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Original Research Article

Knowledge and perceptions regarding immunization among mothers of under five children: a community study from South Kerala

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ABSTRACT

Background: Immunization coverage is undisputedly the most effective health status and outcome indicator. Though India is effectively organizing vaccination campaigns, a large majority of children are often left out. Strong anti-vaccination propaganda is influencing the decision of parents. This study was initiated in the context of vaccine-preventable disease outbreak rising recently in Kerala to assess the knowledge and practices of mothers of children less than five years regarding immunization.
Methods: A cross sectional study was conducted among 140 women with children less than 5 years. Sample was drawn from the rural and urban field practice areas of a tertiary care teaching hospital. A pilot tested interviewer administered questionnaire was used to assess the knowledge and practices of immunization among mothers of under-five children. Chi-Square test was used to find the association between dichotomous variables.
Results: In the study group 96.4% of the children were fully immunized. Mean score on knowledge regarding immunization among the study population was 6.45 (SD=1.84). Majority (89%) of the mothers agreed on the importance of vaccination. More than half (57.1%) had heard of anti-vaccination campaign and 24.3% were influenced by it at one time or the other. Higher knowledge score was associated with mothers residing in urban area, better occupation of mother and educational status of father. Age of child, sex, religion, type of family did not influence knowledge level. Factors influencing the perceived importance of vaccination are better occupation of father, higher education status of father and mother.
Conclusions: Vaccination was perceived significant for child's health. Immunization coverage in the study population was high. The level of knowledge regarding immunization among the study population was poor. Anti-vaccination campaign has influenced the population at one time or the other.

Keywords: Anti-vaccination campaign, Immunization, Under-five children

INTRODUCTION

Discovery of vaccines have been a major breakthrough in the fight towards disease prevention. The success of small pox vaccine paved the way for the launch of global immunization program against six vaccine preventable diseases.[1] Immunization coverage is undisputedly the most effective health status and outcome indicator.[2] In terms of live births India stands ahead of all countries, but at the same time contributes to 20% of global child mortality. Though India is effectively organizing vaccination campaigns, a large majority of children are often left behind.[3] The attitude and knowledge of parents regarding immunization play a major role in increasing vaccine coverage in India. This in turn depends on several factors including accessibility to grass root level

health personnel, opportunity cost incurred by the parents to carry out the vaccination, and cultural practices prevailing in the area.[4,5]

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. By 1983, to combat neonatal tetanus which was very common those days, two doses of tetanus toxoid vaccine for pregnant ladies were also included.[6] 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.[6,7] The UIP has been able to immunize only 65% of children in the first year of life, and increase in immunization coverage was found to be stagnated recently. The Government of India recently launched the Mission Indradhanush to expand immunization coverage to all children, across India by the year 2020.[7] It was aimed to prevent seven dreaded vaccine preventable deaths namely polio, diphtheria, pertussis, tetanus, tuberculosis, hepatitis B and measles as well as at least 90% of the pregnant women to be immunized against tetanus.[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. A study from Michigan University among Indian children reported that two-thirds of children did not receive vaccination on time. And this delay plays a major role in outbreaks of vaccine preventable diseases in India.[10]

These points out the defects in practices of immunization in this country. Strong anti-vaccination propaganda is influencing the decision of parents on whether to vaccinate their child or not. Education and literacy of parents especially mothers determine vaccination practices. In Kerala, which is one of the literate states in India, with better health indicators compared to other states, immunization programs were almost successful till recent times, but in 2016, against expectations diphtheria cases started being reported from Kerala.[11] It alarmed the whole society about practices of immunization. This study was initiated in the context of this outbreak and the anti-vaccination propaganda that is recently arising. The study aims to find out the family practices, knowledge regarding childhood immunization and its association with socio-demographic variables, immunization status of children and level of knowledge existing in this community.

