

Executive Summary

Bangladesh has a population of a hundred and twenty eight million people and is plagued by a host of health issues most of which disproportionately affect women and children. Infant mortality rates are extremely high and children die everyday from diseases associated with acute respiratory infections (ARI). Every year about 120,000 deaths are associated with pneumonia for children under five. In neighboring India, an estimated 400,000 to 550,000¹ premature deaths occur annually from indoor air pollution exposures to women and children under five.

In developing countries, indoor air pollution is caused by burning biomass fuels in inefficient wood stoves in a poorly ventilated area. Exposure to women and small children is significantly higher due to women's customary role in cooking activities. A recent study² conducted by the World Health Organization in Dhaka found that kitchen air concentrations of particulate matters ranged from 4,000 to as high as 10,000 $\mu\text{g}/\text{m}^3$. After a thorough review of the literature I know of no other study in Bangladesh of indoor air quality and household awareness and perceptions.

The main questions that this Thesis asked were:

- How do women perceive and act on health issues in general ?
- How do women perceive the existing health care system and access to services?
- What do women know about the health effects of indoor air pollution?
- How can these findings be used?

¹ Kirk R. Smith, "National Burden of Disease in India from Indoor Air Pollution," National Academy of Sciences, 2000.

² Tabassum Dana, "Study on Indoor Air Pollution in Bangladesh," World Health Organization, Bangladesh.

Methods

Eighty-five (85) women living in four different areas were interviewed for this study.

- International Center for Diarrheal Diseases Research, Bangladesh's (ICDDR, B) Matlab study area in Chadpur district. Fifteen (15) women interviewed in the area. Half of these women were living in a relatively affluent area with access to gas and electricity and the other half were living in a rural area, not as affluent and with access to neither amenities.
- Islampur Village in Gazipur District – Eleven (11) women were interviewed in the area. Most households were fairly well off with electricity however, the residents did not have access to gas and cooked on wood stoves.
- Mohammedpur Geneva Camp in Dhaka City – Fourteen (14) women were interviewed in this predominantly urban area. About half the women came from more affluent households and lived in one of the three buildings in the area. The other half who were not as well off, lived in the adjacent slum area in makeshift squatters.
- Cox's Bazaar – Fifteen (15) women were interviewed in the urban and rural areas of Cox's Bazaar. The urban households, like those in Matlab were affluent with access to gas and electricity. Women in the rural areas however were not as well off, lived in traditional mud houses and did not have access to either gas or electricity.

The primary research method was tape-recorded in depth interviews with these women. A message content analysis of health related communication material, produced by the government, NGOs, and donor organizations, was also conducted to assess what types of health messages women are exposed to. The material included television health spots, drama serials, and health related posters. In addition to observations, relevant administrators, health care providers, and workers were interviewed. The fieldwork was conducted during June – August 2002.

Key Findings

What preventive behaviors do women practice?

Access to health care workers, household affluence, and literacy influenced the frequency and types of preventive health measures taken by women. All women interviewed stated that they took basic preventive measures like drinking tube well water, using iodized salt and immunizing their children. The more affluent households were generally better informed about health issues although, although very few women were affiliated with NGOs. In regions like rural Matlab and Gazipur information was received through interaction with health care workers. Women living in Mohammedpur's slum area were constrained by their living conditions and could take few preventive measures despite having sufficient knowledge.

Where do women get health care services?

The nature of the treatment depended on whether the women were living in urban or rural areas. Affluent families tended to visit doctors and private practitioners more frequently and those who were less well off practiced home remedies and alternate treatments before seeking conventional health care. Some families were generally reluctant to seek treatment at government hospitals due to widespread distrust in the health care providers and their treatment. Enmeshed in these perceptions was an underlying sense of fatalism and inadequacy. Most women characterized this by comments like, "I always pray to God that please don't give us any diseases."

Among the women interviewed poor households felt a strong sense of inadequacy. Comments like "What can we do?" "We are poor people," "We are illiterate and do not understand so much" were frequently heard in response to questions about preventive care. In contrast, women in affluent families expressed a sense of pride, as they were aware of their contribution to the family's health.

Many women appeared to equate good treatment with the amount of medicine they were given. There was some indication that taking more medication would accelerate recovery.

The quality and convenience of care women received at the health centers also determined where and how often women went for health care. Some women expressed dissatisfaction with government and NGO health workers. Concerns were also raised over certain scare tactics used by the government health workers.

Do women see indoor air quality / smoke as a health problem?

Of the 85 women, most focused on the immediate physical discomforts of smoke rather than the health risks. Women with higher literacy levels and more media exposure showed greater awareness of possible health risks associated with smoke exposure and some also correlated smoke from wood stoves to outdoor air pollution, an issue regularly addressed on television. However poorer, less literate women could not mention specific smoke related illnesses

Fuel Use

The types of fuel used directly impacted the amount of smoke produced and consequently the associated exposure from smoke. Fuels used ranged from traditional biomass fuels to those higher up the energy ladder like electricity and gas. Use and preparation process of various biomass fuel varied by region. Women also stated various disadvantages with using wood stove.

Most households in both urban Matlab and Cox's Bazaar were using gas (piped, cylinder or bio-gas) and either wood or kerosene stoves simultaneously. Awareness of smoke related health effects was non-existent as many families were using scrap material for the wood stoves. Despite various advantages to using gas stoves, some women raised safety concerns. In addition, the "smell" of gas was thought to cause diseases like gastroenteritis. Electric stoves were found in some households in Mohammedpur's refugee building where the Red Cross subsidizes the cost of electricity. All women expressed safety concerns since the users often experience electric shocks. Residents of Mohammedpur's slum area and some rural households

used kerosene stoves. There were several disadvantages to using kerosene stoves however, none of the users raised safety concerns.

Using dry wood and gas were one of the most common suggestions from women living in both rural and urban areas. Other suggestions included providing better ventilation, keeping children away from kitchen area, disseminating information through health workers, distributing posters depicting preventive measures, using improved cook stoves etc.

The message of media/materials

The materials analyzed focused on various health issues including, maternal and child health, arsenic contamination of groundwater etc. In addition, they tended to have high production values and often involved celebrities. The study suggests that there may be some attempts to undermine the health risks associated for certain issues. The language and storyline appeared to be important factors. Some health spots appeared to project mixed messages. Visualizations of women cooking on wood stoves emitting smoke were found in at least two health spots. This indicated that cooking smoke is inherent with the image of rural life and there is negligible awareness about its adverse health impacts. The three drama serials on health appeared to be an effective medium. However, the quiz shows at the end of the programs could be administered in a more easily understandable manner.

Recommendations

The following recommendations are based on my findings:

- Dissemination of information in easy to read and listen to messages. These messages should address the health risks to women and children of kitchen smoke and primary preventive measures. In addition, conducting both epidemiological and ethnographic studies to further investigate the issue is equally important.

- The World Health Organization can address the issue by incorporating indoor air pollution issues in its various projects³. Private practitioners, pharmacies, and the Family Welfare Visitors (FWV), working in the Union Health and Family Welfare Centers can disseminate relevant information about the health effects of indoor air pollution. The FWVs, who are all women, can also address non-NGO households. Issues regarding indoor air pollution can be integrated into the various programs under the ‘Behavior Change Communication’ component of the Essential Service Packages⁴ (ESP) and the male health assistants working in the Union Health Centers can be involved as well.
- Develop a drama series around indoor air quality. Entertainment education approaches like drama serials and television health spots can reach large audiences and play an important role in disseminating the information. Health care workers can play the role of health care intermediaries to make the issues raised more relevant. However greater attention should be paid to language levels, the type of target audience, and the quality of information disseminated.
- Several modifications to the government’s Improved Cook Stove Program would make these stoves a feasible alternative for the very poor. However the program should pay attention to area specific needs and extensive user participation during the design and implementation phase.
- Many women also suggested access to cleaner fuels. The agro-forestry projects in Bangladesh can increase the availability of fuel wood for households. However, equity and access issues for women should be given particular attention. Bangladesh has large natural gas

³ Mainly the “Primary Health Care Intensification and District Health System Development Project” and the “Healthy City Project.”

⁴ The Government’s Essential Service Packages (ESP) aims to integrate both family planning and health services and contains the “Behavior Change Communication” component, which, emphasizes on changing health seeking attitudes and behaviors with special focus on men.

reserves and some areas of country can be readily supplied by piped gas. Cylinder gas supplies could be encouraged for remote areas.

In addition to conducting further ethnographic and epidemiological studies on indoor air pollution, the report has also revealed an urgent need to carry out additional qualitative studies to look into the role of the media in disseminating health information.

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CHAPTER ONE

Introduction

Millions of women in Bangladesh are confronted with a host of health issues every day of their lives. Preventive measures for these matters depend on how significant these issues are for the women. Indoor air pollution, primarily from using biomass fuels on

traditional stoves, is one of the leading causes of acute respiratory infections in women and children¹. However, when women are asked about the smoke emitted from cook stoves, they smile and say “What about it?.” In fact, the correlation is not immediately obvious for the academic and administrative communities either. Relevant information is not disseminated by either NGO or government initiatives. The smell of burning firewood and the taste of smoke-flavored food are all elements of nostalgia that are portrayed in popular culture. For women who use these stoves, the smoke is just another discomfort that has to be endured in their everyday lives.

This study investigates how women can address indoor air pollution issues. In order to look into this issue, the following questions will be answered. These are:

- How do women perceive health issues?
- How do women perceive the existing health care system and access to services?
- What do women know about the health effects of indoor air pollution?
- How can these findings be used?

Indoor Air Pollution

Almost one billion people, mostly women and children, are exposed to levels of indoor air pollution that exceed the World Health Organization guidelines². The highest exposures occur in the indoor environments of developing countries mainly from cooking and

¹ Nigel Bruce, Rogelio Perez-Padilla, Rachel Albalak, “Indoor Air Pollution in Developing Countries: a major Environmental and Public Health Challenge,” *Bulletin of the World Health Organization*, 78.9 (2000).

² “*Danger in the Air*,” World Health Organization, Press Release, September 2000.

heating activities, which use solid fuels, like wood, dung, crop residue, charcoal etc. Inefficient stoves and poor ventilation in rural homes further aggravate this situation. For example in India, where 80% of the households use solid fuels, there are estimates that a half a million children die annually from indoor air pollution³. Nearly three fifths of the total global exposure to particulate matter occurs in the rural areas of developing countries. On a global scale this amounts to three million deaths a year from indoor air⁴. While ambient air quality has been a matter of debate and concern in the developing world, very little attention has been paid to indoor air quality in Bangladesh. It should be noted that the country faces other pressing health issues that compete for both resources and manpower.

In most developing countries women are the main energy providers and users in rural homes. They are mainly responsible for gathering firewood, crop residue or other biomass for household use. During these activities they make decisions about which fuels to use and how to use them. Their choices are affected by tradition, convenience, resource availability, accessibility of technologies, household incomes and their roles in family spending decisions. Income decisions have further implications when the household fuel is bought for cash. The male heads of the household usually decide how much money will be spent on household fuel, which often means that the amount allocated for this purpose is meager at best. Studies⁵ have shown that with greater financial flexibility, households tend to use cleaner forms of fuel (for example kerosene as opposed to wood), since it is a measure of affluence or prestige.

³ “*Guidelines for Air Quality*,” World Health Organization, Geneva, 2000.

⁴ Ibid.

⁵ W. S. Hulscher, “Fuel Ladder, Stoves and Health, Women, Wood Energy and Health,” *Wood Energy News*, 10.2 (1997).

Implications of Fuel Use for Indoor Air Pollution

More than half of the world's household's use unprocessed solid fuels for cooking⁶. These are mostly traditional biomass like fuel wood, crop residue, cow dung etc. Comparisons with more modern cooking fuels like kerosene have shown that unprocessed solid fuels produce ten to hundred times more respirable particulate matter per meal as a result of low combustion and heat transferable efficiencies. Although the amount of biomass used is smaller (10 – 15% of total human fuel use) compared to modern fuels a much larger fraction is burned indoors since unprocessed solid fuels are used for cooking on simple stoves. Very little information is available on what fraction of the global population cook indoors on un-vented stoves, the ventilation rates in various housing types etc. In Bangladesh, the largest share of different types of biomass fuels is consumed for domestic purposes (food preparation) in both rural and urban areas of Bangladesh. For 1981 the per capita consumption of biomass fuel for cooking was about 4.44 GJ /year (1 Giga Joule = 10^6 Joules)⁷. Between 1976 – 77 and 1995 – 96 the energy supplied by the traditional fuels in the unorganized sector has increased from 224.4 to 284.5 Million BTU⁸ (British Thermal Unit).

Health Effects of Indoor Air Pollution

There are many substances in biomass smoke that can endanger human health. Some of the most important are particles (PM₁₀ and PM_{2.5}), carbon monoxide, nitrous oxides, sulfur oxides, formaldehyde, and polycyclic organic matter⁹. There are wide ranging health effects

⁶ “*Guidelines for Air Quality*,” WHO, Geneva 2000.

⁷ M. A. Sattar, “Wood Energy in Bangladesh,” *Technical Papers from the National Training Course*, FAO-RWEDP, December 1996.

⁸ “*People's Report on Bangladesh Environment 2001*,” Unnayan Shamannay, Dhaka: University Press Limited, Bangladesh, II(2001).

⁹ Nigel Bruce, Rogelio Perez-Padilla, Rachel Albalak, “Indoor Air Pollution in Developing Countries: a major Environmental and Public Health Challenge,” *Bulletin of the World Health Organization*, 78.9 (2000).

arising from inhaling contaminated air indoors. These include acute respiratory infections (ARI) in children, chronic obstructive pulmonary diseases, lung cancer etc. Acute respiratory infections also accounts for about one-eighth of the disease burden in India and it is estimated that about 400,000 to 550,000 premature deaths occur annually from indoor air pollution exposures to women and children under five¹⁰. In India, diseases associated with indoor smoke exposure include ARI, chronic obstructive pulmonary disease (COPD) – resulting in 290,000 to 410,000 premature deaths, lung cancer, blindness, tuberculosis, cardiovascular diseases etc. There is also some evidence from solid fuel studies in developing countries that indicate a relationship between adverse pregnancy outcomes (primarily stillbirths) and smoke exposure¹¹. A study linking population exposures to type of kitchen and fuel used in rural India revealed strong correlation between concentration of respirable dust in the air and cooking with a traditional stove in a kitchen with no partition¹². Another interesting finding was that exposure to biofuels is a more salient issue for the poor to middle income group rather than the very poor since the very poor cook fewer meals in the open air and also prepare fewer number of dishes. Pollution from biomass fuel causes eye irritation and may cause cataracts. An Indian study found significant correlation between the use of biomass fuels and incidences of both partial and complete blindness. There were also significant differences between men and women and rural and urban areas¹³. Various studies suggest that the greatest

¹⁰ Kirk R. Smith, “National Burden of Disease in India from Indoor Air Pollution,” *National Academy of Sciences*, 2000.

