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Community Medicine

A Study on Immunization Coverage and Age Profile of Receiving Different Vaccines under Universal Immunization Programme

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Abstract | **Original Research Article**

Objectives: To find out percentage coverage of different vaccines given under UIP and the age at which these vaccines were administered to children in the age group of 12 -23 months. ***Study design:*** Cross-sectional study. ***Setting:*** Block Hazaratbal, field practice area of Government Medical College Srinagar. *Sample size:* 210 mothers having children in the age group of 12 to 23 months of age. ***Study variables:*** Age at which BCG received, Age at which DPT1/DPT2/DPT3 received, Age at which measles was received. ***Method:*** 30cluster sampling technique. ***Statistical analysis:*** Percentages and Chi-square tests. ***Results:*** Coverage for BCG and DPT1/OPV1 was 99.5%, for DPT2/OPV2 and DPT3/OPV3 it was 99%.Measles coverage among surveyed children was found to be 92.9%.Regarding BCG vaccine only 26.3% received it at birth, 63.2% received the vaccine in the age of 1 to 8 weeks. A total of 71.8% children received DPT1/OPV1 vaccine at the recommended age of 6 to 8 weeks.20.7% received DPT2/OPV2 after 14 weeks. Majority of children 43.3% had received DPT3/OPV3 vaccine after 18 weeks. Majority of children 71.3% received measles vaccine in the age of 9 to 12 months. 6.2% children had received vaccine after 12 months of age.
Keywords: cluster sampling, immunization**.**

INTRODUCTION

The history of immunization dates back to 429 B.C. when Thucydides observed that small pox survivors were immune to re-infection from the disease. This idea latter on led to the process of inoculating disease fluid on to the skin and mucus membrane of healthy individuals for protection – a process called Variolation, which was practiced in India and China in around 1900 AD. BCG was the first immunization started against tuberculosis in 1962 in India that later became the part of Expanded Programme on Immunization (EPI), which was started in 1978. In 1979 oral polio vaccine was included in EPI. The universal immunization programme (UIP) was launched in 1985-86 to extend immunization coverage among the eligible children and to improve the quality of services. It was a carefully planned strategy for systematic district wise expansion of the immunization programme to cover all the districts by 1989-1990[1].

MATERIALS AND METHODS

Study was carried out in block Hazratbal, field practice area of Government Medical College Srinagar. Study population comprised of 210 mothers. Sampling was done using WHO "30 Cluster Sampling technique" [2]. A total of 30 villages/wards were selected using the above technique. 7 eligible children were taken from each village/ward. Enquiry was made from the respondents regarding the child in the age range of 12-23 completed months. Informed consent was taken from the mother. Immunisation card was checked and the age at which vaccine was received was recorded. The process was continued till the desired number of children was obtained. All the data thus collected was compiled and tabulated in the form of contingency tables and analysis was done using appropriate statistical technique which included Chi-square test to find the variables that came significant.

RESULTS

Table-1: Characteristics of mothers of surveyed children 12-23 month of age

Characteristic		n	%
Age	< 20	20	9.5
	20 to 24	79	37.6
	25 to 29	70	33.3
	30 to 34	40	19.0
	35 and above	1	0.5
Literature Status	Literate	72	34.3
	Illiterate	138	65.7
Occupation	Household	181	86.2
	Working	29	13.8
Type of Family	Nuclear	58	27.6
	Joint	152	72.4

Table 2 shows background characteristics of mothers of surveyed children. The mean age of mothers was 25.1 yrs. Majority of mothers 37.6% were in the age group of 20-24 yrs and only 0.5% were 35yrs and above. 65.7% mothers were illiterate and only 34.3% literate.86.2% mothers were engaged in domestic work and 13.8% were doing paid work. 72.4% belonged to joint families and 27.6% mothers belonged to nuclear families.

Table-2: Distribution of surveyed children as per age (weeks) of Receiving BCG vaccine

Gender	At Birth	1 to 8 weeks	> 8 weeks	Age not known	Total
Male	25 (23.1)	77 (71.3)	3 (2.8)	3 (2.8)	108
Female	30 (29.7)	55 (54.5)	9 (8.9)	7 (6.9)	101
Total	55 (26.3)	132 (63.2)	12 (5.7)	10 (4.8)	209

Table 3 depicts distribution of surveyed children as per their age of receiving BCG vaccine. Out of 209 children who received this vaccine, only 26.3% were immunized with it at birth. Majority of children 63.2% received the vaccine in the age of 1 to 8 weeks.5.7% children received it after 8 weeks. In 4.8% children age of receiving BCG vaccine was not known.

Table-3: Distribution of Surveyed children as per age (weeks) of Receiving DPT1/OPV1 vaccine

Gender	6to 8 wks	8 to 10wks	> 10wks	Age not known	Total
Male	83 (76.9)	11 (10.2)	10 (9.3)	4 (3.7)	108
Female	67 (66.3)	13 (12.9)	13 (12.9)	8 (7.9)	101
Total	150 71.8)	24 (11.5)	23 (11.0)	12 (5.7)	209

Table 4 gives sex wise distribution of surveyed children as per age in (weeks) of receiving DPT1/OPV1 vaccine. Out of total 209 children who had received DPT1/OPV1 vaccine, a total of 71.8%children received the vaccine at the recommended age of 6 to 8 weeks. 76.9% male children and 66.3% female children had received the vaccine at the age of 6 to 8 wks. 11.0% children received it after 10 wks. In 5.7% surveyed children age of receiving measles vaccine was not known.

