Original Research Article

A Cross-sectional study on the knowledge, attitude ,and practices of childhood immunization among mothers of under-five children attending a rural tertiary care center in South India

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Abstract

Background: Immunization is believed to save between 2 and 3 million lives each year. NFHS –4 survey shows that full immunization coverage in Andhra Pradesh is 59.8% in an urban area. The main reasons for inadequate coverage include inadequacy of information, education, and community participation in routine immunization. The study aimed to determine mothers' knowledge, attitude, and practice of childhood immunization.**Methods:** A cross-sectional study of 300 mothers of under-five children visiting the Pediatrics Out Patient Department during the period between August 2020 to November 2020 was done. The mothers were given a pretested questionnaire consisting of questions related to knowledge, attitude, and immunization practice. This study's data were subjected to standard statistical analysis using the SPSS ver.20 data processing software for windows seven. The p-value was considered significant for all tests if it was less than 0.05 at a confidence level of 95%.
Results: The primary resource of information about vaccination was from hospital/ health care workers (58%). Among 300 mothers, 28% of mothers were concerned about adverse reactions. The majority (89%) were utterly immunized, whereas 11% were partially immunized.11% of mothers postponed immunization.86% of mothers had good knowledge about the National immunization schedule. More than half of the studied sample, 162 (54%), were females and 138(46%) were males. The child's gender was not a significant factor in immunization status. There was a statistically significant between the education of the mother and immunization status. In this study, 74% belonged to the lower class and associated with immunization status was statistically significant.**Conclusion:** We conclude that maternal education, maternal attitude towards immunization, and the source of knowledge about immunization significantly reflected the state of vaccination. The improvement of maternal literacy and dissemination of information about vaccination will increase vaccine coverage in children.

Keywords: childhood immunization, knowledge, attitude, practices

Introduction

Background

One of the greatest discoveries in medicine is vaccination. One aspect of public health is considered the most cost-effective in lowering the prevalence of life-threatening and contagious diseases [1]. Immunization is believed to save between 3 million lives every year[2].The concept of immunization is not bounded to a single person. Still, it concerns the community as a whole: a vaccinated child is protecting himself and others by preventing the transmission of vaccine-preventable diseases (V.P.D.). This is known as herd immunity[3].A decrease in multiple V.P.D. has been noticed for various years, increasing the number of unvaccinated children reported recently over 1.5 million children died from V.P.D. in 2017[4]. As per the World Health Organization (WHO), almost 20 million children were not vaccinated against " diphtheria,measles and tetanus" in 2018[5].The historical success of eradicating the dreaded disease, Smallpox, prompted World Health Organization (WHO) to ask its member countries to launch immunization against six vaccine-preventable diseases in its national immunization schedule. In India, EPI was established in 1978, and it was re-designated as the Universal Immunization Programme (U.I.P.) in 1985 to cover at least 85% of infants[6].The National Family Health Survey (NFHS) had a marginal improvement in India's vaccination coverage over the years. NFHS-1 conducted in 1992-93 reported a vaccination coverage of 35.4%, which rose to 42% in NFHS-2 undertaken in 1998-99. The NFHS-3 launched in 2005-06 reported vaccination coverage of 43.5% [7-9].The UNICEF coverage evaluation survey for the year 2009 showed that the immunization coverage had improved to 61%. Nevertheless, these figures are way short of the target of 85% coverage. NFHS – 4 survey shows that full immunization coverage in Andhra Pradesh is 59.8% in urban area[10].WHO defines vaccine hesitancy is the refusal or delay in vaccination. This behavior's primary reason is the doubts about the vaccines' safety, fueled by bad experiences or by media[11]. The easy access to the internet has helped anti-vaccination campaigns reach more people and has facilitated misinformation. One reason for hesitancy is the infrequent observance of the adverse outcomes of V.P.D., as they have become relatively rare. Because of this, many parents believe that vaccines are unnecessary and that the harm more than the benefits[12].The main reasons for poor coverage include community participation in routine immunization, information education, and communication activities.Negative parental perceptions of vaccinations are also an essential barrier to childhood vaccination. It is important to understand the variables that influence parental decisions regarding their child's vaccination and plan measures to overcome these

