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ORIGINAL ARTICLE

A Study of Reasons for Nonimmunization among Children attending the Services of a Rural Hospital in Raigad District, Maharashtra

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ABSTRACT

Introduction: Immunization is a cost-effective public health intervention to decrease childhood morbidity and mortality. According to the 3rd National Family Health Survey (NFHS-3), 43.5% children aged 12 to 23 months were fully vaccinated. The 3rd District Level Household & Facility Survey (DLHS-3) showed 69% full-immunization coverage in Maharashtra with major regional variations. Rural Hospital, Panvel (Raigad), is in a peri-urban area providing health services to a mix of urban, rural, and migrant population. The study was conducted in this hospital with the aim to understand why people seeking health services for secondary prevention refrain from complying with routine immunization services.

Objectives: To assess the reasons for partial and nonimmunization of the children and the knowledge regarding routine immunization.

Materials and methods: All children who completed 1 year but below 5 years of age, attending the Rural Hospital, Panvel, during a period of 1 month from October 16 to November 15, 2014, were screened and those who were not fully immunized for the age were included in the study. Sociodemographic background, immunization status, reasons for partial and nonimmunization, and knowledge about routine immunization data were collected by personal interview using a prestructured, pretested questionnaire after obtaining informed consent.

Results: Out of 303 children, 57 (18.8%) were found to be either partially immunized (47; 15.5%) or nonimmunized (10; 3.3%). The lack of knowledge (36%), lack of priority for immunization (33%), and poor communication by the health worker (21%) were the major reasons. 42% of the mothers were aware about the severity of the vaccine preventable diseases. However, 80% did not have the correct knowledge regarding the immunization schedule.

Conclusion: The opportunities to vaccinate are still being missed and consolidated efforts to improve the active involvement of mother in the immunization activity are required.

Keywords: Child immunization, Maharashtra, Nonimmunization, Rural hospital.

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INTRODUCTION

Universal child immunization has been one of the most significant and cost-effective public health interventions to decrease childhood morbidity and mortality. On November 19, 1985, Universal Immunization Programme was introduced in India, aiming at 85% of coverage of all infants by 1990. Further, a National Demographic goal to achieve universal immunization of children against all vaccine preventable diseases (VPDs) was set up by the National Population Policy 2000.[1] Immunization is provided free of cost at all government health facilities and also as immunization outreach session, yet, the coverage is low. According to NFHS-3, only 43.5% of children, aged 12 to 23 months, were fully vaccinated; 57.5% in urban and 38.6% in rural areas.[2] The DLHS-3 survey showed 69% full immunization coverage in Maharashtra.[3] However, further analysis of the survey by Dr. Wankhede showed large regional variations within the state regarding child immunization coverage.[4]

A number of community[5,6] and hospital-based[7,8] studies have brought to light the poor immunization coverage among the under 5 years children in India. The reasons for the lack of coverage vary from logistics to those dependent on human behavior. One of the usual reasons for poor immunization coverage is difficulty in reaching the service provider. The rural hospital in Panvel (Raigad district, Maharashtra) is in a peri-urban area providing health services to a mixed population of urban, rural, and migrants. The hospital provides free immunization services. Against this background, it was proposed to select the partially immunized and nonimmunized children who are already utilizing the health services at this hospital for various reasons in orders to understand why the people who otherwise seek health services for secondary prevention refrain from complying with the routine immunization services.

OBJECTIVES

The objectives of study were to identify the reasons for partial and nonimmunization of the children and to assess the knowledge of mothers of partial and nonimmunized children regarding routine immunization schedule.

MATERIALS AND METHODS

All those children who have completed 1 year but below 5 years of age, reaching the Rural Hospital, Panvel, irrespective of the reason of visit to the hospital, during the period of 1 month from October 16 to November 15, 2014, were screened for their immunization status and the children who were either partially or nonimmunized were selected for the study.

This is an observational study. For all the children who had not received the full course of immunization (appropriate vaccine doses required to be taken at that age as per National Immunization Schedule), the data regarding the sociodemographic background, immunization status, and reasons for partial and nonimmunization were collected by a personal interview using a prestructured questionnaire after an informed written consent from the mother. The details about the missed dose of bacille calmette guerin (BCG), three doses of Diphtheria, Pertussis, Tetanus (DPT) and Booster, three doses of oral polio vaccine (OPV) and Booster, three doses of Hepatitis B and measles vaccine was noted. The scar of BCG was also checked.

The child was considered as immunized or not based on the information in the immunization card. For those without an immunization card, information from the mother or any other responsible and reliable person in the family stating that the child had been immunized was considered after thorough scrutiny. The child who had completed 1 year of age but not received any vaccine was recorded as nonimmunized, while if received and some of the vaccines were due, this was recorded as partially immunized.