METHODS

A community based cross-sectional study was done at the rural and urban field practice area of community medicine department of a tertiary care medical college hospital. The minimum sample size required for the study was calculated as 110 using the formula $N= (Z_1-\alpha/2)^2 pq/d^2$ where, the prevalence of awareness regarding prevention of polio by vaccination as 78.6% was taken as reference for obtaining sample size for the present study (d=10% of p, α=5%).[12] The study was conducted during the period of May 2017 to November 2017. Author conveniently included 140 mothers of under-five children who are permanent residents of the area. Interviewer-administered questionnaire was used to collect socio-demographic data, knowledge regarding immunization and the practices of immunization. Knowledge regarding availability of vaccines against various diseases, reason for vaccination, and practice on immunization were assessed using preset questions. Data collection was done by contacting mothers through house to house visit. Initially a detailed information sheet regarding the objectives, procedures, confidentiality, benefits and risks regarding the study was explained to the participant and informed consent was taken. The data collected was entered in Microsoft Excel, compiled and analyzed. Knowledge score was calculated by assigning score of "one" for correct response and "0" for wrong response for each of the 10 questions. If the total score was 7 and above it was interpreted as "good knowledge", score between 5 and 6 "average" and "poor" if less than 5. Self-evaluated score on importance of immunization was also categorized as "very important" for score above 7, average for score between 5 and 6, "less important" for score below 5. Descriptive statistics was done. Chi-square test was done to find the association between socio-demographic variables, immunization status and knowledge level.

RESULTS

The study was conducted among 140 mothers of children under-five years of age. Majority of the participants were from rural area (53.6%), Hindu by religion (45.7%) and belonged to nuclear family (77.9%). A large proportion of mothers were unemployed (65%), though most have completed at least post high school degree (55.8%) (Table 1).

Majority (96.4%) of the children were fully immunized, and the rest were partially immunized. Vaccination not being important for child's health was stated as the reason for partial vaccination. The consulting pediatrician was the source of knowledge regarding immunization in 47% of mothers and health workers for another 30%. One in three mothers referred the immunization card regarding the due date for next vaccine. The most influential factor affecting decision on immunization was advice by relatives (40.7%) than by doctors (13.6%).

Table 1: Demographic characteristics of study population.

Socio demographic variables		Number (%)	Percentage (%)
Residence	Urban	65	46.4
	Rural	75	53.6
Religion	Hindu	64	45.7
	Christian	44	31.4
	Muslim	29	20.7
	No religion	3	2.1
Education of Mother	Illiterate/Middle /High school certificate	32	22.9
	Intermediate or post high school	46	32.9
	Graduate / Postgraduate	45	32.1
	Professional /Honours	17	12.1
Education of Father	Illiterate/Middle /High school certificate	28	20
	Intermediate or post high school	45	32.1
	Graduate/Postgraduate	48	34.3
	Professional/Honours	19	13.6
Occupation of Mother	Unemployed	91	65
	Unskilled worker/ semi-skilled	6	4.3
	Skilled worker	5	3.6
	Clerical shop owner/farmer	11	7.9
	Semi-professional	16	11.4
	Professional	11	7.9
Occupation of Father	Unskilled worker/semi-skilled	24	17.1
	Skilled worker	37	26.4
	Clerical shop owner/farmer	34	24.3
	Semi professional	23	16.4
	Professional	22	15.7
Type of family	Nuclear	109	77.9
	Non-nuclear	31	22.1
Monthly family income	Less than 20897	37	26.4
	More than 20897	103	73.5

The consulting pediatrician was the source of knowledge regarding immunization in 47% of mothers and health workers for another 30%. One in three mothers referred the immunization card regarding the due date for next vaccine. The most influential factor affecting decision on immunization was advice by relatives (40.7%) than by doctors (13.6%).

Decision regarding vaccination of child was taken jointly by parents by 46.4% of the families. Even though 6 (4.3%) children missed some doses of vaccine at the prescribed time due to acute illness or forgetfulness, 3 of them took the vaccine later on. The preferred mode of reminder for vaccination is through health worker though some mothers opted SMS or telephonic reminder. Few of the mothers (6.4%) had not given all doses of pulse polio although all knew about pulse polio immunization. Availability of optional vaccines was utilized by only 12(8.6%) of the parents and most common optional vaccine given was pneumococcal vaccine (4.3%). Precautions to prevent side effects following immunization were taken by 40(28.6%) of mothers which included paracetamol given orally and local application of heat by hot water bag. Almost all the mothers 139 (99.3%) had taken two doses of tetanus toxoid during pregnancy.

Only 20(14.3%) parents reported some sort of side effect following immunization. Fever was the most common side effect. No severe or serious adverse events were reported among the study participants.