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barriers. Regarding vaccination practices, so many factors contribute to the decision-making process. First of all, several studies have shown that unvaccinated children had older mothers with lower levels of education. Studies concluded that more educated mothers tended to vaccinate their children more. Moreover, it has been proven in many studies that living with people who support immunization and vaccinate their children resulted in positive attitudes towards vaccination.The cost of the vaccines seems to be one of the determinants of the immunization status. Second, the trust in the health-care system and the relationship with the pediatrician or physician are important determinants of the attitudes towards vaccines. The more trust the parents have in the several health institutions, the more knowledge they acquire about the benefits and risks of vaccines. The relationship between the parent and physician has shifted through the years and has become based on communication and shared decisions. Many parents find themselves lacking knowledge about the concept of vaccination and start looking elsewhere when there is poor communication with the pediatrician, often stumbling upon myths and false information.Furthermore, the level of knowledge of parents is an essential determinant of their practices. Knowledge directly affects attitude, thus, working on educating parents should be a basis for acquiring better attitudes and practices. Many talked about the association between the lack of immunization and the lack of knowledge regarding vaccine necessity. Conversely, others talked about how parents who have less knowledge about immunization were more compliant. This was explained by the fact that parents who acquired knowledge about vaccines also questioned their safety and necessity. The mother plays a significant role in promoting the health of children. Several misconceptions, ignorance, and inadequacy of knowledge about the vaccine are prevalent among mothers, especially under-five children. It is important to understand the variables that influence parental decisions to vaccinate their children and plan measures to overcome these barriers.Despite the efforts put into raising the rate of vaccinated children, Indians are still far from reaching the worldwide -recommended rates. The study aimed to determine mothers' knowledge, attitude, and practice with under-five children about immunization.

Aims and Objectives

1.To study the knowledge,attitude and practices of immunization among mothers of under-5 children

2.To correlate the knowledge, attitude, and practices of immunization with the immunization status of under-5 children

Methods and Materials

A cross-sectional study of 300 mothers of under-five children was included in the study from August 2020 to October 2020 over four months at O.P.D., department of pediatrics,PESIMSR,Kuppam.

Selection criteria: Mothers whoever attending the immunization clinic at The Department of pediatrics,PESIMSR, Kuppam.

Inclusion Criteria:1.Mothers with under-five children and attending the Outpatient Department, Department of Pediatrics, PESIMSR, Kuppam.

Exclusion Criteria: Mothers whoever not willing to participate in the present study. The interview consisted of questions about knowledge, attitude, and practice of immunization and the child and mothers' background characteristics. It consists of two parts: the first part dealt with the socio-demographic characteristics of the parents: sex, marital status, age, level of education, mother's occupation, monthly income, number of children, family size, and type of house. The second part assessed parent's level of knowledge about vaccination, how they acquire their information, neighbors and the pediatrician, pharmacist, friends, social networks, family doctor, and public health ministry in decision making. The Immunization history was entered into immunization data for analysis. The results were categorized into two groups. Group-1 was immunized entirely up to the presenting age, and Group 2 was partially immunized, defined as those who missed anyone vaccine out of the National Immunization Programme.Details of about the vaccine administration was obtained from the immunization card. In case of unavailability of the card data obtained based on recall by the respondents, Variables analyzed were:Respect to the studied mothers:Education, source of information about vaccination, causes of cessation of immunization, the impact of education, and mother's work.

Statistical analysis*:* This study's data were subjected to standard statistical analysis using the SPSS version.20 data processing software for windows seven. The p-value was considered significant for all tests if it was less than 0.05 at a confidence level of 95%. A Chi-square test was used for statistical analysis.

