Original Article

Level of Knowledge on EPI Vaccination according to Respondents Socio-economic Condition in a Selected Urban Community in Rangpur District

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Abstract:

Context: Vaccination is a strong need all around the world, especially in developing countries to save the children from death & diseases. Children are vulnerable to disease & constitute a high proportion of total death. The estimated number of under five children at present in Bangladesh is 20 million. 10% of them are dying from vaccine preventable diseases each year. So we can prevent a large number of under five deaths by immunization. Objective of the study was to ascertain the knowledge of respondents on immunization. **Methods:** It was a descriptive type of cross sectional study. The sample size was estimated by the WHO 30 clusters survey methodology. From each cluster 7 mothers were included and total simple size was 210. **Results:** It was observed that respondents were reportedly very good response in case of need for vaccination (96.2%), number of BCG vaccine (94.3%), and age at BCG vaccine (80.0%). On the contrary, the respondents had average knowledge in terms of frequency of taken vaccination center (65.7%), number of DPT Vaccine (67.6%), number of OPV Vaccine (62.9%) and age at measles (66.2%); but partial knowledge was found in terms of number of immunizable disease (86.2%). The mean score of knowledge was 10.4 ± 3.3 ranging from 2.0 -14.0. **Conclusions:** It was concluded that improvement of educational status of the people and training of the health workers from time to time (refresher training) should be conducted to increase EPI coverage.

Indexing wards: EPI, Knowledge, Socio-economic condition, Urban community

Introduction:

Immunization is one of the most powerful and cost effective health protective measures of modern medical science and thus immunization service has been given required priority to be practiced in the world today. Although immunization cover in the world is progressing rapidly but lack of knowledge on immunization is an obstacle to achieve the desired target and goal[1].

In a study done by ICCDDR, B suggests that giving information and education is an essential part of the motivational process for EPI vaccination. A hospital stay is not only a chance to give the first dose of vaccine, but it is also an opportunity to give health education that will effectively motivates parents in the future.[2] Despite of all facilities available, vaccination is still underutilized especially in developing countries like Bangladesh. Parents can save two-thirds of the 14 million children who die every year. Immunization alone could save three millions of lives. Probably lack of awareness among the people is one of the most important causes of under utilization of immunization in our country[3].

Global immunization efforts open with a view of the history of the Expanded Program on Immunization (EPT) from its inception in 1974. The EPI's goal of facilitating the use of vaccines in the developing world required the establishment of immunization policy at the global and national levels[4].

One of the most dramatic current goals for EPI is the eradication of poliomyelitis by the year 2000. But there are still difficulties in raising the resources needed to ensure that the job is finished on time. Reported BCG and DPT_3 coverage have remained steady since 1990 at about 90% and 80% respectively. Countries in greatest need have reported a slow but steady improvement for DPT_3 coverage, increasing from 26% in 1988 to 44% in 1996. At least 86

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countries have now introduced hepatitis B vaccine into their routine immunization program and at least 25 have introduced Hemophilus influenza type B (HIb) vaccine. EPI have focused attention on countries in greatest need-those requiring technical and financial support. Such countries have low national program implementation capacity and have received little support compared to other countries, which are financially and technically stronger. Support for immunization the area of, for instance, training has resulted in improvement in other areas of health care[5].

Child mortality rate is high in Bangladesh where approximately 833000 children under 5 years of age die per year and about one third of this die due to six vaccines preventable diseases. One child in four dies before his 5th birthday but more than half of this death occurs before the child reaches one year[6].

Bangladesh government has also taken up ambitious acceleration program of EPI through NID (National Immunization day) on 16th march and 16th April 1995 and this program the goal is polio free world by the year 2000 i.e. (a) Eradications of poliomyelitis by 2000 AD (b) elimination of neonatal tetanus by the year of 1995 (c) Reduction of measles by the year 2000[7].

