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Original Research Article

Immunization status of 24-35 months old children in urban slums of Ahmedabad, Gujarat, India: a cross sectional study

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ABSTRACT

Background: Immunization is one of the most cost effective methods of preventing childhood diseases and needs to be sustained with higher coverage for desired benefits. Objective of the study was to assess immunization coverage in children of 24-35 months of age group in urban slums of Ahmedabad city, India.
Methods: Using the purposive sampling method, a cross sectional community based study was conducted in urban slum area (Vadaj area) of Ahmedabad city during July-November 2014. All 214 children of 24-35 months age group of the area were included after taking verbal informed consent of their parents or guardians. Vaccination status of the children was verified using the Immunization card. In conditions where the Immunization card was not available, the mother/parents were asked about the site of vaccinations to confirm the vaccines being given. Analysis of study was done by using appropriate statistical software.
Results: Total 936 households were surveyed. There were 214 children in the 24-35 months age group. Mamta card or immunization record was available with 145 (73.6%) mothers of 24-35 months age group of children. Vaccination coverage in the age group of 24-35 months old children was maximum for BCG and OPV first dose (96.7%) followed by Pentavalent first dose (95.8%) and OPV second dose (95.3%). Overall, 75.7% of the children in the 24-35 months age group were completely immunized while only 6 children were unimmunized. Dropout rate percentage for Pentavalent 1st dose to pentavalent 3rd dose was 3.44% while for BCG to second dose of measles was 19.75%.
Conclusions: Complete immunization coverage was 75.7% which was better than the national surveys still the causes for no/ partial vaccinations need to be addressed.

Keywords: Coverage, Immunization, Immunization status, 24-35 months, Vaccination

INTRODUCTION

Immunization is one of the most cost effective methods of preventing childhood diseases and needs to be sustained with higher coverage for desired benefits.[1,2] With the implementation of Universal Immunization Programme (UIP), significant achievements have been made in preventing and controlling the vaccine preventable diseases (VPDs) namely tuberculosis, diphtheria, tetanus, pertussis, polio, hepatitis b, pneumonia, meningitis and measles.[3] The key to improve the status of complete immunization coverage is to monitor the drop outs at all stages of vaccination before the completion of the full course of immunization. The current scenario depicts that immunization coverage has been steadily increasing but the average level remains far

less than the desired. Still only 44 per cent of the infants in India are fully immunized (National Family Health Survey-III) which is much less than the desired goal of achieving 85 per cent coverage.[4] As per district level household survey-3 (DLHS-3), immunization coverage data of children aged 12-23 months shows that a little over half (54.8 percent) of children received full immunization comprising BCG, three doses of DPT, three doses of Polio (excluding Polio 0) and measles. Only 6.7 percent of children had not received any vaccine.[5]

To improve the immunization coverage, Government of India has also launched Mission Indradhanush closely monitored by Prime Minister Office. E-Mamta based tracking of children is being done by Government of Gujarat along with revision of routine immunization (RI) Micro plans to cover 100% areas, expansion of cold chain points, Survey by Family Health Welfare, concurrent monitoring of Routine Immunization (RI), Mission Indradhanush (MI) to achieve maximum coverage.

Because of increased accessibility of health care services in urban areas, an increase was expected in the utilization of the services; however, studies reveal low utilization of health care services including MCH services by different segments of the society.[6] Slums are high-risk areas leading to a high rate of disease transmission and about 25% of the Indian urban poor currently live in slums. Maternal and child health indicators among slum people show that their health is 2-3 times worse than in urban areas.[7] This study was formulated against this background with an objective of assessing the immunization coverage in children of 24-35 months of age group in urban slums of Ahmedabad city, India.

METHODS

Using the purposive sampling method, a cross sectional community based study was conducted in urban slum area (Vadaj area) of Ahmedabad, India during July-November 2014. An effort was made to collect data for maximum number of children during the available time period and all 214 children of 24-35 months age group of the area were included after taking verbal informed consent of their parents or guardians. Performa was prepared on the basis of government immunization card (Mamta card) having information regarding birth weight, date of birth, gender of baby, birth registration, growth chart and their vaccination status. Details of source of vaccination and reasons for partial immunization/non immunization were also included in Performa. As the Performa was specially prepared for the study, field testing was done and necessary modifications were applied to make it standardized and uniform. Vaccination status of the children was verified using the Mamta card. In conditions where the Mamta card was not available, the mother/parents were asked about the site of vaccinations and the age of vaccination to confirm the vaccines being given. Analysis of study was done by using appropriate statistical software applying suitable statistical tests.

