health Organization with sections on socio-demography, knowledge, attitude and perception towards childhood immunization. The data entry form was used to incorporate in-patient and outpatient details along with pre-intervention and post-intervention KAP Questionnaire. Face to face exit interview method was used and responses were recorded. The study was carried out in two phases: Phase I (pre-intervention study) and Phase-II (post-intervention study).

Phase I

The method used for the study was the convenience sampling technique. The study was planned with a total number of 103 mothers to obtain information on immunization. Informed consent was obtained from each mother after explaining the purpose of study. Information on the place of birth of child, educational status and occupation and age of mother, their address and monthly income, child immunization history were collected. Details of BCG, 0-3 doses of OPV and hepatitis B vaccine were collected from the mother. All the information was recorded in the KAP Questionnaire which consists of two parts. The first part contained parental socio-demographic data and the second part consists of 13 questions regarding knowledge, attitude, and perception. All these questions were "yes/no/don't know" answer format. Mothers get scores based on their answers: yes (1), no (0) and don't know (0). The OPD and IPD departments were visited daily by the project team as per schedule.

Phase-II

In Post-intervention study the mothers were counselled on immunisation using study materials, and again interviewed to collect the data in the post-intervention KAP questionnaire. Post-intervention KAP questionnaire contains same parts as that of pre-intervention questionnaire.

Data evaluation

The data collected from pre and post intervention study were evaluated by calculating the scores obtained by each mother. Chi-square was used as a statistical tool to analyze the scores. A significant difference in the pre and post intervention score indicates success of the study.

RESULTS

The present study was carried out for a period of 6 months. During this period, 103 mothers who met the inclusion criteria were enrolled in the study. Mothers who attended the counselling session on immunization were in the age group of 21-25 yrs [79 (76.69%)], 17 (16.5%) mothers were in the age group of 26-30 yrs, 5 (4.85%) mothers in the age group below 20 yrs and 1 (0.97%) mother in the age group of 36-40 yrs (Table 1).

Table 1: Age-wise distribution of mothers.

Age (years)	No. of mothers (N=103)	Percentage (%)
<20	5	4.85
21-25	79	76.69
26-30	17	16.50
31-35	0	0.00
36-40	1	0.97
>40	0	0.00

Table 2: Educational status of mothers.

Educational status	No. of mothers (N=103)	Percentage (%)
Uneducated	77	74.75
Primary school	11	10.60
Secondary school	10	9.70
Pre-college	3	2.90
Degree	2	2.10

Table 3: Source of information.

Source of information	No. of mothers (N=103)	Percentage (%)
Anganwadi	81	78.6
Family/relatives	18	17.4
Doctor	4	3.8

Table 4: Immunization status.

Immunization status	No. of children (N=103)	Percentage (%)
Immunized	80	77.66
Partially immunized	23	22.33
Unimmunized	0	0

Table 5: Pre-intervention score of the mothers.

Pre-intervention	No. of mothers	Percentage
score	(N=103)	(%)
0	3	2.91
1	4	3.88
2	20	19.41
3	27	26.21
4	23	22.33
5	15	14.56
6	3	2.91
7	3	2.91
8	3	2.91
9	2	1.94
10	0	0
11	0	0
12	0	0
13	0	0

Table 2 shows the educational status of mothers. Out of 103 mothers, 77(74.75%) were uneducated, 11(10.6%) completed primary schooling, 10 (9.7%) completed secondary schooling, 3 (2.9%) completed pre-college and 2 (1.9%) completed degree. Mothers attending the counselling session were categorized according to their occupation, which indicated 100 (97%) mothers were homemakers, 3 were daily wages and none of them was employed. On the basis of religion, the study subjects could be categorized as 75 (72.81%) parents were Hindu, 25 (24.27%) were Muslims and 3 (2.91%) were Christians. Most of the mothers in the study had female child 63 (61.16%) than male child 40 (38.83%). The main source of information regarding vaccination was Anganwadi 81 (78.6%) mainly the Asha health care workers, the remaining sources were information obtained through family/relatives 18 (17.4%), and Doctors 4 (3.8%) as in Table 3. Major place of immunization was Government hospitals and primary health centres 88 (85.4%) and to a lesser extent in private hospitals and clinics 15 (14.5%). Status of immunisation revealed that 80 (77.66%) of mothers immunized their children during the study period, 23 (22.33%) mothers partially immunized their children and none of them was left unimmunized (Table 4).

