

# THE INFLUENCE OF MATERNAL EDUCATION ON INFANT AND CHILD MORTALITY IN BANGLADESH

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## PREFACE

The International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B) is an autonomous, international, philanthropic, non-profit centre for research, education, training and clinical service. The Centre is derived from the Cholera Research Laboratory (CRL). Its activities are to undertake and promote study, research and dissemination of knowledge in diarrhoeal diseases and the directly related subjects of nutrition and fertility--with a view to developing improved health care methods and to prevent and control diarrhoeal diseases and improve public health programmes, especially in developing countries. The ICDDR,B issues an annual report, working papers, scientific reports, special publications, monographs, theses, dissertations, and a bi-monthly newsletter, which demonstrates the type of research activities currently in progress. The views expressed in these papers are those of the authors, and do not necessarily represent the views of the ICDDR,B. They should not be quoted without the authors' permission.



## ABSTRACT

An anthropological approach, using survey, case study and historical data examines the effect of maternal education on infant survival and child mortality in Bangladesh. The study focuses on the recent shift in the meaning of education, the psychological, social and economic changes effected by the education of women, and the implications these may have for the survival of infants and children, as well as for educated women themselves. The study demonstrates also that health behaviours may change in the absence of a shift in previously held theories of disease causation. The findings lead to the formulation of thirteen questions that could be investigated further by epidemiologists.

## INTRODUCTION

Recent studies have directed our attention toward the effect of maternal education on infant and child mortality in Nigeria (Caldwell 1979, Caldwell and McDonald 1981), Kenya (Mosley 1983), and Bangladesh (Halim and Hossain 1981, D'Souza and Bhuiya 1982, Chowdhury 1982, D'Souza 1982). It is generally agreed, as Caldwell (1979) first proposed, that maternal education acts as an independent determinant of child mortality, and is not merely a proxy for other social variables. Although child survival is determined primarily by the social and economic resources available in the child's family, 86% of the decline in child mortality in Kenya between 1962 and 1979 may be attributed to increased maternal education (Mosley 1983:16).

Greatest attention has been paid to demonstrating the finding itself: that maternal education is inversely related to mortality levels of infants and children. A few studies have examined the mechanisms which may be responsible. Levine (1980), for example, considers schooling to be a psychological variable affecting the ways Third World women think about and behave toward their infants and children; Caldwell (1979) speculates on the importance of maternal education in changing structures of authority; and Mosley (1983) proposes a model of social and biological synergy, which takes women's education levels as a social determinant influencing the risk of death through several intermediate biological variables.

Since the education of a mother has been shown to be an important predictor of childhood mortality in Bangladesh, the present anthropological investigation was designed to examine the interacting social and biological variables that have received less attention. The study focuses in particular on the historical shift in the meaning of "education" in Bangladesh, the psychological and social changes effected by the education of women, and the implications that these may have for the survival of infants and children, as well as for educated women themselves.

## METHODS

Four villages initially were selected for study: two from the five villages of the Matlab SES investigation of socioeconomic status, nutrition and mortality; and two villages at Shotaki Bazaar, namely Shotaki and Shugondhi, located in Matlab Upa-zila some distance from Matlab, an area which, until 1979, had been included in the ICDDR,B's Matlab surveillance studies. The Shotaki region was chosen because the present principal investigator had done anthropological field work there from 1963-1966 and for a short period in 1974. Since the first few weeks of field work indicated that the Matlab area villages did not differ significantly from those of Shotaki Bazaar (in socioeconomic status and women's educational

levels), the current study concentrated on the two villages adjacent to Shotaki Bazaar.

The study was carried out between mid-February and early May, of 1983. Field research assistance was provided by Manisha Chakraborty, and ICDDR,B/ Matlab, Health Assistant, who came to live with the senior researcher at Shotaki; and by Mohammed Elias, a resident of one of the villages, who joined the ICDDR,B as a Research Assistant for the study's duration. Manisha Chakraborty and Shirley Lindenbaum lived in one room of Lindenbaum's former field house, which had recently become a diarrhoeal disease clinic, staffed by four male and one female ICDDR,B trained paramedics. This living arrangement provided a unique exposure to a constant stream of incidents and information about the health care of mothers with children under the age of five. However, most daytime hours were spent away from the clinic as all three researchers visited every *bāri* (patrilineal family compound) in the two Shotaki villages at least once, and a few *bāris* almost every day.<sup>1</sup>

#### *The Importance of Education for Women*

In the early days of the study, it became apparent that it would not be difficult to record the educational level of most women, young or old, in the study villages. For unlike such vague or difficult information to determine as a women's age (even that of a schoolgirl), or the specific occupations of absent males (sons and brothers), women's educational levels are widely and accurately known. Even 10-12-year-old boys seemed to know this about most women in their own and adjacent *bāris*, including their married, departed older sisters. The only exception was for non-elite elderly women, whose educational accomplishments sometimes were unknown or of little interest to others. For the most part, however, educational attainment is considered an important part of the social identity of all women.

