



Health knowledge of children in Bangladesh: an exploratory study

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This article explores the relationship between selected socio-economic factors and health knowledge of children in Bangladesh. Data was generated from a representative sample survey of 2520 children aged 11–12 y and resident throughout the country. A total of six health knowledge items, all of which are very relevant to Bangladesh, were assessed in this study. Both bivariate and multivariate analysis were used for this purpose. Analysis revealed that the urban/rural residence of the child, the length of the child's schooling in years, the parental level of education and the economic status of the household was associated with the level of health knowledge of the children. To achieve the required improvement in health knowledge of Bangladeshi children this study concluded that adequate schooling of all children must be ensured by removing social barriers to this. Greater educational investment as well as quality education related to everyday life should be provided in rural areas.

Keywords: Health knowledge; children; schooling Bangladesh

Introduction

Available information on child health shows millions of infants and young children in third world countries die every year;¹ for those children who manage to survive to age six, the world is a threatening place.² Lack of potable water and poor sanitary conditions are common in third world countries. Due to incomplete health care systems many people in such countries do not have access to public or private health facilities. Rural people are often more deprived than urban people; with women having poorer access in comparison to men in both areas, due to cultural barriers. However, in many developing countries, women themselves have tried in different ways to meet the need for health services for their children. The government and different national and international agencies have also made efforts in this regard. Despite various commendable efforts, the problems of providing adequate health services for children are nowhere near solution. Again, as in many societies, children caring for children has become a necessary and accepted practice. A study from rural Nigeria, for instance, indicates that 16% of child care was carried out by older siblings.²

Development programmes to increase elders' health knowledge are well known. It was observed that a mother's health knowledge helps her to get better health care for her children.³ Recently, life skills knowledge has become an essential component in measuring educational achievement and an improved rate of adult literacy within a society.⁴ Obviously life skills include essential health knowledge relevant to the level of socio-economic development. In recent years such health education aspects have been included in health and demographic studies. However, most of these have been limited to married women of reproductive age and/or their husbands. So far only a few studies have investigated children's health knowledge.

Bangladesh is a developing country with pervasive poverty and a high level of illiteracy. The education system is insufficient to provide universal provision and many

children in Bangladesh do not receive schooling.⁵ Different types of primary education currently operate in Bangladesh. These may be government or non-government schools. One type of school known as *Ebtedayee Madrasa*, provides education with a religious focus, kindergartens are located in urban areas and use English for teaching and non-formal primary education is run by non-government organisations (NGOs). Compulsory primary education has only been implemented since 1993. Different sources have claimed that 75–92% of primary school aged children (6–10 y) are currently in school,^{6,7} but Nath found that the net enrolment rate in rural Bangladesh was only 67.7% in 1994.⁸ Significant socio-economic as well as gender variation in enrolment also exists and the drop out rates are very high. Nearly one quarter of students leave school at the end of the first year, about 60% have dropped out before starting the fourth grade and by the end of the fifth grade 88% have left.⁹

Few studies on health knowledge and education have been undertaken on children living in Bangladesh. In 1992, a survey was conducted, for the first time in Bangladesh, to assess the basic education of children aged 11–12 y. Together with reading, writing and numeracy life skills were also considered as a part of basic education.⁴ A slightly modified version of the study was repeated in 1993.¹⁰ Children in both surveys were interviewed whether or not they had attended school. Health knowledge which was highly relevant to Bangladesh was incorporated in the life skills part of the assessment instrument and included in the data produced by the 1993 survey. Using this data this study attempts to explore the state of health knowledge of children in Bangladesh. This paper also explores the association between this and selected socio-economic factors relating to the children.

Methods

Sampling

The subjects of the study were children aged 11–12 y. This age group was chosen as it lies just outside the official primary school age (6–10 y) for Bangladesh. The 30-cluster

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sampling plan commonly used in immunisation coverage surveys¹¹ was adopted for this study with some modifications. For a precision level of 7% with 95% confidence limits, 420 children¹² (irrespective of sex) were selected from 30 random clusters with 14 children being from each cluster. Six different surveys were carried out, of which five were one in each of five rural administrative divisions and the remaining one was in urban Bangladesh. A similar three stage sampling strategy¹² was used for each stratum. In the first stage, applying probability proportional to sizes with systematic sampling techniques 30 thanas (*pourashava* for urban areas, thanas are the government administrative units with an average population of 260 000) were selected at random. In the second stage, one union/ward (these are the local government units with an average population of 22 000) was selected at random from each selected thana. In the third stage, one village/*para*/*mahalla* (under local government units with an average number of 200 households) was selected at random from each selected union/ward. This means that for each stratum, 30 villages/*para* were selected and totalling 180 (30 × 6) for the whole of Bangladesh. Thus the total sample for this study was (180 × 14) 2520.