¹¹ *Wood Energy, Women and Health: A Sub-regional Training Course*, FAO-RWEDP, Bangkok, March 2000.

¹² Jyoti Parikh, et al., “Exposure to Air Pollution from Combustion of Cooking Fuels: A Case Study of Rural Tamil Nadu, India,” *Energy*, 26 (2000): 949-962.

¹³ Vinod Mishra, Robert D. Retherford, Kirk R. Smith, “Effects of Cooking Smoke on Prevalence of Blindness in India,” *East-West Center Working Papers*, July 1997, Population Series, No. 91.

burden of mortality is due to exposure to indoor air pollution in rural areas of developing countries¹⁴.

Gender Differences in Exposure to Indoor Air Pollution

People in developing countries are usually exposed to very high levels of pollution for 3-7 hours per day for many years. Since women are customarily involved in cooking activities their exposure is much higher than men's. There is evidence that in developing countries men typically spend less time in the kitchen area compared to women¹⁵. Studies¹⁶ of individual breathing area concentrations from biomass combustion in developing countries have revealed pollutant (total suspended particles) concentrations as high as 6800 µg/m³. The World Health Organization is yet to set long and short term average concentration value guidelines for PM₁₀ and PM_{2.5}. However, comparisons between developed and developing countries show significant differences between indoor air qualities with the former being about five fold "cleaner."¹⁷

Indoor Air Pollution in Bangladesh

It is only recently that the health impacts of indoor air pollution have surfaced as an important issue for the country. The World Health Organization in Dhaka conducted a

¹⁴ Nigel Bruce, Rogelio Perez-Padilla, Rachel Albalak, "Indoor Air Pollution in Developing Countries: a major Environmental and Public Health Challenge," *Bulletin of the World Health Organization*, 78.9 (2000).

¹⁵ Vinod Mishra, "Gender Aspects of Indoor Air Pollution and Health: An Analysis of Gender Differentials in the Effect of Cooking Smoke on Acute Respiratory Infections in Children," in *Gender Analysis in Health*, edited by Claudia Garcia-Moreno and Rachel Snow, Geneva: World Health Organization. 2001.

¹⁶ Ibid.

¹⁷ "Guidelines for Air Quality," World Health Organization, Geneva, 2000.

preliminary study¹⁸ of indoor air pollution where the indoor kitchen air quality of households in the rural and urban areas of Bangladesh were tested for suspended particulate matters (PM_{2.5} and PM₁₀) with an air sampling machine. The study revealed that in the urban area the concentration ranged from 4000 µg/m³ to as high as 18,000 µg/m³. However, the study does not indicate concentrations of which particles were higher. Fuels used for cooking included wood shavings, cardboard, saw dust etc. Kitchens where the concentration was significantly higher also appeared to use dried coconut husks. In the rural areas the study found that kitchen air concentrations ranged from 4000 to about 10,000 µg/m³. Cooking fuels used in this area included paddy (remains of rice plant after harvest), straw, wood scraps, dry leaves, crop residue etc. It was interesting to find that even in semi-enclosed kitchens (with open roof) the SPM concentration ranged from 4000 to 5000 µg/m³ indicating significant exposure to the cook.

Although the Government of Bangladesh initiated an Improved Cook Stoves Program, the main reason behind it was conservation of biomass. Benefits of reduced emissions were very briefly mentioned in the program's mid-term evaluation report¹⁹. However, no correlation was made between the high rates of acute respiratory infections and the smoke from stoves and further studies were not initiated to investigate the issue.

However, the stove acceptance rate was as low as 2%. There were various reasons behind this low figure including negligible user participation during stove design and implementation, altered cooking and fuel management method, high maintenance etc. the program however ended in December of 2001 and there are no plans to revive it. An

¹⁸ Tabassum Dana, "Study on Indoor Air Pollution in Bangladesh," World Health Organization, Bangladesh - The air sampler was placed directly next to the stoves and samples were collected for about 45 – 50 minutes during cooking hours.

¹⁹ *Improved Stove Dissemination Projects Mid-Term Review*, Institute of Fuel Research and Development, Bangladesh Council for Scientific and Industrial Research, October 1996.

evaluation study²⁰ of various stove programs has also indicated that interaction and feedback between stove designers, producers and users would lead to effective dissemination and implementation.

At present there are no initiatives that directly address indoor air pollution in Bangladesh. However, knowledge regarding the causes of ARI remains poor. There is no indication that the health workers or the population at large have any knowledge of indoor air pollution being a major cause of ARI and other related diseases. The following section on ARI under 'Health in Bangladesh' further discusses the high morbidity rates associated with the disease.

In order to understand the health issues pertinent to Indoor Air Pollution, it is important to get an overall understanding of the health status of the country, the intricacies of its health system and the state of its environment. The following sections are devoted to discussing these issues.

Health in Bangladesh

Acute Respiratory Infections

Acute respiratory infections are one of the leading causes of under-five mortality in the country. There are approximately 17 million children under the age of five and there are 380,000 deaths, mostly from readily preventable or treatable conditions of which 120,000 deaths are associated with pneumonia. About one third of deaths in this category occur during the first month of life. These exceedingly high figures are mainly due to severe malnutrition, wrongful application of antibiotics, and the development of microbial resistance. Two thirds of children under five are malnourished²¹. According to the National Child Nutrition Survey²²,

²⁰ Douglas F. Barnes, et al., "What Makes People Cook with Improved Biomass Stoves? A Comparative International Review of Stove Programs," May 1994, *World Bank Technical Paper*: 242.

²¹ Henry B. Perry, "Health for All in Bangladesh: Lessons in Primary Health Care for the Twenty First Century," Dhaka: University Press Limited, 2000.

60% of the children between the ages of 6 and 71 months are either stunted or wasted²³. Indoor air pollution is not raised as a potential cause of ARI in children since, in Bangladesh, there are no epidemiological studies correlating these factors. The more severe types of ARI like measles, whooping cough, diphtheria etc. are usually prevented with large-scale immunizations however, as already mentioned pneumonia continues to be the prevalent disease. A recent survey revealed that over 75% of the caretakers were aware of ARI symptoms in both rural and urban Bangladesh²⁴. However, only about 35% could identify fast breathing rates as potential symptoms of ARI.

A study²⁵ investigating the role of rural mothers and health volunteers in the understanding of ARI found that 88% of the mothers were able to list a range of symptoms associated with mild and severe forms of pneumonia. However, 27% of the mothers also thought that their children's exposure to 'cold' substances like cold food (stale or left-over), air, water, mud-floor etc. result in respiratory conditions. Surprisingly 51% of the health volunteers also indicated similar reasons as causes of ARI. These volunteers are recruited by one of the largest NGOs in the country. In addition, certain types of foods like bananas, oranges, beans, hilsa fish etc. were also perceived as aggravating agents. Many mothers resorted to traditional treatment when they thought their child was suffering from a mild cold. Although this is discussed further in another section it is safe to say that seeking help from a healer or practicing home remedies delayed early detection and treatment of pneumonia. This

²² "Child Nutrition Survey of Bangladesh 1995-96," Bangladesh Bureau of Statistics, Statistics Division, Ministry of Planning, December 1997.

²³ Their height-for-weight / weight-for-height scores are more than two standard deviations below the international standard.

²⁴ "Progotir Pathay 2000," Bangladesh Bureau of Statistics and UNICEF, December 2000.

²⁵ Sabina F. Rashid, et al., "Acute Respiratory Infections in Rural Bangladesh: cultural understandings, practices and the role of mothers and community health volunteers," *Tropical Medicine and International Health*, 6.4 (April 2001): 249-255.

indicates that despite widespread efforts to disseminate information about the ARI, there still exists large gaps in the knowledge concerning the causes of the disease.

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Maternal Health

As cited in Perry, H. B., less than 40% of the population has access to modern health care service beyond immunizations and family planning²⁶. Approximately 60 million people in the country live below the poverty line²⁷. The average daily diet is still less than 1,800 calories in 27% of rural households. The burden of poverty continues to fall disproportionately on women and children. This is visible in high maternal mortality rates, shorter life expectancies, and lower literacy rates for women. Life expectancy for women is 60.5 years (60 years in urban and 59.8 years in rural areas respectively) versus 60.7 for men²⁸. Maternal mortality is 300 –450 per every 100,000 births and even higher among adolescent girls at 580 per 100,000 births²⁹. In addition to gender discrimination which includes inadequate diet and violence at home, the problem is further compounded by the fact that less than 5% of women with complications have access to emergency obstetric care services – 7% of maternal deaths are due to direct obstetric causes.

Malnutrition

In addition to ARI, vitamin A deficiency, low birth weights, and low levels of exclusive breast-feeding continue to be important issues. Bangladesh has one of the highest rates of malnutrition in the world³⁰. Two thirds of children under the age of five years are

²⁶ Henry B. Perry, "Health for All in Bangladesh: Lessons in Primary Health Care for the Twenty First Century," Dhaka: University Press Limited, 2000.

²⁷ Defined as consuming less than 2100 – 2200 kilocalories per day.

²⁸ "Statistical Yearbook of Bangladesh: 1999," May 2001, Bangladesh Bureau of Statistics, Ministry of Planning, Government of the People's Republic of Bangladesh.

²⁹ Henry B. Perry, "Health for All in Bangladesh: Lessons in Primary Health Care for the Twenty First Century," Dhaka: University Press Limited, 2000.

³⁰ Ibid, 12.

Footnotes continued on next page.

malnourished. The average height and weight of Bangladeshi mothers is 40 kgs (88 pounds) and 147 cm (4 feet 10 inches) and 70% of the mothers and children suffer from nutritional anemia³¹. The use of iodized salt, to protect against iodine deficiency has increased from 20% in 1990 to 70% in 2000. However, as cited by Perry H. B., 47% of the population has goiters and 0.5% has severe retardation attributable to iodine deficiency (cretinism). Since 1990, the infant mortality rate has been reduced by 39% and the under-five mortality rate has also decreased by 32%³². However, immunization coverage has declined mainly due to low vaccination rates (ranging from 30 – 40%) after the first round.

Other issues

One hundred percent of the population in the urban areas and 98% of the population in the rural areas have access to water from tube wells, taps, or ring wells. However, in recent years arsenic has been detected in 53 out of 61 districts tested (210 out of 464 sub-districts). About 32 million people (26% of the population) are potentially at risk of arsenicosis. Awareness of arsenic contamination of ground water is very low and it has been quite difficult to change the water-related attitudes and behavior of people. A recent study, which tested over two thousand tube wells, revealed that over half of the wells might have been wrongly tested and essentially mislabeled³³. Sanitary latrine use has remained constant between 34 – 44% between 1993 and 2000.

Methodology

³¹ A condition in which the haemoglobin content of the blood is lower than normal, as a result of a deficiency of one or more essential nutrients (usually iron, less frequently folate or vitamin B12).

³² “*Progotir Pathay 2000*,” Bangladesh Bureau of Statistics and UNICEF, December 2000.

³³ “Arsenic Field Tests May Lead to Mislabeled Wells,” *Environment News Service*, November 25, 2002. <www.ens-news.com>

Four geographic areas were selected for this research. These were the Matlab study area [situated in Chadpur district and run by International Center for Diarrheal Diseases Research, Bangladesh's (ICDDR, B)], Islampur Village [situated in Gazipur District], Mohammedpur Geneva Camp [located in Dhaka City] and urban and rural areas of Cox's Bazaar District.

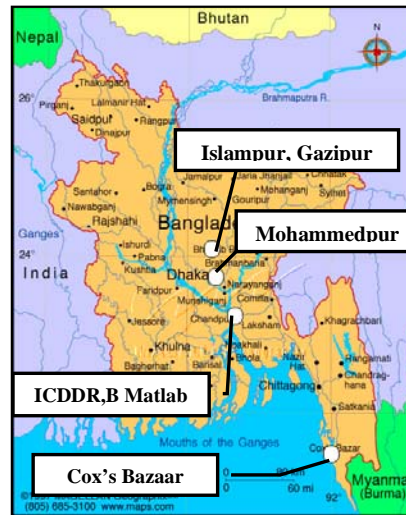


Fig. 1.1 Map of study areas
Asia Pacific Policy Program, Harvard
University, October 2002
<<http://www.ap.harvard.edu/mainsite/countries/bangladesh/map.html>>

Information was primarily collected through in-depth interviews with eighty-five (85) women in these areas. These interviews were a combination of semi-structured questions with a visual³⁴. The conversations were also tape recorded for

subsequent analysis. Prior to the survey, the protocol was pilot tested with five participants in the Islampur Village of Gazipur. The names of the women interviewed have been changed to protect their identities.

In addition, observations were made of everyday lives of the women. This included interactions with neighbors, family members and field health workers, the household fuel collection and management patterns etc. Informal interviews were also conducted with administrators, field-level health workers and health care providers at union health centers and hospitals etc.

In order to assess the role of health communication in raising awareness and promoting behavioral change, a sample of communication media (television health spots, drama serials and posters) were analyzed. These materials were evaluated for content, major

³⁴ Refer to Appendix A for Interview Protocol.

themes, language level, visuals and overall accessibility. Lastly, literature reviews of various books, journals, and reports were carried out to get a better understanding of the issue at hand.

Limitations

Although a range of communication materials have been analyzed, this study is not comprehensive since recordings of health programs broadcasted on the radio could not be obtained. The time selected for the fieldwork was not ideal. The incessant monsoon rains slowed progress and made access to the rural areas particularly difficult. In addition, taping the conversations created some uneasiness among the women who had to be reassured about the confidentiality of the process. The local dialect in the Cox's Bazaar region made understanding problematic, particularly when reference to local fuel types was made. During the interview the male members of some households were eager to answer questions addressed to the women. Although this provided interesting insight into the social dimensions of the family, it also meant that interaction with the woman concerned was limited. Furthermore, data on rates of acute respiratory infections were also limited and it was not possible to obtain statistics from local government hospitals. Although the goal was to interview each woman individually, several people were always present during these interviews and this may have prejudiced the responses of the participants. Further examination of the interview protocol indicated that the incorporation of more visuals into the format would have helped illustrate the issue and facilitate understanding.

Description of Study Areas

ICDDR,B Matlab Intervention Area

A one and half hour boat ride on the magnificent Meghna-Dhonagoda River leads to ICDDR, B Matlab area³⁵ which is located 53 km southeast of Dhaka, the capital of Bangladesh. The population of the area is over two hundred thousand and as cited by Ali et al.³⁶, in 2001,

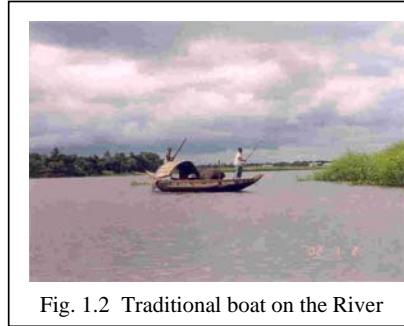


Fig. 1.2 Traditional boat on the River

fourteen percent of Matlab's population was comprised of children under five and five percent were children under two. A total of 30 women were interviewed in DSS's intervention area – half were living in the more affluent area with access to piped gas at the city center and the other half were living a little further from the city center with no gas access. For convenience the first location will be referred to as the 'gas area' and the latter the 'non-gas area'.

