Original Article

Reasons for Dropout of EPI Vaccination according to Respondents Knowledge in a Selected Urban Community in Rangpur District

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Abstract:

Background: Immunization is an essential component of primary health care & child survival activities throughout the world. For preventing communicable diseases it is one of the most effective ways. Though EPI program is available with free supply of vaccination at hospital health centers & community level, the utilization of these facilities by parents is unsatisfactory may be due to lack of proper knowledge on immunization. **Objective:** To find out the reasons for dropout of EPI Vaccination in a selected urban area on the basis of knowledge about vaccination. **Methods:** It was a cluster survey. The sample size was 210 and estimated by the EPI cluster sampling technique. From each cluster 7 mothers were included. **Results:** It was observed that 100% percent of the respondent with dropout of vaccination had no knowledge on need for vaccination where as it was32.2%had correct knowledge with dropout of vaccination. Regarding the age at completion of vaccination, mother with drop out of vaccine had no (89.9%) or partial knowledge (31.4%) compared with correct knowledge (4.8%).Without drop out of vaccination which had 95.2% had full knowledge about need for vaccination. Regarding the frequency of taken to the vaccination center, the drop out mother had poor knowledge (88.9%) compared with correct knowledge (6.5%).Regarding the number of BCG vaccine, it was evident that cent percent of drop out mother had no knowledge about the number of BCG vaccine whereas 30.8% drop out had correct knowledge about number of BCG vaccine. Regarding the number of DPT vaccine, 92.6% drop out had no knowledge on number of DPT vaccine, only 7.0% drop out occur in mother had correct knowledge on number of DPT vaccine. Regarding the number of OPV vaccine, mother with no knowledge on number of OPV vaccine, the drop out was cent percent, whereas the mother with full knowledge about number of OPV vaccine completely vaccinates their infants. Regarding the age at vaccination of BCG and measles, mother with no knowledge, cent percent dropped out from vaccine. Regarding the knowledge of number of immunizable disease, no statistically significant difference was found between mother with drop out of vaccine and completely vaccinate their infants ($p>0.05$) although the mother with completed vaccine had better knowledge than the dropout mother. Mother with dropout of immunization had poor knowledge about immunization than the mother with who completed immunization and the difference was statistically significant ($p<0.01$) indicating lack of awareness on immunization among the dropout mother. **Conclusions:** The study findings suggested that Mothers motivation with proper knowledge on EPI vaccination will improve coverage & reduce future dropout. Effective supervision & further strengthening of the health workers should ensure.

Indexing wards: Dropout, EPI, Respondents knowledge, Selected Urban Community

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Introduction:

Universal child immunization is the cornerstone of the primary health care strategy adopted by UNICE[1]. It is essential component for child survival activities in the world. Bangladesh started its EPI in the country 7th April 1979 with the objectives to reduce the morbidity, mortality and disability. The expanded program on immunization (EPI) is an important strategy in

achieving the international goal of health for all. For the developing countries these six diseases are most common killer diseases and the major public health problem in Bangladesh[2].

The world continues to under use the most cost-effective public health intervention of all immunization. It is unacceptable that at least 2million children still die each year from diseases for which vaccines are available at low cost. Immunization has been responsible for most dramatic changes in last few decades[3]. Vaccine has prevented death, diseases and disablement among hundreds of millions of children. Despite the success children are still slipping the safety net. These are frequently pockets of low coverage as well as high dropout, especially among the urban poor, where frequent contact with each other and easily transmit the disease. During national immunization in 1997, supplemental OPV was provided to almost two-thirds of the world's children under five that is to more than 400million children. So we have to careful about high dropout. To monitor progress towards eradication, establishing and improving surveillance for acute flaccid paralysis has now urgent prioriry[4].

Children fully immunized before their first days, which is one of the targets of immunization program, were 64%,49%,and 47% in Mymenshing, Madaripur and Jamalpur districts respectively. In Mymenshing and Madaripur information gaps were found as the main causes of immunization failure, of which unaware of need for vaccination or need to return for further doses and fear for side effect reaction dominated. At Jamalpur the picture was different where obstacles were the main causes for failure as well as poor knowledge of the parents[5].

There can be no doubt that EPI diseases are commonly occurring in Bangladesh and at rates much greater than currently reported. Although the routine EPI program has had extraordinary success in reaching 95% of all Bangladeshi children with one dose of vaccine, the coverage among children by their first birth day remains low as determined from annual coverage evaluation survey: the year2002 coverage evaluation survey found that only 70% have received 3 valid doses of OPV or DPT, only 65% have received a valid dose of measles vaccine and only 56% are fully immunized against all 6 EPI diseases. Given a birth cohort of 3-4 million children annually, these coverage data suggest that very large numbers of young children remain susceptible and are attacked by any or all of the 6 EPI diseases every year[6].

