Routine Immunization in Children and Unsatisfactory Polio Campaigns; A Cross Sectional Survey Conducted at Darul Sehat Hospital, Karachi

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Abstract

Objective: To assess knowledge, attitude and practices of mothers on routine immunization and to study factors for unsatisfactory Polio campaigns.

Methods: This cross-sectional study was conducted in the Department of Paediatrics, Darul Sehat hospital from 1st March 2015 to 31st May 2015. Sampling type was non probability convenience and sample size was 210. Mothers who brought their children for routine immunization or any other illness of their own or their children, and accompanying women with children below the age of five years were included in the study. Women from other than the local areas, those unable to perceive the questions due to any illness or language problem and those who were accompanying a critically ill child, were excluded.

Results: "Mandatory for child health" (95%) was the most common reason for complete vaccination while missing vaccination card was the main reason for incomplete vaccination (33%). Most common reason of polio vaccination refusal was misconception about campaigns (22%). Two hundred and two (98%) participants indicated that vaccine provided protection from major killer diseases. One hundred and ninety (94%) were in favor of routine immunization. Two hundred and eight (99%) brought a child regularly for routine immunization. Routine polio vaccination coverage was 99.58% while that for National Immunization Days (NID) polio was 87%.

Conclusion: Majority of participants thought that routine immunization protects children from major killer diseases and Polio campaigns are necessary for eradicating Polio. Majority was in favor of routine immunization and brought children regularly for routine immunization. Misconception about Polio campaigns is the main hurdle in Polio eradication and that is the reason why NID Polio coverage is lacking behind.

Keywords: Polio, routine immunization, vaccination, oral Polio virus vaccine.

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Introduction

Immunization is the process by which resistance is produced in a person, animal or plant[1]. The process of conferring immunity can be active or passive. In the active type the individual develops immunity as a result of infection or immunization[2]. When antibodies, produced in humans or animals, are transferred to another to induce protection against disease it is called passive immunity[3]. Herd immunity is the level of resistance of a group of people to a disease[4].

In 1978, WHO expanded its immunization program in Pakistan. Diseases mainly Tuberculosis, Polio, Diphtheria, Pertussis, Tetanus, Hepatitis B, H. influenzae infection, Pneumonia/Meningitis, and Measles can be prevented by active immunization in children. Fixed centers, outreach teams and mobile vaccination programs have been conducted by WHO[5].

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Vaccine preventable diseases cause 27% of the deaths in children five years and younger[6]. In Pakistan, 15% of deaths in children under five years of age add about 50% overall mortality compared to 10% in developed countries[7]. The current mortality rate in children under five years of age is very high i.e. 86/1000 live births[8]. The overall immunization coverage is 86%[9,10].

The cases of Polio are a major concern. In 2014, 198 polio cases were reported in Pakistan; a fifteen years high and the highest number of cases recorded worldwide[11]. As a result of this situation Pakistan might face embargo.

This study was conducted to determine the measures required to overcome this challenge of polio and propose measures to mitigate the high frequency of polio in children. The results from this study will add to the current pool of knowledge related to this issue.

Subjects and Methods

This cross-sectional study was conducted in the Department of Paediatrics, Darul Sehat hospital from 1st March 2015 to 31st May 2015. Sampling type was non-probability convenience and the minimum sample size required by the WHO sample size software was 196. Prevalence of routine immunization was 86%[9,10], confidence interval was kept 95% and absolute precision required was 0.05. Mothers agreeing to participate in the study who brought their children for routine immunization or any other problem of their own and/or children and accompanying women having children below the age of five years were included in the study. Exclusion criteria consisted of non-local women, those unable to perceive the questions and accompanying a critically ill child.

Permission was taken from the Medical Superintendent of the Hospital and Principal of the Medical College. Informed consent was acquired from the mothers. Anonymity and confidentiality of the mothers and children were strictly maintained. They had the right not to reply to any question and could leave the study without any effect on their medical care at the hospital.

Questionnaire was prepared in local, easy and understandable language. Medical students after being trained, along with few members of faculty interviewed the participants. Relevant queries were resolved on the spot.

For data analysis, SPSS 16.00 was used. Data was completely secured, password protected and could only be accessed by the researchers. Frequencies were calculated for categorical and independent variables like socioeconomic status, occupation and education of parents, details of vaccination. Dependent variable was knowledge, attitude and practice of mothers on routine immunization. They were exhibited in frequencies and percentage.