The gas area is located about 3 to 4 km from the ICDDR, B Hospital Center and is readily accessible by both motorized and non-motorized vehicles. This is an urban area and at first sight, appeared to be relatively affluent with houses having proper structures – usually built with bricks and concrete with tin roofs. The women were well dressed with most wearing some items of gold jewellery. All houses were equipped with amenities like television, radio, electricity, cable line etc. In fact, many women were watching television when they were approached for interviews. They usually had two to three children and the families' average

³⁵ The Dhonagoda River, which flows from north to south, bisects the study area in almost two equal parts. A Demographic Surveillance System (DSS) records all vital events of the study area. The DSS operates in 142 villages covering 182 square kilometers which is divided into two units – intervention and comparison area. The former has 70 villages and spans an area of 89 square kilometers. This area is again divided into four blocks (A through D). The 72 villages in the comparison area receive only government health services.

³⁶ Mohammad Ali, et al., "Implications of Health Care Provision on Acute Lower Respiratory Infection Mortality in Bangladeshi Children," *Social Science and Medicine*, 52(2001): 267-277.

monthly incomes ranged from Tk. 5000 to 10,000³⁷. The men were generally employed in local businesses. All participants were approachable and were very willing to discuss various issues. Houses generally had at least one bedroom³⁸, a living area, and kitchen. These residences often had various fruit trees in their front yards along with a tube well.

The non-gas area was located about eight to ten km away from the ICDDR,B hospital center and travel there took about fifteen to twenty minutes on a rickshaw. These households were not as affluent although it was generally very difficult to get any household income information³⁹. This area did not have access to either gas or electricity. The households in the non-gas area were made of mud, tin,

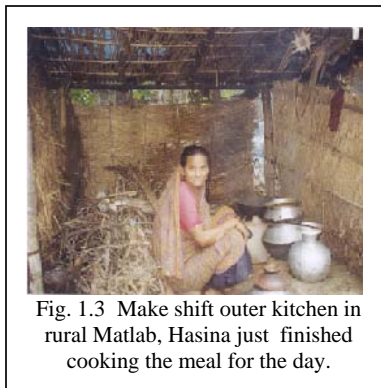


Fig. 1.3 Make shift outer kitchen in rural Matlab, Hasina just finished cooking the meal for the day.

Dana, T., Matlab, June 2002.

or bamboo walls and the roofs usually consisted of thatch material. Unlike the houses in the gas area, most houses consisted of a single room, which functioned mainly as a bedroom⁴⁰ and occasionally living and eating area. The kitchens were usually separate, located a few feet away from the main house. These areas were usually made of makeshift material but in some cases had mud or bamboo walls with thatch roofs. Most were also used as a space for storing fuels.

³⁷ US\$ 86 – 172 at current exchange rates.

³⁸ Usually furnished with a large bed, dresser, showcase, television, wall clock, cassette player etc. Many also had wall hangings of embroidery work done by the participant herself.

³⁹ Initially there were several inquiries about the purpose of the interviews and some women also expressed concern that the time and effort they donated would not result in any direct benefits to them.

⁴⁰ The bedrooms were comparatively sparse with a large bed, a rack for hanging clothes and occasionally a shelf to house utensils or miscellaneous items. Most homes had a little porch-like area in front of the bedroom where a 'khatiya', large table-like furniture used for sitting or sleeping, was placed to seat guests (usually men) who normally would not enter the bedroom.

Many household heads worked as trolley drivers, carpenters, and farmers. Most families did not have amenities like televisions or radios, although a few owned battery-operated televisions. The participants had on an average three to four children. Although, the children were going to schools, the mothers were not as educated - many had received no education and could only sign their names. Despite ample space in the front yards, only a few houses had fruit trees. There were several tube wells, which were used communally. All had been tested for the presence of arsenic.

Islampur Village, Gazipur District



Fig. 1.4 Hanufa cutting fish in her front yard

The District of Gazipur is situated 30 km north of Dhaka and has a population just over 500,000. The village of Islampur with approximately 300 households is situated near the main highway and about half an hour's rickshaw ride from Gazipur's main intersection. Islampur like most other rural areas of Bangladesh provides a sense of relief from the chaos of urban life. Access is however, somewhat difficult during heavy rains since part of the road leading to the village is unpaved. The village is surrounded by at least

nine brick kilns and this has influenced the fuel use pattern.

Due to the close proximity to Dhaka, most men worked in the city as bus, truck drivers, and rickshaw-pullers or in private homes and offices. Many are also employed in the nearby brickfields. Of the eleven households interviewed, five had family members who had received education up to class seven or more. Younger members tended to be more literate than their senior counterparts. Although it is difficult to draw direct conclusions from such a limited sample, most households appeared to be fairly well off with electricity in their homes and access to radio, television etc. The households in Gazipur did not have access to gas and used mainly wood stoves for cooking. Some affluent families used kerosene stoves as well.

The houses were generally built with mud walls and either tin or thatch roofs. These houses also consisted of mainly one room⁴¹, which functioned as bedroom, living and eating area. Most houses had space in the front yard where women carried out all types of household chores⁴². Households with more yard space

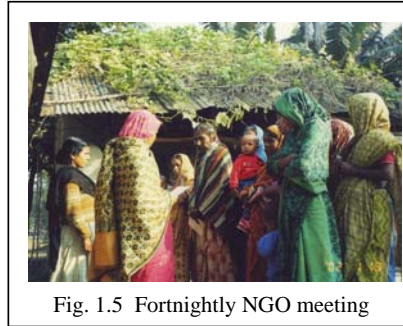


Fig. 1.5 Fortnightly NGO meeting

tended to have more fruit trees and in some cases small vegetable gardens.

Women in general were more outspoken than those interviewed in the rural areas of Matlab. Although not all the women have visited Dhaka City, trips to the nearby busy intersection (usually to visit the doctor) were quite common. Ten out of the eleven participants were NGO members and consequently, health workers from these organizations visited the area quite often.

Mohammedpur Geneva Camp, Dhaka City



Fig. 1.6 Stagnant pool of water in front of refugee building.

There are about 200,000 refugees in 65 camps across the country. The Mohammadpur Geneva Camp, located at the heart of Dhaka City, is one of the largest refugee camps and was set up to shelter Pakistanis who remained after the creation of Bangladesh in 1971. The area is notorious for its high rates of crime, drug abuse, and trafficking and can be quite intimidating. However, this apprehension is soon replaced by pleasant surprise at

⁴¹ The rooms usually contain a large bed, clothes rack, shelf for storing utensils, television, radio etc.

⁴² These included drying various cooking fuel, giving oil massages to small children, hanging clothes to dry, sifting rice before cooking etc.

the warmth of the inhabitants. The families live in a state of despair. Piles of garbage at street corners are nothing out of the ordinary. Sanitation is deplorable and there are usually long queues for using the toilets. Of these fourteen households, half of the interviews were conducted in on of the three buildings donated by the Red Cross and the other half in the adjacent slum area.

Although the Red Cross buildings offered comparatively 'better' living conditions, the inhabitants lived in desolate circumstances. A large pool of stagnant rainwater made the entrance to the building difficult. Each building had five stories and housed about fifteen families on each floor. There were an average of four members in each family. Some households had an adjacent kitchen area while others had to make do with their 8' by 10' room⁴³. The women cooked on electric stoves since all homes had electricity and the Red Cross was bearing the cost of these buildings, which include rent, electricity etc.

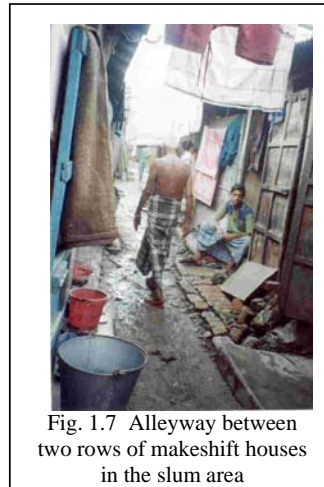


Fig. 1.7 Alleyway between two rows of makeshift houses in the slum area

Dana, T., Mohammedpur, August 2002.

However, wood stoves were also used when the electricity supply was disrupted. The walls were usually decorated with wall hangings of intricate embroidery and most respondents earned a living through this craft. It was quite obvious that these women were expert housekeepers, keeping their rooms painstakingly tidy by maximizing the use of every nook and cranny.

⁴³ Movement was difficult inside these rooms, which were usually filled with a medium sized bed, clothes rack, almira, showcase, television, radio, ceiling fan, wall clock, sewing machine, and one or two electric stoves.

Most families had monthly earnings ranging from Tk. 3000 to 10,000⁴⁴. The men usually worked in the local cloth business especially tailoring and their income was supplemented by embroidery work from homes. On an average every household had at least one member who had studied up to class eight or more. Four of the households had children aged five years or younger.

Adjacent to these three buildings was the less affluent slum area where the other seven women were interviewed. Residences were interspaced with embroidery, tailoring, small convenience stores, food shops etc. These households had living areas the same size as those in the Red Cross building. Although most had brick walls the roofs were usually made of makeshift materials and rainwater often seeped through. Families used kerosene stoves with some using wood stoves occasionally. There were no separate kitchens and the rooms usually served as bedroom, living area, and kitchen. Most of these rooms had two entrances and the stoves were usually located near the rear door.

Keeping the house clean was particularly difficult during monsoon when the unpaved roads leading to these dwellings became muddy. Even brief rainfall accumulated pools of stagnant water and nearly all households had elevated beds. On an average each family had about seven members and only two households had children aged five years or younger. Most households had monthly earnings ranging from Tk. 3000 to 7000⁴⁵. The men were employed in a wide variety of small businesses⁴⁶. The women also assisted their husbands with work relating to embroidery, tailoring etc. Only three households had members educated up to class eight or more. Many children were either sent to madrasas (religious schools) or worked in one of the nearby shops. The women of Mohammedpur spoke a dialect, which was a mixture

⁴⁴ US \$ 52 - 172

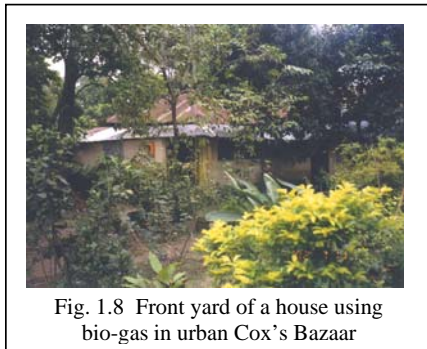
⁴⁵ US \$ 52 – 120

⁴⁶ These included embroidery, clothing, hair cutting, painting, manufacturing umbrellas etc.

of Urdu⁴⁷ and Bangla. They conversed candidly about their problems, making frequent reference to the hopelessness of their situation.

Cox's Bazaar

With the longest uninterrupted natural beach in the world, Cox's Bazaar is the tourist capital of Bangladesh⁴⁸. Members of thirty households were interviewed in Cox's Bazaar – half of which were conducted in the gas area and the other half in the non-gas area. Interviews in the gas area included households that were primarily using biogas and cylinder gas and those in the non-gas area included families using mainly wood stoves for cooking purposes.



The gas area was located in Cox's Bazaar town adjacent to the Circuit House Road. This cluster of households was easily accessible by all modes of transport. They were visibly more affluent, with properly constructed houses⁴⁹. All houses had space in their yard where fruit trees had been planted. Average

monthly earnings appeared to be around Tk. 6000⁵⁰ although some families were not readily forthcoming with financial information. Income levels were similar to those found in Mohammedpur, the cost of living in these areas are comparatively lower which, gave these families greater financial flexibility. Most of these houses were kept meticulously clean with spotless front yards and inner rooms. These families were also more educated with most

⁴⁷ National language of Pakistan.

⁴⁸ The city is located about 152 km south of Chittagong District and is also well known for its Buddhist monasteries.

⁴⁹ These houses had at least two bedrooms, a living, and dining area, kitchen, and toilet.

⁵⁰ US \$ 103.

having at least one member who completed the Higher Secondary Certificate⁵¹ examinations. Some had also completed their Bachelor's. The men worked in local businesses (like poultry farming), as schoolteachers, contractors, drivers, pharmacists etc.

A scenic drive led to the non-gas areas located in the Janar Ghona and Muhuripara areas of Jhilongi Union in Cox's Bazaar. Both areas appeared to be considerably less affluent than the gas area. Most houses were built with mud walls and thatched roofs with a separate external



Fig. 1.9 Field overlooking a cluster of households in Janar Ghona, Cox's Bazaar

kitchen – some with proper mud walls and others made with makeshift materials. None of these households had access to gas, however several had electricity⁵². The households interviewed did not use electric stoves. Most houses had a front porch-like area, followed by a living cum bedroom and the last room was usually the kitchen area. The more affluent households generally had an extra room. The women went to great lengths to keep the indoors well maintained by applying coats of fresh mud to the interior walls.

Initially the women were not as forthcoming with information⁵³. The dialect in the region made communication difficult and sometimes a family member acted as an interpreter. NGO activity was minimal and few women were affiliated with these organizations. The households had an average of seven to eight members. Many children were sent to madrasas or religious schools. Affluent households with space in their back yard grew seasonal fruits

⁵¹ Equivalent to a High School Graduation.

⁵² In the form of an extended electric line to operate a fan or light bulb.

⁵³ There was also a certain degree of reservation or shyness indicating that these women were not accustomed to interacting with members outside their community and certainly not with someone who was visibly urbane. Many women interviewed were the daughter-in-laws of the household, and were not only younger but also expected to play their part and provide appropriate answers.

and vegetables. Cox's Bazaar is well known for its beetle leaves and many households were cultivating the plant. Household heads usually worked as bus conductors, fishermen, farmers etc. However, there were some who were unemployed.

CHAPTER TWO

In order to discuss indoor air pollution and investigate women's perception of the issue, a brief overview of the country is given in the following, to provide a backdrop for further discussion.

Bangladesh – an Overview

Bangladesh is situated in the northeastern part of South Asia and is bounded by India, Myanmar, and the Bay of Bengal. The country has a landmass of 147,570 square kilometers and is inhabited by about 128 million people. Bangladesh has one of the highest population densities in the world with 869 persons per square kilometers. The country is only one twentieth the size of India and about the same size as the state of Georgia or Illinois in the United States.