In Bangladesh socio political support has been a critical success factor in EPI achievement. Such support will be absolutely necessary in the years ahead so that Bangladesh can achieve the goals of elimination of neonatal tetanus, reduction of measles as well as eradication of poliomyelitis.

Methods:

This study was a cluster survey. This study was carried conducted at different wards in Rangpur municipality and population was the mothers having children of ages ranging from 12-23 months with history of EPI vaccination within one year age. The sample size estimated by the EPI cluster sampling technique and total simple size were 210.This study was carried out during the period of months from March2003 to June 2003.

A structural questionnaire and observational checklist were used for data collection through face to face interview and observation. The Percentage and other statistical calculations and analysis were done by using software SPSS version 11.

Results:

It was observed that respondents were reportedly very good response in case of need for vaccination (96.2%), no of BCG vaccine (94.3%), Age at BCG vaccine (80.0%). On the contrary, the respondents had average knowledge in terms of frequency of taken vaccination center (65.7%),No of DPT Vaccine (67.6%), No of OPV Vaccine (62.9%),Age at measles (66.2%). In this study an attempt was made to assess the knowledge on different type of immunization. To quantify the knowledge an arbitrarily score was given for each option such as no knowledge scored 0, partial knowledge scored 1 and full knowledge scored 2 and in case two level for each question correct knowledge 1 and no knowledge scored 0 the full level of knowledge was scored from 0-14 Afterwards it was weighted into 1.i.e. on other way, it could be said, those who scored 14 will

be weighted as 1 and those who had no response or incorrect response will get 0 score. So, final full level of knowledge was ranging from 0-1. The mean weighted knowledge was 0.74±0.2 ranging from 0.14 to 1.0. Arbitrarily, up to 0.5 score categorized as poor and above 0.5 score categorized as good knowledge.

It was observed that 100% percent of the respondent with dropout of vaccination had no knowledge on need for vaccination where as it was(32.2%)had correct knowledge with dropout of vaccination and the difference was statistically significant (p<0.01)indicating mother with dropout of vaccination were not aware about need for vaccination (Table I).

Table I: Distribution of respondents by drop out of immunization and knowledge on need for vaccination

Need for vaccination	Drop out		Total
	Yes	No	
No knowledge	8(100.0)	0(0.0)	8(100.0)
Correct knowledge	65(32.2)	137(67.8)	202(100.0)
Total	73(34.8)	137(65.2)	210(100.0)

χ^2 = 15.608, df = 1, p value = 0.001

Regarding the age at completion of vaccination, mother with drop out of vaccine had no (89.9%) or partial knowledge (31.4%) compared with correct knowledge (4.8%).Without drop out of vaccination which had 95.2% had full knowledge about need for vaccination and the difference was statistically significant (p<0.01) indicating mother without drop out of vaccination were fully aware about the need for vaccination (Table II).

Table II: Distribution of respondents by drop out of immunization and knowledge on age at completion of vaccination

Age at completion of vaccination	Drop out		Total
	Yes	No	
No	53(89.8)	6(10.2)	59(100.0)
Partial	15(31.9)	32(68.1)	47(100.0)
Full	5(4.8)	99(95.2)	104(100.0)
Total	73(34.8)	137(65.2)	210(100.0)

χ^2 = 120.212, df = 2, p value = 0.001

Regarding the frequency of taken to the vaccination center, the drop out mother had poor knowledge (88.9%) compared with correct knowledge (6.5%) and the difference was statistically significant (p<0.01) indicating drop out mother had poor knowledge on how many times their infants to be taken to vaccination centre (Table III).

Table III: Distribution of respondents by drop out of immunization and knowledge on frequency of taken vaccination center

Frequency of taken vaccination	Drop out		Total
	Yes	No	
No knowledge	64(88.9)	8(11.1)	72(100.0)
Correct knowledge	9(6.5)	129(93.5)	138(100.0)
Total	73(34.8)	137(65.2)	210(100.0)

χ^2 = 141.545, df = 1, p value = 0.001

Regarding the number of BCG vaccine, it was evident that 100% percent of drop out mother had no knowledge about the number of BCG vaccine whereas 30.8% had correct knowledge about number of BCG vaccine and the difference was statistically significant (p<0.01) (Table IV).