RESULTS

Total 936 households and 4589 persons were surveyed. The average family size was 4.15 per household. There were a total 2745 males and 2715 females in the area surveyed. There were 111 children in the age group of 0-11 months, 114 children in the 12-23 months age group and 214 children in the 24-35 months age group. There were 116 females who had delivered in the past one year, 405 children less than 3 years and 511 children less than five years of age in the area surveyed. Number of Adolescents (10-19 years) and women in the reproductive age group were 456 and 1643 respectively (Table 1).

Table 1: Demographic profile of household studied.

Parameter	Number
Total number of the households studied	936
Total number of persons in the households	4589
Total number of males in the families	2745
Total number of females in the families	2715
Total number of children 0-11 months of age	111
Total number of children 12-23 months of age	114
Total number of children 24-35 months of age	214
Total number of children under 3 years of age	405
Total number of children under 5 years of age	511
Total number of women who delivered in last one year	116
Total number of adolescents (10-19 years) of age	456
Total women in reproductive age (15-49 years) of age	1643
Average family size	4.15

Occupation was one of the variables included in the household forms. Labour work was the most common occupation (51.9%), while almost one-fourth of the females were housewives (25.2%). This was followed by fixed jobs and household business being done by the people (4.6%). One fifth of the population surveyed was studying.

Mamta card or immunization record was available with 145 (67.8%) mothers of 24-35 months age group of children. Out of them only 2 (0.9%) mothers did not know about the card or immunization record of their children. Vaccination coverage in the age group of 24-35 months old children was maximum for BCG and OPV first dose (96.7%) followed by pentavalent first dose (95.8%) and OPV second dose (95.3%). It was 93.5% for the measles first dose while for the second dose of

measles it was 77.6%. Measles second dose was not mentioned (as a box) in Mamta cards and could have been missed being mentioned. Almost three fourths of the children in this age group (24-35 months) were completely vaccinated, while 21.5% were not completely vaccinated and six (2.8%) were unimmunized (Table 2).

Table 2: Vaccination status of children in 24-35 months of age (N = 214).

Indicator	Number	Percentage
BCG	207	96.7
Pentavalent/ DPT and Hep B1st dose	205	95.8
Pentavalent/ DPT Hep B1st 2nd dose	203	94.9
Pentavalent/ DPT Hep B1st 3rd dose	198	92.5
OPV 1st dose	207	96.7
OPV 2nd dose	204	95.3
OPV 3rd dose	201	93.9
Measles 1st dose	200	93.5
DPT Booster	182	85
OPV Booster	181	84.6
Measles 2nd dose	166	77.6
Completely immunized	162	75.7
Not completely immunized	46	21.5
Unimmunized	06	02.8

Reasons for incomplete or non-immunization were asked to the guardians (mothers/parents) of the children who were not completely vaccinated or not vaccinated at all. Most of them were not aware of the missed dose (42.3%) (more so for the measles second dose). This was followed by not being contacted to come for vaccination (7 responses), session time not being convenient (5 responses), no perceived need, no one to take the child for vaccination and fear of adverse events following immunization (3 responses each). Other reasons included no time to take the child, parents unavailable to take the child for vaccination and not having Mamta card issued after migration. (Table 3).

Dropout rate percentage for pentavalent 1st dose to Pentavalent 3rd dose was 3.44% while for BCG to second dose of measles was 19.75%. (Table 4).

Table 3: Reasons for not completely/non-immunization among 24-35 months of age (N = 52).

Reason	Number	Percentage
Not aware where to go	2	3.85
No perceived need	3	5.77
Session time not convenient	5	9.62
No one to take the child	3	5.77
Child sick	1	01.9
Fear of AEFI	3	5.77
No AD syringe	0	00
No vaccine	0	00
Travelling away	2	3.85
Session not held	0	00
No one contacted	7	13.46
Adverse media reports	0	00
Resistant family	1	01.9
Vaccinator behaviour unfriendly	0	00
Not aware about missed dose	22	42.31
Other (specify)	11	21.15

Table 4: Vaccine drop-out rates (24-35 months).