Fig. 2.1 Map of Bangladesh
PhotoAtlas, October 2002,
<http://www.photoatlas.com/map/map_of_bangladesh.html>

Bangladesh is ethnically homogeneous except for a small tribal population of 1.2 million. About 90% of the inhabitants practice Islam. The majority of the population speaks Bangla, a language that has a rich literature and culture. There is a long history of struggle for liberation and this is firmly rooted in the country's national identity.

The country is divided into six divisions (Rajshahi, Khulna, Barisal, Dhaka, Sylhet and Chittagong), 64 districts, 460 sub-districts (thanas), 4,451 unions, and 68,542 villages. Eighty percent of the population still lives in the rural areas and only 31% of the rural households own more than one acre of land. Twenty eight percent of the households have no cultivable land at all.

Bangladesh has a low-income economy and ranks 132 out of the 162 countries on the HDI (Human Development Index) list⁵⁴. In 2000, the estimated per capita GDP was US\$ 380⁵⁵. About 62% of the adult population is illiterate and this includes 74% of adult women. Enrollment in primary schools is about 18 million. Although net enrollment is at 82%, there are 3 million children of primary school age who are not enrolled. Attendance rates are low, averaging only 60% and at least one third of those who enter primary education do not complete it. Enrollment of girls has shown significant increase over the past few years.

Primary Health Care System in Bangladesh

Compared to most other developing countries, Bangladesh has a relatively extensive network of infrastructure and human resource base for the delivery of health and family planning services. Since 1975 the World Bank along with other donors have provided financial and technical assistance to the Government of Bangladesh for the implementation of projects in health and population. Each project had a duration of five to six years. Historically the family planning sector of the Ministry of Health and Family Welfare (MOHFW) has received more funding for population control measures than other health issues. Although this has led to significant progress in the country's family planning programs, there has also been widespread duplication in management and service delivery staff, inefficiencies and difficulties in coordination at all levels.

To address these issues, the Government developed its Health and Population Sector Strategy, which was incorporated into the Health and Population Sector Program (HPSP) 1998 - 2003. The overall goal of the program is to ensure universal access to essential health care services of acceptable quality, which should lead to further reductions in infant mortality and morbidity, reductions in maternal mortality and morbidity, improvements in nutritional status

⁵⁴ “*Progotir Pathay 2000*,” Bangladesh Bureau of Statistics and UNICEF, December 2000.

⁵⁵ Ibid.

and reductions in fertility so that replacement level fertility will be reached by 2005⁵⁶. One of the main components of the program is the Essential Service Packages (ESP) which has several objectives which range from providing indispensable health care (in the area of child health care, reproductive health, communicable disease control and limited curative care services) to the most vulnerable population (women and children) to providing information, education and communication services through behavior change communications which will motivate clients to seek services included in the ESP. In addition, 105 previously semi-independent projects will be consolidated into 15 programs that will be funded solely by the government. This is because in the past, there was overlap in the spending scheme of the government's Revenue and Development budgets and this led to tension and conflict between staff members of the two sectors. This consolidation of funding activities is aimed at remedying many of these problems.

Essential Service Packages (ESP)

This approach was developed by giving priority to interventions, which will strengthen maternal, and child health services. ESP activities will be provided at the Union Health and Family Welfare Centers⁵⁷ and at the community outreach levels⁵⁸. The major

⁵⁶ Henry B. Perry, "*Health for All in Bangladesh: Lessons in Primary Health Care for the Twenty First Century*", Dhaka: University Press Limited, 2000.

⁵⁷ The country has 3,275 operational Union Health and Family Welfare Centers. Most of the welfare centers are staffed by two paramedics - a Medical assistant, (two thirds men) who focuses on acute curative care services and is responsible for the overall functioning of the welfare centers and a family welfare visitor (FWV), women who provide anti natal and post natal care, treat mothers and children suffering from minor ailments and provide family planning services, and child health (MCH) services. A pharmacist is also present at some centers - a total of 801 pharmacists work in the union welfare centers.

⁶¹The Directorate of Family Planning has established eight sites for outreach services in each union. These are known as satellite clinics. Each union is divided into three wards and each ward is again divided into two or three units depending on the population of the union and the number of FWVs working there. They visit each of these units once a month. These clinics are usually held at a person's home or at a local gathering spot in the community. Approximately 34,000 Satellite Clinic sessions are held every month in the country and most of these are conducted by FWVs and some by paramedics working for NGOs.

elements of the ESP have already been mentioned. Behavior Change Communication appears to be a key component of each of these elements. The main emphasis of this component will be⁵⁹:

- To change attitudes and behaviors so that people will try to improve their health status
- Build effective community support for health seeking behavior
- Change attitudes and behaviors of service providers so that services are more client centered
- Promote men's understanding of and respect for the special situation of women and girl children.

The government aims to gradually discontinue the doorstep delivery of pills and condoms and provide ESP at the community levels for a population of approximately 6,000 persons. According to Schuler, Bates and Islam⁶⁰, one of the main goals of the community family planning workers was to establish personal relationships with their clientele (in this case rural women). The health worker often worked as an intermediary when her client wanted to get health care from existing institutions – she was familiar with the system and clinic staff and could not only provide important information but also use her influence to help women get vital medicine without needless (in this case bribes) charges. Without the presence of these workers, it may be increasingly difficult for women not only to seek treatment but also make informed health care decisions.

However, there is some provision for the Family Welfare Volunteers (FWVs) to continue to provide services at satellite clinics. Furthermore, the community clinics will be

⁵⁹ Henry B. Perry, *Health for All in Bangladesh: Lessons in Primary Health Care for the Twenty First Century*, Dhaka: University Press Limited, 2000.

⁶⁰ Sidney R. Schuler, Lisa M. Bates, MD. K. Islam, "Paying for Reproductive Services in Bangladesh: Intersections between Cost, Quality and Culture," *Health Policy and Planning*, 17.3 (2002): 273-280.

established through collaboration with the local community, which leaves some avenues open for better participation and access. The local community will be involved in the management of government hospitals in the area.

Although the HPSP has focused on decentralization and community participation, evidence suggests that organization and institutional rigidities are inhibiting local resource flows and service uses⁶¹. Furthermore, issues like access for women - especially transportation costs, unofficial fees, the role of health care providers – in prescribing medicine, attitude towards patients and incentives to carry out their duties properly need to be further investigated to ensure that these do not hamper the process. However, it may be too early to assess the success of the program since it has only completed its first half and benefits usually accrue during the second half or later.

Primary Health Care in Urban Areas

In the urban areas, Government primary health care facilities are practically non-existent while the NGO sector is quite well established. In many respects the conditions facing the urban poor are worse than those facing the rural poor. Dhaka district has one of the highest population densities in the country with 3989 persons per sq. km⁶². High densities in the urban centers has led to higher risk of disease transmission, exposure to pathogens and toxins. Violence is also more prevalent with the largely female-headed households being more vulnerable. As cited by Perry, H. B., households in urban slums spend on an average about Tk. 319⁶³ per capita per year on health care. Poor families often go into considerable debt due to these expenses.

⁶¹ Tim Ensor et al., "Do essential service packages benefit the poor? Preliminary evidence from Bangladesh," *Health Policy and Planning*, 17.3 (2002): 247-256.

⁶² "Statistical Yearbook of Bangladesh: 1999," May 2001, Bangladesh Bureau of Statistics, Ministry of Planning, Government of the People's Republic of Bangladesh.

⁶³ US\$ 5.50.

USAID's 'Urban Primary Health Care Project' supports most of the NGOs working in the urban areas. During the next decade the government aims to build the capacity of the local municipal government and the municipalities to monitor and regulate urban health services. In this effort the government has established municipal primary health care committees throughout the country.

Services Provided by the NGOs

There are a large number of NGOS that are attempting to fill the gap left by the government sector in meeting the health and family planning needs of the population. These range from large international organizations like CARE, Save the Children, World Vision etc. to national ones like BRAC, Grameen Health Program etc. As cited by Perry, H.B.⁶⁴, there are over four thousand NGOs working in the health, population, and nutrition sector (HEU and Data International, 1998). NGOs provide extensive family planning services and contraceptive prevalence⁶⁵ is about 60% in areas served by NGOs as opposed to 45% in government-supported areas. Donor organizations like USAID, World Bank provide assistance to a large number of NGOs many of which are local efforts and serve the 'poorest of the poor'. Please refer to Appendix B for further information on relevant NGO activities in providing health care.

Services Provided by Private Practitioners and Pharmacists

Only 8% of the rural population seeks health care at government facilities and the vast majority goes to private practitioners for primary health care. Private practitioners usually include Palli Chikitschaks (village doctors), kabiraj (traditional healers), local pharmacists, and

⁶⁴ Henry B. Perry, "*Health for All in Bangladesh: Lessons in Prmiary Health Care for the Twenty First Century*", Dhaka: University Press Limited, 2000.

⁶⁵ Defined as the proportion of a population practicing contraception at a given point in time.

homeopaths. There are about 220,00 private health care practitioners throughout the country⁶⁶. The majority of these practitioners are not certified and those with degrees or medical board licenses constitute only 3% of the total. In 1978, the government provided a one-year training on curative medical care to 16,000 'barefoot doctors'. Although this program was eventually discontinued their medical skills are considered to be quite favorable.

There are an estimated 85,000 retail outlets, of local shops and pharmacies, nationwide. In addition to selling drugs these outlets also provide health advice and treatment. In recent years these stores have become an important source of family planning commodities and packet oral rehydration saline.

Health Education and Communication

As described in the previous section, many of the NGOs along with the government are involved in the dissemination of health information. This information is disseminated using a wide variety of communication material. These include, primarily, the printed media like posters, flip charts etc. The broadcast media is also used and in recent years innovative 'entertainment education' programs have achieved considerable success in dissemination of health related information. These issues are further discussed under the 'Findings on Health Communication Media' section where a range of health communication materials have been analyzed.

Environment in Bangladesh

Increasing population pressure is taking a toll on forest, land, and water resources of the country. In addition Bangladesh is often exposed to natural disasters like floods, cyclones, riverbank erosion, tornadoes, droughts and earthquakes. The floods in 1998 incurred damages

⁶⁶ Ibid, 58.

of \$2-3 billion⁶⁷. As mentioned earlier, water quality has emerged as an important issue. Untreated sewage and excreta disposed directly into rivers and water bodies is mainly responsible for the water related health problems in much of the country. As already discussed, the burning of fossil fuels, which causes Indoor Air Pollution, has severe health implications. In addition, increasing use of agro-chemicals has led to further deterioration of water quality.

Outdoor air quality issues are mainly prevalent in urban areas where emissions from motor vehicles contribute to the deteriorating air quality. Although the extent of industrial pollution is quite low at this stage of development, a significant amount of green house gases are produced mainly from the combustion of fossil fuels. In 1997, approximately 2,724 Giga grams (Gg) of green house gases were emitted from the burning of biomass and agricultural residues as opposed to 13,443 Gg from burning fossil fuels⁶⁸. The emission of large quantities of green house gases also has global implications. Recently, a dense blanket of pollution, also known as the ‘Asian Brown Cloud’ was spotted over the Asian sub continent⁶⁹. The cloud contains a cocktail of aerosol, ash, and soot and biomass burning was indicated as one of the major sources of cloud. Scientists are reporting that the haze is responsible for thousands of deaths from respiratory illnesses and erratic weather patterns which has prompted floods in countries like Bangladesh and droughts in Pakistan

⁶⁷ “*Progotir Pathey 2000*,” Bangladesh Bureau of Statistics and UNICEF, December 2000.

⁶⁸ “*Bangladesh Compendium of Enviromental Statistics 1997*,” Bangladesh Bureau of Statistics, 1999.

⁶⁹ Bray, Marianne, “ ‘Asian Brown Cloud’ poses global threat,” *Cable News Networks*, 21 August. 2002. <<http://www.cnn.com/2002/WORLD/asiapcf/south/08/12/asia.haze.glb/index.html>>

CHAPTER THREE

FINDINGS

Findings from Field Study

Where do women cook?

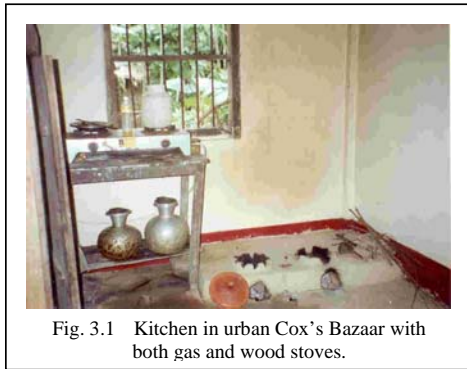


Fig. 3.1 Kitchen in urban Cox's Bazaar with both gas and wood stoves.

Dana, T., Cox's Bazaar, July, 2002.

Kitchen structures varied significantly by affluence and region. In general, the urban households had attached kitchens with concrete walls, door, tin roof, and a small netted window. Many urban households cooked on wood stoves despite having access to cleaner fuels like gas and kerosene. Most woodstoves were located in

the enclosed kitchens possibly due to the monsoon. However, cooking indoors in an area with poor ventilation can expose the women to very high concentrations of harmful kitchen smoke. This may be further compounded by the fact that women in affluent families usually cook more often and may spend more time in the kitchen. The concrete housing structures may 'trap' the smoke indoors and expose other family members as well.

In less affluent regions like the rural areas of Gazipur, Matlab and Cox's Bazaar, kitchens were usually located outside the house and made of tin or mud walls with tin or thatch roof, makeshift materials - bamboo mat, gunny bags, coconut leaves etc. These

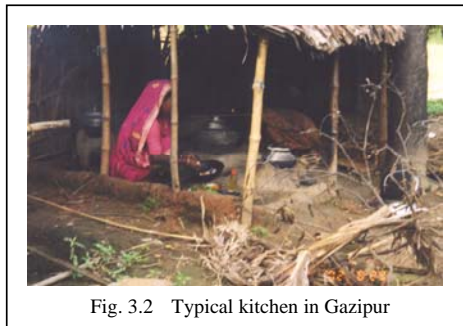


Fig. 3.2 Typical kitchen in Gazipur

detached kitchens also varied according to region. In rural Matlab and Gazipur they were quite similar, built with either mud walls or makeshift material with sometimes one to three sides

open. For kitchens with all four walls, there was sometimes a small opening, which served as a window. However, the stove usually rested in a protected corner of the kitchen, away from the window. In rural Cox's Bazaar, these kitchens were larger, well maintained and usually had just one entrance with no windows. All kitchens in these areas were used to mainly cook and store biomass fuels. It was a common sight to see wood or dung sticks hanging above the stoves for drying. Sometimes makeshift kitchens were built in anticipation of building a proper structure during the dry seasons.

All the families in Mohammedpur's slum area cooked in their living quarters. Women in these households may have been the worst affected by smoke since they not only cooked under one roof but used various scrap materials as fuel.

