

Vaccination Practices of Children Under Two Years of Age, Admitted in Tertiary Care Hospital of Karachi, Pakistan

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Abstract

Objective: To determine the vaccination practices of mothers for children less than two years of age admitted with the complain of diarrhoea in the Zainab Panjwani Memorial Hospital, Karachi, Pakistan.

Methods: A Cross sectional hospital based study was conducted to determine the vaccination practices of mothers whose children were admitted with the complain of diarrhea in the paediatric ward of Zainab Panjwani Memorial Hospital, Karachi. Study was approved by the Ethical Review Board of Zainab Panjwani Memorial Hospital. After taking verbal consent from mothers or caregivers, the data was collected by using a semi-structured questionnaire. The study was conducted from 1st March to 30th April 2015. About 207 mothers were selected through consecutive sampling from paediatric units of Zainab Panjwani Memorial Hospital. Data was entered and analyzed by using SPSS V.21.

Results: Out of 207 children 51% were females, 89% of the children were under 1 year of age. About 90% of the children received BCG and OPV at birth, 82.1 % received Pentavalent1+Hib1+OPV1 at 6 weeks, 75.8% were vaccinated with Pentavalent 2 +Hib2+OPV 2 at 10 weeks. About 66.2% children received Pentavalent 3+Hib3+OPV3 at 14 weeks and 52% of the children were vaccinated with Measles vaccine at 9 months of age. The coverage rate was found low to be 30% at 15 months of age. More than 45% of the mothers reported difficulty in accessing vaccination center as the major reason for not getting their children immunized against EPI (Expanded Program of Immunization) vaccine preventable diseases.

Conclusion: The practices of mothers for immunization at birth, 6 weeks and 10 weeks interval were found more than 90% but at 9 months and 15 months the immunization rate for under 2 years of age child was found below 35%. The mothers should be encouraged through awareness campaign for EPI vaccination to completely immunize their children under two years of age.

Keywords: Vaccination coverage, infant's morbidity rate, infant's mortality rate, Expanded Program of Immunization, health care accessibility and utilization.

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Introduction

Prevention of the vaccine-preventable diseases is the dire need of the day. Immunization has been

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Abbreviations: Bacillus Calamitous Guerin (BCG), oral polio vaccine (OPV), H influenza vaccine type b (Hib), Penta (i.e. includes fives vaccines i.e. H influenza type b vaccine, hepatitis B vaccine, oral polio vaccine, diphtheria and pertussis)

recognized as one of the most noteworthy and cost-effective public health interventions to reduce infant mortality. It has been estimated that approximately three million children die each year from vaccine-preventable diseases globally, more than 40% of infant's mortality contribution is by the Asian countries¹.

The proportion of the world's children who received vaccination has remained steady for the past few years². The recent report of UNICEF evidenced that Global vaccination coverage is about 86% while in developing countries the proportion is significantly low, documented even less than 30% in under-developed countries². World Health Organization has

stated that if all the vaccines currently available against infectious diseases have been adopted properly and if all countries would have raised the vaccination coverage to global average of 90% by year 2015 an additional two million deaths could be prevented among children under 5 years of age and this would have great impact to achieve the global goal to infant's mortality by two - third between 1990 - 2015 (Millennium Development Goal-4)³.

The Expanded Program of Immunization (EPI) was launched in Pakistan in 1978 and is continued on priority basis. The main motive here was to focus on reducing the illness and prevalence of disabilities along with childhood mortality as a whole from all those illnesses that can be prevented through immunization of the child aged 0 to 11 months. The cause of mortality in children less than 2 years is mainly vaccine preventable diseases which is precisely 27%⁴. Routine vaccination practices are suboptimal for attaining the preferred objectives.

Pakistan has the higher rates of infant's morbidity and mortality compared to developed countries and even the neighboring countries. The latest Pakistan's Demographic Health Survey 2012-2013 has documented that overall vaccination coverage is 54%, which varies in all four provinces, Punjab having the highest vaccination rate of 66% and Baluchistan being the most deprived having the lowest of all (16%). In Sindh the vaccination coverage is 29%, the EPI is the major contributor in the decline of under-5 years morbidity and mortality from 95 to 66 per 1000 live births in last five years⁵. One of the hospital based study from Peshawar, evidenced that immunization coverage of children in government hospitals was 47%. However, private hospitals had lower coverage⁶. Another study from Punjab teaching hospital reported 57.4% vaccination coverage in urban Punjab⁷. A surveillance based study from the private sector of Karachi reported overall 84% of the vaccination coverage⁸.