#### *Recent Changes in Women's Education*

There are many indications that the current value attributed to the education of women is a recent phenomenon. One way to trace this shift is to examine the history of Sharifullah High School at Shotaki Bazaar. One of three high schools in the Union (a group of villages), it is the one which most educated residents of the two adjacent study villages have attended or currently attend. Begun as a primary school in 1939 with classes 1 through 5, it was upgraded in 1943 to admit students to Class 8, and became a high school (up to class 10) in 1945. That year, the government officially recognised the school, and the first group of students (all male) sat for the SSC (Secondary School Certificate) examination, the qualification given upon successful completion of 10 years' schooling. Although a few girls from elite families attended the school's primary grades in its early years, the first girl entered class 6 in 1953. She failed the SSC examination in 1958, but another female student who entered class 6 in 1954 passed the exam in 1959. Thus, it was in the early 1950s that a significant increase in



female school enrollment began with more girls entering primary school and proceeding to the secondary level. The student population now consists of:

	<u>Boys</u>	<u>Girls</u>
Primary School:	275	150
Secondary School:	249	94

The present sex ratio in the entire school thus is 2,15:1, and in the primary grades 1.83:1. These figures seem comparable to the nationwide trend documented by Sattar (1982:32), in which the boy/girl ratio in primary school was 4:1 in 1950 and 1.7:1 by 1980. Although the total number of primary school students in Bangladesh in the last few years may have declined, since school enrollment has not kept pace with population increase (*Bangladesh Times*, March 20, 1983), the Sharifullah School data suggest that the number of schoolgirls actually has increased. The first woman teacher began teaching in the primary school in 1976. Married into an elite Shugondhi family, she passed the SSC and Primary Teachers Institute examinations, and her own children attend the Sharifullah School.

Islamic schools provide another avenue of education in the villages. The Shugondhi Islamic School (or "*Maktab*") began in 1913, teaching Bengali, mathematics and Arabic. Since 1939, however, when the Sharifullah School opened, students who attend the *Maktab* early each morning study only Arabic, as in other Islamic schools in the area. Not all students attend Islamic schools. About 25 boys and 25 girls attend the Shugondhi *Maktab*, while the Shotaki *Maktab* has a somewhat smaller enrollment. Moreover, some children attend no school at all.

The changing educational experience of women, which began in Bangladesh in the 1950's, has many important consequences. First, although many women still do not go to school, the community of women can be divided in two those over age 40 who have little or no education, and those under 40 whose educational experience ranges from primary schooling to SSC (a graduate of class 10), to HSC (Higher School Certificate, two years beyond SSC), or even to a B.A. (Bachelor of Arts, an additional two years). Although highly educated women (and men) tend to reside in Dhaka or some other urban area, there is considerable visiting between village and town, and the social universe of village residents may include those who work and live for a major portion of their lives in urban areas.

In the two Shotaki Bazaar villages (Shotaki and Shugondhi) information about educational level was obtained for every woman.<sup>2</sup> Currently, the mean number of years of schooling for women over age 60 is 0.53 (n=75), and for women aged 40-59 it is 1.25 years (n=199). For women aged 20-39, however, the mean rises to 2.96 years (n=424). The dramatic increase in women's education may be better expressed as follows:

TABLE I

Age (Years)	Women with No Education	Women with Some Education	% with Some Education
60 +	64	11	14
40 - 59	141	58	29
20 - 39	214	210	50
10 - 19	128	192	60

Although 14% of women over age 60 report having had some education, they did not attend school for long, as the following table illustrates:

TABLE II

Age (Years)	Women with Less than 5 years Schooling	Women with More than 5 Years Schooling	% with More than 5 Years Schooling
60 +	74	1	1.3
40 - 59	189	10	5.0
20 - 39	329	95	22.4
10 - 19	(school experience for this cohort is not yet complete)		

Thus, the current generations of adult women have vastly different educational levels. Daughters are more highly educated than their mothers. In a sample of 101 mother-daughter pairs, 66 daughters at the time of their marriage had an education exceeding that of their mothers, 31 had the same education, and 4 had less than their mothers. However, of the 31 pairs with the same education, 27 had had no education, and 4 had reached the same grade in primary school. Of perhaps greater importance, daughters-in-law are now more educated than their mothers-in-law. A sample of 139 mother-daughter-in-law pairs shows that 72 daughters-in-law have more education,

62 the same (of which 61 pairs have no education, and 1 pair studied to class 5), and 5 have less education than their mothers-in-law. This generational feature of women's experience will be discussed later.

In general, women marry husbands who are more educated than themselves, a situation which is not unexpected. However, a sample of 298 married couples shows that 39 wives have more education than their husbands, a finding which initially seems somewhat surprising. In most of these cases, however, the husband has a job (*chākri*) and thus is a wage-earner, or he is a farmer belonging to a family with sufficient land to produce a food surplus. That is, the husband's economic condition is stable, or even favourable, and his family is in a position to acquire more highly educated daughters-in-law for their sons. In several cases, the more educated wife is the man's second or third partner, the earlier uneducated<sup>2</sup> wives having been divorced. Moreover, where the husband/wife educational disparity is greatest, the contribution of the groom's family to marriage costs increases. For example, in one family, a young farmer with no education whose bride had studied to class 5, contributed more wealth than did his brother who had studied to class 6 and had married a woman with 7 years' schooling. Where educational levels are equal, marriage expenses tend to be shared by the two sides. This indicates that female education currently has a social value equivalent not to male education, but to the economic condition of the husband and his family.

The changing meaning of education for women in Bangladesh can also be demonstrated by examining the matter from another direction. A small but educationally diverse sample of men and women aged 40 and over were asked to define the qualities they desired in marriage partners, and the qualities they thought desirable for members of their own sex, for two periods of time: the past generation and the present. The most frequently mentioned attributes included *bangsha* (hereditary title of the lineage, such as Sarkar, Chowdhury, etc.), the beauty of the bride (*shundor*, meaning in particular, the lightness of her skin), the family's social status (*bhadralok*, upper class, "gentlefolk"), economic condition, and education. Ranked by the number of times each attribute was mentioned, the results show an interesting shift over time.