The 'Taste' Factor

Women's perception about the importance of the taste of food was a recurrent finding. When women were asked about the benefits of using certain stoves, they brought up the 'taste' of the food cooked as one of the prime factors. Women who were using wood stoves claimed that the 'taste' of smoke was unappetizing however, those using other stoves claimed that food cooked on wood stoves in fact tasted better.

As was discussed under "Health in Bangladesh," access to health care mainly occurs through various fixed and satellite health centers, governmental hospitals and NGO health centers. People also seek health care from alternative healers, village doctors, and local pharmacies. The following sections focus on findings regarding access to health care and the practice of preventive measures.

Taking Preventive Health Measures

One of the key findings from this section is that access to health care workers, household affluence, and literacy influenced the frequency and types of preventive measures taken by women.

How do Women Access Health Care

Almost all women interviewed stated that they took basic preventive measures like drinking tube well water, using iodized salt and vaccinating their children. However, in rural Cox's Bazaar where NGO activity is minimal, at least five households did not have sanitary latrines. Some households in the area preferred to use pond water due to the high iron content in the tube well waters. More affluent families in the urban Cox's Bazaar area drank boiled water instead.

Health workers from various NGOs visited this urban area. These workers usually visited households, which were members of the respective NGOs. However, only two respondents were members. This could be due to improved financial conditions, which counteracted the need to take small-scale loans. One of these NGOs, WorldVision, held monthly meetings where various health issues were discussed. Only three women claimed that government health workers visited regularly. There was some discontent about these workers. These included that the workers visited very rarely either for survey purposes or to ask about MCH and FP issues, they did not spend enough time on these visits and were reluctant to have in-depth conversations with the families etc.

Only one of the seven respondents interviewed in Mohammedpur's slum area was an NGO member and although she was advised to go to their health center she did not because it was too far away. She preferred to buy medicine from the nearby pharmacy instead. None of the women interviewed in the building were affiliated with NGOs.

In regions like rural Matlab and Gazipur a substantial amount of health-related information was disseminated through the health care workers, who visited the areas regularly. Due to greater interaction with health workers, the participants in this area appeared to be more aware of various health issues and preventive measures. Only one of the fifteen households interviewed in rural Matlab lacked a sanitary latrine. All households drank tube well water, used iodized salt, and immunized their children.

Affluence

The affluent households had more options for taking preventive measures and appeared to be more knowledgeable about health issues in general. For example, in urban Cox's Bazaar, households that were producing biogas had a variety of fruit trees and vegetables growing in their yards. They took a greater interest in food and nutritional issues and were generally better informed. At least two women living in the building in Mohammedpur claimed that they did not allow their husband to smoke indoors and one of them did not use mosquito coils⁷⁰ either. In urban Matlab, one participant claimed that she had made it a point to discuss the AIDS issue with her daughter.

Literacy and Exposure to Media

In the urban areas, where the participants were generally more literate, some women claimed that they understood more than the average person and always followed good health practices. I found that higher levels of education led to greater awareness about health issues. Most families got health-related information from the media⁷¹ and NGOs. Improved literacy rates could also indicate that the health information received through the media is better understood and the preventive measures advocated are therefore taken.

All the urban households had cable television. One woman in urban Cox's Bazaar claimed that she watched these cable channels to get health-related information as well. Although, only one participant could mention a specific health related program, it was apparent that the urban households received a substantial amount of information about diseases that most concerned them. For example, one respondent in urban Matlab stated that she watched television to know more about her husband's high blood pressure and learned that patients should eat more vegetables and avoid foods with high starch content.

⁷⁰ Coils that burn like incense but are made with 0.23% D-CIS Trans Allethrin to repel mosquitos.

⁷¹ Books, newspapers and television.

Seeking Health Care in Urban Areas

Health seeking behavior varied by region and the following sections have been divided into urban and rural areas. The nature of treatment women seek depend on whether a woman is living in an urban or rural area. Although all families practice home remedies and visit local 'healers', families that are more affluent tend to visit doctors and private practitioners more frequently than those who are less well off. The affluent families, living in urban Cox's Bazaar, Matlab and Mohammedpur's refugee buildings tended to be more concerned about diseases like diabetes, arthritis, heart problems, blood dysentery, paratyphoid, high blood pressure, malaria, dengue fever, tonsillitis etc. For minor illnesses like headaches, seasonal colds, and coughs etc. all women tended to practice home treatment first. For example, in Mohammedpur, women tended to treat fever with Napa tablets bought from nearby pharmacies. Whereas poorer women were more concerned about everyday illnesses like diarrhea, seasonal colds and coughs, dysentery etc.

People preferred to seek treatment at private health centers as opposed to services offered by the government. Women in Mohammedpur visited the Bangladesh Medical College, which is a private institution located in the nearby Dhanmondi area. Women reported that long waiting times and the quality of care received often deterred them from going to government centers. However, three of the seven respondents with small children stated that they went to the Shishu Hospital (Government's Children's Hospital) for treatment.

In urban Matlab, some families visited private doctors and hospitals in Dhaka for complicated illnesses. One woman stated that she visits BIRDEM⁷² regularly for her diabetes. Families with small children visited the ICDDR, B health center for their illnesses. Private

⁷²Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine and Metabolic Disorders - provides comprehensive diabetic health care and in 1982 was designated as the WHO Collaborating Center for research on prevention and control.

doctors were also visited in the Chadpur area. In urban Cox's Bazaar, most households went to private doctors as well as government health centers.

Households in Mohammedpur's slum area, who are not as affluent as those residing in the buildings, administered treatment at home – for example, gave hot water compress for skin diseases - or bought medicine from nearby pharmacy for small illnesses. For severe illnesses they visited private doctors or government health centers. For example, one participant took her husband to Suhrawardy Hospital for heart problems. There are several health centers inside the camp area as well. Al-Falah⁷³, a clinic located on the road where many of the households were interviewed, appeared to be a popular center where many went for treatment.

Seeking Health Care in Rural Areas

Health care seeking behavior in the rural areas differed from the urban areas and also depended on the frequency and types of interactions with health care workers. The following discussion is focused on the findings in the villages of rural Gazipur, Matlab, and Cox's Bazaar.

In Gazipur, for minor illnesses, home remedies and herbal treatment from healers were applied. Private doctors were visited in nearby areas. Families with small children tended to go to the government hospitals mainly for immunization, diarrhea, seasonal cold or when the private doctors were unavailable. This reluctance to seek treatment at government hospitals appeared to stem from a widespread distrust in the health care providers and their treatment. However, some women also mentioned the drawbacks of visiting private doctors and there was widespread consensus that private doctors were mainly concerned with monetary gains. These and other issues are discussed further under 'Main Themes'.

In rural Matlab, in addition to practicing home remedies, most families went to the government hospital located in Matlab and the Family Welfare Center nearby. ICDDR, B's

⁷³ Al Falah Bangladesh was established in the camp area in 1980 and in addition to providing primary health care services has been implementing HIV/STD prevention programs in the area.

hospital was usually visited for children's illnesses. The women claimed that they did not seek alternative treatment and this could be due to extensive involvement of health care workers who make regular visits to collect health indicator data and provide nutritional supplements to expecting mothers and young children. At least one woman claimed that the NGOs only targeted the relatively wealthier families who were better able to repay loans. This allegation and other perceptions of NGO activities are addressed in later sections.

In rural Cox's Bazaar there was almost no NGO activity, and women went to government hospitals or nearby pharmacies to seek treatment. Comparatively fewer women sought alternative treatment and only one was affiliated with an NGO. One respondent claimed that she usually visited herbal healers and private doctors only when there was enough money. Again, there was some discontent about health worker activities and at least three women stated that those visiting the area (mostly governmental and very few from NGOs) did not spend adequate time with them and in some cases discouraged interaction. Government workers visited solely for immunizing the children and most NGO workers focused on issues related to taking loans.

Fuel Use

The types of fuel used directly impacted the amount of smoke produced and consequently the associated exposure from smoke. In the areas visited, a large variety of fuels were being used for cooking purposes. These ranged from the more traditional biomass fuels⁷⁴ to those higher up the energy ladder like electricity and gas. As expected, families who were more affluent preferred to use gas where it was available. Otherwise, they tended to use kerosene or electricity. In rural areas where primarily biomass fuels were used, the relatively more affluent households preferred to use a greater proportion of firewood in the biomass fuel mixture. These and other relevant issues are discussed in the following sections.

⁷⁴ These include fire wood, cow dung, dry leaves etc.

Fuel Use in Rural Areas

The areas for this discussion include Islampur Village, Rural Matlab and Rural Cox's Bazaar.

The following table summarizes the various types of fuels found in the rural areas.

Table 3.1

Fuels Used in Rural Areas

	Fire-wood	Cow dung	Hay	Leaves	Saw dust	Jute Stick	Rice husk	Coconut husk	Coal	Kerosene
Gazipur	■	■	■	■				■	■	■
C. Bazaar	■	■	■	■	■		■	■		■
Matlab	■	■	■	■	■	■		■		■

Access to Fuels in Rural Areas

There is tremendous variety amongst the biomass fuels that are used in the rural areas. Quite literally, any biomass matter that burns is used. These include dry leaves, hay, branches, firewood, dried cow dung, stray branches, twigs, coconut husks, sawdust and, rice husks⁷⁵. Families with trees in their yards use a greater proportion of firewood from these trees and buy wood from the market when there is a heavy cooking load. Households who own cows primarily rely on cow dung that is either molded into dried dung cakes or dried on sticks. Families who have neither cows nor trees either use a greater quantity of residual fuel⁷⁶ or if they can afford to, purchased wood from the market. Please refer to Appendix C for additional information about fuel access and management patterns.

⁷⁵ Please refer to Appendix D for illustrations of various biomass fuels.

⁷⁶ Dry leaves, twigs, crop residue etc.

Wood Stoves – Design and Ease of Use

Like the biomass fuels, wood stoves encountered in the rural areas varied widely by shape and size⁷⁷.

Improved Cook Stoves in Gazipur

Under the initiative of the NGO, BRAC, a revised version of the government cook stove was disseminated in the village of Islampur. Although, this new model was created through community participation, it was not tested to ensure that the amount of fuel required and the associated emission



Fig. 3.3 BRAC initiated improved cookstoves of Gazipur

were indeed less than the more conventional model. Like the government stove program, the main motivation behind BRAC's program was to reduce the amount of biomass being used. The principal difference between the improved stove and the traditional one⁷⁸ was the inclusion of a metal grate which reduced the distance between the flame and the pot, thus increasing the efficiency of heat transfer.

All eleven houses interviewed in Gazipur were using the improved stove and the participants indicated that the stove requires less fuel than the traditional one. However, they were also quick to point out that unlike the more conventional stove, this stove can only use fuels like fire wood or cow dung. Therefore all families have also built a traditional stove immediately next to the improved one to take advantage of the abundant residuals fuels available during the winter months. Since most households in the area do not have ready access to fire wood, many have little alternative but to use dried cow dung for these stoves.

⁷⁷ Please refer to Appendix E for illustrations of various wood stoves.

⁷⁸ Typically there are several variations to traditional wood stoves. The most common version is made of mud with three raised points and a hole for adding various biomass fuels. Refer to Appendix E for illustration.

Hay is normally used to start the initial fire. The following case study further illustrates this issue.

Amena's Story

Amena is in her late fifties and lives in a family of nine, which includes her husband, two sons, their wives, and three grandchildren. She is still active and helps her daughter in laws with household chores including cooking. She has two stoves – one an improved version and the other a traditional wood stove made of earth. The improved stove has metal grates that enhance heat transfer to the pot by decreasing the distance between the fire and the pot. She has learned to make the stove from her neighbors and claims that it is more convenient to use when compared with traditional stoves. There are no trees in her yard thus her only source of fuel is dung from the four cows she has. During the monsoon it can take up to ten days or more to dry dung cakes and lack of space has forced her to dry these cakes on the walls of her kitchen. She uses the improved stove most often since she can use dung cakes – ideally wood should be used for this particular stove but most families have improvised and use dung instead. The traditional stove is used for any residual dried dung or dry leaves, sticks etc. that may be available round the year.

To light the improved stove she first puts a layer of hay on the grate and then the dung cakes. Once the hay is lit, the dung cakes eventually catch fire. However, initially there is a large amount of smoke. Although, the amount of smoke decreases once the fire is burning properly, the fuels have to be lit all over again if for any reason the fire goes out. This is quite different from the traditional stove where there are residual burning embers and the fire can be relit simply by fanning vigorously. She cooks in a kitchen, which is located away from

the house. Two of the walls are earthen and the other two are made of makeshift materials – she plans to repair these once the rains stop.

Amena is aware that the smoke probably has harmful impacts but does not know of particular smoke related diseases. When she cooks her eyes water and she coughs constantly. However, her choices are limited. Owning cows has meant that she is not forced to use dry leaves or other residual fuel that many use, but this in itself is not the most desirable arrangement.

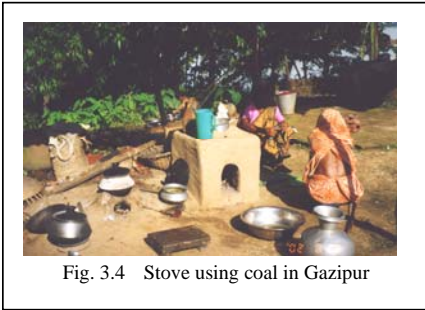


Fig. 3.4 Stove using coal in Gazipur

In addition to cow dung, it was found that coal was also used in many of these stoves. Women have realized that coal is more convenient to use since it burns for a longer time and the burning embers can be used to relight the stove at a later time. One woman had built a

stove, that resembled the wood ovens seen in local bakeries. The advantage of this stove is that the stovetop can also be used as a place to keep utensils. In all areas, women tended to modify their wood stoves to fit their own needs.

How Satisfied were Women with Wood Stoves?

All wood stove users overwhelmingly agree that cooking on a wood stove has its shortcomings. These include immediate physical discomforts like:

- Eyes watering
- Irritation of throat and nasal passage
- Breathing difficulties
- Coughing
- Production of large amounts of ash and often soot
- Soot and ash sully food, clothes, utensils and surroundings

In addition to the difficulties of lighting a wood stove, the fuels used need to be acceptably dry. Other factors like the right proportion of air and fuel and heat intensity are also constantly monitored while cooking. This is particularly important for cooking staple foods like rice, and other dishes, which are boiled or simmered in water for a long time. All these activities require constant tending and the women can do little else while cooking. Therefore it comes as no surprise that women cook with young children on their laps and this results in high smoke exposure to both mother and child.

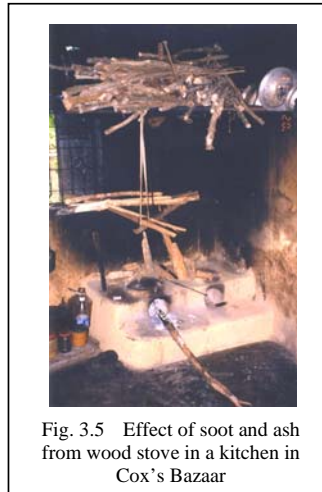


Fig. 3.5 Effect of soot and ash from wood stove in a kitchen in Cox's Bazaar

Dana, T., Cox's Bazaar, July, 2002.