Table-4: Sex wise distribution of surveyed children as per age (weeks) of receiving DPT2/OPV2 vaccine

Gender	10 to 12 wks	12to 14 wks	> 14 wks	Age not known	Total
Male	59 (55.1)	27 (25.2)	17 (15.9)	4 (3.7)	107
Female	43 (42.6)	24 (23.8)	26 (25.7)	8 (7.9)	101
Total	102 (49.0)	51 (24.5)	43 (20.7)	12 (5.8)	208

Table 5 gives distribution of surveyed children as per age (wks) of receiving DPT2/OPV2 vaccine. Among 208 surveyed children 55.1% male and 42.6% female and a total of 49.0% children received the vaccine at recommended age of 10 to 12 wks. 24.5% received it at the age of 12 to 14 wks and 20.7% received it after 14 weeks. In 5.8% children age of receiving DPT2/OPV2 was not known.

Table-5: Distribution of surveyed children as per age (wks) of receiving DPT3/OPV3 vaccine

Gender	14 to 16 wks	16 to 18 wks	> 18 wks	Age not Known	Total
Male	42 (39.3)	14 (13.1)	47 (43.9)	4 (3.7)	107
Female	30 (29.7)	20 (19.8)	43 (42.6)	8 (7.9)	101
Total	72 (34.6)	34 (16.3)	90 (43.3)	12 (5.8)	208

On analyzing age of receiving DPT3/OPV3 vaccine as per sex of surveyed children it was found that 39.3% males and 29.7% females and a total of 34.6 % children received the vaccine at the recommended age of 14 to 16 wks. Majority of children 43.3% had received this vaccine after 18 weeks and in 5.8% children age of receiving this vaccine was not known.

Table-6: Distribution of surveyed children as per age (months) of receiving measles vaccine

Gender	6 to 9mth	9 to 12mth	≥ 12mth	Age not known	Total
Male	16 (16.5)	69 (71.1)	9 (9.3)	3 (3.1)	97
Female	18 (18.4)	70 (71.4)	3 (3.1)	7 (7.1)	98
Total	34 (17.4)	139 (71.3)	12 (6.2)	10 (5.1)	195

Table 6 depicts distribution of surveyed children as per age (months) of receiving measles vaccine. Out of 195 surveyed children who had received this vaccine 17.4% received it in the age of 6 to 9 months. Majority of children 71.3% received it in the age of 9 to 12 months. 6.2% children had received vaccine after 12 months of age. In 5.1% children age of receiving measles vaccine was not known.

DISCUSSION

In the present study BCG coverage was 99.5%.This observation corresponds to the observation of Punith K *et al.* [3] who in their study on evaluation of primary immunization of infants under UIP in an urban area of Bangalore city found BCG coverage of 97.7% which is similar to our study.In the present study, the age of receiving BCG ranged from 0 day to 180 days. Only 26.3% received BCG at birth (0 days), 63.2% received BCG within 1 to 8 weeks and 5.7% infants received it after 8 weeks. In 4.8% children information about age of receiving BCG was not available. BCG scar was present in 91.9% children. Tapare VS *et al.* [4] in his study in an urban community of Miraj reported median age for receiving BCG vaccine to be 6 days. (Range 1-200 days). 86.25% children received BCG within 8 weeks after birth. Of the children vaccinated with BCG, 87.50% developed BCG scar. DPT and polio vaccination is generally given at the same time as part of routine immunization programme therefore it is not surprising that coverage rates for polio and DPT are similar. In the present study DPT1/OPV1 coverage was about 99.5%, DPT2/OPV2 was 99% and DPT3/OPV3 was 99%. Nair and Varughese *et al.* [5] carried out study on coverage evaluation of immunization under UIP in Trivandrum and observed that the coverage of DPT1 was 98.6%, DPT2 was 91.6% and DPT3 was 86.7%. Kokhar A *et al.* [6] documented DPT1 coverage of 90.3%, DPT2 coverage of 88.9% and OPV2 coverage of 90.3%. Lal S *et al.* [7] reported that coverage for DPT-3, OPV-3 was 97.8% and 97.2% respectively which is similar to our study findings. The reason for high coverage is explained by the fact that Hazratbal Block is the field practice area of Department of Community Medicine and lot of emphasis is laid on effective implementation of the immunization programme. The median age of receiving DPT1/OPV1in the present study was 7 wks and ranged from 3rd weeks to 24th weeks. 71.8% children received DPT1/OPV1 in recommended age of 6 to 8 weeks and 11.0% children received it after 10 wks. With regards to DPT2/OPV2 49% children received this vaccine at the age of 10 to 12 weeks and 24.5 % received it at 12 to 14 wks. 20.7% received it after 14 weeks of age. Studying DPT3/OPV3 dose, 34.6% children received vaccine at the age of 14 to 16 wks and majority of children (43.3%) received the vaccine after 18 wks of age. Information regarding age of administration of different DPT/OPV vaccines was not available in 5.8% children. Measles in a healthy child is a negligible disease but mortality due to measles is 400 times greater in an undernourished population and the spread and severity of the epidemic is directly linked to overcrowding. The overall measles coverage in the present study was 92.2%.Although appreciable coverage levels were observed for BCG, OPV (3dose) DPT (3doses) slightly lower coverage levels for measles vaccine could be explained by a gap of 6 months between DPT-3 and measles, wherein parents of infants eligible for immunization lose contact with health staff which leads to negligence on the part of the parents. Almost similar observations were reported by Nair and Varughese [5,8] in their study in semi urban area in Kerala where measles coverage was 90.6%.

These findings stress the need of team work of our peripheral health workers (ANM, ASHA, AWW) for continual sensitization of parents regarding importance of timely vaccination of their children. Constant monitoring with supportive supervision and reorientation training of the peripheral workers needs to be done so that they can effectively motivate beneficiaries to receive the vaccine at the recommended age.

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