The 14 children in each village/*para* were selected by following a procedure used in the WHO recommended 30-cluster survey⁽¹³⁾. The procedure was as follows: on entering the selected village, the interviewers located the northwest corner of the village and started looking for children in the designated age group by visiting households. It should be noted that date of birth is not celebrated and births are not properly recorded in Bangladesh. The age of the children had, therefore, to be estimated by using event calendars and by visual examination. After completing the first subject the interviewers then moved in an anti-clockwise direction to locate their next household. In order to reduce intra-cluster correlation of children's knowledge the interviewers skipped the next five households and started looking for a target child from the sixth household. On finding a household with a child in the chosen age group, they then interviewed her/him. In this way they continued moving from household to household until they had completed the fourteenth child. Children who were identified as prospective interviewees but were not at home at the time of interview, for example they were in the field, at market or in the street, were revisited on the same day at a time when their return was expected. If this was unsuccessful the interviewers recommenced the same methodology to make the numbers up to 14. Such extra subjects amounted to no more than 5% of the total. If the chosen village was too small to find the requisite number of children, the interviewers moved to the village closest to the one where they had just finished and repeated the process to complete the remaining interviews.^{4,10}

Question items and the interview

The following six questions were put to each of the children in order to assess their knowledge of health issues:

1. What is a good and simple treatment for diarrhoea?
2. Where should one defecate?
3. Which foods help to prevent night blindness?
4. How can water be purified, or made drinkable?
5. How does a child benefit from vaccination?
6. What should you do first for someone with a very high temperature (fever)?

Interviewing was done by 36 teams of two male interviewers who were given an intensive three day training course. A detailed interviewers' manual was used in these training sessions.¹⁴ Due to the cultural prohibition against men and women travelling together teams were all male but in each location a local elderly woman was selected to help an interviewer prevent interruption by curious onlookers. It is rare for children rather than adults to be interviewed in Bangladesh and this was a necessary precaution. Interviewers alternated their duties between interviewing and crowd control and care was taken to prevent the child being disconcerted by the interviewer or onlookers.

Interviews took place either inside the child's home or the family's courtyard. For the interview the child and interviewer sat face to face. The interviewer asked the questions from the questionnaire one by one with the child responding orally. Responses were recorded on the questionnaire by the interviewer. If the child got stuck, the interviewer repeated the question twice (sometimes in the local dialect, if necessary) and tried to keep the child unworried. If the child still failed to respond the interviewer moved to the next question. Socio-economic background information was collected from parents or guardians.

Assessment was made as to whether the answer was correct or incorrect. Non-response and 'do not know' were categorised as incorrect. Correct answers were defined according to the cultural context and primary health care system of the country. The following answers were considered as respectively correct for each of the questions previously stated

1. Giving: packed saline, oral rehydration saline (ORS), salt-molasses-water saline, or home made saline.
2. Slab, pit or sanitary latrine.
3. Green vegetables, certain fruits, small fish or Vitamin A capsule.
4. Boiling, using alum, or using water purification tablet.
5. To prevent disease.
6. Use cool water to make body/head cool.

The quality of the data was checked by test-retest method.¹⁵ For this, 5% of the initial sample was randomly selected and re-interviewed within one week of the initial interview. The reliability co-efficient was found to be 0.96¹⁰ which means that the method is repeatable.

Analyses

To explore the contribution of each of the selected socio-economic variables on health knowledge of the children, bivariate (cross tabular) and multivariate analyses were done. To determine the influence of socio-economic variables on each of the knowledge items a total of six logistic regression models were employed. Finally, to identify the influence of selected variables on the overall knowledge of children, considering the total correct answers as a dependent variable, a multiple regression analysis was done by the same set of socio-economic variables. The measurement of the variables used in the multivariate analysis is given in Table 1.