Fuel Use Issues in Urban Areas

The areas for this discussion include the urban areas of Matlab, Cox's Bazaar and the Mohammedpur Geneva Camp area in Dhaka. The following table summarizes the various fuel types found in these areas.

Table 3.2

Fuels Used in Urban Areas

	Firewood	Leaves	Cardboard	Scrap Paper	Gas	Biogas	Kerosene	Electricity
C. Bazaar	■	■	■		■	■	■	
Matlab	■				■		■	
Md'pur	■			■			■	■

Access to Fuels in Urban Areas

As can be seen from table 3.2, various types of fuels and stoves are used in these regions. While piped gas supply was found only in urban Matlab, cylinder and biogas was used in urban Cox's Bazaar. In Mohammedpur's Geneva Camp on the other hand, electric stoves were used since the Red Cross subsidized the cost of electricity. However, these stoves apparently did not adhere to any safety standards and women were often subjected to frequent electric shocks while cooking. Please refer to Appendix C for additional information about fuel and stove usage patterns.

Are Women Aware of the Risks of Kitchen Smoke?

In order to assess the level of awareness of indoor air pollution, women interviewed were presented with a visual⁷⁹ which contained images of three wood stoves, with varying levels of emissions and asked, "Which one of these pictures do you think depicts the unhealthiest environment to cook in?" Once they had identified an image they were asked to explain the reasoning behind their choice.

Discomfort vs. Health Risks

About two thirds of all respondents (46 out of 85) could identify the third image (also the 'smokiest' image) as representing the most unhealthy cooking conditions. However, most women appeared to focus on the immediate physical discomforts of smoke rather than the health risks. These discomforts included eyes watering and burning, difficulty in breathing, throat and nasal passage irritation, coughing etc. There were some participants who were not able to select an image immediately but did so after further probing or explanation by the women sitting nearby. Not surprisingly almost all women (35 out of 37) living in comparatively affluent families were able to provide the correct response.

⁷⁹ Please refer to Appendix A for Visual illustration and Interview Protocol.

The majority of the fifteen women, who did not select the third image, selected the second image and gave more attention to stove ergonomics. Stove height and open flames were indicated as reasons for concern. Surprisingly, most of the respondents (10 out of 15) of rural Matlab did not pick the smokiest image. Despite having a lower literacy rate⁸⁰, more women in rural Cox's Bazaar could select the correct picture when compared with rural Matlab. This may be because the women in Cox's Bazaar use a larger proportion of residual fuels⁸¹ in their fuel mixture and are thus exposed to more smoke. In addition, the women in rural Matlab cooked just once a day, usually in the morning. At least two women stated that there were no physical discomforts while cooking on a wood stove other than the minor issue of eyes watering.

It was clear that these women understood the concept of hygiene and its role in good health status however, it was also clear that the idea of smoke being emitted was inherent with wood stoves and therefore not always correlated with negative health outcomes.

Knowledge of Indoor Air Pollution

Of the women interviewed, those who were literate and had more media exposure demonstrated greater awareness of possible health risks associated with smoke exposure. The majority of the women living in Mohammedpur Geneva Camp's refugee building and in urban Matlab identified specific diseases like asthma, respiratory illnesses, cancer, tuberculosis etc. This was followed by urban Cox's Bazaar, Gazipur, rural Cox's Bazaar, and rural Matlab⁸² where none of the participants could indicate specific diseases. Many also stated that smoke causes gastric problems since it is believed that the smoke or the "gas" enters the stomach

⁸⁰ Adult female literacy for Barisal (Matlab) Division is 41% whereas, for rural Chittagong (Cox's Bazaar) Division is 36.6% - "*Renewed Hope, Daunting Challenges: State of Primary Education in Bangladesh 2002*," Education Watch, The University Press Limited, 2002.

⁸¹ These include coconut husks, rice husks, saw dust etc.

⁸² Urban Cox's Bazaar – 7/15, rural Cox's Bazaar – 1/15, Gazipur – 2/11 and rural Matlab – 0/15.

through the digestive system. Of those who were able to identify smoke related illnesses, most got the information from the broadcast media, especially from watching television commercials.

Several women also correlated smoke from wood stoves to outdoor air pollution, an issue regularly addressed on television. This will be discussed in greater detail under the main themes. There was wide spread consensus that smoke was harmful for children. The women reached this conclusion by deducing that children are more sensitive and smoke probably has greater adverse effects on a child's body.

Solutions Women Chose

Named solutions varied according to the region and most times depended on the commodities available in the neighboring areas. These solutions include:

- Using dry wood (most common response)
- Better Ventilation (particularly while lighting the fuel by blowing the smoke away)
- Cooking on low fire
- Avoiding the use of Beetle Nut leaves
- Using gas
- Using kerosene
- Keeping children away from kitchen area
- Keeping the stove dry
- Covering face while cooking
- Disseminating smoke-related health information through health workers
- Arranging village meetings (in small groups that gather at one house) to discuss and explain the issue

- Distributing posters which depict preventive measures in an easily understandable way
- Further efforts by the government to address the issue and
- Using improved cook stoves.

Although these women could identify the picture on the visual correctly, one of them mentioned that smoke from cook stoves is not a problem since it “*goes away quickly.*” Women in the Cox’s Bazaar area using biogas also suggested that the government further subsidize bio gas plants. Not surprisingly participants who suggested further health worker involvement were also the ones living in areas (like Gazipur and rural Matlab) where the health workers visit regularly and there is extensive interaction.

At least five women referred to the dissemination of improved cook stoves in a favorable way. They received this information from watching television, NGO health classes or from neighboring villages where such programs were implemented. Women who watched television regularly tended to live in urban areas and suggested using the television media for disseminating information.

However, not everyone had solutions and at least two respondents in rural Cox’s Bazaar said that there was nothing that they could do to reduce exposure. They reasoned that they did not have the financial means to use higher-grade fuels and that smoke would always be emitted from wood stoves. These issues are addressed in the Themes Section.

Many of the suggestions made by the women, like having access to gas supply, were ‘ideal’ solutions and there was some difficulty in explaining how these ideas would be implemented in reality. However, it was also evident that some tailored these solutions to their living conditions in general.

Findings on Health Communication Media

In order to assess what types of health information the women were exposed to, samples of various health communication media were analyzed. These included 1) drama serials 2) television health spots, and 3) health related posters. The women interviewed were asked about their sources of information and the relevant health related materials were analyzed. Fifty-three (53) of the eighty-five (85) households interviewed owned televisions. This is because more than half the women (44 out of 85) interviewed lived in urban areas⁸³.

Studies have shown that ‘entertainment education’ programs have a positive impact on health behaviors of the audience. Islam and Hasan⁸⁴ indicate that the ownership of television, radio etc. and the exposure to family planning messages from these media has a significant effect on the present use of various methods. However, actual adoption of the messages appeared to depend on social norms and sense of community, the various channels used to demonstrate the consequences of non-practice, the role of health officials and how individuals perceived the practice of preventive care. Papa, et al.⁸⁵ further states that ‘entertainment education programs can promote changes in the thinking and behavior of audience members in several ways’. However, the authors also point out that these changes may not always be the desired ones. The audience may employ contradictory reasoning in an effort to internalize the new values or practices that are being promoted. In addition the audience may also be exposed to conflicting messages from competing programs.

⁸³ Mohammedpur, Urban Matlab and Cox’s Bazaar.

⁸⁴ M. Mazharul Islam and A. H. M. Saidul Hasan “Mass Media Exposure and Its Impact on Family Planning in Bangladesh,” *Journal of Biosocial Sciences*, 32(2000): 513-526.

⁸⁵ Michael J. Papa, et al., “Entertainment-Education and Social Change: An analysis of Parasocial Interaction, Social Learning, Collective Efficacy, and Paradoxical Communication,” *Journal of Communication*, December 2000.

1. Entertainment Education - Drama Serials

Since 1997, Bangladesh Television has aired several weekly drama serials, which have focused on health care. These serials are similar to mini-series, with each episode having a duration of about thirty (30) minutes. Studies have shown that these serials have indeed had an impact on the audience⁸⁶.

Two 13-episode television serials titled “Shabuj Shathi” (Green Companion) and “Shabuj Chhaya” (Green Shade) were a central part of the Green Umbrella Campaign⁸⁷ and were broadcasted in 1997 and 2000 respectively. Both series focused on various health issues, which ranged from pneumonia, childhood diarrhea, other maternal and child health issues to HIV/AIDS and sexually transmitted diseases. The main goals of both series were to

encourage people to seek health care at a nearby clinic bearing the Green Umbrella Logo. “Shabuj Chhaya” went a step further to focus on a different health issue in every episode. The first series had increased focus on family planning and maternal health issues. However, the roles of local health care workers, depot holders, and FWVs were also emphasized in the story. One such episode focused on Acute Respiratory Illnesses (ARI) and the storyline very clearly demonstrated the warning signs and the need to seek treatment at the local health

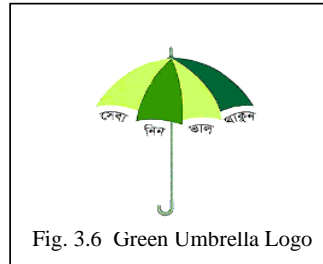


Fig. 3.6 Green Umbrella Logo

Media Materials
Clearinghouse, Johns Hopkins
University Center for
Communication Programs,
10 December, 2002.

⁸⁶ The National Media Survey of 1998 found that watching the dramas was strongly correlated with the level of knowledge regarding HIV/AIDS, nutrition, and childhood diseases. In addition visiting a health center and the use of modern contraceptive methods were significantly related to the recall of the program.

⁸⁷ The Green Umbrella Logo Campaign was launched in September 1996. Its main slogan was “Sheba Neen, Bhalo Thakun” (Take Services, Stay Healthy) and the Logo represented the country’s integrated family planning and health services under the Essential Service Packages program. The Logo is prominently displayed in selected health centers to remind the clientele that the Green Umbrella offers a comprehensive range of services at the health centers.

center. Information regarding indoor air pollution as a risk factor for ARI was not included and it was evident this could be very effectively integrated into the story.

The announcer at the end of each episode administered a short quiz. These segments usually consisted of discussions of various health issues after which the audience had one week to mail in the correct answers to questions from the discussion. The first hundred correct answers received prize bonds. However, the audience survey⁸⁸ conducted after the series was aired did not address the effectiveness of these quizzes.

The survey however, revealed that knowledge about diseases and health conditions like pneumonia, anemia etc increased only if a viewer watched at least six (6) of the thirteen (13) episodes. Only 9% of the respondents could name both symptoms⁸⁹ of pneumonia and about 57% could not name any symptoms at all. Of those who did recognize symptoms, the women tended to be more aware, recognizing at least one warning sign. Overall, there appeared to be an increase in awareness about the disease with 42% men and 63% women in the high-exposure⁹⁰ group being able to name at least one symptom of pneumonia compared to 28% for both sexes in the low exposure⁹¹ group. In addition, those who watched the drama showed increased awareness about where to find a health center. The success of the series was also attributed to a very engaging story line, pre-testing of scripts and pilot episodes and strong endorsement by both government and donor organizations.

Eyi Megh Eyi Roudra (Now Cloud, Now Sunshine), is another twenty-six (26) episode drama series that aired recently, depicting the everyday lives of rural and urban Bangladeshis. The story promoted good health practices and encouraged viewers to seek

⁸⁸ Mai P. Do, and Lawrence Kincaid, "Impacts of the Shabuj Chhaya Television Drama in Bangladesh: Key Findings from Audience Survey," Center for Communication Programs, Johns Hopkins University.

⁸⁹ 1) Chest expanding and contracting with heavy breathing and 2) fever.

⁹⁰ Watched at least 6-13 episodes.

⁹¹ Watched at least 1-5 episodes.

health care at clinics with the Green Umbrella and “Smiling Sun” Logo⁹². In addition, discussions of issues like diarrhea, acute respiratory infections, maternal and childcare were also woven into the storyline. However the estimated number of viewers is not known.

Language Complexity

Similar to Shabuj Chhaya, each episode is followed by a short quiz. With over 180,000 letters the response has been enthusiastic. It is not known what fraction of the letters originated from rural areas. The language used in these quiz shows is extremely formal and complex. During one such quiz show⁹³ ARI issues were discussed. This included the symptoms of ARI and preventive measures. The host used words such as “Shashtontrer shongkromon jorito rog” (Diseases related to ARI) and “Khaddo o panio grohone shishur oruchi dekha dibe” (Loss of appetite in child). Considering that the characters in the drama use local dialects, similar colloquial language could be used during the quiz shows as well. For example, for loss of appetite simpler sentences like “Jokhon shishu khabar o pani khete chabe na” could be used. Using visuals would help to illustrate the issue further. These findings raise some doubt as to how likely it is that poorer families with low education can understand the information disseminated. Moreover, getting feedback by writing back may not be appropriate for low literate people who have a hard time writing to begin with. Instead a simpler method like mailing in a coupon might encourage less educated viewers to interact further.

⁹² This is the symbol that appears on all behavior change communication material and all Urban Family Health Project and Rural Service Delivery Project NGO clinics. The Behavior Change Communication Campaign was launched by USAID and the National Integrated Population and Health Program (NIPHP). The program aims to improve health and health seeking behavior and increase the usage of both urban and rural health care centers. The campaign’s main slogan is ‘Go to the clinic where you see the “Smiling Sun”’.

⁹³ “Eyi Megh, Eyi Roudra,” Quiz 6, Ministry of Health and Family Welfare, Government of Bangladesh.

2. Health Spots on Television

Health spots on television, which, usually run for 1-2 minutes during commercial breaks, are broadcast on both the national and private television channels. No formal evaluation or studies of these transmissions were found and the following analysis is provided to give the readers an understanding of the various ways in which the population is exposed to health messages via the broadcast media. Several participants referred to some of these health spots and the very relevant ones like Control of Diarrheal Diseases and consumption of Iodized Salts are discussed under the section titled 'Information Diffusion - Role of Mass Media'.

Arsenic Contamination of Groundwater Issues

At the time of the field work⁹⁴ there were five television spots airing in Bangladesh, each lasting between one to two minutes, that focused on matters related to the arsenic contamination. One ad was general and the other four featured different members of the community including a schoolteacher, female health worker to an Imam (religious preacher) of a mosque.

Important themes in these ads included the importance of providing proper care for patients with arsenicosis, avoiding social ostracism and the role of men in the community in getting access to safe drinking water. Information about the symptoms of arsenic poisoning and preventive measures were also explained with the help of flip charts.

