

Health and Social Conditions in the Dhaka Slums

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Acknowledgements: The authors are indebted to all of the surveyors: Dr. Shayla Farzana, MBBS, Medical Officer of Bangladesh Institute of Research and Rehabilitation in Diabetics Endocrine and Metabolic Disorders, Mansuara Begum MSS, Nazirul Islam M. Com, Mosaraf Hoissain Khan BSS, Mahinur Begum BSS, Khayrul Islam, B.Com M.Com, Akteruddin MSS, Kazoli Begum B.A. and to Dr. Susan Farrell for assistance in developing the survey.

Abstract

Objective: Bangladesh has 3.4 million people living in the 5000 slums of its capital city Dhaka. A comprehensive healthcare and poverty survey households living in Dhaka slums has not been reported in the literature. Urban planning and poverty alleviation strategies call for study of demographics, health status and services, income, education and security.

Methods: This was a pilot study. Data from 100 heads of household in the slums of Dhaka was collected by a 115-question survey, which included questions on migration, housing, rent, security, water, sewage, child and adult health, health care, mortality, contraception, nutrition, work and income.

Results: The survey of 100 heads of household represented a total 511 people. Habitation in the slums was due to economic migration in 93%. Subjects had 296 children, 89 of whom died. Protein consumption was scarce. 81% had no schooling. Contraception was used by 68%. Acute and chronic health conditions were reported. Work was mainly in the service sector, household income was 56.4 USD/month.

Conclusions: Slum living has important social and health consequences. The majority described migrated to Dhaka for economic reasons, and once there had unacceptable levels of malnutrition, hygiene and health, deprivation of essential services, and financial instability. Meaningful data is required to inform public policy in order to formulate poverty alleviation strategies.

Key Words: Poverty Areas, Dhaka, Health, Health status, Income, Nutrition, Delivery of Health Care, Child mortality

Introduction

Homelessness and poverty are an international crisis. Bangladesh, with a population of 147.4 million¹ is one of the poorest countries in the world, with an estimated 3.4 million people live in some 5000 slums of its capital city, Dhaka². In 2010, the population of the city of Dhaka has been projected at 17.6 million people, with up to 60% in the slums. Slums, which are heavily populated urban areas characterized by poverty and substandard housing, are not well described in the literature despite their prevalence and the pervasiveness of poverty world wide. The last study of the urban poor was the 1995 Survey of Urban Poverty in Bangladesh³. The Bangladesh Demographic and Health Survey (BDHS)⁴ is a periodic study of the population and although urban areas are surveyed, slums are not specifically investigated. Urban planning to accommodate increasingly large slum areas requires study to determine demographics and determinants of improved quality of life, such as health status, health services, financial stability, education and security.

In this pilot study, we describe 100 families living in Dhaka slum areas. Migration, living conditions, social structure, child and adult health and health care, income, nutrition, and contraceptive practices are examined. Comparison is made to the Survey of Urban Poverty in Bangladesh, the BDHS, and to existing literature. Potential areas to target for intervention are also explored.

Methods

We undertook a 115-question survey, of a convenience sample of 100 heads of household living in 3 slum areas of Dhaka. The questions were based on a survey administered to the homeless in Ottawa (the Ottawa Population Health Survey⁵), was adjusted to be culturally sensitive and was translated to Bengali. The study was approved by the Ottawa Hospital research ethics board. Questions were mainly closed-ended. Eight surveyors were trained and the survey field-tested prior to general administration. Inclusion criteria required subject age over 20 and residence in the slum for more than one year. A consent and confidentiality statement was read aloud, and the interview conducted with subject consent. Interviews took place from April-July 2002. Respondents were paid 300 Taka per interview and given a bucket to collect fresh water for participation. Interviews were conducted in one sitting.

Results

A sample of 100 subjects was recruited from the Mohammadpur (n= 41), Lalbagh (n=12) and Dhanmondi (n=47) slums of Dhaka, Bangladesh. Twelve were male and 88 were female with an average age of 35 years (Table 1). Subjects were mostly married and were associated with 84 spouses; the majority (81%) had received no schooling.