Many factors may be considered responsible for this state of affairs. Acceptance of various health care facilities is especially dependent on the motivation of the people, creating awareness among the people, which in turn is influenced by the factors like education and economic freedoms of individuals and families. One can therefore, reasonably expect a difference in acceptance level of health care services provided in these various community[8].

Methods:

This study was a descriptive of cross sectional study. This study was conducted at different wards in Rangpur municipality and population was between the period of January 2003 and June 2003. The mothers having children of ages ranging from 12-23 months with history of EPI vaccination within one year age was the subjects of the study. The sample size estimated by the WHO 30 clusters survey methodology and total simple size were 210.

From different Mohollah each cluster was selected randomly b y using COSAS software. From each cluster 7 mothers were selected purposively. A structured questionnaire and observational checklist were used for data collection through face to face interview and observation. Proper ethical permission was taken from the Municipal authority and the mothers. The percentage and other statistical calculations and analysis were done by using software SPSS version 11.

Results:

It was observed from Table 1 that respondents were reportedly very good response in case of need for vaccination (96.2%), number of BCG vaccine (94.3%), and age at BCG vaccine (80.0%). On the contrary, the respondents had average knowledge in terms of frequency of taken vaccination center (65.7%), number of DPT Vaccine (67.6%), number of OPV Vaccine (62.9%), age at measles (66.2%), but partial knowledge was found in terms of number of immunizable disease (86.2%). The mean score of knowledge was 10.4 ± 3.3 ranging from 2.0-14.0.

Table 1: Scoring of the level of knowledge on immunization

Level of knowledge	Score	Frequency	Percent
Need for vaccination			
No knowledge	0	8	3.8
Correct knowledge	1	202	96.2
Age of completion of vaccination			
No	0	59	28.1
Partial	1	47	22.4
Full	2	104	49.5
Frequency of taken vaccination center			
No knowledge	0	72	34.3
Correct knowledge	1	138	65.7
No of BCG Vaccine			
No knowledge	0	12	5.7
Correct knowledge	1	198	94.3

Level of knowledge	Score	Frequency	Percent
No of DPT Vaccine			
No knowledge	0	68	32.4
Correct knowledge	1	142	67.6
No of OPV Vaccine			
No Knowledge	0	43	20.5
Partial	1	35	16.7
Full	2	132	62.9
Age at BCG Vaccination			
No Knowledge	0	10	4.8
Partial	1	32	15.2
Full	2	168	80.0
Age at measles Vaccination			
No Knowledge	0	15	7.1
Partial	1	56	26.7
Full	2	139	66.2
No of immunizable disease.			
No Knowledge	0	0	0.0
Partial	1	181	86.2
Full	2	29	13.8

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 After wards 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; so 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.

Table 2: Distribution of respondents by level of knowledge on immunization

Level of Knowledge	Frequency	Percent
Poor	63	30.0
Good	147	70.0
Total	210	100.0

Mean ±SD =0.74±0.2
Range = 0.14 to 1.0

Table 3 shows that the mean age of mother with poor knowledge was 26.3±6.7 years and that of good knowledge was 27.4±6.4 years. No statistically significant difference was found in terms of level of knowledge on immunization and age of the mother (p>0.05) although the mother poor knowledge were a bit young than the mother with good knowledge.

Table 3: Distribution of respondents by level of knowledge and Age

Age in year	Level of knowledge		Total
	Poor	Good	
<20	8(30.8)	18(69.2)	26(100.0)
20-29	36(33.0)	73(67.0)	109(100.0)
≥30	19(25.3)	56(74.7)	75(100.0)
Total	63(30.0)	147(70.0)	210(100.0)
Mean ±SD	26.3±6.7	27.4±6.4	27.1±6.5

x^2 = 1.261, p Value= 0.532

It was observed from Table 4 that mother who was engaged in different type of job that is working mother had good knowledge on immunization (87.7%) than the non working mother i.e. housewife having poor knowledge on

immunization and the difference was statistically significant. (p<0.01)

Table 4: Distribution of respondents by level of knowledge and occupation

Occupation of respondents	Level of Knowledge		Total
	Poor	Good	
Housewife	55(37.9)	90(62.1)	145(100.0)
Others	8(12.3)	57(87.7)	65(100.0)
Total	63(30.0)	147(70.0)	210(100.0)

x^2 =14.032, p value=0.001.