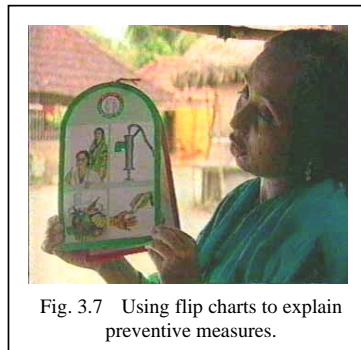


Fig. 3.7 Using flip charts to explain preventive measures.

Arsenic (Health Worker), TV Spot 3, Department of Public Health Engineering, December 8, 1999.

⁹⁴ June – August 2002.

a) ***Risk Communication***

Risks were only mildly stated in these spots. Only two of the five ads portrayed the symptoms of arsenicosis, for two and four seconds respectively, and only one spot mentioned that drinking arsenic contaminated water is dangerous even if there are no external symptoms. However, the ad did not go on to explain what internal effects there would be. This may mislead many into believing that the health effects of drinking arsenic contaminated water are limited to external skin lesions. None of the spots mentioned that arsenic poisoning could in some cases result in death.

All the spots stated that “a few tube wells in some areas of the country have been found to be contaminated with arsenic.”⁹⁵ Although it is true that not all tube wells of the country are contaminated, about twenty-seven percent (27%) of the country’s shallow tube wells have exceeded the allowable levels of arsenic⁹⁶. Forty – five percent (45%) of the country’s area contains groundwater with Arsenic contamination greater than 0.05 mg/L⁹⁷. This could well be a measure to avoid panic since, for the majority at risk, there are very few alternatives. However, such tempered statements may not motivate the viewers to take preventive measures, particularly in areas where there are no external symptoms of arsenic poisoning despite contamination of the groundwater. This may also be an indication of the existing conflict between acceptable testing kits, testing standards and the latest controversy over correct testing and marking of tube wells.

⁹⁵ Arsenic, TV Spots, Department of Public Health Engineering, December 8, 1999. (My emphasis).

⁹⁶ “*People’s Report on Bangladesh Environment 2001*,” Unnayan Shamannay, Dhaka: University Press Limited, 1(2001).

⁹⁷ Seth H. Frisbie, et al., “The Concentrations of Arsenic and Other Toxic Elements in Bangladesh’s Drinking Water,” *Environmental Health Perspectives*, November 110.11(2002):1147-1153.

b) Tone

Class difference between the health worker and her clients was visible when one ad depicted a well-dressed worker sitting on a stool while addressing a group of rural women who gathered on the ground. This was also observed in actual settings and indicates that this may be the norm, creating a barrier to the communication of health information. The issue is discussed in detail in the themes section.

Interestingly, a scene in one ad depicts a woman cooking on a wood stove with her child on her lap. The ad does not address indoor air quality and this may be indication of the lack of awareness of the problem and to some extent, how such an image is so much a part of rural life in Bangladesh.

Maternal Health Issues

In the summer of 2002, six television spots that focused on the various aspects of maternal health care were reviewed. These range from the importance of early preparedness, seeking treatment immediately and giving nutritious diet, to taking advice from male doctors and stopping violence at home. The slogan for all the ads is “A woman’s right – healthy life, happy mind.” In addition, appreciation for the health care workers and seeking care at clinics with the Green Umbrella logo are also advocated.

The language used is familiar and easily understandable and the spots are aimed at building relationships of trust and respect with these workers. As with the arsenic spots analyzed, class disparity between health care advocates and the rural inhabitants is evident in one of these ads.

One of the leading causes behind the high maternal mortality rates is violence against women and this theme is strongly reflected in two of these health spots. The strong underlying message is

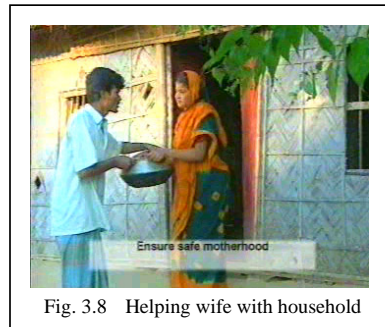


Fig. 3.8 Helping wife with household

‘Jari Gan’, TV spot 6, BCC unit, Ministry of Family Planning, Ministry of Health and Family Welfare, UNICEF Bangladesh.

that the society as a whole should stand up against such aggression and that it is a woman's right to lead a happy and safe life. One of the spots, running over six minutes, is more dramatic and shows real life stories of families who have lost a family member due to violence or pregnancy-related complications. The importance of men's involvement is communicated through a song performed by a folk singer. There are several scenes depicting men helping their spouses with household chores.

This is perhaps one of the more effective campaigns in which the issue is presented in as 'real' a sense as possible. However, the length of the spot may reduce the number of

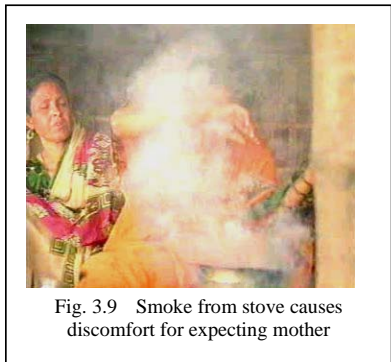


Fig. 3.9 Smoke from stove causes discomfort for expecting mother

'Jari Gan', TV spot 6, BCC unit, Ministry of Family Planning, Ministry of Health and Family Welfare, UNICEF Bangladesh.

viewers or it may be broadcasted fewer times. In addition, some messages appear on the screen as written words and are not narrated. This is an obstacle for low literate women and families.

Despite the appealing music and visuals, one particular scene appeared to contradict the very

essence of safe motherhood. As discussed in the arsenic spots, this ad also depicts a pregnant woman cooking on a wood stove with the smoke rising and at one point obscuring her face. It was ironic considering that the background music advocated proper care of pregnant women. This particular finding leads me to conclude that the adverse health effects of indoor air pollution are not addressed at any level and that the issue has gone unnoticed by international organizations like UNICEF⁹⁸ who were collaborating partners in this endeavor. This may also be attributed to the lack of awareness on the part of the producer of the spot.

⁹⁸ United Nation's Children's Fund.

There are four health spots that advocate immunizing children on the National Immunization Day⁹⁹ (NID). These ads involve celebrities like cricket players and television actors used to spread the message. Emphasis is given to getting vaccinations on both days. These infomercials have catchy music and messages. The language appears to be more complex and the information is communicated in a very short time. Although the visuals convey the main messages of the spots, understanding may be difficult for audiences with low levels of literacy, particularly in remote areas. However, the involvement of known personalities may ensure greater audiences.

The findings discussed above indicate an urgent need to carry out further qualitative studies to investigate what types of health messages the audience are exposed to, how relevant and effective they are.

3. Health Related Posters

Health posters addressing a wide range of issues can be found throughout health and NGO centers of Bangladesh. In addition many of these materials are developed with the help of international organizations like UNICEF, WHO, USAID etc. However, there are none addressing indoor air pollution issues. Important themes from a sample of relevant posters are discussed below.

Arsenic Related Posters

There are several posters developed by UNICEF and the Department of Public Health and Engineering (DPHE), that address the various aspects of arsenic contamination of ground water in the country. In addition to general information about arsenic contamination, other issues like testing tube well water, conserving rainwater etc. are also discussed. One of these

⁹⁹ National Immunization Days (NID) are conducted twice every year under the government's Extended Program on Immunization (EPI). On these days, all children under five years of age are given oral polio vaccine, as part of the global drive to eradicate the disease. On the second round, Vitamin A supplements are given to all children under five years of age. At present about these, immunization drives reach more than ninety percent of the 17 million children under five in the country. Vitamin A supplementation has also reduced the number of children going blind from 30,000 to 60,000.

posters depicts a testing kit with chemicals and solvents. The visual is not very clear and a less educated audience may mistake this image for the preparation of oral saline. At present there are no assessment of the effectiveness of these posters and it is important to carry out ethnographic studies that would investigate if the viewers are indeed getting mixed messages. Similar to the television spots on arsenic contamination, it appeared that some of the posters attempted to downplay the severity of the situation.

Roles of a Responsible Husband and Father

In response to the government’s new approach that advocates behavior change communication, the Bangladesh Center for Communications Programs (BCCP)¹⁰⁰, produced several health posters that focused on the issue of men’s roles in addressing health issues of the family. The posters are primarily aimed at men and an appeal to their conscience Due to the exceptionally high rates of maternal mortality, motivating the husband to play

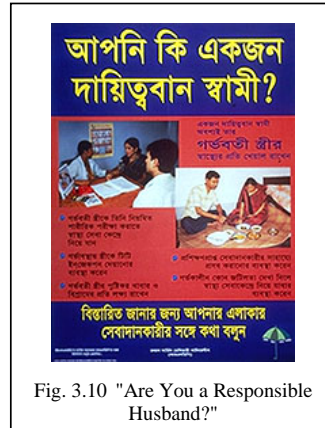


Fig. 3.10 "Are You a Responsible Husband?"

an active role in anti (pre) and post natal care for the wife emerged as an important issue.

Further information in the poster includes:

*“A responsible husband always takes care of his pregnant wife’s health. He takes her to the health center for a physical exam. He arranges for her to have tetanus shots during pregnancy. He makes sure she has nutritious foods and rest. He arranges for a trained birth attendant to be at the delivery. He arranges to take his wife to the health center if any pregnancy-related complications happen. You have the right to know about reproductive health. Take care and keep healthy”*¹⁰¹

¹⁰⁰ BCCP was established in 1996 as a predecessor to Johns Hopkins University’s Center for Communications Programs. The organization’s main aim is to design, manage and implement large-scale communication programs for health and other development sectors.

¹⁰¹ Media Materials Clearinghouse, Johns Hopkins University Center for Communication Programs, 10 December, 2002. <<http://www.jhuccp.org/asia/materials.shtml>>

These messages are essentially the same as the ones disseminated by the television spots discussed earlier. The Green Umbrella Logo on the far right hand corner of the poster represents integrated health services provided at local health centers. Similar posters are also available with messages urging fathers to take preventive health measure for their children. Proper diagnosis of ARI and timely treatment are also advocated.

Other posters analyzed included those advocating sanitary hygienic practices and seeking care at integrated health care centers. In general most posters could further reduce the amount of written information and use visuals more effectively. However, without relevant studies it is difficult to assess the effectiveness of this media.

CHAPTER FOUR

Main Themes in Interviews

Analysis of the interviews revealed three main themes, which are:

- Concept of Alternative and Medical Care
- Health Care Providers – Roles and Perceptions
- Information Diffusion – Role of Mass Media

Concept of Alternative and Medical Care

When asked, “What do you do to keep your family healthy?” most women, particularly those who were less educated, could not directly answer the question. It appeared that they had some degree of difficulty associating everyday health practices with the concept of ‘disease prevention’ although most do practice preventive measures to varying extents. For example, when Farida of Muhuripara Cox’s Bazaar was asked about preventive measures she replied, *“If everyone is healthy then I am happy.”* However, when it was explained to her that she drinks water from the tube well to prevent water borne diseases, she understood the reasoning. There seemed to be increased concern about disease and more than one respondent commented, *“Someone or the other is constantly sick in the family...I have no choice but to worry about diseases.”*

Fatalism

However, the concern with health often came with an underlying fatalistic attitude in almost all the geographic areas visited. The idea that health is in God’s hands and we as human beings can only do so much to prevent illnesses. Most women characterized this by comments like, *“I always pray to God that please don’t give us any diseases.”*

Ayesha’s Story

Ayesha is in her late forties and the mother of four. She has cut back on household chores specially cooking since the last five years when one of her sons got married. Now the

daughter in law does most of the household work. The family is relatively affluent with two of her sons working as truck drivers and the others looking after the paan (beetle leaf) shop nearby. When asked about what preventive measures she takes she replies:

“During our mothers time there were no such advanced treatments (C - Section), immunization etc. God took care of us – he gave us and took from us...”

Relevant literature ¹⁰² states that most women feel that women’s health problems are an inevitable part of life and they must *suffer in silence because there is no alternative*. This is further compounded by the fact that women’s decision-making power within the household is quite limited. It was further stated that women often neglect health problems because they inherently believe that it is a “woman’s lot to suffer.” This strongly resonates with Ayesha’s comment that during her childhood, her mother would ask them not to make too much noise when they were ill lest they disturb the men.

Alternative Medicine

Despite having strong beliefs in the healing powers of God, Ayesha and her family make frequent visits to the private doctor who sits at the main intersection near the village. Like many of her neighbors, she also takes preventive measures like immunizing her children, drinking tube-well water, eating iodized salt etc and has extensive knowledge about maternal health care specially during pregnancy.

At the same time, she uses traditional herbal remedies to cure ‘small’ illnesses. For example, if the children catch cold, she administers Tulsi (Basil) juice – a common practice in both rural and urban areas of Bangladesh. Or when Moni, her one and half year old grand daughter cries too much she takes her to the herbal healer who does jhar phook - chants incantations and prayers and blows on the child.

¹⁰² “Women’s Reproductive Health and Matters of Policy,” Policy Dialogue, Population Council, Bangladesh, April 1998: 7.

Similar statements were heard from other women of the village. Younger mothers often turn to elder members of the household for advice and treatment. For example, Rokeya who is in her mid twenties and has a seven-month old son often takes him to her mother when he has fever or cold. The mother usually administers some herbal or traditional treatment, failing which he is taken to the private doctor at the crossroads. In addition to administering Tulsi juice, other home remedies include hot oil massage – especially for colds and coughs, hot compresses etc. Taking children to herbal healers when they cry incessantly also appeared to be a common practice.

While most children are taken to herbal healers at the onset of a disease, there are times when mothers resort to herbal healers when “modern” medicine fails to cure the symptoms. Amena who is in her early fifties and has three grand children says that she often resorts to herbal treatment when medicine from the government health centers proves to be ineffective. This may give some indication about the role of trust in government institutions.

Herbal treatment is often sought when a woman feels that the illness is due to “*bad wind*” or “*bataash lagse*” – a concept that winds can carry undesirable elements (which may be spiritual) and anyone who is exposed to this wind will be adversely affected. *Hanufa who is in her late forties and lives in Cox’s Bazaar with her husband and son suffers from epilepsy. The seizures started when she was about twenty-five and initially she sought treatment from a herbal healer since many of her neighbors and family members told her that she had been exposed to some bad wind. The healer then gave her some jhar phook. When this treatment did not work she went to a government hospital.* Interestingly, her husband is a pharmacist (although it was not known if he possesses a degree in the field). However this does not appear to have had any impact on her decision to seek alternative treatment.

In some areas, such as Muhuripara in Cox’s Bazaar, seeking alternative treatment is not very common since as one participant stated, “We don’t go to kabirajs (herbal healers)

since they are too expensive...sometimes charging Tk. 200 – 300¹⁰³ and it is just not affordable.” Government subsidized medicine may be considerably cheaper in these areas. Therefore, herbal treatment is always not affordable even if many women prefer it to conventional medicine.