Table IV: Distribution of respondents by drop out of immunization and knowledge on number of BCG vaccine

No. of BCG vaccine	Drop out		Total
	Yes	No	
No knowledge	12(100.0)	0(0.0)	12(100.0)
Correct knowledge	61(30.8)	137(69.2)	198(100.0)
Total	73(34.8)	137(65.2)	210(100.0)

χ^2 = 23.885,df = 1, p value = 0.001

It was revealed that among the mother with drop out of vaccination, 92.6% had no knowledge on number of DPT vaccine, only 7.0% mother had correct knowledge on number of DPT vaccine whereas among the mother without drop out only 7.4% had on knowledge but 93.0% had correct knowledge on number of DPT vaccine and the difference was statistically significant (p<0.01) (Table V).

Table V: Distribution of respondents by drop out of immunization and knowledge on number of DPT vaccine

No. of DPT	Drop out		Total
	Yes	No	
No knowledge	63(92.6)	5(7.4)	68(100.0)
Correct knowledge	10(7.0)	132(93.0)	142(100.0)
Total	73(34.8)	137(65.2)	210(100.0)

X^2 = 148.583, df = 1, p value = 0.001

Regarding the number of OPV vaccine, mother with no knowledge on number of OPV vaccine, the drop out was cent percent, i.e, no mother of drop out of vaccine had full knowledge about number of OPV vaccine, whereas the mother with full knowledge about number of OPV vaccine completely vaccinate their infants and the difference was statistically significant (p<0.01) indicating mother with drop out of vaccine had poor knowledge about number of OPV vaccine (Table VI).

Table VI: Distribution of respondents by drop out of immunization and knowledge on number of OPV vaccine

No. of OPV	Drop out		Total
	Yes	No	
No	43(100.0)	0(0.0)	43(100.0)
Partial	30(85.7)	5(14.3)	35(100.0)
Full	0(0.0)	132(100.0)	132(100.0)
Total	73(34.8)	137(65.2)	210(100.0)

χ^2 = 191.102, df = 2, p value = 0.001

Regarding the age at vaccination of BCG, mother with no knowledge, cent percent dropped out from vaccine and less likely dropped from with partial and full knowledge on age at immunization, whereas the mother with completion of vaccine 74.4% had full knowledge about the age at BCG vaccine and the difference was statistically significant (p<0.01) (Table VII).

Table VII: Distribution of respondents by drop out of immunization and knowledge on age at BCG vaccine

Age at BCG	Drop out		Total
	Yes	No	
No	10(100.0)	0(0.0)	10(100.0)
Partial	20(62.5)	12(37.5)	32(100.0)
Full	43(25.6)	125(74.4)	168(100.0)
Total	73(34.8)	137(65.2)	210(100.0)

χ^2 = 35.849, df = 2, p value = 0.001

A statistically significant difference was found in terms of age measles vaccine and drop out of vaccination (p<0.01) indicating mother with drop out of vaccination had poor or no knowledge about the age at measles vaccine than the mother with completion of vaccine who had full knowledge about age at measles vaccine (Table VIII).

Table VIII: Distribution of respondents by drop out of immunization and knowledge on age at measles vaccine

Age atmeaslesvaccine	Drop out		Total
	Yes	No	
No	15(100.0)	0(0.0)	15(100.0)
Partial	48(85.7)	8(14.3)	56(100.0)
Full	10(7.2)	129(92.8)	139(100.0)
Total	73(34.8)	137(65.2)	210(100.0)

χ^2= 138.840, df = 2, p value = 0.001

Regarding the number of immunizable disease, no statistically significant difference was found between mother with drop out of vaccine and completely vaccinate their infants (p>0.05) although the mother with completed vaccine had better knowledge than the drop out mother (Table IX).

Table IX: Distribution of respondents by drop out of immunization and knowledge on number of immunizable disease

No of immunizable disease	Drop out		Total
	Yes	No	
Partial	63(34.8)	118(65.2)	181(100.0)
Full	10(34.5)	19(65.5)	29(100.0)
Total	73(34.8)	137(65.2)	210(100.0)

χ^2 = 0.001, df = 1, p value = 0.973

Revealed that mother with drop out of immunization had poor knowledge about immunization than the mother with who completed immunization and the difference was statistically significant (p<0.01) indicating lack of awareness on immunization among the drop out mother (Table X).