Results

Following the inclusion criteria, 300 participant mothers were interviewed in our study. Of those, 89% (n=267) was completely immunized whereas 11% (n=33) was partially immunized (Table 1). The most often reason for incomplete immunization was child sickness, reported in 55%, followed by social reasons, forgetfulness, and others. More than half of the studied sample, 162 (54%), were females and 138(46%) were males. The child's gender was not a significant factor in immunization status, as our study showed (Table 2).In our study, the average of children with age is nine months. Out of 300 mothers, 11% (n=33) were illiterate, 24%(n =72)were completed primary education, 30%(n=90) were completed secondary education and intermediate, 21%(n=63) were completed graduation, 14% (n=42)were postgraduates. It was statistically significant (p-value <0.005) between the education of the mother and the child's immunization status (Table-3). Out of 300 mothers, 69% (n=207) were housewives, and 31% (n=93) worked women. There was no significant association between mother's occupations on child's immunization status. Out of 300 father's 8 % (n=24) were illiterate, 28%(n =84)were completed primary education, 28%(n=84) were completed secondary education and intermediate, 16%(n=48) were completed graduation, 20% (n=60)were postgraduates. There was no statistically significant (p-value >0.005) between the father's education and the child's immunization status. In the present study, Out of 300 participant mothers,20% (n=60) belonged to the middle class,74%(n=222) belonged to the lower class, and 6%(n=18) belonged to the upper class.There was an relation between socio-economic status and immunization status as statistically significant (p-value <0.05). Overcrowding in the family was present in 25% (n=75) of the study population.Among the study group, only 32% (n=96) of mothers searched about immunization. The primary resource of information about vaccination was 11% (n=33) of mothers from Newspaper, 58% (n=174) of mothers from hospital/ health care workers, 24% (n=72) of mothers from Asha-workers/ community worker,(2% n=6)of mothers from neighbors, and 5% (n=15) from the religious leader (Table -4, figure -1).Among 300 mothers,74%(n= 222) of mothers trust a family doctor or pediatrician who provides all vaccination information. There was an association between trust in the family doctor and immunization status as statistically significant (p-value <0.05). Out of 300 mothers, the main impact in decision making regarding vaccination was 28% (n=84)of mothers by husband, 22%(n=66) of mothers by in-laws, 19% (n=57) of mothers by the doctor, 27% (n=81) religious leader, 4% (n=12) of mothers by media. Among 300 mothers, 8 %(n=24) of others rejected, 11% (n=33) of mothers postponed immunization. Out of 300 mothers, 86% (n=258) of mothers had good knowledge about the National Immunization schedule. There was a statistical significance (p-value less than 0.05)between knowledge about the National immunization schedule and immunization status.Among 300 mothers, 28% of mothers were afraid of adverse reactions. 88% of mothers fear fever, 34% of mothers fear excessive cry,4% of mothers were afraid of convulsions, and 18% were afraid of loose stools, 22% of mothers fear injection site abscess.

Table 1: Frequency and percentage of immunization status

Immunization Status	Frequency	Percentage
Completely immunized	267	89%
Partial immunized	33	11%

Table 2 Association between sex and immunization status

Sex	Completely immunized	Partial immunized	P-value
Female	144	18	0.969 (Chi-square -0.0015)
Male	123	15	

Table 3 Association between mothers education and immunization status

Mother's education	Completely immunized	Partial immunized	P-value
Illiterate	18	15	0.002711 (Chi-square -16.2)
Primary education	63	9	
Secondary education & intermediate	87	3	
Graduation	60	3	
Post Graduation	39	3	

Table 4 Resource of information regarding immunization

Resource of information	Frequency	Percentage
News paper	33	11%
Hospital / health care worker/ doctor	174	58%
Asha worker	72	24%
Neighbors	6	2%
Religious leaders	15	5%