As Table III indicates, men today are less interested in the hereditary status of the bride's family, and more interested in her family's economic condition. They are still preoccupied with the bride's beauty, although less so than in the past. The wife's education (unmentioned for the first period) is now of some concern. When women consider the features they desire in a husband, they are now most interested in the husband's employment, followed by his economic condition. Hereditary status, previously a prime concern, is in third place which it shares with the groom's education, a feature unmentioned for the earlier period. Thus, both men and women are less concerned with the hereditary status of the husband's family, replacing this with economic condition, which is no longer necessarily tied to *bangsha*. Education has entered into the evaluation of a bride, and women's priorities are compatible with the finding that educated women are marrying

TABLE III--MEN'S VIEW OF QUALITIES DESIRED

In Wives		In Husbands	
Past	Present	Past	Present
1. <i>Bangsha</i>	1. Beauty	1. <i>Bangsha</i> and economic condition	1. Employment
2. Beauty	2. Economic condition and education	2. Social status and education	2. Economic condition and education
3. Social status	3. Social status and <i>Bangsha</i>	3. Employment	3. Social status
4. Economic condition and education			

TABLE IV--WOMEN'S VIEW OF QUALITIES DESIRED

In Wives		In Husbands	
Past	Present	Past	Present
1. <i>Bangsha</i>	1. <i>Bangsha</i>	1. <i>Bangsha</i>	1. Employment
2. Beauty	2. Economic condition	2. Economic condition	2. Economic condition
3. Social status and economic condition	3. Beauty	3. Social status	3. Education and <i>Bangsha</i>
	4. Education	4. Employment	

men with jobs or with sufficient land to farm, even though the husbands may have less education than they do.

Men currently view employment as the most desirable qualification of husbands, followed by education and economic condition. Hereditary status is no longer mentioned. As to the qualities of wives, women continue to regard their own family's hereditary status as important, but beauty is given less current notice by women than by men. The economic condition of a woman's family is an important feature of women's self-evaluation, as is her own education, unmentioned in the past.

Women's education is thus a rapidly moving social counter. Its current meaning differs from that of the recent past, when only young women from elite

families received an education. At that time, female education may have more nearly been a proxy for social and economic status. Now, women of the four locally-recognised social classes<sup>4</sup> may go to school, although many children from the lowest social categories still do not attend, or attend intermittently, since their contribution to household labour is of greater value. In addition, although primary school is now free and books are distributed without cost to classes 1 and 2, the poorest children do not have the clothing to permit them to attend school daily.

A woman's education has a new value at the time of marriage. It currently defines an important aspect of the bride's status. Whether she marries a more highly educated groom or one with no education, women marry into families considered to be of equal or higher status than their own (isogamic or hypergamic marriages), thereby permitting family groups to continue pursuing old strategies with new social components. Women's education thus has broken loose from an earlier cluster of socioeconomic attributes, and is no longer a proxy for hereditary or social status. Educated women are now said to be less costly when their families come to arrange their marriages. Indeed, one uneducated woman said jokingly: "I did not go to school, so I should demand 20,000 taka to give to my husband, since this amount was not spent on my learning."

Education differs in one important aspect from the other attributes considered desirable in a bride. In a sense, education belongs to the woman alone. To some degree it reflects upon her family's ability to bear the expense of schooling and suffer the loss of her youthful labour; unlike the hereditary or social status of her family, however, it describes something specific to the woman herself. Like physical beauty, it contributes to her sense of identity, but unlike beauty education has a more dynamic effect on the behaviour of the educated person and of others toward her, a feature to be considered next.

#### *How Education Changes Women*

Ninety people (51 and 39 women) from all four social classes, with educational experiences ranging from no education to a Master of Commerce, were asked to discuss how education might affect women. Forty-one men and 35 women said education was good for women, while 10 men and four women disagreed. Those who thought education was not a virtue were predominantly males and all were older persons with little or no education. In general, the responses were overwhelmingly in favour of women receiving an education.

The effects of female education seem to cluster around three main topics:

- a. The psychological changes education brings about in women;
- b. The economic value accruing from such education;
- c. The new status thus conferred and its implications.

a. *Psychological Effects:*

Men almost always mention the self-sufficiency of educated women: they "depend upon themselves;" they become "proper persons (*mānush*;" they become "brave and smart." Even those who disapprove of educating women stress the behavioural and psychological consequences of schooling. Among these are that educated girls "choose husbands for themselves, and do not depend on their fathers and mothers;" their "character becomes bad," and "they do not serve their parents or nurse their husbands well." Those who approve often point to the woman's enhanced ability to live harmoniously with her husband and his relatives. Thus, it is said that educated women "become psychologists, and their dealings with their husband's family are admirable," and that they "begin to behave in a gentle manner."

Women agree that their relationships with their husbands' relatives improve, and stress that their conjugal life also is happier. They comment that they are not too shy to discuss things in their husbands' households, they become "frank" (*mishuk*), and consider their family life to be "progressive." Educated women feel themselves to be more intelligent and sometimes add that the behaviour of educated women is "more polite."

b. *Economic Value*

As mentioned earlier, men and women agree that it costs less for an educated woman's family to arrange a marriage. Once married, men especially point to the fact that an educated girl who can read and write can appreciate the income and expenditure of her new family, and has a better sense of handling financial and domestic affairs. The role of the educated mother as tutor for her children, thereby saving the family the expense of an outside tutor, often is mentioned by more educated people. Women with less education point to the skills acquired with literacy when it comes to land disputes. A woman who can read and write does not need to take court documents to outsiders who may not be trustworthy. An educated woman acts in an autonomous fashion, thereby protecting her own interests. (Similarly, an educated woman who receives a letter from her husband does not have to risk taking it to another woman who may read the letter but convey only part of the text, thereby coming between the couple.)

