Original Research Paper

Medicine

IMMUNIZATION DROP OUT RATES OF DIFFERENT VACCINES IN URBAN AREA OF JHANSI CITY

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ABSTRACT

Background- Immunization against diseases is one of the most important public health interventions with cost effective means to preventing childhood morbidity, mortality and disability. The objective was to determine the coverage evaluation different vaccines and the dropout rates of immunization in an urban area of Jhansi city.

Methods- A cross-sectional cluster survey was conducted among 245 children for a period of 6 months from September 2016 to March 2017. Data was collected using semi- structured questionnaire through face-to-face interviews. The mothers/ caregivers were interviewed, extracted information from the child immunization. Data was collected & appropriate statistical tests were applied for analysis.

Results- 62% were boys and 38% were girls whose mother gave details about there immunisation. 69% of children were fully immunised at one year of age and above while 24% were partially immunized. The drop-out rate of BCG to Measles was 26% while that for DPT1 to DPT3 was 20% & that for DPT 1 to Measles was 21.6%.

Conclusion- Drop out rate is very high as compared to WHO drop out rate. Health education and orientation of service providers is urgently needed.

Introduction-

Immunization is the most effective means of combating communicable diseases [1]. It is proven as one of the most cost effective health interventions worldwide, through which a number of childhood diseases have been prevented or eradicated [2]. Immunization is one of the most effective health investments, with proven strategies that make it accessible to even the most hard-to-reach and vulnerable populations. The Government of India on 19th November 1985 renamed EPI programme as "Universal Immunization Programme (UIP)" after modifying the schedule. This programme was expanded to entire country and measles vaccine was added in the schedule of this programme (World Health Organization, 1978). Strategy under this programme was [3]:

1. 100% coverage of expectant mothers with two doses of tetanus toxoid.
2. At least 85% coverage of infants with 3 doses of DPT and OPV and one dose each of BCG and measles before the child celebrates his/her first birthday.
3. In 1992 it was recommended to cover 100% infants under Child Survival and Safe Motherhood Programme (CSSM) (World Health Organization, 1978).

Immunization significantly lowers the morbidity and mortality rates in children by protecting them from Vaccine Preventable Diseases (VPDs) (Ministry of Health and Family Welfare, 2012). Immunization is a proven tool for controlling and eliminating life-threatening infectious diseases and is estimated to avert between 2 and 3 million deaths each year in all age groups from diphtheria, tetanus, pertussis (whooping cough) and measles (World Health Organization, 2012). Thus, many children are still susceptible to the EPI targeted diseases [3, 4]. In 2011, about 107 million infants (83%) world- wide received the third dose of Diphtheria-Pertussis- Tetanus (DPT) vaccine. Approximately, 22.4 million children failed (dropout) to receive the DPT3 dose leaving many children susceptible to VPDs and death [5,6].

Objectives

To find out the coverage evaluation different vaccines and To determine the dropout rates of immunization in an urban area of Jhansi city.

Materials and Methods

The study was conducted in 30 colonies (total 163 colonies) of urban area of JHANSI city having population of 3, 86,807 (as on 31st March 2017). The population of the study area is served by MLBMC, Jhansi, one District hospital and 4 urban health centres running under Department of Community Medicine. The 30 clusters were selected using cluster identification form through the probability proportionate to size simple random method. Twenty (20) households from each of the 30 clusters were sampled. The starting point was selected as the first household for each cluster and then continued to the next nearest household until 20 eligible children were obtained. Door-to-door visits and face-to-face interviews were conducted with mothers/caregivers who had children 12–23 month. 245 children in the age group of 12-23 mothers were studied from 30 colonies of Jhansi city. A modified semi-structured questionnaire was used for the data collection. The questionnaire included items on socio-demographic characteristics and infant immunization information. After informed consent was received, the mothers/caregivers of selected children participated in a structured interview. Information on immunization coverage was obtained in two ways: immunization cards and mothers'/caregivers' verbal reports. Secondary data on routine immunization coverage was also extracted from registers and annual reports at the MLB medical college.

Data processing and Analysis-

Data was entered, cleaned and analyzed using Statistical Package for Social Sciences (SPSS) version 17.0. Descriptive statistics such as frequencies and percentages were produced and presented in tabular form. Moreover, dropout rates between two vaccines doses in sequence were computed using the formula: Dropout rate = [(coverage of initial vaccine dose – coverage of ending vaccine dose) ÷ (coverage of initial vaccine dose) × 100], e.g. (BCG-Measles)/ (BCG)*100.