The knowledge of the mothers about routine immunization schedule was assessed with open-ended questionnaire. Data were entered in a spreadsheet and analyzed using Microsoft Excel and EpiInfo.

RESULTS

A total of 303 children between the ages of 1 and 5 years, who visited the hospital for various reasons during the study period, were checked for their immunization status. Among these, 57 (18.8%) children were found to be either partially immunized or nonimmunized and were included in the study. There were 47 (15.5%) partially immunized children and 10 (3.3%) nonimmunized. The sociodemographic characteristics of these children are seen in Table 1.

Table 1: Sociodemographic profiling of study subjects

Variable no. (n = 57) Percent		
Age		
12–24 months	23	40.35
> 24 months	34	59.64
Sex		
Males	36	63.15
Females	21	36.84
Religion		
Hindus	42	73.68
Muslims	15	26.31
Birth order		
1	15	26.31
2	24	42.11
3	12	21.05
≥ 4	6	10.52
Type of family		
Nuclear	30	52.63
Joint	21	36.84
Three generation	6	10.52
Literacy of the mother		
Illiterate	37	64.91
Primary	3	5.26
Secondary	5	8.77
Higher secondary	8	14.04
Graduate	3	5.26
Postgraduate	1	1.75
Occupation of the mother		
Unemployed	36	63.15
Unskilled work	16	28.07
Semi-skilled work	5	8.77
Socio economic status (BG Prasad Classification 2013)		
Class II	16	28.07
Class III	26	45.61
Class IV	14	24.56
Class V	1	1.75

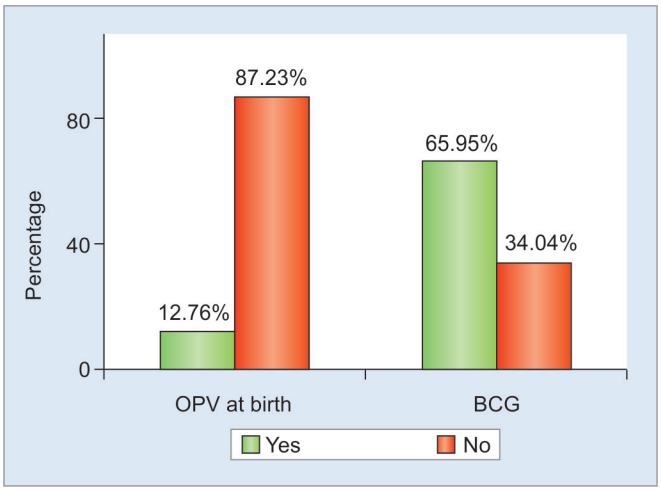
The mean age of the children under study was 27 months, with a minimum age of 12 months and a maximum of 58.3 months. In the present study, 36 (63.15%) children were males. Majority (24 children (42.10%)) of the children were of the second-order birth.

Thirty (52.63%) children were from nuclear families and 21 (36.84%) were from joint families, while the rest (6 (10.52%)) were from three-generation families. Majority (37 (64.91%)) of the mothers were illiterate. Most of the children (40 (70%)) were from socioeconomic class III or IV (BG Prasad classification 2013).

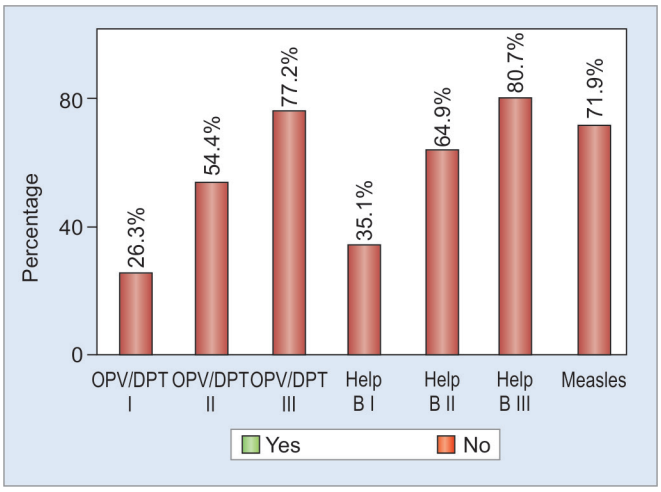
IMMUNIZATION PROFILE OF CHILDREN

Immunization card was present with 27 (47.36%) children, the card was at home in respect of 12 (21.05%), and 18 (31.57%) children did not receive any card.

As seen in Graph 1, among the 57 children in the study, 47 (82.45%) had institutional birth. It was observed that



Graph. 1: Vaccination in children with history of institutional birth



Graph 2: Vaccine and dose wise drop outs among partially and non-immunized children

among the 47 children, only 31 children (65.95%) received BCG vaccine at birth. Only six children (12.76%) received OPV zero dose.