They had 296 children (3.1 ± 1.5 children per family) and 31 other dependents (in-laws and siblings) living with them, thus a total of 511 people are represented in the results. Of the 96 married subjects, 84 lived with their spouse; three husbands lived closer to work, and seven women reported their husbands to be polygamous, living with a second wife. Most families (45%) had been living in the current slum for less than two years.

Migration

The majority (93%) of the subjects were born in outside villages, an average of 255 km from the slum. Most described an economic migration, citing poverty (76%), inability to

find work (29%) and sell-off of their land (27%) as reasons they left the countryside. A further 19% described family conflict or violence, and 21% cited floods or land erosion.

Eighty families had been living in another slum prior to the current and reasons cited for moving were eviction (27), rent increase (15), lack of drinking water (4), dirty environment (5), threat to personal safety (9), loss of job (2), fire (4), and flood (1).

Living Conditions

Slum land was owned by a landowner or basti (slum) owner for 83%, and rent collected for permission to build a bamboo shelter to use as a home. Landowners and basti owners are not thought to pay government taxes and are not accountable for the conditions or safety of the slums. Government land is also illegally occupied by so-called “musclemen,” who build slum dwellings or rent bare land plots, and allegedly maintain corrupt links with police and political parties; the remainder lived on these lands. On top of rent and the cost of security paid to the landowners and muscle men, the subjects were variably charged for the use of facilities such as toilet (46%), drinking water (87%), bathing water (13%), electricity (78%) and gas (6%).

All families lived in one-room dwellings, with construction usually of bamboo frame, fencing and roof (Table 2). Forty-five of 100 dwellings were built elevated over water. An average of 5 people lived in each room, and four families had over eight individuals in one room.

Drinking water was from a tube well for most, and five to 100+ families shared each well. The rest used city tap water, also sharing one tap among many. A latrine area (pit or elevated) was located outside the room for most (86%). The rest used a lake, river or non-designated latrine areas as a toilet. Bathing water was from a tube well, standing water or river water, and subjects bathed themselves and their children daily, and their clothes 2-7 times per week. Electricity was available to 84 of the families, though only 34 had electricity in their rooms. Nineteen of the 84 reported paying bills to the company; the other 65 splice the wire illegally, and paid the slumlord. Mud stoves were hand made and wood purchased by 94% for meal preparation; most cooked their meals in or just outside their homes.

Most respondents (89%) did not feel that they lived in a hygienic environment, and 93% felt that the slum had led to disease or ill health in their families. The most desirable place to live was felt to be in their village of origin (57%), while others dreamed of living in higher-class places in the city (14%), a place more quiet (14%) or free of mosquitoes (5%). Only 6% were happy in their current location. Evils described were unclean latrine facilities (30%), harassment by slum owners and the need to pay bribes (10%), lack of employment (32%), mosquitoes (86%), extremes of heat (5%), leaking roof (11%), harassment of women (7%) lack of available fuel/gas (17%) and lack of food (3%). Barriers preventing a move to a more desirable location were stated as a lack of funds (91%), lack of land (11%), inability to find work (10%), lack of government assistance (14%), illiteracy (2%) and large family size (1%).

Most felt that they would not attain a better standard of life without government assistance, though 57% reported trying to save their own money to this end. Support

desired from the government included land (80%), subsidized homes (31%) and jobs (9%) with a few hoping for a rickshaw, or a bull to plow the land. From NGOs they hoped for loans (77%) land (18%), educational facilities (17%), medical treatment facilities (12%), ready-made houses (7%) and food (1%). NGOs provided some support for 24 of the families; 15 had schooling for 19 children, 7 were receiving micro credit and 2 received cooperative assistance.

Children

There were 3.1 ± 1.5 children per family, average age 10 years 2 months (Table 3). Only 27 of 228 school-aged children had attended school, 16 higher than primary school. A further 43 could read, 42 could read and write, and 8 attended non-formal schooling. Children who worked to help support the household (n=35) were generally unable to attend school.

Children's health was reported to be good to very good (76%) while 19% noted it was poor. Reasons for poor health included rheumatic fever (3), tuberculosis (2), leprosy (1), abscess (4), epilepsy (4), disabled hand or leg (4), kidney disease (1) and non-specific descriptions (5). Immunization ("with the six major" diphtheria, pertussis, tetanus, measles, poliomyelitis, tuberculosis) was reported by 89% surveyed, and 89% reported their children received vitamin A.