When knowledge regarding the role of vaccines on disease prevention was enquired, 77%, 76% and 75% mothers respectively knew that polio, measles and diphtheria can be prevented by vaccine. Only 44% knew about pertussis vaccine. Immunization was considered as preventive by 134(95.7%) mothers while the rest (4, 2.9%) opined it was to treat disease (Figure 1).

The perceived importance of immunization was high among the study participants with 89% marked it as very important (Figure 2).

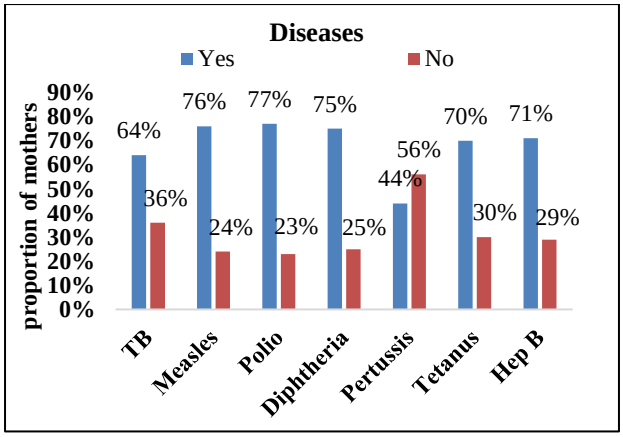

Figure 1: Knowledge regarding immunization among the study participants.

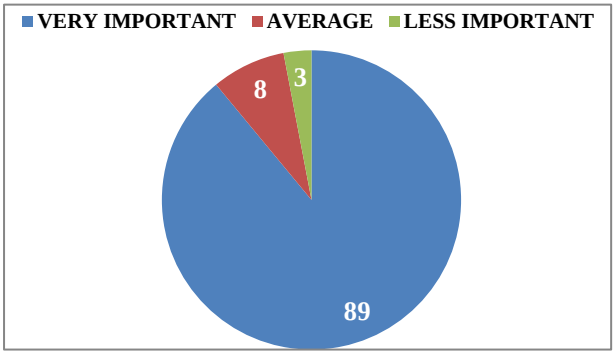

Figure 2: Perception on importance of immunization among the study participants.

The positive response to questions regarding availability of individual vaccine was scored and found that 47.9% of the study participants have good knowledge regarding immunization, 36.4% have average and 15.7% poor knowledge (Figure 3).

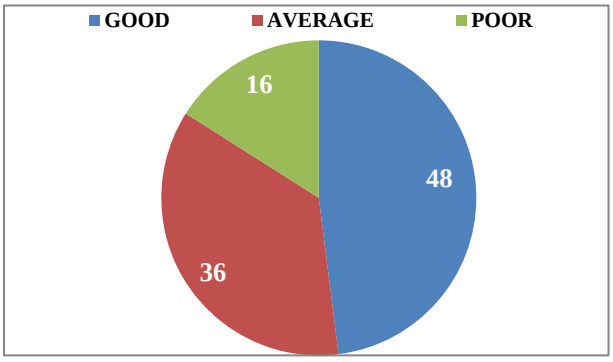

Figure 3: Distribution of level of knowledge on Immunization among the study participants.

Level of knowledge were higher in families residing in urban area, (p=0.023), mothers with better occupation (p=0.044) and fathers with higher educational status (p=0.015). Age of child, sex, religion, type of family did not influence knowledge level. Factors influencing the perceived importance of vaccination are better occupation of father (p=0.027), higher maternal (p=0.037) and paternal (p=0.015) education status.

The current study also collected information about father's role in immunizing children. The role of father in immunization has been rarely studied. This study observed that 89.3% fathers enquired about the vaccination status, 70% checked the vaccine cards, 43.6% accompanied during immunization and 32% reminded mother's regarding vaccination dates. More than half (57.1%) of the interviewees knew about the anti-vaccination propaganda and 24.3% were influenced by it at one time or the other.