Out of the 57 children in the study, 32 children (56.14%) were residing within 5 km of the hospital during the first year of life. Graph 2 shows that 41(73.7%) children received first dose of DPT, 26 children (45.62%) received the second dose of DPT/OPV, and 13 children (22.81%) received the third dose of DPT/OPV. Similarly, 37 children (64.92%) received the first dose of Hepatitis B vaccination, 20 children (35.08%) received the second dose, and 11 children (19.3%) received the third dose.

Regarding measles vaccination, only 16 children (28.07%) received the vaccine. Among the 41 children who were not immunized against measles, 6 (14.63%) gave a history of suffering from measles.

Among the 57 children, 41 children were eligible for the first booster dose of DPT/OPV. Out of them, only 8 (19.5%) received it.

Reasons for Partial Immunization or Nonimmunization

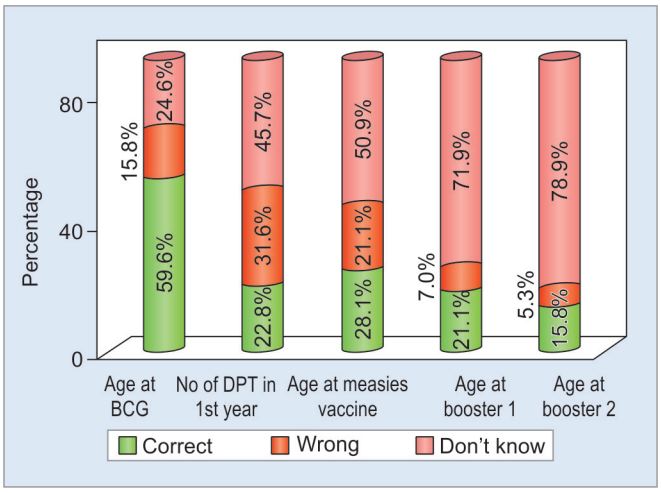
As Table 2 shows, various reasons were given by the mothers for missing the vaccination. It was observed that the major reason for missing the vaccination was the lack of knowledge about vaccination schedule in 21 mothers (36.84%), followed by the reason of being busy with work in 19 mothers (33.33%). The other significant reasons were not knowing the timing of subsequent vaccination and the place or center for vaccination after migrating for work.

Knowledge regarding Routine Immunization Schedule

As seen in Graph 3, knowledge of routine immunization among the mothers of the study group is poor. When

Table 2: Reasons for nonimmunization and partial immunization

	Reasons (includes multiple reasons) no. (n = 57) percent		
I	Lack of information		
	a) Unaware of vaccination schedule	21	36.84
	b) Not informed about subsequent vaccination	12	21.05
	c) Unaware of the days of vaccination	9	15.78
	d) Did not know the center for vaccination	12	21.05
II	Lack of priority		
	a) Busy with work	19	33.33
	b) Lost the card	2	3.50
	c) Forgot about vaccination	4	7.01
	d) Mothers sickness	2	3.50
III	Misinformation		
	a) Child was ill	8	14.03
IV	Dissatisfied		
	a) No faith in vaccination	1	1.70
	b) History of adverse event after vaccination	1	1.70
	c) Husband or Mother-in-law against vaccination	4	7.01
V	Problems in the provision of the services		
	a) Vaccination center is far	1	1.70
	b) Vaccine not available at the centre	0	0
	c) Vaccinator was not present	1	1.70
	d) Payment asked for vaccination	1	1.70



Graph 3: Mother's knowledge of routine immunization schedule

enquired whether vaccine-preventable diseases are severe, 24 mothers (42.10%) said yes, 23 (40.35%) said that they do not know whether they are severe, and 10 mothers (17.54%) said that they are not severe. More than half, that is, 34 mothers (59.64%) knew correctly the timing of BCG vaccine, 9 (15.78%) gave a wrong response, and 14 mothers (24.56%) did not know.

Regarding the number of the DPT/OPV doses given during the first year, 13 mothers (22.80%) knew correctly that it was three doses, 18 mothers (31.57%) gave a wrong response, and 26 mothers (45.67%) did not know. When asked about the age at which measles vaccine should be given to the child, 16 mothers (28.07%) gave a correct response of 9 months, 12 mothers (21.07%) gave a wrong response, and 29 mothers (50.87%) did not know.

About the knowledge regarding the age at first booster dose of DPT/OPV, majority, that is, 41 mothers (71.90%) did not know, 12 mothers (21.05%) knew correctly, and 4 mothers (7.01%) gave a wrong response. About the second booster dose of DPT, 45 mothers (78.94%) did not know when it should be given, 9 mothers (15.78%) knew correctly, and 3 mothers (5.26%) gave a wrong response.