Fifty-eight families had one or more children die, reporting a total of 89 deaths (Table 4) with 50 (56%) dying before 1 year old. While diarrhea, respiratory disease, trauma and stillbirth were cited as known causes, a far greater number did not know the cause of their child's death. Forty-two of 58 respondents sought treatment before the death of their child, while 16 were not able to consult a health care worker due to poverty (7) and lack of time (2); the remainder (7) were unable to answer. Total death rates were not calculable as the children were counted per household and not per family.

Adult Health

Physical disabilities of the interviewees were enumerated; vision or hearing loss was reported by 5, handicapped hand or leg in 5, and chronic back pain in 2; these disabilities were severe enough to limit daily activities. Common chronic conditions (Table 5) included headaches, arthritis, back pain and urinary incontinence. Pain prevented 19 from performing most activities. Acute/recent conditions were typically jaundice, worms, joint pain, and sexually transmitted disease.

Symptoms of visual impairment were reported: 23 were farsighted (hyperopic) and 17 were nearsighted (myopic), with 20 able to obtain corrective glasses. In self-report, 9 noted cataracts and 31 had glaucoma. Hearing difficulties were noted by 24%. Five people reported needing the help of another person to walk, and another 12 required a cane.

Memory was appraised and 24% responded that they were unable to remember anything/most things, and 54% remembered most things. It was not felt to be culturally sensitive to ask questions regarding psychosis, depression or suicide.

Injuries and accidents were reported by 47% in the past year. These included cuts, concussions, poisoning, assault, motor vehicle accidents, and accidents involving machinery.

Dental health was reported as poor or very poor in 20, and 58 reported problems with their mouth or gums. Eleven had received dental services in the past year, and 30 had 1-6 missing teeth.

Health Facilities

Health care providers were sought by 61 respondents in the past 6 months; a doctor by 44, a homeopath by 4, a “quack” (traditional medicine) by 3 and NGO clinics by 16. Twenty-five respondents were taking medicine, and 62 had prescriptions but were not taking medication due to cost. When asked if their families receive the health services that they need, 67 did “sometimes,” and 32 responded “never.”

Health care facilities were government- run, NGO-run and private. Facilities charged for services, and a third each felt that the charges were expensive, moderate and low. Subjects were asked what they would be willing to pay for services (Table 6). Most felt that immunization, contraceptive services and consultation should be free, but were willing to pay 5-20 Taka for children’s care and antenatal checkups.

Children were born at home, and were very occasionally delivered by trained birth attendants (5 of 296 deliveries) or in a hospital (6 deliveries). Mothers frequently returned to their home land for delivery (150 births) or delivered at home in the slum attended by elder family members (135).

Nutrition

Rice and vegetables were consumed daily by all (Table 7) but foods with a higher protein content were consumed daily by less than 20%. Meals were consumed three times per day in 89% of families. When asked: “Do you feel that your family eats a balanced diet and receives proper nutrition?” 94% responded negatively. Subjects were asked if they or their family ever go hungry; 90% responded “sometimes” and 10% said “never.”

Reproductive Health

Contraception was used by 64%. Methods are cited (Table 8). Reasons for not using contraception as well as hygiene during the menstrual cycle were also noted.

Substance Use and Gambling

The respondents report household use of betel nut (91), cigarettes (64), marijuana (4), alcohol (1) and heroin (2); most using daily. Of the 100 surveyed, 19 reported that substance use in self or family caused impediments in functioning. Gambling was reported in 11; all were husbands of women interviewed.

Work and Family Income

A total of 100 people represented by the survey worked for pay. Female adults and children tended to work as housekeepers, laborers or in garment piecework, while male adults and children tended to work as rickshaw pullers, laborers, brick breakers, drivers or carpenters. Male and female adults worked an average of 9 hours and 14 hours per

day respectively, while male and female children work and average of 14 and 10 hours per day. The families reported 35 of 228 children aged 6-18 worked for pay; 29 boys earned 1107 Taka per month and six girls earned 733 Taka per month. The average income per family was 3725 Taka per month and the average expenditure was 3218 per month, however 37 families reported expenses greater than income and dependence on loans for survival. Expenditures included rent, food, education, clothes, electricity, water, wood and health care.