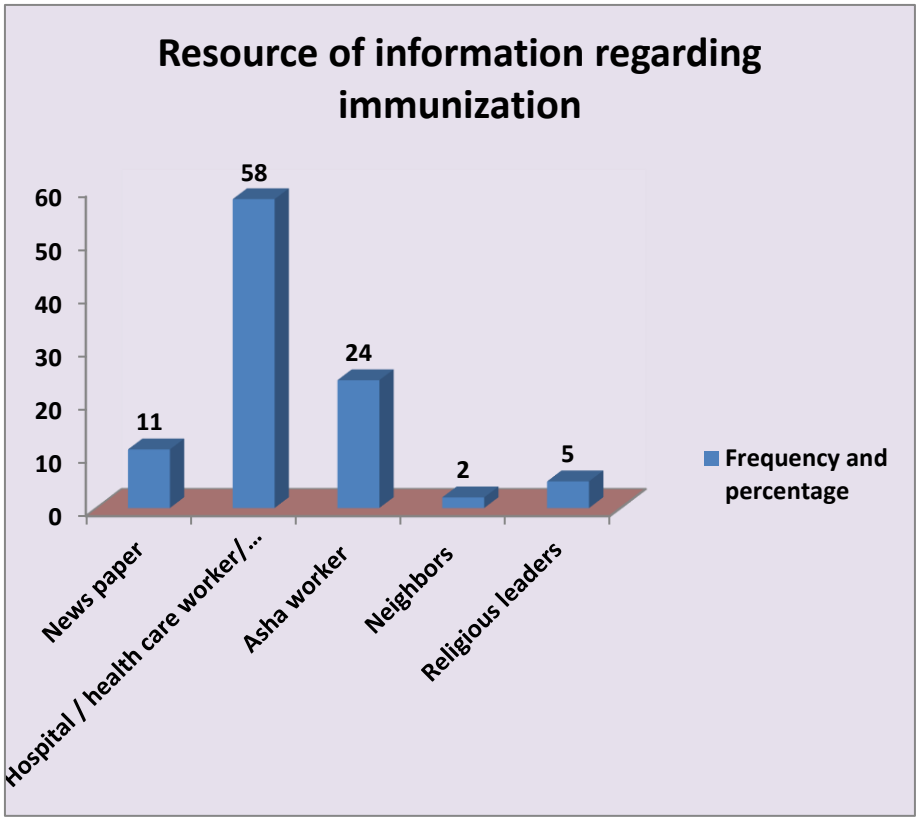

Fig 1: Resource of information regarding immunization

Discussion

Vaccination in India is an obligatory program and maintained adequately through a universal protocol. Despite all efforts and initiatives are taken by the Government, international agencies, and helping hand through various non-governmental organizations, incomplete immunization of the children observed in our study. Child sickness was the main reason behind the cessation of vaccination in our study, followed by social inhibitions, forgetfulness, and non-availability of vaccines during their stipulated immunization date.These reasons were similar to other studies such as Impicciatore et al. in Italy in 2000[13].Similar findings were reported from developed[14]and developing countries[15].There was a statistically significant association between maternal education and immunization status (p= <0.0001). This might be because being more educated allows better communication with health care providers and fewer chances of acquiring wrong beliefs regarding vaccines. Singh et al. had reported in their study that mothers had adequate knowledge regarding the need for immunization but had insufficient knowledge regarding VPDs[16].In a study by Kapoor et al., it was found that awareness and knowledge about V.P.D.s increase with mothers' education status[17]. In our study, completely immunized children were 82.25%, and maternal literacy was 91.25%. The gap between these was relatively higher than the study carried out by Odusanya et al. in Nigeria in 2008[18],where maternal literacy and complete immunization rate were 83% and 81%, respectively. Maternal education was a significant predictor of immunization completeness as the highly educated mothers will be more aware of this issue's seriousness. Several researchers have shown this role of maternal knowledge as an essential determinant of vaccination coverage. Hence if steps were taken to ensure good education to the girl child and knowledge about vaccination integrated into the antenatal care of mothers, the vaccination coverage would be near complete and the goals of eradicating diseases. The lower than expected coverage observed in our study reinforces the need for continuous motivation, regular supervision, continuous monitoring, and evaluation to detect any declines in vaccination. There was no statistically significant association between gender and immunization status (p= >0.05),and this is almost the same with the study carried out by Odusanya et al. in Nigeria in 2008[18].In a cross-sectional study conducted by Siddiqui et al.In Karachi, significantly better vaccination status was found among children with both parents literate than children with both parents illiterate[19].Educated parents seem to understand more the risks of infectious diseases and the benefits of vaccination in their prevention.There was a strong statistically significant association between socioeconomic status and immunization status (p= <0.05).This might be because parents with a high income have the means to treat their children and live near health facilities. Some may also think that they can protect their children through healthier lifestyles and less exposure . other studies also noticed that low socio-economical sta income can be associated with a negative attitude since some parents with low income choose to spend money on other necessities.There was a strong statistically significant association between the source of immunization and immunization status (p= <0.05). More than half of the attendants of immunized children received the information from health care workers/doctors.This was because most of the respondents had available services at primary and secondary health care levels. These health facilities seem to be most reaavailable and accessible to the people. Our study revealed that doctors /health care workers were the primary source of information. This was in concordance with the study by Bholanath et al[20].Healthcare providers play an essential role in shaping the opinion of parents and their vaccination practices. When dealing with parents, the pediatrician or other physician should properly communicate the importance of vaccines, their safety, and the consequences of noncompliance with the schedules. The interaction between healthcare workers and caregivers is decisive to ensure the completion of the vaccination schedule.Effective communication is particularly needed to achieve vaccination coverage in hard-to-reach populations and to build trust in vaccines among those who question