DISCUSSION

Vaccination remains as one of the most cost-effective public health initiative. It is well known that percentage of protection may be reduced in partially immunized child. In the present study, 47 children (15.5%) were partially immunized and 10 children (3.3%) were nonimmunized. Hospital-based studies conducted by Kumar[7] and Agrawal[8] in medical college hospitals reported 44 to 48% partial immunization and 13.8 to 34.5% of nonimmunization respectively. Wadgave[9] reported 25.95% partially immunized and 9.76% of nonimmunized children in a study from urban health center OPD of Akola, Maharashtra. Community-based studies by Kar et al[6] and Angadi et al[10] reported that partially immunized were 15.1 to 62.58% and the nonimmunized were 15.1 to 2.58%. The percentage of the partially immunized and nonimmunized children depends on the design, population, and area of study.

The sociodemographic profile of the children in the present study shows that more than half (59.64%) were above 24 months of age; 63.15% were males. Majority of the children (42.10%) were second-order birth, followed by children of first-order birth (26.31%). Studies by Kumar et al,[7] Kar et al,[6] and Yadav et al[11] reported that female children and higher birth order were less likely to be fully immunized. As the present study was conducted in the hospital, it could have been that male children and lower-birth-order children were paid attention for their sickness and hence more male children are found to be partially immunized or nonimmunized.

Half of the children (52.63%) belonged to a nuclear family and 45.61% belonged to socioeconomic class III as per the BG Prasad classification 2013. Regarding the mothers of these children, 64.91% were illiterate and 63.15% were housewives. Dindod et al[12] reported that literacy of the mother is significantly associated with full immunization. Kar et al[6] and Angadi et al[10] reported that factors, such as mother's literacy, socioeconomic status, and the sex of the child were not significantly associated with immunization.

In the present study, among the 47 children (82.45%) who had institutional births, 31 children (65.95%) received BCG vaccine and only 6 children (12.76%) received OPV zero dose. Though BCG vaccine is given till 1 year of age, 34.05% children had missed the vaccination. Dindod et al[12] reported 87% institutional births and found that there was no association between place of delivery and immunization status. However, Kumar[7] reported that the children delivered in the hospital are more likely to be fully immunized. Sensitizing the mother during pregnancy and childbirth regarding the importance of immunization of the child needs to be addressed to ensure full immunization.

It was observed in this study that 42 children (73.69%) received the first dose of DPT/OPV, but only 13 children (22.81%) received the third dose. Only 16 children (28.07%) received measles vaccine. Out of the 41 children eligible for the first dose of DPT/OPV booster, 33 (80.48%) did not receive. High level of dropout rates is another concern. High levels of initial vaccination rates and low levels of OPV/DPT3 and measles were reported by Manjunath et al[13] from the study in a semi-urban area of Rajasthan. Similarly, a hospital-based study by Agarwal[8] also reported that the immunization status declined with age.

Among the various reasons stated by the mothers in the present study about missing the vaccination, it was found that lack of knowledge about routine immunization schedule (36.84%) and being busy with work (33.33%) were the major reasons. Kar et al[6] reported that child being ill (30.8%) and lack of knowledge about immunization schedule (23.1%) were the main reasons for missing. Devendra[7] reported that lack of knowledge about immunization (30.3%) and perception that vaccine has side effects (28.8%) were the major reasons. Though different studies bring many reasons for missing the vaccination, it is understood that the underlying reason is lack of awareness and motivation regarding immunization.

When the knowledge regarding routine immunization was assessed among the mothers of the children in the present study, it was observed that 34 mothers (59.64%) knew the timing of BCG vaccine. About one-fourth, that is, 13 mothers (22.80%) knew that DPT/OPV is given in

three doses within 1 year of age and 16 mothers (28.07%) knew that measles vaccine was given at 9 months of age. Twelve mothers (21.05%) were aware of the age at which the child should be given the first booster dose of DPT/OPV and 9 mothers (15.78%) knew correctly when the second booster dose of DPT/OPV should be given.

About 42.10% mothers knew that VPDs are severe, 23 mothers (40.35%) were not aware, and 10 mothers (17.54%) said that they are not severe. Though VPDs were perceived to be severe, still they did not completely immunize the child, which shows the importance of filling the gaps in the knowledge about correct age of vaccination and doses of routine immunization. Freeman et al[14] reported that provision of information to mothers regarding when to start the immunization and how often the child should be immunized were the key factors in determining immunization status. Anand et al[15] reported that as factors influencing demand vary greatly by region and context, findings from one population cannot always be extrapolated to another. Thus, simple operational research into knowledge and attitudes should become an essential part of every vaccination campaign.

CONCLUSION

The present study brings to light the poor knowledge regarding routine immunization schedule among the mothers. Lack of motivation among the mothers due to poor knowledge about the immunization schedule is the main cited reason for the partial or nonimmunization of the child. Hence, aggressive campaigning and dissemination of information is crucial for achieving universal immunization coverage.

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