Discussion

This study describes the subsistence of 100 households, representing a total of 511 people living in the slums of Dhaka. Subjects were largely migrants to Dhaka, living in small bamboo huts with an average of 3 children per household. They were uneducated, lived in unhygienic and difficult conditions, worked in the informal service sector and consumed a diet low in protein. Health concerns included a variety of acute and chronic conditions both in the respondents and their children, and difficulties accessing health and dental care were reported.

The findings of this study are comparable to results of the 1995 Study of Urban Poverty in Bangladesh in which poverty was defined by monthly household income of 2264 BDT (\$66 1995 USD) and 2313 households were evaluated. Compared to the present study, living conditions, prevalence of illness, access to clean water and latrines, availability of health services, nutrition, education, employment and security were similar or slightly better for the 1995 cohort³.

Other studies have also reported slum dwellers as comprising distressed migrants from rural areas, with poverty-driven urbanization due to unsustainable rural economy^{3,6,7}. Consistent with a 1993 Unicef report, the main reasons for migration to Dhaka remain poverty, landlessness, unemployment and river erosion.⁸ The urban poor have been noted to pay very high rent for dismal housing⁸, and dwellings in Dhaka are often on government-owned land⁷; moving within slums is common due to land re-appropriation³. Unsanitary latrine conditions are found in 76.6%⁷ and many pay intermediaries for utilities. As in other studies, pumped/tap water is used for drinking while open/surface water is used for non-drinking purposes^{3,9}.

Childhood immunization in Dhaka slum households has been reported at 51-76%^{3,10}. In this survey 89% reported childhood immunization, though records for each child were not polled. Adult access to immunizations was comparable to a study in the slum areas of Bangladesh, in which 85% had tetanus immunizations¹¹. Poor health literacy and maternal misperception of immunizations is common in Dhaka.¹² Only 25% of mothers had received any formal education¹³ in one study.

Half of the respondents in this study had a child die, an extremely high number, comparable to other samples of Dhaka slums, where 31-46% of mothers reported previous child death^{13,14}. In this as in other studies, symptoms rather than diagnoses of diseases were reported, and most causes of death were unknown in this study (39%) as in the literature (48%)¹⁵. As in previous reports, most deaths occurred in the first year of life, and diarrhea was a frequent cause¹⁵. Other causes in the literature and this study were respiratory illness^{3,7} and drowning^{16,17}. Neonatal tetanus was not a main cause of

death here, perhaps due to immunization or symptom recognition. As in previous slum studies, most sought treatment prior to their child's death¹⁵. Lack of maternal education has previously been found to be a strong predictor of infant loss.¹⁴

A family member rather than a trained birth attendant assisted most births in the slums in this and other studies. Only 5-10% of births are attended by someone trained in safe childbirth practices; even the most basic cleanliness is not observed, e.g. the umbilical cord is cut with an unsterilized razor or bamboo strip¹⁴. In this study 47% of women delivered their babies in Dhaka, 51% in their village of origin and 2% in a hospital, compared to 69%, 28% and 3% in another study of births in Dhaka slums.

At any given time, 30-45% of the urban poor have been reported ill⁸. Barriers to care in the Dhaka slums have previously been noted to be accessibility, long distances to travel, a family's unwillingness to spend money on female care, providers prejudiced against the poor, short clinic hours, and cost^{3, 14, 18}. The poor may visit village doctors for convenience and low cost^{3, 18}.

Family income per month in the Dhaka slums in USD has been reported at \$71-82,¹⁹ \$75¹³ and \$60⁷ in past studies, comparable to the \$63/month reported herein. Slum dwellers often work for wages much lower than those specified by law²⁰. Children in this study (12%) worked 10-14 hours/day and contributed to family income, similar to a 1993 Unicef report, where they were noted work an average of 10.7 hours/day⁸.