Results

Two hundred and nine (99%) of the mothers had got their children vaccinated against BCG while 172 (86%) did so against Measles Fig.1. "Mandatory for child health" was the most common reason for complete vaccination n=199 (95%) while missing vaccination card was the main reason for incomplete vaccination n=03 (33%) (Table 3). Most common reason for refusals to polio teams was misconception about campaigns (n=44, 22%) Fig.2. Routine polio vaccination was 99.58% while National Immunization Day (NID) polio vaccination 87%. Drop out of children in routine immunization was 17.7%.

Two hundred and two (96%) indicated that routine immunization protects against major killer diseases, 201 (96%) of participants were of view that it is necessary to eliminate Polio and 181 (86%) thought cold chain is necessary for keeping the vaccine effective. One hundred ninety (90%) were in favor of routine immunization. Two hundred two (96%) brought child regularly for routine immunization; the same number recommended vaccine to others and 199 (95%) vaccinated their child since birth.

Table 1. Basic demographic profile n=210

Characteristic	Frequency	Percent
Socioeconomic status. n=(206)		
< Rs. 10,000/m	2	0.9
Rs. 10,001 to 20,000/m	23	11.17
>Rs. 20,000/m	181	88
Education of father. n=(208)		
No education	6	
Middle	2	
High School	1	99
Graduation	181	87
Education of mother. n=(208)		
No education	1	36
Middle	8	4
High School	49	23
Graduation	138	66
Occupation of father. n=(207)		
Self-employed	23	11
Job	175	85
Other	9	4
Occupation of mother. n=(209)		
House wife	190	91
Self employed	3	
Job	16	8

Table 2. KAP of mothers on routine immunization n=210

	Frequency	Percent
Knowledge		
Who gave knowledge on immunization? n=(205)		
Family member	158	56
Neighbour	5	2
Health worker	16	6
News paper	30	10
TV	30	2
Radio	8	3
Routine immunization protects child from Major killer diseases? n= (206)		
Yes	202	96
No	4	2
Polio campaigns necessary for polio Eradication? n=(205)		
Yes	201	96
No	4	2
Proper cold chain necessary for vaccines? n= (202)		
Yes	181	86
No	21	10
Vitamin given during routine immunization? n= (206)		
Yes	70	30
No	136	65
Attitude		
Are you in favor of routine immunization? n= (202)		
Yes	190	90
No	12	6
Refusal to vaccination could be due to?		
Religious belief	39	46
Fed up with the campaigns	13	16
Vaccines are harmful	32	38
Practice		
Bring child regularly for routine immunization? n = (207)		
Yes	202	96
No	5	2
Recommend routine immunization to others? n = (205)		
Yes	202	96
No	4	2
Has vaccinated child since birth?		
Yes	199	95
No	5	2

Table 3. Reasons for complete/incomplete vaccination n=210

Reason	Number	Percent
Complete vaccination, n=(201)		
Mandatory for child health	199	99
Mandatory for school registration	35	17
Mandatory for international travel	4	2
Incomplete vaccination, n=(9)		
Lack of information	2	22
Missing vaccination card	3	33
Fever	1	11
Unclear immunizationschedule	2	22
Other	2	22