Results

General characteristics of the children

Out of 2520 surveyed children 49.4% were boys and 50.6% girls. The children on a school roll at the time of the survey

Table 1 Definitions of variables used in multivariate analysis

Variables	Category
<i>Dependent variables</i>	
<i>Logistic regression</i>	
Treatment for diarrhoea	1 = Correct answer, 0 = others
Place for defecation	1 = Correct answer, 0 = others
Prevention for night blindness	1 = Correct answer, 0 = others
Water purification	1 = Correct answer, 0 = others
Benefits from vaccination	1 = Correct answer, 0 = others
First aid for high fever	1 = Correct answer, 0 = others
<i>Multiple regression</i>	
Overall performance	0 = No correct answers. 1–6 respective numbers of correct answers.
<i>Explanatory variables</i>	
Child's residence	1 = Rural area and 2 = Urban area
Child's sex	1 = Boy and 2 = Girl
Child's years of schooling	0 = Never enrolled, 1–>6 y grade completed
Mother's and Father's education	0 = No education, 1–>10 y highest grade attained
Economic status of household	1 = Always in deficit, 2 = Sometimes in deficit, 3 = Balance and 4 = Surplus.

were considered as currently enrolled (76.7%), children who had been to a school of any kind but were not enrolled at the time of the survey were defined as 'dropped out' (9.5%), and 13.8% had never enrolled. Two thirds of the rural mothers had had no formal education and only 1% of rural and 14% of urban mothers had completed 10 years or more schooling. Nearly half of the fathers of rural children had no formal education, in urban areas this was 22.6%. In nearly half of the children's households the yearly economic condition was either always in deficit or sometimes in deficit.

Health knowledge: bivariate analysis

The children's levels of health knowledge varied by items; more than 70% knew the correct answers of 'What is a good and simple treatment for diarrhoea?' and 'Where should one defecate?'. Very few children knew the 'benefits from vaccination' and 'prevention for night-blindness'. These rates are respectively 36.3% and 36%. The urban children had significantly higher knowledge than that of their rural counterparts, but the differences in the knowledge of 'nightblindness' and 'benefits from vaccination' varied markedly. Except for 'prevention for night-blindness' in all the items girls demonstrated better performance than boys (Table 2).

The increment in the proportion of children correctly answering each of the items were highly associated with additional years of schooling. As parental levels of education and economic status of the households increased so did the knowledge of different items (Table 2).

On average, the children correctly answered 3.4 items. The average number of items correctly answered was higher for urban children than rural children (4.5 vs 3.1). Mean number of items was found to be increased according to the increase in years of schooling of the children, parental education and improved economic status of the household (Table 2).

Multivariate analysis

Results from logistic regression analysis indicate that urban children did significantly better than rural children. The

regression co-efficients also showed that numbers of years of schooling of children were significantly positively associated with the knowledge of all individual items (Table 3). Except for 'first aid for high fever', mother's level of education was significantly associated with the other five items. However, relationship with mother's education was found positive for all the items. Though a statistically significant relationship was found only for 'treatment of diarrhoea' and 'benefits from vaccination' girls did better than boys for all items except 'prevention of nightblindness'. The co-efficients of logistic regression models showed that as years of schooling of children, parental levels of education and economic status of the household increased the levels of knowledge in all items also increased.

The multiple regression co-efficients revealed that in aggregate level of knowledge, urban children performed better than their rural counterparts and girls had better health knowledge than boys (Table 3). Years of schooling of children and parental levels of education had a significant positive influence on the health knowledge of children. The economic status of the household was not found as significant, but it had a positive influence on each of the items separately as well as on overall health knowledge.

Discussion and Conclusion

Health knowledge, as part of life skills is important if children are to prosper in society. The results of this study show that, in Bangladesh, essential health knowledge is not known by all children aged 11–12 y. Such children have good knowledge regarding 'treatment for diarrhoea' and 'place of defecation' but poor knowledge was observed regarding 'benefits from vaccination' and 'prevention of nightblindness', 'water purification' and 'first aid for high fever'. Both the bivariate and multivariate analysis showed, in each of the six items, as well as at the aggregate level, that the knowledge of urban children was greater than that of their rural counterparts. This is probably due to greater access to electronic communication media in urban areas and the proportionately lower educational investment in rural areas. The higher proportion of correct responses

Table 2 Proportion of children who correctly answered the different items and mean number of items correctly answered, by selected socio-economic characteristics