Pre-intervention score of the mothers

The knowledge, attitude and perception of mothers towards immunization was analysed using a structured

KAP questionnaire. Their KAP were measured on a scale of 1-13. The result of present study indicated that 3 (2.91%) mothers showed a score of 0, 4 (3.88%) mothers got score of 1, 20 (19.41%) mothers got a score of 2, most of the mothers; 27 (26.21%) got score of 3 and 23 (22.33%) mothers got score of 4,15 (14.56%)got score of 5, 9 mothers (2.91%) got score between 6-8 and only 2(1.94%) mothers got a score of 9. None of the mothers got score between 10-13 (Table 5).

Table 6: Post-intervention score.

Post intervention	No. of mothers	Percentage
score	(N=103)	(%)
0	0	0
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	5	4.85
10	11	10.67
11	28	27.18
12	59	57.28
13	0	0

Post-intervention score of mothers

In post-intervention study the mothers were counselled on immunization using study materials like patient information leaflet, personal conversation with mothers to explain and clear their doubts about vaccines, using smartphones and other media like newspaper, television to educate them in order to enhance their knowledge, attitude and perception towards vaccination. After the counselling period, the post- intervention KAP questionnaire was given and again scores were collected for 103 mothers. The results showed that 5 (4.85%) mothers had score of 9, 11 (10.67%) mothers had score of 10, 28 (27.18%) mothers with a score of 11, and 59 (57.28%) mothers having score 12. There was no mother having the score in the range of 0-8 (Table 6).

Comparison of pre and post-intervention scores

Comparison of pre and post-intervention scores showed that mother's knowledge is improved after counselling. Most of the mothers had pre-intervention score of 2-4 out of 13 and whereas for the post-intervention score of the same subjects was 10-12 out of 13 (Figure 1).

Statistical analysis

Chi-square test was used as a statistical tool in order to interpret the significance of the study (Table 7 and 8). The test revealed that the pre and post intervention scores were found to be significant (p<0.01).

Table 7: Statistical analysis of the pre and post-intervention scores.

			Pre and post interv	T-4-1	
			Pre intervention	Post intervention	Total
0.2		Count	54	0	54
	0-3	% within pre and post intervention	52.4	0	26.2
	4.7	Count	44	0	44
Score 4-7	% within pre and post intervention	42.7	0	21.4	
	Count	5	44	49	
	8-11	% within pre and post intervention	4.9	42.7	23.8
	≥12	Count	0	59	59
≥12	% within pre and post intervention	0	57.3	28.6	
Total		Count	103	103	206
		% within pre and post Intervention	100	100	100

Table 8: Chi-square test.

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-square	188.00	3	0.000<0.01*
Likelihood ratio	253.281	3	0.000
Linear-by-linear association	159.937	1	0.000
No. of valid cases	206		

^{*}P=0.000<0.01 is Highly significant.

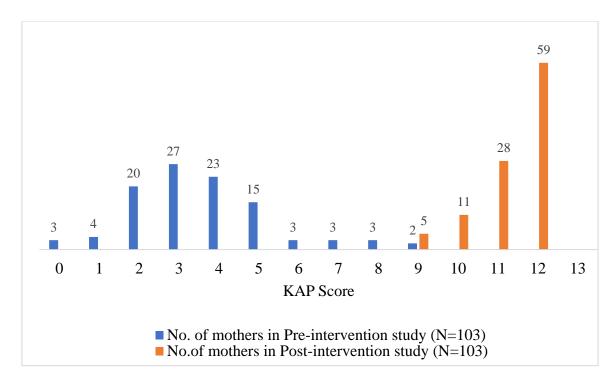


Figure 1: Scores obtained by mothers in pre and post intervention KAP Questionnaire.

DISCUSSION

The pharmacist's contribution to patient care through education and counselling is an approach to improve patient's quality of life. There are several misconceptions, ignorance and inadequacy of knowledge in relation to vaccines among the parents of children. Therefore, this study was undertaken to assess mother's knowledge on paediatric immunization and to provide clear information and improve their knowledge, attitude and perception. Face-to-face interviews and case sheets were the source of data. Informed consent from the mothers was obtained before and only those children who satisfied the inclusion criteria were included in the study.

Mother's knowledge about the child's immunization was initially assessed by using pre-intervention questionnaire and after providing the appropriate information, the improvement in the parent's knowledge level on immunization was assessed using post-intervention questionnaire.