Women often suggest that educated girls can find employment (*chākri*) which they describe as jobs in family planning, or school teaching. They refer to the few women they know who have such jobs. They sometimes add that a woman's income will benefit her parents, who will be supported by her earnings. Although female employment is recent and still rare for women in this region, 45% of women (and 31% of men) spoke about women finding paid work. Moreover, our census data on women's education shows that parents, especially in non-elite families, tend to give the highest education to first born daughters, with subsequent daughters attending school for less time. Thus, the first born daughter studies to class 10, the second to class 8, and the 3rd to class 5. While higher education is an investment toward a marriage that will reflect upon the entire family,

the parents of first born daughters also are actively seeking employment for them. It might be said that daughters are becoming "sons" in many rural families. This new focus on employable daughters suggests that male and female infants might receive equal nurture, and that the greatest shift in the morbidity and mortality rates of children under 5 should occur with the better survival of daughters, especially those of educated women.

### c. *New Status and its Implications*

As mentioned, an educated woman is said to take upon herself the role of family tutor, helping her children learn to read and write, a task with social as well as economic implications. She also is said to become a better nurse for her husband when he becomes ill, and to take better care of the whole family. Men add that educated wives keep the house cleaner, and entertain guests well. Women agree that education improves the standard of housework, and say that educated women manage the family well. Uneducated women point to the fact that an educated bride acquires a good husband, and also may travel to foreign parts (*bidesh*), which sometimes means another country, but more likely refers to somewhere beyond the local community, such as Chittagong or Dhaka. It also is said that the educated woman is in a position to "buy soap and saris and eat good food," and that "she and her children enjoy good health." Moreover, uneducated women add, the educated woman marries at a later age and does not have to do hard agricultural work. This latter point sometimes leads to a discussion as to how many years schooling are needed to provide protection from hard labour. It is generally agreed that young women with secondary schooling to classes 5, 6 and 7 might still be found doing agricultural work, processing crops within the *bāri*, but not those with matriculation and beyond. "With education to class 10, or a B.A.," it is said, "you can pay maidservants to work and carry water for you."

### *Mother's Education and the Health of Children*

The evidence from this last section concerning the psychological and social changes effected by educating women brings us closer to the question of the relationship of mother's education to the mortality of children. Women and men experiencing and observing the first generation of educated women (other than the small elite of earlier years) point to the liberating effect of education. Educated women themselves speak of the new tool which makes them self-propelled, of the freedom from dependency and constraint. Others comment on the way education changes the woman, gives her a kind of "autonomous" value, and provides her with skills now considered useful and highly respected. Education transforms a woman in the eyes of others, and increases the woman's own self esteem. How does this translate into better health for her children?

Some of the answers to this question have been suggested already. Thus, compared to the uneducated, educated women are said to keep themselves,

their houses and children neater and cleaner, an observation which, superficially, seems to be the case. A focus on sanitation must come, in part, from lessons learned at school. A textbook used in class 3, for instance, has segments on sanitation and hygiene, and shows Salam and Mina washing their hands before eating. Mina also washes her plate at a tap, and covers her rice and vegetables to keep them free from contamination. The book speaks of the importance of burying rubbish and refuse, and of keeping flies away. A class 6 textbook likewise shows a picture of a thin, malnourished child. When a group of class 6 children returning home from school were asked why the child seemed to be in such a bad condition, they said that it was because he was dirty and did not eat good food. Class 3 children also report that the teacher talks to them about hygiene and cleanliness. This is confirmed by the female school teacher, who adds that she inspects children each day for tidiness, and that any child with a skin infection such as scabies is sent home until the condition improves.

Looking at groups of children on a village path, it is easy to predict which go to school. School children are polished clean, they have unsoiled clothes, their skin shines, and their hair is combed and glossy. Schoolgirls may be directed to focus more on cleanliness than schoolboys. School books give more attention to Mina performing hygienic acts than to Salam; and schoolgirls report washing their own clothing, while boys say their mothers do this. Moreover, the one school toilet is used by girls, not boys.

Schooling encourages upwardly mobile behaviour. At school, the behavioural styles of the elite are a model for others to imitate, with personal cleanliness perhaps being the easiest to follow, and the quality of clothing and nutrition the most difficult. The cohort of girls who travel together through secondary school keep an eye on one another. When secondary schooling is completed, they try to keep abreast of the news of higher education, marriage, and the fortunes of the first years of married life, especially of their elite companions. Schoolgirls have the freedom to move out of the *bāri* every day, where they are exposed to a wider range of people and experiences than those who work at home, or even those who work as maidservants. For uneducated girls, given the constraints of *pardah* (seclusion of women) there is no similar context in which they can join as equals with a cross-section of young people from surrounding villages, whose behaviour they may intimately observe and follow. (An opportunity to observe the imitative behaviour of schoolgirls arose during several photo-taking sessions, where clothing, purses, reading glasses and other prestigious items were borrowed by the girl having her photo taken.)

Schooling endows girls with prestige, and as the comments of uneducated women indicate, educated girls try hard to emulate the behaviour of "gentle folk (*bhadralōk*).\" When possible, educated women wash with tank or tubewell water at home, bypassing public bathing in canals and rivers, thereby avoiding waters shown to be most contaminated (see Khan *et al.*, 1981).

Schooling also presents girls with new sources of authority from whom they seem willing to learn. Of the schoolgirls who visited our room in the clinic (nearly a daily event), all said they had access to a radio, even



if it was not in their own house. Although Bengali songs are their passion, they also listen to broadcasts concerning health and family planning, and some girls in class 6 know what time of day to listen to the evening news. With the schoolbell ringing throughout the day to alert different classes to set off for school, school children become accustomed to a more structured, time-defined existence than those for whom the bells require no behavioural response.