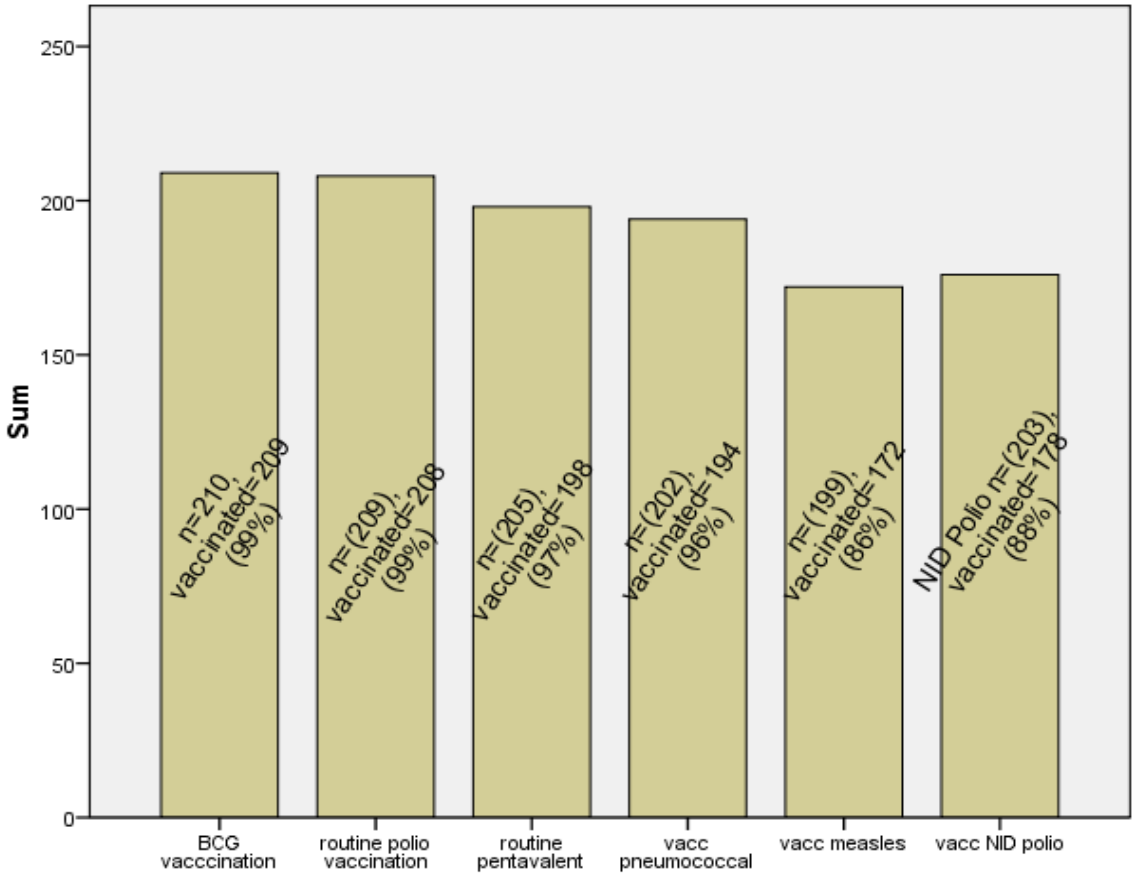

Fig 1. Vaccination status of children, n=210

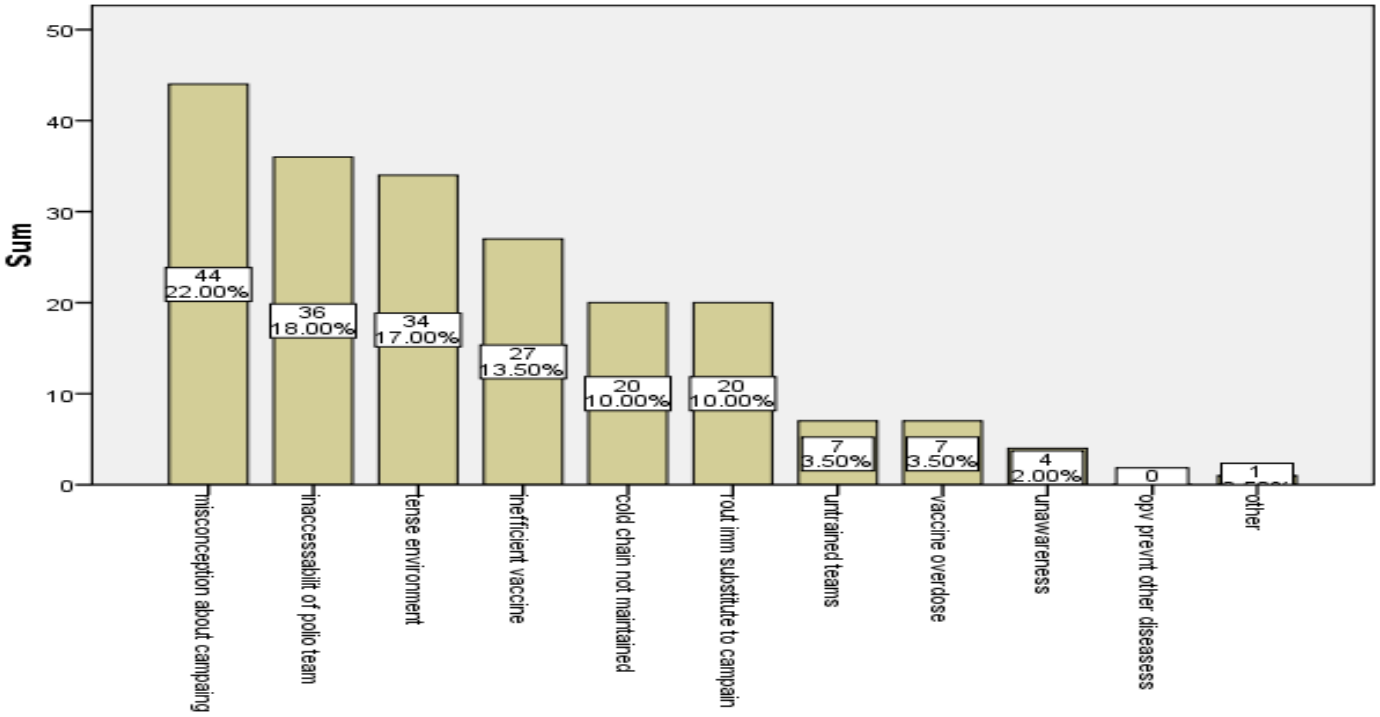

Fig 2. Refusal to polio teams, n=210

Discussion

Parents' knowledge, attitude and practices about immunization of their children are the major factors that contribute to their vaccination decisions. Such decisions of the parents, on account of compliance, are of critical importance for maintaining the immunization status of their children thereby minimizing the chances of immunization errors. In the study in hand 66% mothers had completed graduation, 23% were higher school graduates with only 6% being with no formal education. As compared to this, a study conducted by Yousif et al in Saudi Arabia[12] revealed that 56% of the mothers were graduated, 30% had completed high school education and 4.5% had no formal education. The major reason for improper immunization in Pakistan is mother's lack of knowledge about vaccination of child.

In this study majority of the participants (88%) reported house hold income more than Rs.20,000 per month, 11% reported between Rs.10,000 to 20,000/m while only 0.9% reported less than Rs.10,000/m. This is in contrast to a study conducted in Kemari, Karachi[13] showed that 67% of the participants report house hold income less than Rs.4,000 per month, 28% between four to ten thousands per months while only 5% had per month income of more than Rs.10,000. Vast difference between the figures of the two studies could be due to diversified socioeconomic difference between the two areas of Karachi.

The study in hand shows 91% of the mothers were housewives and working mothers were 8% of the total. In a study conducted in Bangladesh, 98% mothers were housewives while working mothers were 2% among those who completed vaccination[14]. Nearly similar findings in the two countries show similar setup as both the countries belong to third world, having same religion and nearly same geographical location.