Most of the mothers involved in study were in the age group of 21-25 years, which may be due to the regional issues where early marriages are common and as a result, girls in that age group are getting married early. This is in contrast to the study conducted by Shiferaw et al in health centers at Addis Ababa, Ethiopia where most of the mother's (89%) were in the age group of 20-34 years. ¹² This indicates that early marriages are not common in urban areas. Educational status of mothers indicated that out of total 103 mothers, 77 (74.75%) mothers were

uneducated which was the main reason for lack of knowledge regarding immunization because of that most of them don't know about the diseases for which their child is being immunized and also many mothers don't know the timings of vaccination. The results were similar to the study conducted by Angadi et al where 78% of mothers were illiterate. 13 Also Vikram et al showed using nationally representative data, that human capital (health knowledge) among mothers with primary education and cultural capital (communication skill) among mothers with secondary and college education as pathways that mediate relationship between education and child immunization.¹⁴ Mothers attending the counselling session were categorized according to their occupational status and it was found that 100 (97%) were homemakers, 3 (2.9%) were daily wager's and no one was employed. This information was collected to assess the level of understanding of parents and its impact on child immunization. Nadeem et al conducted a similar study where out of 210 mothers 78 (37.1%) were working and 132 (62.9%) were not working. ¹⁵ In the study, 75 (72.81%) mothers belonged to Hinduism, 25 (24.27%) were Muslims and 3 (2.9%) were Christian. From this data, it was suggested that future immunization counseling programs can be conducted focusing mainly on mothers living in communities such as Islam and Christianity to improve the knowledge level of the mother's belonging to that community. These findings were similar to the study carried out by Siddique et al with a higher percentage of Hindu's (56.04%) compared to Muslim (23.62%) and others (20.32%). 16 This finding is concordant with other previous surveys in India revealing that completion of the childhood immunisation schedule was lower in Muslim households compared with non-Muslim households. 17,18 Such religious beliefs affecting immunisation coverage is seen in low-income and middle-income countries as well as in high-income countries. 19 These findings were in contrast to the study carried out by Nadeem et al where Hindu's (38.6%) are less and Christian (52.9%) are more than others (8.6%). Gender analysis showed a high ratio of female [63 (61.16%)] child was observed compared to male child [40 (38.83%)] and this observation was similar to the study conducted by Ansong et al where female children are more compared to male children. 20 It is in contrast to the study conducted by Angadi et al where the percentage of male children is more compared to that of female children.13 The study revealed that the sources of information regarding immunization amongst majority of the mothers were Anganwadi kendras (78.6%) and family/ relatives (17.4%), followed by health workers such as doctors (3.8%). This observation is contrast to the study conducted by Angadi et al where the major source of information is family/ relatives (42.58%) followed by Anganwadi (34.19%) and doctors (17.42%). 13 Majority of children received vaccination from Government sites 88(85.4%) than private sites 15 (14.5%) which is similar to the study conducted by Angadi et al where a large proportion of the children (78.71%) had received their immunization from government establishments.¹³ Immunization status showed that 80 (77.66%) children were immunized, 23 (22.66%) were partially immunized and no one was unimmunized, but the major challenge was that most of them were unaware about importance of immunization and its role in child health. This observation is in contrast to the study conducted by Niveditha et al where 61.9% children were completely immunized, 31.43% were partially immunized and 6.67% were not immunized at all.²¹

Pre-intervention score

The knowledge level of parents on immunization was assessed with pre-intervention questionnaire and it was found that out of the total 103 mothers, 54 mothers scored in between 0-3, 44 mothers scored in between 4-7, 5 mothers scored between 8-9. The lowest scores indicate that the parents had no knowledge about immunization. None of the mothers got score in the range of 10-13 which emphasizes the importance of the study.

Post-intervention score

The post-intervention score for 103 mothers who attended counseling session on immunization showed 5 (4.85%) mothers scored 9, 11 (10.67%) mothers scored 10, 28 (27.18%) mothers scored 11 and 59 (57.28%) mothers scored 12. None of the study subject got score in the range of 0-8. The higher percentage of mothers with good score may be due to the awareness on childhood immunization. None of them got score of 13 because mothers were not able to name any five diseases that can be prevented by vaccine.

Comparison of pre and post intervention scores

Pre and post-intervention scores were compared which showed that mothers knowledge, attitude and perception towards immunization is improved after counselling. Most of the mothers had pre-intervention score in the range of 2-4 and post-intervention score for the mothers was in the range of 10-12. Qutaiba et al conducted a similar study where (KP) Knowledge Practice score were used to evaluate the parent's knowledge on paediatrics immunization compliance.²² Also Nadeem et al conducted similar study where knowledge questions were knowledge to assess mothers regarding immunization.¹⁵

Chi-square test was used as a statistical tool to analyse the pre and post intervention scores and it was found to be significant (p<0.01).

CONCLUSION

This study goes out as a wakeup call for all policy makers and healthcare providers, in that, providing the resources for immunization alone is a job which is half done and that health education is also an essential component that can go a long way in improving the prevailing scenario of immunization in the country. This study concludes that the clinical pharmacist's interventions certainly will be helpful in providing education on immunization and improving immunization rates in the country. KAP questionnaire can be used in future researches on immunization and allow for better understanding of relation between mothers knowledge and immunization of children.

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