On many occasions, the principal researcher was struck by the quick conversational replies of young women who had been to school, in contrast to their uneducated mothers or mothers-in-law. Young women with a class 5 or 6 education, as well as younger schoolgirls and schoolboys, showed great interest in our work; and sometimes followed us across the borders of one or two *bāris* to participate in the discussions. Educated younger people were found to be more familiar with an interrogatory style, which sometimes puzzles or fatigues their uneducated elders. Moreover, they seem to enjoy the interchange. The experience of schooling, however, goes beyond acquaintance with a new conversational style. Women speak of a newfound consciousness, a sense of mental change (*paribartan hoi*) which empowers them to act. "If a girl studies to class 5 she feels there is no work she cannot do," said one man who had studied to class 5 himself. The evidence from Shotaki thus seems to support Caldwell's (1979) and Levine's (1980) suggestion that participation in the classroom is a form of assertiveness training, especially for girls who otherwise grow up in contexts that do not encourage them to express their thoughts or feelings. Caldwell notes that an educated woman is more likely to feel personal responsibility for the health and welfare of her offspring, and to act in ways that redirect the inter-generational flow of family resources in favour of the children, who may work less hard and live healthier lives (1979:412).

### *Health Care*

A sample of the principal attendants accompanying patients at the Shotaki hospital<sup>5</sup> during three weeks in April, 1983, shows that although the admission fee is 20 Taka, the facility serves mainly the poor and uneducated. Eighty-eight people were interviewed, 77 women and 11 men. The uneducated consisted of 59 women and 10 men. The percentage of uneducated women (76.8%) thus substantially exceeds the percentage of uneducated women of similar age (over 20) in the population at large (53.5%).

When one looks at the diarrhoeal disease treatment behaviour of the 47 mothers in the sample with children aged 5 and under, the picture becomes more complicated. Of the 47, 31 were uneducated, and 16 had had some education. When their young children experienced severe diarrhoeal disease, 16 of the 31 uneducated mothers, and 11 of the 16 educated mothers came directly to the diarrhoea clinic, and did not seek prior treatment. Thus, roughly half the uneducated mothers but two-thirds of the educated women came directly to the clinic seeking treatment with oral rehydration solution (ORS) or intravenous saline. This behaviour, it might be argued, is the informed choice for medical service in the case of diarrhoea. It could also

be said, however, that uneducated mothers made more vigorous attempts to find alternative medical care before coming to the clinic, and that their choice of practitioners was thus weighted in favour of local (largely self-trained) allopaths, as Table V shows.

TABLE V

	Mothers with No Education	Educated Mothers
Allopath	11	2
Homeopath	1	2
Kobiraj	2	1
ORS from hospital worker	1	

The numbers are too small to draw any conclusions, and a more illuminating way to discover if uneducated and educated mothers pursue different health care is to consider the following case study of Khorsheda.<sup>7</sup>

Khorsheda, a young widow in her late 20's, studied to class 7. She has four children to care for. Concerned that the second eldest, a boy about 8, seemed thin and slow growing and suffered from intermittent fevers, she sought a variety of cures during March, 1983. She started with bespelled water acquired from a local *Huzur* (an Islamic woman curer) but the water seemed to have no positive effect. Next, she turned to a local allopath and then to an allopath in the distant town of Narayanganj, both of whom prescribed tonics costing 50 Taka. Toward the end of March, seeing no improvement, she took her son to a still more distant hospital at Munshiganj where, she had heard, MBBS trained doctors were available. This trip, which was her own idea, required assistance from a variety of kin.

Khorsheda first persuaded her mother-in-law to accompany her, a considerable feat, as we shall see. Since the journey required that she stay away from home for two days, she left her other three children with her mother, whose house she passed on her way to the ferry pier. Her older sister's husband provided money for the journey and for the medicines. Moreover, her sister's husband had relatives living near the hospital, and it was with them that Khorsheda, her mother-in-law and her son stayed. After several days, she returned with the hospital laboratory reports (the child was diagnosed as having several types of worms), and with worm

medicine and a tonic. As her mother commented, she succeeded due to the generosity of certain kin.

While the journey required a far-flung support system, it was Khorsheda who conceived of and directed the complex arrangements, against considerable odds. Since her husband's death 18 months earlier, her less educated mother-in-law had shown little sympathy for the young woman's predicament. She viewed her daughter-in-law as a girl with 7 years schooling who should find employment to support her children and herself. Immediately after her husband's death, Khorsheda began to appreciate the precariousness of her position in the household of her in-laws, and asked that a small amount of land and a house be legally allocated to help her support her children. When her parents-in-law were unsympathetic to this request, Khorsheda appealed to one of the community's most influential members, a man who is her mother's brother (in somewhat distant kin terms). This man argued her case, and the deceased husband's parents reluctantly granted her a small plot of agricultural land, as well as a house and house site in the *bāri*. Still, the mother-in-law repeatedly proposed that Khorsheda should leave the village to find a job.

Khorsheda, meantime, tried to find a way to earn a livelihood while living at home with her children. She thought about a sewing machine to make and sell clothes, but did not have the money to buy one. She sent a message to her mother's brother (who had moved to Dhaka, the nation's capital) saying she wanted to see him when he next visited Shotaki. She continued matching wits with her mother-in-law, who, she said, had begun giving her children an inadequate amount of food. Fortunately, Khorsheda's mother's house is situated in an adjacent village, and her children frequently go there for snacks and meals on their way to and from school.

This is a story of tenacity and perseverance, of the behaviour of a young woman whose educational status exceeds that of her mother and her mother-in-law. She has a sense of the social geography beyond the limits of the household compound, and she knows where good medical care is available, and how to gain access to it (cf. Nag 1981). Further, as an educated person she is in a position to command the assistance of other elite and educated people in better circumstances than herself, people who are able to help her.