In this study routine immunization was completed in 99% of the children. A total of 99% of the mothers thought it were mandatory for child health, 17% believed it is mandatory for school registration and according to 2% thought it was mandatory for international travel. The results of a study done in different districts of Nigeria[15] showed that 90% mothers believed vaccines help prevent from major killer diseases and 78% of the mothers are aware and recognize the benefit of immunization as prevention of disease.

In this study, EPI vaccination coverage for BCG was found 99%, routine Polio 99%, Pentavalent 97%, Pneumococcal 96%, Measles 86% and that for NID Polio 88%. In comparison, a study conducted in Nigeria[16] showed BCG coverage 93%, oral Polio 44%, Pentavalent 80-88% and that of Measles 86%. A similar study conducted in Iraq[17] shows complete immunization coverage of only 56%.

EPI target diseases are one of the leading causes of childhood morbidity and mortality as evidenced by high infant mortality rate (IMR) in developing countries[18]. In Pakistan, the reported EPI coverage is still below the herd immunity threshold[18-20]. The reasons underlying poor coverage have been studied worldwide. Besides other factors, parental knowledge and belief have been documented to influence immunization uptake[21,22].

The challenge for immunization service providers, therefore, is to offer balanced and comprehensive information about the risks as well as the benefits of immunization counseling sessions. In the study in hand, oral Polio coverage on National Immunization Days was 88% and was less than routine Polio coverage (99.58%). In Enuga Nigeria, National immunization Polio coverage was found to be 75%[23].