The BDHS⁴ is conducted every 4 years and it provides the most reliable national estimates of health, living conditions and conduct. It is data source for policymakers, program managers, donors and researchers. Although urban areas are surveyed, slums are not specifically studied in any national survey even though half of Dhaka's population lives in the slums. Compared to BDHS data, household size was the same. No education was recorded in one third of the BDHS, compared to 81% in our study. Homes were brick/cement in 54% compared to 2% herein, and 80% owned their homestead nationally compared to none of the slum dwellers. Electricity was in-home for 81.2%, compared to 34% in this survey. Toilets were sealed septic tanks for 65% of the BDHS population compared to none here, and over 50% in the BDHS reported adequate or surplus of food compared to 10% herein. Urban planning for health interventions and infrastructure for increasingly large slum areas will require study of this population as the BDHS tends to underestimate the severity of conditions.

There were considerable limitations of this pilot study, including the small study size, a tiny fraction of the 3.4 million in the slums of Dhaka. Slums are not uniform in their population or demographics,²¹ however the areas polled and results here are comparable to the Study of Urban Poverty in Bangladesh, as well as other studies of health and poverty in the Dhaka slums. As language and health literacy limit reliability, symptoms rather than diagnoses may better investigate these subjects. Few deaths are attended by physicians, however verbal autopsies have been found to be practical estimates¹⁵. Finally, surveys are self-report, which leads to recall bias. Notably, the magnitude of memory lapse was not assessed, and immunization cards were not (in each case) documented by the surveyors.

Conclusions and Areas of Future Research

By all counts, urbanization in Bangladesh is projected to increase, with an estimated 80 million living in urban areas by 2020, 40-60% of whom will be in the slums⁸. This study and others show that these people are human capital greatly contributing to the economy and work force of the country. The majority migrated to Dhaka for economic reasons, and once there suffer unacceptable levels of malnutrition, hygiene and health, deprived of essential health services, financial stability, education and security. Bangladesh was slated as most corrupt in the 2002 Corruption Perceptions Index²². Evidence in the slums is in payment by slum dwellers to land owners or managers for rent, utilities and security. This and ongoing costs for food and health services prevent economic advancement. Violence, coercion and extortion are part this system⁸. Slum living is an unavoidable reality of the future; efforts must be made to build the slums of Dhaka into sustainable communities. To accomplish this, a strategy involving government authorization to use the land, and the creation of infrastructure and sustainable development with the elimination of corruption is crucial at all levels of government, police and individual slum leaders.

Essential service packages require focus for efficient service delivery²³. Incorporating NGOs into uniform healthcare and service delivery appears logical given that they already deliver three quarters of first contact care.

Finally, numerous studies describe health and demographic data pointing to causes of poor health and livelihood in the Dhaka slums. Conclusions generally identify the problem or risk factor and suggest that improvement of the variable in question will lead to improvements in outcomes e.g. improving nutrition is likely to reduce the incidence of diarrhea²⁴. These problems though important are numerous, and it is unlikely that piecemeal solutions will be amply cost effective to achieve health in the slums; rather these problems require parallel attention. Funds are limited, and to alleviate poverty a detailed cost effectiveness analysis of comprehensive interventions is required, to create a strategy for sustainable improvements in the quality of life for those in the ever growing slums of Dhaka.

