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Original Article

EPI Coverage among Under 5 Children Attending Pediatric Department of Dhaka Medical College Hospital

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Abstract :

This cross-sectional study was carried out among 1000 children between 10 months to 5 years of age during November 2004 to February 2005 attended in the department of pediatrics, Dhaka Medical College Hospital (DMCH) with different childhood illness. Aim of study was to know the Immunization (EPI) coverage, dropout rate and factors influencing dropout. According to parent's statement, 82.5% of the children were fully, 16.1% were partially and 1.4% were non-immunized. Specific immunization coverage revealed that, 97.3% were immunized with BCG, 96.7% with DPT1/OPV1, 92.9% with DPT2/OPV2, 91% with DPT3/OPV3 & 84% with measles vaccine. Among the BCG vaccinated children 91.77% had BCG scar. Drop out of DPT1-DPT3 was 5.78% & DPT1- measles was 12.88%. The main reason found for non-immunization were lack of faith in programme (57.1%), lack of awareness (21.4%), and fear of side effects (21.4%), whereas lack of awareness (41.6%) and illness of child (32.9%) played role behind drop out. Drop out cases were found to be associated with female sex, parent's illiteracy, higher number of children in the family and father's occupation ($p<0.001$), whereas mothers occupation had no independent effect on coverage ($p>0.05$). The study findings suggested that despite the effort taken by Government and NGOs to expand coverage, dropout rates are unacceptably high. To combat this challenge counseling and motivation on EPI, improvement of information system, health education and training of health workers are required.

Key words : EPI, Vaccination coverage, Dropout rate, Factors responsible for dropout.

Introduction :

Of the various dimension of primary health care, universal child immunization is the corner stone to improve child survival[1]. Despite of eradication of polio, mortality and morbidity from measles, neonatal tetanus and other vaccine preventable diseases are still high. EPI is one of the well organized, excellently documented primary health care services in Bangladesh and is the second glorious programme of our health sector after successful small pox eradication programme. EPI was launched on 7th April 1979 in Bangladesh. In 1985 Government of Bangladesh, WHO and UNICEF named EPI programme as universal child immunization programme with a target of 85% coverage by 1990 and 100% by the year 2000AD[2]. Despite government's strong commitment, this goal is not yet achieved.

According to national coverage evaluation survey 2003, BCG coverage was 95%, DPT3 coverage 83% and measles coverage 75%[3]. It is the time demand to evaluate the present situation of vaccination and to find out the pitfalls. As DMCH is the largest tertiary level hospital in this country and all level of people from various parts of the country are receiving healthcare from this hospital, a study conducted here could reflect the existing vaccination situation of the country. Therefore this study was undertaken to determine immunization coverage (crude)and dropout status of under 5 children attending DMCH, dropout rates and factors responsible for dropping out from vaccination.

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Materials and methods :

This descriptive type of cross-sectional study was carried out from 1st November 2004 to 28th February 2005 in both outpatient and inpatient paediatric department of DMCH. A total of 1000 children, in between ages from 10 month to 5 years were included and the cases were selected randomly. Immunization status were defined as follows, Fully immunized-Children who had taken all the doses of DPT, OPV, BCG and measles vaccine; Partially immunized-Children who had taken one or more vaccine but not all the four vaccine with proper doses; Non-immunized-Children who had not taken any vaccine. Child who started vaccination but failed to continue the required immunization series under EPI program was leveled as dropout. In other words, the children who failed to complete their full schedule of DPT, OPV, BCG and measles vaccination are called drop out. Drop out for DPT1-DPT3 gives the proportion of the children receiving DPT1, who failed to receive DPT3. Dropout rate for DPT1-measles gives the proportion of the children receiving DPT1, who failed to receive the measles vaccine[4]. Coverage was defined as access of children of target population by immunization team where at least 1st dose of vaccine given[5]. Valid coverage was assessed in terms of the valid dose of any antigen administered to a child by age 1.Valid coverage is calculated from vaccination recorded by card and history[6]. A valid dose is a recommended dose of an antigen administered at the recommended age and/or interval. An invalid dose is the dose given before the recommended age or interval[4]. Crude coverage was assessed in terms of the dose of any antigen both valid and invalid, that a child received regardless of whether he/she received them by or after age. Crude coverage rates are considered as measures of levels of access to vaccination services[4]. It is calculated from card or from history[6]. Missed opportunity refers to a visit of a child to a vaccination center for a dose that he received. However at that time he was also eligible for another dose of antigen that he did not receive. If the missed dose was provided at a later date, it is a corrected missed opportunity. If not, it is an uncorrected missed opportunity[6]. A pretested questionnaire was used to collect the information related to this study. Data were collected from attendants of under 5 children with face to face interview. After the end of data collection editing and coding of data was done. After the entry of data into the computer for analysis, descriptive statistics was employed using software SPSS package for data analysis. Chi-square test at 5% level of significance was attempted to find out the difference of significance where needed.