This study showed incomplete vaccination was only 4%. In 33% cases the reason was missing vaccination card, 22% lack of information, 22% unclear immunization schedule, 22% others and 11% fever. In a study done in Sudan, the reasons for not vaccinating the child includes child too young for vaccination (38%), unawareness of the importance of child vaccination (17%), illness of child (17%) and unavailability of vaccination services (13%)[24]. A

study conducted in Rajasthan, India[25] revealed that "obstacles" are the most frequent reason for non-immunization (39%), misconception/beliefs (25%) like fever following immunization in a healthy child is harmful, too many doses and so vaccination is not needed. Eight percent reported that the child was sick at the time of vaccination and according to 10% there was lack of information about the program. In this regard 19% mention some non-specific reason such as laziness of parents, forgetfulness, losing the card etc[25]. Awareness plays a key role in adoption and implementation of issues related to health promotion and health seeking behavior. Polio immunization programs have gone through so many challenges socially, politically, religiously and culturally.

Levels of awareness in a community tend to determine level of health status, development and productivity. In this study, 56% of the mothers were informed through family members, 15% through media, 6% through health workers and 2% through neighbors. In a study conducted in Saudi Arabia[26], physicians were found to be the main source of information (78%) followed by television (38%), internet (22%) and news papers (13%).

To sustain high immunization coverage rates, immunization programs must maintain public confidence in the utility and safety of vaccines. Maintaining public confidence in vaccines can be challenging when vaccine preventable diseases have been controlled and attention is focused on reported vaccine associated adverse events rather than prevention of disease. In this study 46% of the mothers refused vaccination due to religious beliefs, 38% thought vaccination was harmful and 16% were fed up with the campaigns. In a study conducted in USA, the most common reason for not vaccinating related to perceived vaccine safety, perception like vaccine may cause harm (69%) and might overload the immune system (49%). Other reasons given for not vaccinating the child include the perception that the child is not at risk for the disease (37%), disease is not dangerous (21%), vaccine might not work (13%), ethical or moral issues (9%) and religious beliefs (9%)[27].

In this study rate of Polio immunization in NIDs was found lower than that in routine Polio immunization. Routine polio vaccination was 99.58% while NID polio vaccination was 87%. When mothers were assessed for reasons for refusal to Polio teams, 22% refused because of misconception about campaigns, 18% pointed to inaccessibility to Polio teams, 17% were afraid of tense environment, 13% mentioned ineffective vaccines, 10% thought that cold chain was not maintained, 10% thought routine immunization was a substitute to Polio campaigns. About 3% refused because of untrained teams and fear of vaccine overdose. In studies done in the villages of Nigeria regarding Polio campaigns, over 40% would not accept Polio vaccination during NIDs while 56% felt cost of immunization was unaffordable[28]. Furthermore 39% of the respondents disagreed with the vaccines being safe[29], 98% worried about the side effects of immunization and 61% of the respondents refused immunization because of the health worker's behavior and attitude. Similarly in the study conducted by Olawepo, it was found that 72%[30] of the respondents rejected Polio vaccination because of religion and cultural factors and only 2% accept that their religion does not allow immunization.

Recent killings of the polio team workers in certain areas resulted in tense environment for Polio campaigns. Beside protection, low salary for trained health workers has led to refusal by trained staff. The provincial government had to accomplish the campaign by untrained and immature workers which has resulted in refusal by the parents leading to unsuccessful campaigns.

In this study drop out of children in routine immunization was 17.7%. This figure can be decreased by measures like, reducing the missed opportunity and vaccinating the unvaccinated child, by clarifying misconception of mother about vaccination, by providing transport facilities for reaching difficult and remote areas for vaccination, by greater promotion of vaccination through media by re-

nowned personalities of the society by clearing misconception about vaccination especially regarding polio by Islamic scholars, muftis, imams of the mosque and finally by including groomed medical students and paramedical staff in National polio days campaigns and EPI vaccination centre's.

The study was conducted in middle to upper socioeconomic area and the vaccination status of the children in this area might not portray the true picture of the overall vaccination status of the children in the country. More studies are required with a larger number of cases in future.

Conclusion

This study indicates that the majority thought that routine immunization protects children from major killer diseases and Polio campaigns are necessary for eradicating Polio. Most were in favor of routine immunization and brought children regularly for vaccination. Misconception about Polio campaigns is the main hurdle in Polio eradication. Electronic and print media should take active part in eliminating misconceptions from the minds of people.

Conflict of Interest

Authors have no conflict of interests and no grant/ funding from any organization.

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