Bibliography

1. CIA, Central, Intelligence, Agency. The World Factbook. Accessed at: <http://www.cia.gov/cia/publications/factbook/geos/bg.html>. 2004.
2. Islam N. Slums of Bangladesh Mapping and Census <http://www.cpc.unc.edu/measure/publications/pdf/tr-06-35.pdf>. Center for Urban Studies. 2005.
3. Islam N, Huda N, Narayan FB, Rana PB. *Addressing the Urban Poverty Agenda in Bangladesh*. Dhaka: The University Press Limited; 1997.
4. Mitra S, Ahmed A, Saha T, Kumar S. *Bangladesh demographic health survey 1999-2000*. Calverton Maryland: Macro International; 2001.
5. Farrell S, Reissing E, Evans S, Taylor J. Using community collaboration to develop the first successful needs assessment of the street homeless population in Canada. *J Interprof Care*. May 2004;18(2):197-201.
6. Barkat A, Rahman MU, Bose ML. Family planning choice behaviour in urban slums of Bangladesh: an econometric approach. *Asia Pac Popul J*. Mar 1997;12(1):17-32.
7. Rahman MM, Shahidullah M. Risk factors for acute respiratory infections among the slum infants of Dhaka city. *Bangladesh Med Res Counc Bull*. Aug 2001;27(2):55-62.
8. Anam S. *Staying Alive: Urban Poor In Bangaldesh*. Dhaka: Unicef; 1993.
9. Ahmed SA, Hoque BA, Mahmud A. Water management practices in rural and urban homes: a case study from Bangladesh on ingestion of polluted water. *Public Health*. Sep 1998;112(5):317-321.
10. Perry H, Weierbach R, Hossain I, Islam R. Childhood immunization coverage in zone 3 of Dhaka City: the challenge of reaching impoverished households in urban Bangladesh. *Bull World Health Organ*. 1998;76(6):565-573.
11. Perry H, Weierbach R, Hossain I, Islam R. Tetanus toxoid immunization coverage among women in zone 3 of Dhaka city: the challenge of reaching all women of reproductive age in urban Bangladesh. *Bull World Health Organ*. 1998;76(5):449-457.
12. Perry H, Weierbach R, El-Arifeen S, Hossain I. A comprehensive assessment of the quality of immunization services in one major area of Dhaka City, Bangladesh. *Trop Med Int Health*. Dec 1998;3(12):981-992.
13. Arifeen SE, Black RE, Caulfield LE, Antelman G, Baqui AH. Determinants of infant growth in the slums of Dhaka: size and maturity at birth, breastfeeding and morbidity. *Eur J Clin Nutr*. Mar 2001;55(3):167-178.
14. Hoque A, Selwyn BJ. Birth practice patterns in urban slums of Dhaka, Bangladesh. *Women Health*. 1996;24(1):41-58.
15. Hussain A, Ali SM, Kvale G. Determinants of mortality among children in the urban slums of Dhaka city, Bangladesh. *Trop Med Int Health*. Nov 1999;4(11):758-764.
16. Arifeen S, Black RE, Antelman G, Baqui A, Caulfield L, Becker S. Exclusive breastfeeding reduces acute respiratory infection and diarrhea deaths among infants in Dhaka slums. *Pediatrics*. Oct 2001;108(4):E67.
17. Baqui AH, Sabir AA, Begum N, Arifeen SE, Mitra SN, Black RE. Causes of childhood deaths in Bangladesh: an update. *Acta Paediatr*. Jun 2001;90(6):682-690.

18. Schuler SR, Bates LM, Islam MK. Paying for reproductive health services in Bangladesh: intersections between cost, quality and culture. *Health Policy Plan.* Sep 2002;17(3):273-280.
19. Sarkar NR, Biswas KB, Khatun UH, Datta AK. Characteristics of young foster children in the urban slums of Bangladesh. *Acta Paediatr.* Jul 2003;92(7):839-842.
20. Fjortoft A. Literacy and nutrition: a grass roots experience from Bangladesh. *Acta Paediatr Suppl.* May 1999;88(429):37-40.
21. Pryer JA, Rogers S, Normand C, Rahman A. Livelihoods, nutrition and health in Dhaka slums. *Public Health Nutr.* Oct 2002;5(5):613-618.
22. Corruption Perceptions Index 2002. www.transparency.org. Accessed August 31, 2004.
23. Ensor T, Dave-Sen P, Ali L, Hossain A, Begum SA, Moral H. Do essential service packages benefit the poor? Preliminary evidence from Bangladesh. *Health Policy Plan.* Sep 2002;17(3):247-256.
24. Chowdhury MK, Gupta VM, Bairagi R, Bhattacharya BN. Does malnutrition predispose to diarrhoea during childhood? Evidence from a longitudinal study in Matlab, Bangladesh. *Eur J Clin Nutr.* Jul 1990;44(7):515-525.