This current situation highlights the need for further improvement in order to eradicate the vaccine preventable diseases, it is important to know

the vaccination coverage rate and reasons for inadequate vaccination coverage for developing the new interventional strategies and vaccination policy for the improvement. Hence, vaccination coverage data is the best indicator because it reflects the management, access and utilization of health services⁹. The aim of this study was to determine the vaccination practices of mothers for children less than 2 years of age who were admitted in tertiary care hospital with the complain of diarrhoea.

Subjects and Methods

This is a hospital based cross sectional study conducted for the period of two month from 1st March to 30th April 2015 by using consecutive sampling of the admitted children with the complain of diarrhea in Paediatric Unit Zainab Panjwani Memorial Hospital. WHO calculator calculated the sample size by using the frequency of 84%⁹ the sample size was 207. Before proceeding the study was approved by the Institutional Review Board of Zainab Panjwani Memorial Hospital. A total of 207 children 0-24 months who were admitted with the complain of diarrhoea were included in the study and those who were terminally ill or had any other chronic illness such as Tuberculosis, malnutrition, and any other autoimmune disorder were excluded. The method used for determination of the vaccination status was the "vaccination card". Verbal consent was taken from mothers. The primary respondent was mother of the child in case of her absence, the father or any other guardian acted as the next respondent, the data was collected on pre-designed and pre-tested questionnaire. Data was entered and analyzed by using SPSS version 21.00. Mean and SD were calculated for quantitative data. Frequencies and percentages were calculated for categorical data.

Results

There were 207 children out of which 104(51%) were females; mean age of the children was 18 ±1.5 months SD. Nearly two-third of the patients were between 6 to 12 months of age. About 46.9% of the children's birth weight was lying between 2.5

-2.9 kg. Fifty-nine (28.5%) mothers did not know the birth weight of their child. More than half of the mothers (52.7%) accompanying children were illiterate as shown in Table 1. Only two mothers (1%) had educational attainment up to the graduation level.

Table 2 illustrates that out of 207 children 198 (91.8%) received BCG for Tuberculosis and OPV0 for Polio 170(82.1%) received Penta +OPV1+Hib at 6 weeks, 157 were vaccinated at 10 weeks, 137 received complete vaccination at the age of 14 weeks, nearly half of the children (52%) received measles vaccine at 9 months, however at the age of 15 months only 68 (32%) children were vaccinated with 2nd dose of Measles vaccine. Only 15 (7.2%) patients received Non-EPI vaccines including rotavirus vaccine, typhoid and chicken pox vaccination.

Fig. 1 illustrates the reasons given by the mother or care provider for not getting their children immunized by vaccine; about 45% of the mothers reported that the major reason for not getting their children immunized against vaccine preventable diseases was the difficulty in accessing the vaccination centre. The other reasons given by the mothers were that they forgot the date of vaccination, fear of side effects, lack of awareness and religious concerns.

Discussion

This study reported that the overall vaccination coverage was adequate at birth and it dropped subsequently from Penta1+Hib1+OPV1 to Measles vaccine among children under two years of age. Moreover, the most significant reason for not getting the children vaccinated was difficulty in accessing the Vaccination Centre.

In this present study it was observed that nearly one-third of the children were immunized completely with EPI recommended vaccines. The immunization rate was comparable to the former Hospital based study of Karachi¹⁰. However, in contrast to this, 93% immunization coverage in pre-school children has been reported from hospital

survey of USA¹¹. Moreover, this obvious disparity in the immunization coverage could be multi-factorial, it may be attributable to the fact that poor policy incentives by the government, inadequate resources and inappropriate utilization of the health services leads to malfunctioning of the EPI in Pakistan.

We found that BCG+OPV0 coverage was significantly higher while with increasing age relatively fewer children continued successive vaccination still the end of 2 years. These findings are consistent with the results of a hospital based study conducted in the different hospital of the same city, which reported that vaccination coverage reduced remarkably from DPT1 to DPT3¹². Another community based study, which had representation of 34 states of India had parallel results¹³. However the studies from Europe¹⁴ and Nigeria¹⁵ showed contradictory results when compared to the present study. This substantial decline in the vaccination coverage from birth to the end of 2 years can be attributed to difficulty in accessing immunization services, lack of awareness regarding the importance of immunization, loss of motivation for vaccination or may be combination of all.

In this study, we also found that the most significant reason for inadequate vaccination coverage was difficulty in accessing the vaccination centre, the other reasons were fear of side effects and lack of awareness among parents. These findings are consistent with the previous researches of Pakistan¹⁶ and India¹⁷. There are several socio-cultural factors, which have been identified, in the previous studies of Karachi¹⁸, Peshawar¹⁹ and Punjab²⁰ that may lead to steadiness in the immunization program regardless of huge international funding for the EPI. Here, it is noteworthy that healthcare non-accessibility is the main constraint in the health care utilization²¹. Apart from other social determinants, lack of extensive network of primary health centers, sub-centers and health care providers could partially account for our findings, which emphasize for the implication of vigilant interventional strategies and related policies.