Those who responded to her requests for assistance were all her elders--her mother, sister's husband, mother's brother, even the reluctant mother-in-law, who stands in the position of greatest authority over her. It is significant that the dispute between Khorsheda and her mother-in-law centers around the deployment of family resources between the generations, as Caldwell (1979) might have predicted. Khorsheda successfully orchestrates resources in favour of her children; the mother-in-law views Khorsheda instead as an educated person who should "replace" the wage-earning son she has lost, not as someone she should be obliged to support. Perhaps the most significant aspect of Khorsheda's activities concerns the fact that her behaviour is directed at "preventive" health measures--

nourishing food for the children, and an attempt to maintain a standard of healthy growth. Her children, three of whom attend school, are kept tidy and clean. Despite her husband's death, which has left her in a poor financial situation, Khorsheda has a sense of herself as an educated person of a certain social standing. She expressed embarrassment when we found her one day in a ragged sari, spreading wheat seed to dry in the *bāri* courtyard.

Khorsheda's story illustrates the predicament facing a young mother who loses her husband, the mainstay in a precarious support system. Khorsheda was able to secure help from some close and some distant kin whom she judged could assist her. Most educated women do not face widowhood so early in married life. Uneducated women, however, do suffer a similar deprivation, in that they are frequently divorced during the early years of marriage. The principal author's data on this point (not yet tabulated) show that uneducated and poor women increasingly are subject to the stress of enforced return to their parents' households, often with infants they must continue to care for. As divorced women, their social status and economic condition is unfavourable, and their ability to care for small children is greatly constrained. Any family resources they can muster will be pledged toward the expenses of another marriage, which they (and their parents) hope will provide a safer haven than the last. The number of poor, uneducated women in this situation is quite high. Shaikh's analysis (1982), based on data from Matlab between 1975 and 1979, shows also that divorce is inversely related to the education of both bride and groom. The lowest divorce rates at Matlab occur among brides and grooms with secondary education or higher. Thus, educated women tend to have access to a network of strategic support which it is acceptable to call upon, and which is more likely to stay in place for the duration of their married lives.

Education has a substantial effect, not only on the stability of marriage, but on a woman's age at first marriage. As uneducated women at Shotaki observe, educated girls marry later than themselves, a feature of social life which may favour the future mother and her infants. Before marriage, an educated daughter does little strenuous work. This is a moment in her life when a certain amount of prestige accrues to the entire family by keeping her at home in apparently unproductive luxury, the rewards of such image management being a well-regarded marital alliance (Lindenbaum 1975:78). Under these conditions, a young woman living at home until age 19 or 20 is likely to approach motherhood in a healthier and better-nourished state than is an uneducated, hard-working younger person. Having invested in the education of their daughters, even non-elite families give them special consideration in the few years prior to marriage. Thus, educated women may approach childbirth in a relatively well-nourished state, and give birth to babies of greater birth weight, a condition judged to be a survival advantage (Khan 1980). They also may experience greater success in breast feeding, especially if they return home for the birth of the first children, a custom many women aspire to, since they eat and rest better in their own homes.

One further bio-social consequence of women's education may lie in the fact that, as the present study shows, educated women tend to marry into economically "secure" families. Moreover, in this region, women in economically well-placed families (social class 1 and most of social class 2) light the hearth fire twice a day for two separate food preparations (apart from breakfast), while in some of social class 3 and all of social class 4 they light the fire only once a day (in the late morning). Thus, the degree of bacterial contamination of food, an important cause of diarrhoeal disease in children (Black *et al.*, 1982), may be greater in families of the poor and less educated who eat foods following longer storage periods. School lessons concerning the reheating of cooked foods may make an important difference in families where cooking occurs once only.

One consequence of the likelihood that the children of the poor (and presumably uneducated) have higher mortality rates than do children of their better-nourished, wealthier counterparts (Chen *et al.*, 1980), is that a mother of a breast feeding infant with diarrhoea modifies her own dietary regime. It is universally believed that diarrhoea in infants is caused by spoilage of the mother's milk. Thus, the mother responds by avoiding meat, fish, eggs and, often, salt, a regimen which, if frequently repeated, would further adversely affect the mother's nutritional status and her ability to produce milk. In addition, a breast-fed child on supplemental food who suffers from diarrhoea also has its diet changed. In some cases, the mother withdraws breast milk for the duration of the illness, and in most cases, eliminates rice and decreases bread, puffed rice, biscuits, banana and other supplements. These two dietary modifications would seem to have two deleterious effects. First, repeated diarrhoea episodes lead to a downward spiral in the nutritional status of both mother and child, a constitutional challenge which better-nourished, better-educated women and their children may be in a position to withstand.<sup>8</sup> Moreover, an interrupted course of suckling imposed by the mother on the child, and by an ill child on the mother, might inhibit the mother's capacity to generate a constant milk supply, leading to the infant's further nutritional deprivation. The principal author's data is insufficient to indicate whether educated mothers follow a better course of nourishment for their infants and themselves during illness episodes. The infants admitted to the Shotaki hospital frequently cried for food, but it sometimes seemed that this was because the mothers had not prepared well for this unusual and disorienting period away from home. Questions of dietary modification during illness and supplemental foods are topics that could be investigated more fully.

### *Health Care Beliefs*

As the previous section indicates, the health seeking behaviour and health status of educated women differs from the behaviour of the uneducated. The question of differing health beliefs, however, is answered largely in the negative. The authors found no evidence that education significantly changes the ideas of women about the causes of disease.

Rich and poor, educated and uneducated, Muslim and Hindu women on the whole share similar beliefs about the origin of disease. It is only among the most educated women (and men), and only for certain diseases, that one finds different notions concerning disease origins. Some fundamental cultural postulates about the workings of the human body and the universe still provide a unity from which the causes of specific diseases are deduced (see Lindenbaum 1964, 1965 for a fuller discussion).