Results

Table 1- Sex wise distribution of children (n=245)

Sex	Frequency (%)
Boys	155 (62)
Girls	90 (38)

Table 1 shows out of 245 children studied, 62% were boys and 38% were girls whose mother gave details about there immunisation.

Table 2- Immunisation status among study age group (n=245)

Immunisation status	Number (%)
Fully immunised	169 (69)
Partially immunised	60 (24)
Not immunised	16 (7)

Table 2 shows the immunisation status of the children in which 69% of children were fully immunised at one year of age and above while 24% were partially immunized and the remaining 7% received no vaccine. Fully immunized -Child received 1 dose of Bacillus Calmette-Guerin (BCG), 4 doses of Oral Polio Vaccine (OPV), 3 doses of DPT and 1 dose of Measles is said to be fully immunized. Partially immunized -Child missed some of the prescribed vaccines doses considered to protect against vaccine preventable diseases. Not immunized -Child received none of the prescribed vaccines doses considered to protect against vaccine preventable diseases.

Table 3- Distribution of children according to vaccine coverage (n=245)

Vaccine	No. of children	Coverage percentage
BCG	215	87.7
OPV1	225	91.8
OPV2	225	91.8
OPV3	178	72.6
DPT1	203	82.8
DPT2	201	82
DPT3	162	66.1
MEASELS	159	64.8

Table 3 shows the vaccine antigen coverage of children for different vaccines. OPV1/OPV2 had the highest coverage i.e 91.8% whereas that for DPT1/DPT2, BCG and DPT3/OPV3 was 82.8%, 87.7%, 66% & 72.6% respectively. The lowest coverage (64.8%) was observed for measles vaccine immunization.

Table 4- Drop out rates of different vaccine

Vaccine	Drop out rate(%)
BCG to MEASELS	26%
DPT1 to DPT3	20%
DPT1 to MEASELS	21.6%

Table 4 shows drop-out rate for different vaccines among study subjects. The drop-out rate of BCG to Measles was 26% while that for DPT1 to DPT3 was 20% & that for DPT 1 to Measles was 21.6%.

Discussion

This study was carried out in 30 colonies in urban area of Jhansi city. A total of 245 children of age group 12-23 months for the present study were studied. The coverage for various vaccines in the study area is quite good as compared to national figures (NFHS- 4), data from state of world children for 2009 and also some of the studies undertaken in the area however, it is still less than the national targets. BCG coverage in the present study was found to be less than OPV1/2, this might be due to improper recall by the mothers as only mothers had immunization cards. In the current study, coverage for measles immunization (64.8%) was low (85.4%) as compared to that observed by Singh et al. (2010) [7]. Yadav et al., (2006) [8]. Low coverage of measles vaccine compared to other vaccines reflects that special campaign needs to be organized for measles. Another reason might be that health workers did not assess proper history and failed to give proper immunization to the beneficiaries. It stresses upon the importance of having immunization card with both the mother and the health worker. Another main concern in our study was immunization drop-outs which was 26% for BCG to Measles and 20% for DPT1to DPT3, it was more compared to CES-2009 where it was 15 % & 13 % respectively. The drop-out rate indicates the system's inability to hold on to child once registered. The drop- out could be due to migrant nature of urban population. Datar et al., (2007) [9] also found that the effectiveness of community health workers in extending immunization coverage was low. Anecdotal and case study evidences suggest that the current job requirement of the health workers may not be optimally allocating them time for the goal of achieving immunization coverage. At the same time providing better training and monitoring of the community health workers has been identified as an important area for improvement. Bhanwar et al (2013) [10] reported in his study DPT1/OPV1 had the highest coverage i.e 96.2% whereas that for DPT2/OPV2, BCG and DPT3/OPV3 was 94.4%, 93.9% & 93% respectively. The lowest coverage (85.4%) was observed for measles vaccine immunization. The drop-out rate of BCG to Measles was 9% while that for DPT1 to DPT3 was 3.4% & that for DPT 1 to Measles was 7.2 % .

Conclusion-

To reach the goal of 100% coverage of immunisation in India, the policy managers should implement the following:

- Enhance coverage by organizing more sub-national immunization days (SNIDs).
- Compulsory possession of immunization cards for school admission can be taken as a positive approach towards increasing the level of awareness.
- VPD & AEFI surveillance should be made mandatory and should be carried out under the direct supervision of District Immunization Officer (DIO)
- Some supply side facility enhancement can also improve demand for vaccination.
- Higher budgetary allocation for preventive care might improve immunization coverage but only in the short run.

Conflict of interest- none declared.

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