From Table 5 it was observed that no statistically significant difference was found in terms of level of knowledge on immunization and husbands occupation (p>0.05).

Table 5: Distribution of respondents by level of knowledge and Occupation of husband

Occupation (Husband)	Level of knowledge		Total
	Poor	Good	
Non manual job	42(30.0)	98(70.0)	140(100.0)
Manual job	21(30.0)	49(70.0)	70 (100.0)
Total	63(30.0)	147(70.0)	210(100.0)

x^2 =0.000, p value=1.000.

It was evident from Table 6 that illiterate mother had poor knowledge on immunization (36.7) compared with literate mother who had good knowledge on immunization (75.0%).
But the difference was not statistically significant (p>.05).

Table 6: Distribution of respondents by level of knowledge and educational status

Level of education of respondents	Level of knowledge		Total
	Poor	Good	
Illiterate	33(36.7)	57(63.3)	90(100.0)
Literate	30(25.0)	90(75.0)	120(100.0)
Total	63(30.0)	147(70.0)	210(100.0)

x^2 =3.333, p value=0.068.

A statistically significant difference was found in terms of level of knowledge and level of education of husband (p<0.05) indicating literate husband had good knowledge on immunization (75.2%) than the illiterate husband (Table 7).

Table 7: Distribution of respondents by level of knowledge and educational status of husband

Level of education (respondents)	Level of knowledge		Total
	Poor	Good	
Illiterate	24(45.3)	29(54.7)	53(100.0)
Literate	39(24.8)	118(75.2)	157(100.0)
Total	63(30.0)	147(70.0)	210(100.0)

x^2 =7.885, p value=0.005.

It was revealed from Table 8 that Mother of Muslim by religion had poor knowledge (30.6%) on immunization compared with non –Muslim mother (75.0%) having good knowledge on immunization, But the difference was not statistically significant (p>0.05).

Table 8: Distribution of respondents by level of knowledge and Religion

Religion	Level of knowledge		Total
	Poor	Good	
Muslim	57(30.6)	129(69.4)	186(100.0)
Non Muslim	6(25.0)	18(75.0)	24(100.0)
Total	63(30.0)	147(70.0)	210(100.0)

x^2 =0.323, p value=0.750.

It was observed from Table 9 that divorced mother had poor knowledge on immunization (40.0%) compared with currently married mother having good knowledge (70.0%)
Difference was not statistically significant (p>0.05)

Table 9: Distribution of respondents by level of knowledge and marital status

Marital Status	Level of knowledge		Total
	Poor	Good	
Married	61(29.8),	144(70.2),	205(100.0)
Divorced	2(40.0)	3(60.0)	5(100.0)
Total	63(30.0),	147(70.0)	210(100.0)

x^2 =0.244, p value=0.621.

A statistically significant difference was found in terms of level of knowledge on immunization and monthly family income (p<0.05) indicating mother with poor knowledge had monthly income below tk 5000 where as with good knowledge had better income of above tk 5000 (Table 10).

Table 10: Distribution of respondents by level of knowledge and monthly income

Monthly income taka	Level of knowledge		Total
	Poor	Good	
<2500	30(46.2)	35(53.8),	65 (100.0)
2500-5000	20(25.0)	60(75.0)	80 (100.0)
5000-10000	10(20.0)	40(80.0)	50(100.0)
>- 10000	3(20.0)	12(80.0)	15(100.0)
Total	63(30.0)	147(70.0)	210(100.0)

x^2 =12.125, p value=0.007

It was observed from Table 11 that the mean family size having poor knowledge was 5.17±1.5 and good knowledge was 5.2±1.5. No statistically significant difference was found in terms of level of knowledge and family (p>0.05) although mother having good knowledge had a bit large family than poor knowledge family.