In conversations at Shotaki with 206 persons (155 women and 51 men) concerning the cause of diseases--primarily diarrhoeal diseases, fevers and scabies--the germ theory was mentioned only twice. One 40-year-old man with a Bachelor of Science degree said that dysentery (but not diarrhoea) in a variety of age groups was caused by lack of cleanliness; diarrhoea in patients beyond breast feeding age was due to "irregular eating." In the second exception, a 23-year-old woman with an SSC qualification noted that her 1-year-old child suffered from chickenpox, an infectious disorder caused by germs. However, she believed that dysentery in the same child, as well as in a 3-year-old sibling, was a hereditary disease acquired from the mother.

Apart from these two cases, there was general agreement that infant disorders result from a spirit attack associated with bad winds, and that illness in all age groups results from various bodily imbalances, caused by poor eating habits, hard work, and occasionally, punishment from God. In this context, it can be seen that an educated woman's understanding of the value of hygiene and sanitation is an epiphenomenon compared to more fundamental beliefs that explain the workings of the body and of society, as well as the causes of illness. Educated women follow hygienic behaviours associated with the social standing of prestigious people. They keep their children, children's clothing and food free from dirt and contamination, and observe "*bhadralök*," codes of personal behaviour. For instance, they refrain from spitting inside houses, wipe mucus from their children's faces, and bathe in "private" waters.

#### SUMMARY, SPECULATIONS AND SUGGESTIONS FOR FURTHER INVESTIGATION

The present anthropological approach treats education as an "empty category," its meaning to be spelled out by informants' opinions, and by observations of the day-to-day behaviour of educated and uneducated people in a rural setting. Compared to its meaning for women prior to the 1950s, education in the 1980s carries a different social import. Children of classes other than the elite now attend school, and a bride's education enters into an evaluation of her qualifications at the time of marriage, displacing and re-arranging earlier considerations. Thus, an epidemiological approach that divides the data into educated versus uneducated, without regard to historical period, misses an important shift in meaning. Education could be said to function as a proxy for social and economic status for the earlier period only.

The search for a "cultural definition" of education leads to the perception that education is not the same thing as literacy. Some advantages stem from the capacity to write, but as many of the Shotaki residents indicate, schooling has other transforming effects. Rural women with a few years of primary education who could not be considered "literate," acquire a prestige that raises them above uneducated women in the village, many of whom are otherwise their seniors in age and lines of family authority. Education changes the views of other people toward the educated person, as well as the view of the educated woman toward herself, as Caldwell notes. Education encourages exploratory and self-confident behaviour. Literacy adds skills which are perceived as economically and strategically useful. Moreover, "literacy" emerges also as a culture-bound concept of Western academia (cf. Scribner and Cole 1981), for the ability to "read" the Koran in the absence of a further capacity to read and write in Arabic is highly respected, especially in women, and is said to be a skill that earns religious merit. In addition, the Union Council (local governing body) definition of literacy as an ability to write one's own name and recognise some words, does not imply the degree of accomplishment conveyed by the Western use of the term.

The present study finds too that people at Shotaki are attracted to the efficacy of Western therapy, without dislodging their own theories of disease causation. Khorsheda, an educated woman, consulted indigenous spiritual practitioners before she turned to the MBBS-qualified doctors at a distant hospital. Many of the uneducated (and educated) clients who came to the Shotaki clinic had a similar therapeutic record, and their beliefs showed little recognition of the germ theory of disease. The Shotaki data indicate that the differential behaviour of educated women in the pursuit of health care is carried out with little cognitive change concerning the cause of disease. Except at the highest educational levels, and in the case of one or two diseases only, educated and uneducated women (and men) share a set of common beliefs which do not stem from scientific medicine (cf. Chowdhury *et al.*, 1981:184). Education appears to change the minds and behaviours of women in ways that influence the survival of their offspring, without significantly changing their theories of disease origins.

In a society that restricts the movement of young women, the act of going to school is a socially liberating experience. Each day, school-girls leave the confines of the household compound to make the acquaintance of classmates from other villages, as well as of a variety of students from other social classes. Schooling exposes students to new information, new figures of authority, and a day structured in ways that differ from the normal agricultural round. Young girls exposed to this experience undergo a change, which gives them a heightened sense of themselves and their own capacities, and prepares them for a style of discourse dependent on question-and-answer interchange. Schooling also alerts them to the delivery of information via such media as the radio, and perhaps imparts a willingness to accept it. The enhanced knowledge of life beyond the confines of the local community is said to enable an educated woman to

handle the budget in her husband's household, one example of the means-ends relationship that LeVine suggests results from educating women. Some illiterate women at Shotaki, for instance, have no experience with money beyond small coinage, and do not know the value of paper money denominations. The sense of personal awareness that occurs with "literacy" may be its most important legacy. Women dwell upon the power it gives them to act independently, and in their own interest.

An educated woman gains access to a network of other educated people, who may be instrumental in providing information and assistance when help is required. The social networks of the poor and uneducated are not as extensive, well-placed, or lasting. Uneducated women may ask kin and neighbours to contribute to the cost of medical emergencies, but their status in this support network is that of an unequal supplicant. The plight of uneducated women, and their ability to nurture offspring, is further undermined by more frequent divorce and "abandonment." Some Shotaki men are now marrying 7 or 8 times, sending each wife back to her family, and keeping the small marriage dowries for their own use. Since the parents of educated women are not necessarily obligated to provide grooms with marriage gifts (although they are not free of the burden), education might protect some poor, uneducated women from this recent strategy of wealth-acquiring males which is detrimental to the physical and emotional health of young women and their offspring.