Table 1. Characteristics Heads of Household n=100

Age (years)	Mean 35.1
Male	40.3
Female	34.2
Sex	
Male	12
Female	88
Education	
None	81
Grade 1-5	19
Marital status	
Married	96
Widowed	4
Children	
Yes	95
No	5
Number of Children	
1	17
2	17
3	23
4	20
5	13
6	4
7	1
Years living in current location	
<2	45
2-6	37
6-10	11
>10	7

Table 2. Household living conditions n=100

Room	
height (m)	2.38
depth (m)	4.57
Number of people living in one room	
2-3	26
4-5	49
6-7	31
8-9	3
>10	1
Rented land	
Yes	96
No	4
Construction of home	
Bamboo frame with roof	68
Bamboo fencing with roof	39
Over water	45
Cement walls/sheet roof	2
Self-made home	
Yes	51
No	49
Drinking water	
Tube well	71
WASA (water and sewage supply)	29
Washing water	
Tube well	33
River	26
Standing water	31
Access to electricity	
Yes	84
No	16
Latrine shared with # people	
20	29
20-40	25
>40	46
Washing	
Self daily	96
Children daily	89

Table 3. Characteristics of children n=296

Sex	
Male	132
Female	164
Age	
0-5	68
6-10	105
11-15	68
>16	55
Literacy	
Can't read or write	176
Read only	43
Read and write	42
Any schooling	35

Table 4. Childhood Mortality n=89

Sex	
Male	49
Female	40
Age (years)	
< 1 year	18
1-5	58
6-10	8
11-15	2
>16	3
Location of death	
Dhaka	58
Home village	31
Cause of death	
Unknown	35
Diarrhea	16
Respiratory	11
Trauma	5
Still birth	5
Abdominal symptoms	7
Jaundice	4
Drowning	3
Tumor	2
Tetanus	1

Table 5. Health of subjects interviewed n=100

Description of health	
Excellent	0
Very good	19
Good	52
Poor	22
Very poor	7
Immunized	
Yes	85
No	15
Physical disability	
Yes	16
No	84
Suffered injury in past 12 months	
Yes	47
No	53
Missing teeth	
1	10
2-3	13
4-6	7
Chronic health conditions	
Allergies	24
Asthma	5
Arthritis	75
Diabetes	13
Back pain	48
Headaches	74
Sinusitis	24
Stomach ulcers	27
Urinary incontinence	25
Hypertension	15
Heart disease	6
Stroke	1
Recent health conditions	
Fatigue	87
Anemia	73
Headaches	68
Intestinal worms	54
Joint pain	37
Sexually transmitted disease	13
Jaundice	11
Maternal morbidity	9
Diarrhea	1
Tuberculosis	1
Malaria	0
Currently taking medication	
Yes	25
No	75
Prescribed but not taking	62
Visited doctor in past 6 months	
Yes	61
No	39
Type of care received	
Doctor	44
Hospital	16

Homeopath	4
Quack	3
Family always receives health services when sought	
Always	1
Sometimes	67
Never	32

Table 6. Number who would pay given fees for services

	0 TK	5 TK	10 TK	15 TK	20 TK	30 TK	40 TK	50 TK
Immunization	86	7	6	1	0	0	0	0
Antenatal checkup	31	20	34	34	9	0	1	5
Contraceptive services	57	6	11	0	24	0	0	1
Child health care	28	36	22	1	8	1	0	5
Consultation	80	11	6	0	0	1	0	2

TK = Bangladesh Taka (1 USD = 66 BDT)

Table 7. Food consumed by family according to head of household n=100

Food consumed	Daily	Weekly	Monthly	Special Occasions	Never
Rice	99	1	-	-	-
Vegetables	97	3	-	-	-
Fish	17	70	12	1	-
Bread	5	28	18	35	14
Egg	4	45	16	34	1
Milk	3	6	30	36	25
Meat	-	14	51	28	7

Table 8. Reproductive Health

Contraception method n=64	22
Oral contraceptive pill	13
Depo injection	11
Sterilization	4
Norplant	1
Rhythm method	5
Unknown (wife uses)	8
Reasons contraception not used n=36	
Not living with husband	14
Don't want to use	5
Menopause	3
Want male child	2
Religious reasons	2
Want more children	1
Side effects	1
Infertile	1
Not stated	7
Menstruation n= 88 women	
Sanitary pad	1
Piece of cloth	84
Menopause	3