Vaccine	Coverage of first antigen	Coverage of last antigen	Drop-out rate	Drop-out rate proportion
Penta1 to penta3	95.8	92.5	3.3	3.44
Penta1 to measles	95.8	93.5	3.2	2.4
Highest coverage vaccine to lowest coverage vaccine	96.7 (BCG)	77.6 (Measles 2)	19.1	19.75

DISCUSSION

Immunization card is one of the important tools for assessing immunization status and as a documentary record. In our study Mamta card or immunization record was available with 145 (67.8%) mothers of 24-35 months age group of children. Similar low availability of vaccination card was seen in NFHS3 Gujarat and DLHS 3 Gujarat.[4,5] While in coverage evaluation survey (CES) 2009, availability was more than the previous surveys (47.1 and 53.5 in rural and urban Gujarat respectively). However, preservation of vaccination card is still very poor and needs to be emphasized as it is an important document which can affect the calculation of status of immunization of a child.[8]

In our study, 75.7% of the children in the 24-35 months age group were completely immunized (all vaccinations given as per age), 21.8% of the children were partially immunized (at least one of the vaccines given) while 2.8% were unimmunized. As per NFHS 3 Gujarat.[4]

54.7% were fully immunized and 3.6% were non immunized in urban area. While, as per DLHS 3 Gujarat, percentages of fully immunized were 66.8 % and of non-immunized were 3.6 in urban area.[5] The CES 2009 recorded complete vaccination 50.0% in urban infants of Gujarat while no vaccination in 2.9% of the infants. Similar high coverage of full immunization (84% - 93%) has been reported by other studies also.[8-12]

In our study dropout rate percentage for pentavalent 1st dose to pentavalent third dose was 3.44% while for Pentavalent first dose to measles was 2.4%. The highest covered vaccine was BCG (96.7%) while lowest covered vaccine was Measles second dose (77.6%) The dropout rate percentage was 14.1 %. As per NFHS-3 Gujarat, DLHS-3 Gujarat and CES 2009 India, DPT1 - DPT3 Dropout rates were found gradually decreasing in rural (26.7% in 2005 - 06 to 15.0 in 2009) and urban (22.8% in 2005 - 06 to 9.6% in 2009).[4,5,8] In our study good coverage of Pentavalent indicated good service utilization by people of area studied. In our study pentavalent 1st dose to pentavalent third dose was less than 10% (4.4%) also showed good service utilization indicating good health care infrastructure/resources with good demand in the area studied.

Most common reason for partial/non-immunization was that most of them were not aware of the missed dose (42.3%) (more so for the measles second dose). This was followed by not being contacted to come for vaccination (7 responses), session time not being convenient (5 responses), no perceived need, no one to take the child for vaccination and fear of adverse events following immunization (3 responses each). Similar reasons were seen for non-immunization in a study in Banglore by Punith et al where unawareness of the need of immunization or need to return for 2nd or 3rd dose, lack of information about the place of immunization, fear of side reaction were found.[11] Vohra R et al in Lucknow showed that major reasons for non-acceptance/ discontinuation of immunization were lack of faith in immunization (21%), child being ill and hence not brought (13.68%) etc.[13]

However, study done in single area of Ahmedabad city limits us to generalize the results. There is definitely a need for well-planned, large-scale studies using standardized methodologies to estimate coverage of immunization. Multi indicator cluster survey (MICS) by 30 cluster sampling technique proposed by World Health Organization is gold standard method for rapid assessment of coverage evaluation. When planning these studies it is necessary to ensure that importance is given to accurate evaluation of immunization status and representation of the different regions of Gujarat, India.

CONCLUSION

Overall complete immunization coverage in the study was 75.7% which was above the national average (NFHS or DLHS). Improvement should focus on bottlenecks by reducing the dropout rate from pentavalent 1st dose to pentavalent 3rd dose and improving coverage of measles second dose (and also Vitamin A). The remaining deficiency may be overcome by generating awareness among the community by holding mother's meetings and extensive social behavior change communication programs, inviting opinions and suggestions from them, and enhancing community participation.

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