DISCUSSION

The present study was conducted among 140 mothers of children less than 5 years. In this study, 96.4% of mothers had fully immunized children and only 3.6% reported partial immunization. But a similar study conducted in the urban slums of Bijapur city, Karnataka found only 34.84% children as fully immunized and 2.58% of children to be unimmunized.[1] This shows a greater coverage of immunization in Kerala compared to Karnataka. The level of health care in Kerala has achieved worldwide attention and good immunization coverage is an inevitable part of health care system. Though there had been a break in vaccine coverage in few pockets of Northern Kerala the overall coverage still remains good.[11]

The main source of knowledge about vaccination in this study remains a doctor, followed by health workers and Anganwadi workers. However, when it came to positively be influencing their opinions on vaccination, relatives influenced 40.7% mothers, while health workers and doctors influenced 30% and 13.6% of mothers respectively. Anganwadi workers played only a meagre role in influencing the mothers. A study by Sunny et al, Bangalore (2018) also found doctors and nurse to be most important source of information on immunization.[13] A study conducted in Lucknow in 2005 reported that the paramedical workers were the main source of knowledge regarding immunization for fully and partially immunized respondents while unimmunized respondents were mainly influenced by community leaders.[2]

A negative advice on vaccination by others, especially by relatives and neighbors was reported by 10% of mothers. Decision on immunization is taken mainly as a collective decision by the father and mother in about 46.4% of families. But in 37.1% of family's mothers singly take the decision regarding vaccination of the child. Only in 13.6% families, the father took the decision regarding vaccination of their child.

Questions on knowledge about vaccines and diseases prevented by vaccination showed that 77% know that polio is prevented by vaccination, 76% know measles is

prevented by vaccination. Awareness on presence of vaccine to prevent diphtheria and tuberculosis was shown by 75% and 64% of mothers respectively. Only 44% know that pertussis can be prevented by vaccination. In Bijapur city of Karnataka, a study reported low level coverage for OPV3/DPT3 and measles vaccine.[3] A study at an immunization clinic in Tamil Nadu (2018), found a good proportion (73%) of mothers to be having good knowledge on immunization. The positive attitude towards immunization was found to be associated with access to knowledge on immunization.[4] Awareness on Oral Polio Vaccine was high in two studies in South India, while the awareness on pentavalent vaccine was less.[12,13] This shows the need for active awareness campaign while introducing a new vaccine.

Urban residence, better occupation of mother was seen to influence the knowledge about immunization in present study. Similar association was found by Alagsam et al, Saudi Arabia (2019).[14] Immunization is considered as a preventive strategy by 95.7% of mothers while 2.9% of mothers consider it as a treatment. Along with these findings it can be seen that in a study conducted in Bengaluru, even though there is good immunization coverage, majority do not have specific knowledge on vaccines.[4] A very few study participants reported side effects after vaccination. A study among health workers in Jhalwar of Rajasthan to assess the knowledge on vaccine adverse effects and anaphylaxis, showed very poor knowledge among them.[5] This implies the importance of spreading awareness and adequate knowledge on adverse effects of immunization among health workers as well as the mothers.

A high awareness among the study participants on pulse polio immunization demonstrates the success of health promotion activities of the government. A higher proportion of these mothers without any interruption have given pulse polio immunization for their children yearly. Only few mothers have missed some doses of vaccines for their children. Child being sick and vaccine not being recognized as important for child were the reasons for 2.1% of the missed vaccines. Some mothers (1.4%) who missed their child's vaccination due to the child's illness took vaccination after few days, others did not. A hospital based study at Andhra Pradesh (2017) listed the most common causes for incomplete vaccination to be non-availability of vaccines, unawareness of mother regarding time of vaccination and acute illness of the child during due date of vaccination.[5] Majority of the mothers stressed the need for a reminder for the vaccination due date while 30.7% preferred health workers reminding them on the same. So, it highlights the role of health workers in improving the immunization coverage. In the study, 96% of mothers were in favor of vaccination, but 4% were against it. A study in Al-Beida city of Libya, found 19% of the children to be partially immunized. The main reason for cessation of vaccination being child's health and sickness (54%) followed by non-availability of vaccine (20%) and social reasons (10.5%).[15]

CONCLUSION

The immunization coverage is high among the study group. Though the participants perceive vaccination to be important, knowledge regarding the availability of vaccines for prevention of pertussis, tetanus, tuberculosis, hepatitis B is less. Urban residence, occupation of mother and education of father were found to influence the knowledge regarding vaccination. Mothers are getting exposed to anti-vaccination propaganda.

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