them. Different types of media (e.g., television and radio and social)) in immunization campaigns and collaboration with influential community leaders can positively increase immunization coverage in both rural and urban areas.Mobile phone access has been increasing dramatically even in rural areas of developing counties like India, over the past decade. Mobile phone-based interventions for improving vaccination coverage in populations at risk for under-vaccination are quickly becoming more efficacious. The negative attitude such as fear of vaccination and some false beliefs played a significant role in the partial immunized group. This finding is under other studies such as Nisar et al. in Pakistan in 2010 and Saunders et al. in Combodia in 2005 [21,22]. Parents would delay vaccinating their children in the circumstances of simple childhood illnesses. These myths must be abolished, and mothers must be assured regarding the safety of vaccines.Regarding vaccination practices, many factors contribute to the decision-making process. First of all, multiple studies have shown that unvaccinated children were mostly white, had older mothers with higher levels of education, and were of families of increased income. Many parents find themselves lacking knowledge about the concept of vaccination and start looking elsewhere when there is poor communication with the pediatrician, often stumbling upon myths and false information. Furthermore, the level of knowledge of parents is an essential determinant of their practices. Knowledge directly affects attitude; thus, educating parents should be a basis for better attitudes and practices.In addition, another factor related to immunization practices is the parental attitude towards vaccines. Studies have shown that mothers who had negative attitudes towards vaccination didn't vaccinate their children and didn't attempt to learn about immunization. Smith et al. clearly demonstrated that parents whose children were vaccinated listed their pediatrician as a strong influence on their decision to vaccinate. With all the challenges acknowledged, the single most crucial factor in getting parents to accept vaccines remains the one-on-one contact with an informed, caring, and concerned pediatrician. A well-informed pediatrician who effectively addresses parental concerns and strongly supports the benefits of vaccination has an enormous influence on parental vaccine acceptance[26].Most of the mothers did not have sufficient knowledge about vaccination related to low immunization status in Khana. This study also mentioned that nearly half of the children did not complete their immunization schedule because of routine vaccines in the health facilities. The Government's long-term and advanced commitment to vaccine manufacturers to purchase vaccines and engage communities in dialogue over the benefits of immunization is advocated to improve immunization [27].The government health facilities need to be more user-friendly by making it accessible to all and reducing the waiting time and coordination between all tires of health facilities so that the health system becomes efficient for the achievement of the goal of "Health to All".Being a cross-sectional study, our research faces some limitations. A non-differential bias could have occurred since parents may under or overestimate a question. A selection bias might be possible because of the refusal rate and since no comparison could be made between parents who refused and those who accepted to enroll in this study. Another limitation is the possibility of occurrence of a recall bias, especially in parents who did not have vaccination cards.

Conclusion

We conclude that maternal education,maternal attitude towards immunization,and the source of knowledge about immunization significantly reflected the state of vaccination. Biased information, false beliefs, and little knowledge about immunization make things challenging to make ultimately successful. It also calls attention to the need to guide parents, especially those with lower levels of education, on the importance of vaccination. It is crucial to identify new strategies to highlight the need for immunization and educate

parents about the importance of vaccines on an individual and public health level. Appropriate information dissemination, aggressive campaigning, the involvement of health care workers, and collaborative group work are crucial to making it a universally successful program. That appropriate actions are being taken to better parental guidance.

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