Table 1. Socio-demographic characteristics of the study population (N=207)

S.No.	Characteristics	Frequency N	Percentage (%)
1	AGE OF CHILD		
	Less than 6 months	36	17.4
	6-12 months	127	61.4
	13- 24 months	44	21.2
2	GENDER		
	Males	102	49
	Females	105	51
3	BIRTH WEIGHT		
	Less than 2.5 kg	41	19.8
	2.5- 2.9 kg	97	46.9
	3 kg or more	10	4.8
	Birth weight not known	59	28.5
4	MOTHER'S EDUCATION		
	Illiterate	109	52.7
	Primary	44	21.6
	Secondary and Intermediate	52	25.1
	Graduate	2	0.6

Table 2. Vaccination status of the participants according to age(N=207)

Age of child	Vaccination	Received n (%)	Not Received n(%)
At birth	BCG +OPV0	190 (91.8)	17 (8.2)
6 weeks	Penta1+OPV1+Hib	170 (82.1)	37 (17.9)
10 weeks	Penta2+OPV2+Hib	157 (75.8)	50 (24.2)
14 weeks	Penta3+OPV3+Hib	137 (66.2)	70 (33.8)
9 months	Measles	109 (52.7)	98 (47.3)
15 months	Measles	68 (32.9)	139 (67.1)
Non EPI vaccines	Typhoid, Chicken pox, rotavirus	15 (7.25)	192 (92.8)

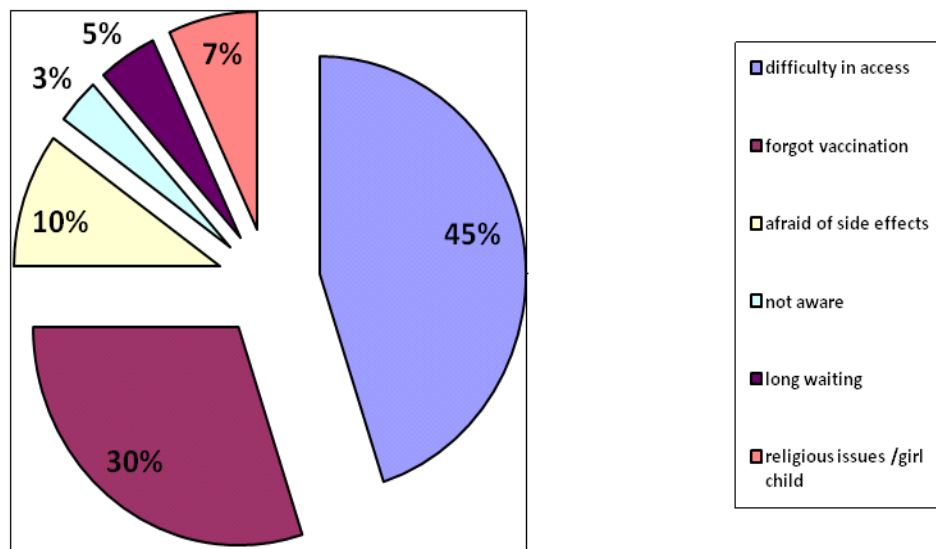


Fig. 1. Reasons for inadequate vaccinations among participants given by the care-givers

There were several limitations of this study. Firstly it is limited by its cross sectional study design. Secondly, those parents who did not have the vaccination card, their information regarding immunization of children were attained through recall which may not be reliable or there may be chance of recall bias. Thirdly the questions regarding the residence and socioeconomic status were not added in the questionnaire. Also, fathers along with the mother should be motivated to take the children to vaccination centres as in our society, the transportation is mostly dependent upon the father primarily, especially in the rural areas, where majority of the population resides. Hence, future studies taking into account these deficiencies and a larger sample size must be encouraged with inclusion of both rural and urban population.

It is recommended that parents should be encouraged to combat this low immunization coverage by sensitizing them through interventional strategies to recognize the benefits of taking their children to vaccination centers and operational vaccination centers should be provided within reach of every household, Moreover all the stakeholders of the community must take active participation and realize their responsibilities towards the community strengthening for achieving targeted goals for Health services in Pakistan.

Conclusion

The mother's practices for immunization at birth, 6 weeks and 10 weeks interval were found adequate but at 14 weeks, 9 months and 15 months the immunization rate for under 2 years of age child was found low. The mothers should be encouraged through awareness campaign for EPI vaccination to completely immunize their children of less than two years of age.

Conflict of Interest

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

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