The study of mother's education as a determinant of child survival traverses both social and biological domains. Thus, education raises a woman's age at first marriage, protecting her from the risk of infant deaths associated with child-bearing at a very young age. One might postulate further that schooling itself safeguards young women from performing exacting labours during their growing years. Many children in class 1 are 8 years old. Thus, a girl who studies only to class 5 spends an important phase of her growth and development in the protective environment of the schoolroom. Sheltered from excessive work before marriage, educated women marry later, presumably with physiological advantages, which in the next few years may protect them and their children, especially during illness episodes, when the diets of mothers and their offspring are impoverished by behavioural strategies believed to safeguard them.

Uneducated women, by contrast, frequently are found as maidservants and labourers in the houses and fields of others. Between February and May at Shotaki, the most impoverished women harvest such dry crops as coriander, millet and wheat, and then process the produce in the owners' courtyards. Women harvesting field crops is a new phenomenon at Shotaki, a sign of increasing poverty in the region, and the migration from the village of male labour. Women speak of the arduousness of working with wheat, a new crop for Bangladesh, that matures in the heat of April. Moreover, women (and many men) associate diarrhoeal disease in adults, including the mothers of breast feeding infants, with "hard work" and "irregular eating," two hazards against which uneducated women find little protection. Poor, uneducated women perhaps have a greater chance of giving birth to low



weight infants, which they cannot adequately nourish. While many educated women also may be poor and can be found processing field crops within the *bāri*, the female field labourers at Shotaki all are poor and uneducated.

Observations at Shotaki indicate that education also is a form of upward mobility for women, who tend to marry economically "secure" husbands. It is likely that the nutritional status of these women thus is relatively stable. In addition, educated women adopt bathing habits, standards of cleanliness, and other forms of upper class hygienic behaviour. Lessons learned at school concerning the contamination of food also are relatively easy to follow, even in poor households, and pursuit of such behaviours distinguishes educated women from others in the *bāri*.

It is possible that one overriding factor will be found to determine the relationship between education and child mortality in Bangladesh. However, there may be a multitude of contributing and interacting factors, as Mosley's (1983) model suggests. This pilot study indicates that the lives of educated women differ from those of uneducated women in a number of ways that may affect the survival chances of their infants and small children. It is suggested, therefore, that the following questions be investigated further:

1. Does schooling "protect" women? Are schoolgirls taller and heavier than their uneducated counterparts?
2. Do educated young women enter marriage and begin their reproductive careers in a state of better nutrition than uneducated women?
3. Do educated women give birth in environments that provide better care for the new mother and infant? Do they have access to birth attendants, older family members, whose sanitary habits differ from those of uneducated birth attendants? Do they go home for first births, where they have lighter chores, and better nourishment?
4. Do educated women have greater initial breast feeding success, thereby avoiding the early introduction of contaminated weaning foods, as well as providing the protective advantages of breast milk?
5. Do educated and uneducated mothers differ in the ways they prepare and store supplemental foods? The Shotaki data suggest that water sources may be one important difference in supplemental food preparations. Uneducated women appear to use the same waters that they bring in for general household use, rather than tubewell or boiled water.
6. Does the "illness diet" of the uneducated mother and child differ significantly from that of educated mothers and their children? Do the two groups avoid the same foods? Do educated women resort to more nourishing alternatives?
7. Do educated mothers in poor households pay more attention to reheating foods cooked earlier in the day?

8. Do the bathing habits of educated versus uneducated mothers and their infants differ significantly? Do educated women not only bathe in "private" waters, but, where necessary, have others carry bath water to the *bāri* for them? Do they also use this water for bathing their infants?
9. What is the incidence of diarrhoeal disease or other illness in educated versus uneducated women? Is there a greater incidence of illness, especially diarrhoeal disease, in women who work in the fields, as the Shotaki theories of disease causation would suggest?
10. Is there more anaemia among uneducated women?
11. Will the new focus on employable daughters as if they were sons be reflected in female morbidity and mortality rates?
  - a. Are female infants showing better survival rates than in the past?
  - b. Is this especially true for the daughters of educated women?
12. Do educated women tend to follow preventive health measures more often than uneducated women? Do they make greater use of family planning?
13. Do educated women have access to better information about quality medical care? Do they have better networks of assistance in gaining access to this care, and are their support networks more enduring?

The first 12 of these questions should be quantifiable, and lend themselves to epidemiological investigation. Number 13 also could be quantified, but would require more extensive preliminary enquiry. The answers will contribute to a better understanding of the relationship between maternal education and the survival of small children, and thus to policies that may contribute to reducing infant mortality. As the residents of Shotaki are aware, educating women is good social policy and an investment in health.

#### FOOTNOTES

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2. On several occasions the word "uneducated" is used to refer to those who have no formal schooling. This is not meant to depreciate the informal schooling of cultural information transmitted from generation to generation outside the classroom.
3. Women's ages are estimated according to a consensus position, based variably on Matlab census birth registration, the relative birth order of a woman among siblings, the number of a mother's pregnancies, her recollection of the Hartal (strike) of 1929, and other historic events. Ages thus may be off in either direction by several years. However, since the decision as to a woman's age was made by the principal author, the bias should be consistent.
4. People recognise four social classes, currently based on the following criteria: reputation of the *bāri* name within the area and the Upa-zila (district), number of educated people in the *bāri*; amount of land and wealth; and whether family members labour for themselves or for others.
5. The Union Council has named the local clinic the Shaitnal Union Cholera Hospital.
6. It also could be that the poor and uneducated are more frequently ill.
7. This is not her real name.
8. This nutritional regime may be one cause also of the post-partum condition women call "*shutika*," a nutritional anaemia experienced by large numbers of Shotaki women.

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