Results :

The study results revealed that out of 1000 children, 8.4% was ≤1 year and 91.6% more than 1year of age. Mean age of children was 26.33±11.18 months. Regarding sex, 58.2% were male and 41.8% were female with male female ratio about 1.4:1. In 83.5% of the cases, mother participated as respondent. Regarding number of children in the family, in 81.5% of cases it was confined to 3.

Out of 1000 children 82.5% were fully immunized and 16.1% were partially immunized while 1.4% were non-immunized. Coverage regarding different vaccine is shown in Figure-1.

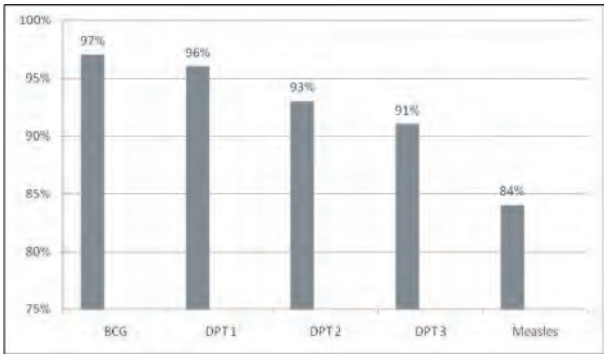

Figure-1: Coverage of different EPI vaccine

Almost all the vaccinated children received EPI-card (98.6%). Although no card was available at the time of interview, 77.1% of the respondents told that they had EPI card at home. Remaining 21.5% told that they had lost their EPI card.

With regard to presence of BCG scar mark, among the BCG vaccinated children, 91.77% of the children had BCG scar and 8.2% had no scar.

Regarding vaccination status of children by age, young children were found more to be partially immunized (21.4%) than others. Regarding vaccination status of children by sex, significant sex differences was observed between fully and partially immunized group (p<.001). Figure 2

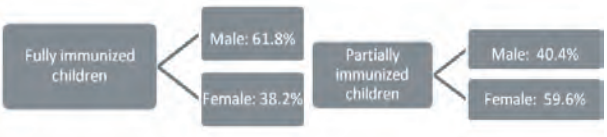

Figure-2: Sex difference among vaccination status

Considering vaccination status in relation to the number of children in the family it was found that families with more than 3 children had lower level of coverage than the families having children confined to 3 (p<.001). Figure 3

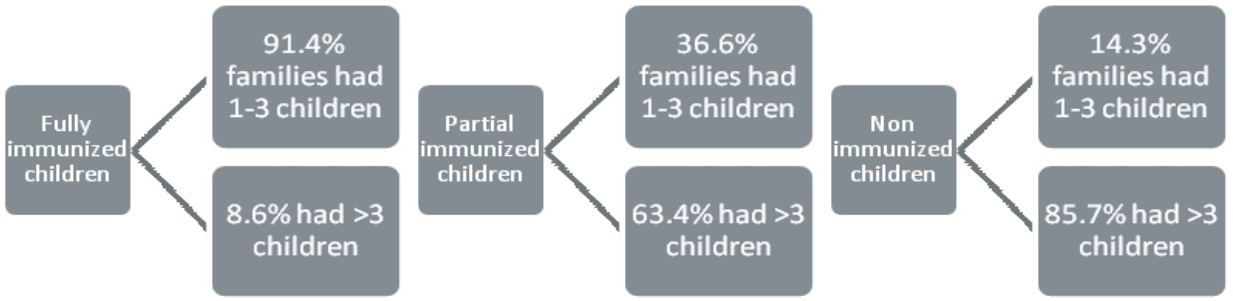

Figure 3: Vaccination coverage in relation to number of children in a familly

It is noted that 29% of the fathers of the fully immunized cases passed SSC &32.3% of their mother was a student of secondary classes. On the other hand this figures were quite low among the partially and non immunized children.

Regarding occupation of father, in partially immunized children 65.2% were day labor and non immunized children 85.7% were day labor. In case of fully immunized children majority of them were engaged in service (66.3%) followed by business(21.1%). Regarding occupation of mother most of them were housewife.

Dropout rate was shown in the Figure-4. Major cause of partial immunization were lack of awareness (41.6%) followed by illness of the child (32.9%). Considering the causes of non-immunization main causes were no faith on immunization (51.1%), lack of awareness (21.4%) and fear of side effects (21.4%).