Table 11: Distribution of respondents by level of knowledge and family size

Family size	Level of knowledge		Total
	Poor	Good	
3-4	33(29.2)	80(70.8),	113 (100.0)
5-6	24(33.8)	47(66.2)	71(100.0)
≥7	6(23.1)	20(76.9)	26(100.0)
Total	63(30.0)	147(70.0)	210(100.0)
Mean ±SD	5.17±1.46	5.21±1.51	5.20±1.49

x^2 =1.116, p value=0.572

Table 12 shows the distribution of infants by pattern of immunization. It was observed that coverage of immunization gradually fall from BCG vaccine to Measles vaccine.

Table 12: Distribution of infants by immunization

Vaccine	No	1st Dose	2nd Dose	3rd Dose	4th Dose	Measles
BCG	210	210(100.0)	-	-	-	-
DPT	210	210(100.0)	189(90.0)	169(80.5)	-	-
OPV	210	210(100.0)	189(90.0)	169(80.5)	158(75.2)	-
Measles	210	-	-	-	-	158(75.5)

** Figure in parenthesis indicates percentage.

Discussion:

In this study, regarding knowledge on the need of vaccination it was found that, those who had no knowledge had zero coverage of her children in EPI vaccination and those who had correct knowledge had 67.2% coverage of her children in EPI vaccination. Regarding knowledge on age at completion of vaccination, those who had no knowledge had 10.2% of coverage, those who had partial knowledge had 68.1% coverage and those who had correct knowledge had 95.2% coverage. Regarding knowledge on frequency of taken to vaccination center, those who had no knowledge had only 11.1% coverage and those who had correct knowledge had 93.5% coverage and those who had correct knowledge had 93.5 coverage. Regarding knowledge on number of BCG vaccine, those who had no knowledge had zero percent coverage and those who had correct knowledge had 69.2% coverage. Regarding knowledge on number of DPT vaccine, those who had no knowledge had 7.4% coverage and those who had correct knowledge had 93% coverage. Regarding knowledge on number of OPV vaccine, those who had no knowledge had zero percent of coverage and those who had partial knowledge had 14.3% coverage and those who had correct knowledge had no dropout. Regarding knowledge on age at BCG vaccine those who had no knowledge had cent percent of dropout and those who had partial knowledge had 37.5% coverage and those who had correct knowledge had 74.4% coverage. Regarding age at measles vaccine those who had no knowledge had zero percent coverage and those who had partial knowledge had 14.3% coverage and those who had correct knowledge had 92.8% coverage. Regarding number of immunizable disease, those who had partial knowledge had 65.2% coverage and those who had correct knowledge had only 65.5% coverage.

From this study it was evident that among the mothers of age group below 20 years less percentage of coverage was present and 20 to 29 years age group was in second position. Majority of the respondents were young aged group and this has similarities with the study conducted by Begum et al[3] where she showed that young mothers were less aware and inexperience of the six killer diseases as well as wives were dominated by their husbands or mother-in-low. But another study done by Hossain[9] showed that coverage were less in the children of middle aged (20-30) mothers.

National coverage evaluation survey Bangladesh done by DGHS and WHO in 1997. Coverage rate of DPT_1- to measles were 30% decrees in Dhaka division and DPT_1 to measles 15% in Khulna division. DPT_1-DPT_3. DPT_1 to measles 18% in urban area. DPT_1 to measles 14% in Dhaka city corporation. Reason for failure of vaccination were lack of information about doses were needed, place and time of immunization unknown[10].

Conclusion & recommendation:

In this study it was found that many mothers had poor knowledge about immunization and was not aware of the need of vaccination. Poor knowledge was found regarding frequency of taken to vaccination center, number of doses of immunizable diseases. Very few had partial knowledge on age of completion of vaccine and number of immunizable diseases. Lastly it was concluded that improvement of educational status of the people is to be strengthened to increase EPI coverage. Training of the health workers from time to time (refresher training) is to be conducted.

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