Socio-economic characteristics	Name of items						Mean no. of items
	Treatment for diarrhoea	Place for defecation	Benefits from vaccination	Prevention for night blindness	Water purification	First Aid for high fever	
Bangladesh	74.7	75.0	36.3	36.0	56.8	57.2	3.4
Residence							
Rural	71.5	72.2	32.0	29.7	53.6	54.2	3.1
Urban	90.7	88.6	58.1	67.9	72.4	72.1	4.5
Sex of child							
Boy	72.4	74.7	35.7	36.9	56.3	55.8	3.3
Girl	76.9	75.3	36.9	35.2	57.3	58.6	3.4
Years of schooling							
None	56.2	54.3	11.5	13.1	36.7	52.0	2.2
One	63.9	63.9	12.6	19.1	40.4	45.9	2.4
Two	60.6	62.8	14.2	19.0	35.4	48.7	2.4
Three	66.3	75.0	22.1	24.0	44.2	51.3	2.8
Four	77.6	81.1	35.2	35.6	59.1	57.4	3.5
Five	84.3	82.6	51.0	47.3	68.4	60.3	3.9
Six and more	92.7	87.5	70.2	64.7	82.5	69.8	4.7
Mother's education							
None	68.1	69.3	25.7	26.3	47.1	53.3	2.9
1-5	80.6	80.1	44.1	39.9	64.3	61.5	3.7
6-9	89.3	87.4	60.4	64.8	79.6	62.6	4.4
10 y and more	95.5	93.2	83.0	83.0	92.0	75.0	5.2
Father's education							
None	65.9	66.9	22.5	24.0	45.9	53.4	2.8
1-5	73.4	75.3	34.4	30.3	54.1	53.2	3.2
6-9	81.3	80.8	47.1	45.5	67.4	60.3	3.8
10 y and more	91.3	88.0	62.3	65.1	76.6	70.1	4.5
Economic status							
Always in deficit	62.6	66.7	21.2	23.5	48.7	53.8	2.8
Sometimes in deficit	70.9	69.2	30.6	29.1	54.0	51.5	3.1
Balance	78.0	78.3	40.0	39.9	58.0	57.8	3.5
Surplus	85.7	85.2	53.6	51.8	67.4	69.3	4.1

relating to 'treatment for diarrhoea' may be due to the fact that in the early 1980s millions of mothers in Bangladesh were taught 'how to make oral rehydration saline' at home for the treatment of diarrhoea.¹⁶ Again, in recent years this

has been publicised widely all over the country. In all individual items (except nightblindness) girls have a better health knowledge than boys. One possible explanation for this may be that girls are more closely associated from an

Table 3 Results from logistic and multiple regression analysis^a considering the knowledge items as dependent variables

Socioeconomic Characteristics	Logistic regression co-efficients						Multiple regression co-efficients all six items
	Treatment for diarrhoea	Place for defecation	Benefits from vaccination	Prevention for night blindness	Water purification	First Aid for high fever	
Residence	1.03***	0.79***	0.61***	1.28***	0.38***	0.64***	0.81***
Child's sex	0.33***	0.02	0.16*	-0.02	0.12	0.13	0.14**
Years of schooling (child's)	0.24***	0.22***	0.44***	0.31***	0.27***	0.08***	0.31***
Mother's education	0.08***	0.06*	0.08***	0.09***	0.11***	0.01	0.07***
Father's education	0.02	0.01	0.02	0.03*	0.02	0.01	0.02**
Economic status	0.10*	0.09	0.05	0.05	0.14***	0.09*	0.04
Constant	-1.77***	-0.88***	-3.62***	-3.66***	-1.23***	-1.23***	0.76***
Model chi-square	302.6	221.4	399.8	553.7	358.3	88.7	Multiple R ² = 0.29
P-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000

^aFor definition of variables see Table 1.

***Significant at $P < 0.01$.

**Significant at $P < 0.05$.

*Significant at $P < 0.10$.

early age with household tasks and in nursing family members. Numbers of years of schooling of children, parental levels of education and the economic status of the household all played a significant positive influence on the health knowledge of the children.

The findings of this study indicate that the health knowledge of children was strongly associated with the urban/rural residence of the child, the numbers of years of schooling of the child, their parents' level of education and the economic status of the household. Though it is expected that children from all sections of society will have an equal level of health knowledge children with better socio-economic background benefited more and health knowledge has a strong dependence on the number of years of schooling. So to achieve the required level of health knowledge, the schooling of children must be ensured by solving the social barriers hindering children from going to school. Greater general educational investment in addition to quality education related to everyday life should be provided in rural areas.

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