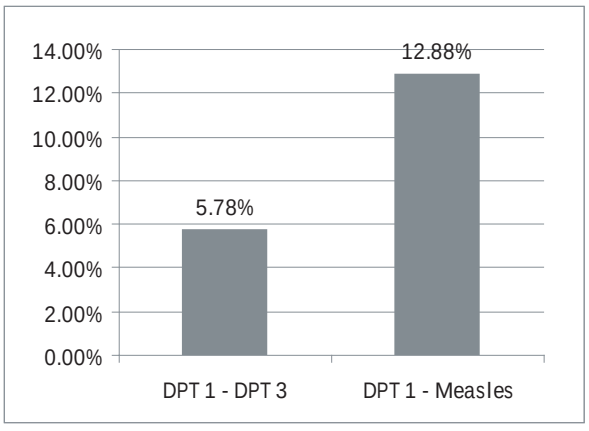

Figure-4: Vaccination Drop out status

Discussion :

Although immunization coverage is progressing rapidly but dropout is an obstacle to achieve the desired goal. So at present we need to evaluate the present situation of vaccination.

It was revealed from the study that 82.5% were fully immunized and 16.1% were partially immunized while 1.4% were non-immunized. This finding differed from study done by Rahman MM in the year 1999 in a selected tribal Community where it was revealed that 58.2% was fully immunized, 26.4% partially immunized and 15.4%non immunized[7]. The difference of findings may be due to difference of study place, population (tribal community)or it may be due to better EPI activities during the intervening period.

Regarding EPI card status, almost all the vaccinated children received EPI card (98.6%). Although no card was available at the time of interview, 77.1% of the respondent told that they had EPI card at home. Remaining 21.5% told that they had lost their EPI card. In contrast to this National Coverage Evaluation Survey (NCES) 2003 revealed that EPI card retention rate was 64%[8]. High retention rate found in the present study may be due to difference of methodology. In NCES2003 card retention rate was confirmed by direct household survey, but in present study it was based on parental statement. The chance of overstatement could not be ruled out.

From the present study it is evident that 97.3% children were immunized with BCG, 96.7% with DPT1/OPV1, 92.9% with DPT2/OPV2, 91% with DPT3/OPV3 and 84% with measles vaccine. The findings of this study has got similarity with the CES 2003 in urban areas[6] where it was found that BCG coverage was 97%, DPT3 & OPV3 coverage was 92%, Measles coverage was 83% and fully immunized was 82%.This is because the present study was conducted in Dhaka Medical College Hospital, most of the patient in outpatient department came from Dhaka city or the area near to the city. Only a few patient admitted in inpatient pediatric department of DMCH came from different parts of the country. But the findings of this study differ from National Coverage Evaluation Survey 2003[8] and 2002[5]. The variation of the result may be due to better EPI activities and community participation. The central finding of the present study was increased coverage of measles 84%, DPT3 & OPV3 91%. This increase could be the

consequence of more awareness and participation of the community. The present study has got similarity with the reported and survey coverage rates in South East Asia Region (SEAR)[9] where BCG coverage rate was 98%, DPT3/OPV3 was 90% and measles coverage rate was 89%.The high measles coverage rate was due to high measles coverage in Srilanka(99%).

Regarding drop-out of vaccination, maximum drop-out was observed in measles which was14.8%.The dropout rate for DPT1 to DPT3 was 5.78% & DPT1 to measles was 12.88%. High drop out of measles may be due to long time interval between DPT3 to measles & lack of motivation during this period. Regarding dropout rate, the present study has got similarity with NCES 2002 in urban areas which revealed that drop out of DPT1-DPT3 was 6.4% & DPT1 to measles was 11.8%.[7]

The present study revealed that "lack of awareness" is one of the important causes of partial and non immunization. This finding is supported by a study conducted in 1998 to evaluate the awareness of the mothers about EPI diseases and vaccines attended at EPI outreach centers[10]. The study was conducted among 75 mothers who attended at EPI outreach centers for immunization of their children. The study revealed that 40% mother knew the name of measles vaccine, 26.6% knew the name of tetanus vaccine, and quite a low percentage of mothers knew the name of other vaccines. Mother who did not know the name of any vaccine was 10.66%. A reasonable number of mother(42.67%)does not have any idea about the contraindication of vaccination. To increase the coverage these factors should be further addressed properly by more community participation, using print and electronic media and using social group.

Conclusion :

After reviewing the findings of this study, it is concluded that more than eighty percent children were fully immunized. Maximum vaccination dropout was observed in measles and majority of the dropout and non immunized children belong to illiterate parents. Similarly, illness of the child and large family sizes were also found more among drop out & non immunized cases. It was also disappointing that immunization coverage rate of female child is far less than male children. It is evident that EPI grass root level personnel do not apply proper technique while giving BCG vaccine to the children because 8.2% of the children were not found to have BCG scar which created doubt on successful vaccination against tuberculosis. From the study it has been observed that considerable progress has been made by Bangladesh EPI. The following steps can be taken to further improve the programme at all levels like, vaccination of children before their first birthday should be ensured; follow-up to detect drop out cases and motivate for completion of dose schedule; it should be communicated properly that illness of the child is not a contraindication for vaccination.

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