Table X: Distribution of respondents by level of knowledge on immunization and dropout

Drop out of immunization	Level of knowledge		Total
	Poor	Good	
Yes	63(86.3)	10(13.7)	73(100.0)
No	0(0.0)	137(100.0)	137(100.0)
Total	63(30.0)	147(70.0)	210(100.0)

χ^2= 168.904,df = 1, p value = 0.001

Regarding the reasons for drop of vaccination, highest percentage of respondents reportedly mention 'Lack of awareness of next dose' 41(56.2%) followed by 'Worried about side effects' 15(20.5%), 'Illness of child' 13(17.8%), 'No knowledge of place and time of vaccination' 6(8.2%)etc.

Discussion:

In this study, the mothers with poor knowledge were a bit young than the mothers with good knowledge. Working mothers had good knowledge on immunization than the housewife. Illiterate mothers had poor knowledge on immunization compared with literate mothers. Mothers, who had illiterate husband, had poor level of knowledge on immunization in comparison with mother, who had literate husband. Mothers of low-income family had poor level of knowledge on immunization. Mothers of large family size had good level of knowledge on immunization than the mothers of small family size. Mothers with poor level of knowledge on immunization had dropout of immunization than the mothers with good knowledge on immunization.

With regard to the presence of BCG scar among dropout, 97.26% of the children had BCG scar over the left upper arm and 2.74% had no scar, though it was found in the card and history that the children were vaccinated with BCG. From this finding there is doubt about successful vaccination against tuberculosis among the children having no scar. This finding could not be evaluated with other findings due to non-available of information.

In this study, regarding dropout of vaccination, maximum dropout was observed in DPTI-measles was 24.8% and DPT_1-DPT_3 was 19.5%. Dropout of DPT_2 and OPV_2 were 10%. Regarding high dropout of measles and OPV_4 it may be revealed that this was due to lack of communication, long interval from the DPT_3/OPV_3 dose and reduced motivation stimuli.

National coverage evaluation survey, Bangladesh done by DGHS in 1997: Dropout rate of DPT_1-DPT_3 were 30% and DPT_1-measles 30% in Dhaka Division. DPT_1-DPT_3 9% and DPT_1- measles 15% in Khulna Division; DPT_1-DPT_3 12% and DPT_1- measles 18% in urban area; DPT_1-DPT_3 12% and DPT_1- measles 14% in Dhaka City Corporation. Reasons for failure of vaccination were lack of information (mothers too busy), child illness, lack of knowledge that further doses were needed, place and time of immunization unknown, vaccinator absent, vaccine was not available[7].

National level of dropout rates in the year 2000 survey was higher compared to the 1998 and 1999 surveys. The DPT_1-DPT_3 was 14.6% in 2000 compared to 12.5% in 1999, and the DPTI-measles dropout rate was 24.9% vs 21.2%[8].

In this study, regarding reasons for dropout, the major reasons for dropout were lack of awareness for further (next dose) immunization schedule (56.2%), worried about side effects (20.5%), illness of child (17.8%), no knowledge of place and time of vaccination (8.2%), sickness history at the time of vaccination of mother (4.1%), mothers were too busy at the time of vaccination (4.1%). Other reasons for dropout were place of immunization too far (2.7%), long waiting time (2.7%), inconvenient time (2.7%), absent of vaccinator at time of vaccination (1.4%).

In this study conducted by Khanom[9] main reasons identified for dropout was lack of knowledge about importance of vaccination and it was 27.08%. The other major reasons for dropout were due to fear of side effect 25%, personal business 20.83%, and ignorance about vaccine 16.66%. In the study conducted by Hossain[10], the major reasons for dropout was unawareness for need further immunization schedule (25%), next major cause was due to illness of child (21.9%). So the reasons for dropout of vaccination in this study found to be similar to the present study. In another study, barriers to immunization were difficulties in traveling away from home, opposition from family member, long waiting time, inconvenient hours of clinic operation, lack of information and earlier experiences with side-effects following immunization[11].

In this study statistically significant difference was also observed between dropout of immunization and level of knowledge in terms of need of vaccination, age at completion of vaccination, frequency of taking the child to vaccination center, no of BCG, OPV and DPT vaccine, age at BCG, measles vaccine. Statistically highly significant difference was also observed between level of knowledge and dropout of immunization.

Conclusion:

In this study, regarding reasons for dropout, the major for dropout were poor knowledge on immunization schedule, worried about side effects, illness of child and no knowledge of place and time of vaccination. The other reasons were sickness history at the time of vaccination of mothers; mothers were too busy at the time of vaccination, place of immunization too far, long waiting time, inconvenient time and absence of vaccinator at time of vaccination. Lastly it was concluded that improvement of knowledge on immunization of the people should be strengthened to increase EPI coverage as well as to reduce dropout. Awareness & motivation of mothers about immunization should be improved. Further in depth studies are needed to determine the actual reasons for dropout cases.

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