Similar findings were made by Rashid et al.¹⁰⁴. The study found that mothers resorted to home remedies and herbal healers when they perceived the illness to be mild or if the child was thought to be suffering from “evil wind carrying diseases.” In addition the study found that infants over 40 days old were also taken to religious healers like fakirs or huzurs when they thought that the child was suffering from “spirit attacks.” These children were thought to be particularly vulnerable to spirit attacks which may mean that mothers tend to seek alternate treatment for their children at this stage. These healers often performed *jhar phook* to treat the children. Most mothers also thought that “alga bataash,” another term for “bad wind,” can kill their children whereas pneumonia is more manageable.

Impact of Surrounding Environments

Not surprisingly, surrounding environmental conditions greatly prevented or had a negative impact on the preventive health measures taken by many women. *Nazma Alam is in her early thirties and lives with her husband and two sons in one of the three refugee buildings in the Mohammedpur Geneva Camp area. She has passed her Intermediate Exams (equivalent to a high school graduation) and is aware of a wide range of health issues. Although she takes various preventive health measures for her family she stated that poor environmental conditions in the surrounding areas left her family susceptible to diseases. She*

¹⁰³ US\$ 3.44 – 5.17

¹⁰⁴ Sabina F. Rashid, et al., “Acute Respiratory Infections in Rural Bangladesh: cultural understandings, practices and the role of mothers and community health volunteers,” *Tropical Medicine and International Health*, 6.4 (April 2001): 249-255.

made particular reference to the water logged roads and open drains next to her apartment that are potential breeding grounds for Aedes mosquitoes, carrier of the Dengue Virus.

Salma's Story

Salma is in her early twenties and lives in the Islampur village of Gazipur with her husband and two children. Although she is not as well off as her sister in law who lives next door, she practices preventive health care measures (like drinking tube well water, immunizing her children etc.) and gets some health information from watching television. Her house is situated near the paddy fields in a relatively low-lying area. It is a one room mud house with a make shift kitchen area built adjacent to the front entrance. She points to the three walled kitchen area and states that the rising floodwaters have broken the fourth wall and the house often gets inundated. There is very little she can do to maintain a hygienic environment. Moreover, her two sons often venture out to play in the water and it is nearly impossible to keep an eye on them all the time. It was evident that many of the recommendations made for preventive measures did not address these area-specific issues.

Sense of Inadequacy

Many women experienced a sense of inadequacy. Comments like “What can we do?” “We are poor people,” “We are illiterate and do not understand so much” were frequently heard in response to questions about preventive care. *Ojifa Khatun is in her mid forties and lives with her husband and two of her four children in the Matlab area of ICDDR, B. She lives in a thatch house with one room partitioned to function as two rooms – bedroom and kitchen area. Illness is no stranger in this household. Her ten year old son, Shafique, suffering from paralysis of the lower body, is bed-ridden and confined to the house. Her sixteen-year-old daughter, Salma, was married last year and this June gave birth to a stillborn. She says that*

*Salma did not get adequate care at the government hospital. Her husband Nurul Amin, in his late fifties, works as a daily laborer and collects earth for a living*¹⁰⁵.

Ojifa comments, “We are poor people and have to do everything ourselves through hard work.... my husband has to dive under water to collect the earth. How can he stay healthy? How can his body bear so much hardship?” She feels that the government should make special provision for the elderly so that they don’t have to suffer like she and her husband do in their old age. She confides that she is constantly plagued by a sense of shame, that there isn’t enough to eat two good meals a day, that she has been living on only two saris for several months now...this feeling of helplessness is further compounded by the fact that she could not get membership to a local NGO and felt that she was rejected because of her poverty. These circumstances appear to reinforce the idea that only the well-to-do can control their health and their destiny.

Deleted:

As cited by Ahmed, Chowdhury and Bhuiya¹⁰⁶ emotional stress resulting from poverty and related conditions can result in mental health problems like stress and anxiety. There is further evidence that physical diseases may be a consequence of emotional stress and that emotional well being can reduce premature mortality and diseases.

Sense of Pride

Quite contrary to the issue discussed above is the sense of pride or satisfaction expressed by women who were aware of the effect of their affirmative actions on the health of their family members. Not surprisingly these women usually lived in the more affluent areas (with access to gas and electricity), were well educated (grade eight or higher) and had extensive knowledge about preventive health measures.

¹⁰⁵ Many day laborers are employed in collecting earth from nearby areas – the soil is used for construction purposes, making bricks etc.

¹⁰⁶ Syed M. Ahmed, Mushtaque Chowdhury, Abbas Bhuiya, “Micro-Credit and Emotional Well-Being: Experience of Poor Rural Women from Matlab, Bangladesh,” *World Development*, 29.11 (2001): 1957-1966.

Hasna's Story

Hasna is in her mid twenties and lives in rural Matlab with her husband and three young children. She has attended two years of university and taken the BA pass course, which is a shorter version of the conventional Bachelor's program. Her husband about ten years her senior works as a contractor and the family is relatively well off. Hasna's house consists of a large room which functions as living area and bedroom, a dining area, kitchen and attached bath. At present, she stays home to look after her youngest daughter who is just a year old. Her bedroom has all the amenities for a comfortable life including, electricity, television, radio, etc. The furniture looks expensive, complete with cushion covers and throws. When asked where she gets health related information, she says, "Like you, I read books and newspapers...and make use of the information to keep my children healthy." Similar sentiments were heard from Monowara resident of urban Cox's Bazaar who is in her late forties.

It appeared that greater financial solvency also produced similar reactions. Many respondents said that they were capable of purchasing 'good foods' from the markets for their children. A feeling of empowerment, from the ability to take charge of the family's health and making important health related decisions, was inherently conveyed in their statements and activities and, this in turn had the desired effect on the health of the family members.

Health Care Providers – Roles and Perceptions

The scope and range of NGO and government activities varied widely in the four areas where the interviews were conducted. However, there were some key issues that arose during the interviews. These may be categorized in the following sections:

- _____ Perceptions of good treatment
- _____ Quality of Care

Formatted: Bullets and Numbering

- Convenience of Care
- Communication Issues

Perceptions of good treatment

Many women appeared to equate good treatment with the amount of medicine that they were given. More medicine was often correlated with the quality of care received (good doctors give more medicine) and there was some indication that taking more medication would accelerate recovery.

Ojifa of Gazipur says, *“The government hospitals do not give enough medicine. When I went last time they gave me only two tablets for baat (arthritis).”* The fact that many centers sell their stock in the black-market may further perpetuate this perception. Tim Ensor et al.¹⁰⁷ found that on more than 85% of the cases the patients were not told what was wrong with them and that over 90% of the patients were prescribed medicine. They go on to add that, *“Prescriptions were strongly influenced by the availability of medicines in stock. Medicines such as anti-histamines, analgesics and antacids were handed out to most patients regardless of medical indication.”*

Rabeya is in her late twenties and lives with her two sons in Gazipur. Her husband has been working in Malaysia for the last several years. Although the family has debts (accrued during her husband Khaleq’s departure), at present he is able to send her money on a regular basis. She takes her children to the private doctor who has a chamber in the market at the main highway intersection near the village. Previously she would go to the government hospital however has stopped since they no longer give medicine which were either subsidized or provided free of cost.

This is probably due to the government’s Essential Service Packages (ESP) system which has been already discussed in the section titled “Primary Health Care System in

¹⁰⁷ Tim Ensor, et al., “Do essential service packages benefit the poor? Preliminary evidence from Bangladesh,” *Health Policy and Planning*, 17.3 (2002): 247-256.

Bangladesh.” Under this system, the users are charged modest fees for services, which were previously offered free of charge or at lower costs. Schuler, Bates and Islam¹⁰⁸ found many instances where people who had traveled over long distances to government facilities to receive free treatment were turned away and told to use the NGO services in their own administrative area. Not only did the respondents of the study find it unfair but they also resented the way they were treated by the government health staff. The research also found that the very poor associate quality of health care with compassion and “The manner in which access is granted reflects the stance of the health care providers, the government and society towards the poor...Providing services to those who cannot pay for them is viewed as morally right and an acknowledgement of a human bond between the poor and the powerful.”

Quality of Care

I found that women’s interactions with health care workers and providers have an impact on the type of health care they seek. Moreover, these workers roles in facilitating access to medication and health related advice also surfaced as important issues.

When asked if she seeks treatment from government health centers, Amina of Gazipur, immediately replies that she does not go to government hospitals. When asked why she replies, “*We are given the same medicine for headaches, stomach cramps and typhoid.*” Rokeya, who was sitting next to her and listening to our conversation, agrees readily. In addition to administering home remedies, both women prefer to visit private doctors when they need to. This despite the fact that private doctors charge substantially higher fees when compared to government practitioners. This apparent distrust however was also directed towards some private practitioners when she went on to explain that her neighbor’s daughter in law underwent a caesarian section as advised by a private doctor who sits in nearby Joydevpur, while the general consensus was that none was necessary.

¹⁰⁸ Sidney R. Schuler, Lisa M. Bates, MD. K. Islam, “Paying for Reproductive Services in Bangladesh: Intersections between Cost, Quality and Culture,” *Health Policy and Planning*, 17.3 (2002): 273-280.

Government field workers come to this area every other month for immunization purposes. Rokeya fervently adds that many people are unable to vaccinate their children and are forced to go to the private doctors who charge high fees. Upcoming immunization drives are usually announced with mikes in different areas of the village. The field staffs often exclude various areas and people simply remain uninformed. Sometimes, they visit on different dates than the one announced previously and this creates further confusion. They also send written notices however this is largely ineffective since households that are not literate have very little use of this printed information. In such circumstances, an NGO volunteer can play a crucial role however, non-member households may be excluded from this information network.

Shaju's Story

Shaju is in her late twenties and lives in Islampur with her husband and two young children. She lives in a one-room house with a separate kitchen outside. She seems knowledgeable about diseases and preventive measures and gets most of the information from watching television. She tries to keep her children

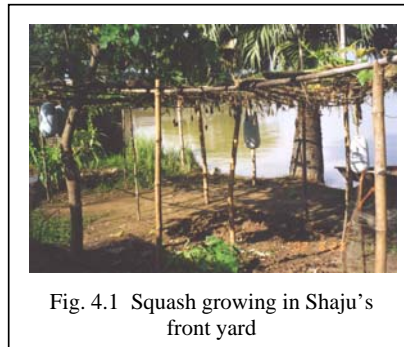


Fig. 4.1 Squash growing in Shaju's front yard

away from the rising floodwaters and plants seasonal vegetables in her front yard. Although she has two small children (her younger son Saiful is only four years old) she only goes to government hospitals as a last resort. She says, "They (government health workers) don't want to give us medicine. They sell off their stock and then when people ask for medicine they say that 'we have run out'." Another young woman sitting with us added, "They don't give medicine to everyone...they ask for bribe. If you pay Tk.10 then they give good quality syrup."

This not only further perpetuates the prevalent sense of distrust but may also have a negative effect on the women's perception of themselves and their lives. Similar findings were

established in Schuler, Bates and Islam's study¹⁰⁹ where "The common perception of getting drugs and vitamins from government facilities depends on the whim of clinic staff, which women saw as symptomatic of corruption and discrimination against them as poor people." There appears to be an inherent assumption that the poor will be taken advantage of and women are so accustomed to leaving government facilities empty handed that they usually do not ask for fee waivers at NGO clinics.

Convenience of Care

In addition to the quality of care just discussed, the convenience of access to health services appeared to be an important issue. As the following example will show, a woman's decision to seek particular health services is largely based on how accessible she feels these services are.

Apart from poor quality medicine, there were other reasons for not visiting government centers. *Parveen lives with her husband and two children in one of the refugee buildings in the Mohammedpur Geneva Camp area. Her husband works in the jute mill and she is a homemaker. For small illnesses, she visits a nearby private doctor but is not keen on going to government hospitals. She says, "We don't feel like going to the government hospitals because of the long queues. If the illness is severe then we go to Bangladesh Medical Center (BMC)¹¹⁰."* Since they live in an urban area Parveen and her family have the option of seeking proper treatment elsewhere. This is not the case for rural inhabitants for whom distance to health centers is a key issue, particularly for women.

Communication Issues

Communication took place at many levels and involved, women's perception of the health workers, the extent to which women trusted the advice and care given and complex

¹⁰⁹ Ibid.

¹¹⁰ BMC is a private hospital and is located nearby.

social interactions between the households and health care providers. Dissatisfaction or distrust was not directed solely at government health workers.

Fatema lives in the Muhuripara area of Cox's Bazaar with her husband and seven children. Her husband does not work, and her eldest son who works at a bus counter earns the family's only income. Like most mothers, she is concerned about the health of her children and relies on the nearby pharmacy and the private doctor in town for medicine. Government health workers come monthly for immunization drives however, Fatema expressed displeasure when asked about what information she gets from health workers. She says, "They (government health workers) don't talk to us...they just come vaccinate the children and leave." Similarly, Nazma who lives nearby with her husband and four children says that the NGO worker who visits her house discusses only issues related to loans. Incidentally, Nazma is also one of the few NGO members in the area.

This apparent "distance" between an NGO field worker and the members was evident in Gazipur as well. During a fortnightly NGO meeting the women were complaining that the NGO health centers were too far away (therefore not always accessible) and that the medicine was often more expensive than what the private doctors charged. There also appeared to be a hierarchical aspect to their relationship with the field worker, who sat at a distance on a stool while the members were sitting in a group on a mat on the ground. This can perpetuate the perception that the NGO worker is not just "superior" in terms of knowledge but also in terms of wealth and social standing and therefore he or she will not be able to empathize with the problems of the poor. Schuler, Bates and Islam¹¹¹ found that although many clients felt that they were treated with kindness and respect by the NGOs, there was a widespread feeling that

¹¹¹ Sidney R. Schuler, Lisa M. Bates, and MD. K. Islam, "Paying for Reproductive Services in Bangladesh: Intersections between Cost, Quality and Culture," *Health Policy and Planning*, 17.3 (2002): 273-280.

the poor face discrimination in health facilities and they cannot seek quality services since they don't have the financial solvency to do so.

Scare Tactics

Putul lives in the Islampur village of Gazipur with her husband and two sons. Her husband works as a day laborer in the nearby brickfield and they live in a one-room mud house with thatch roof. Her sons are young (ten and six years old respectively) and she worries about diseases like diarrhea, dysentery etc. She prefers to take her children to various private doctors and avoids the government centers because 'they don't give good medicine'. She herself is an NGO member and has some knowledge about preventive health measures particularly, the importance of immunization. Government workers come regularly for immunization drives and she says, "They (government workers) say that even if one child does not get vaccinated (in this case the Polio vaccine), the child will be put to death." This information was corroborated by other women who were sitting nearby during the interview.

Scare tactics are widely used in the United States for issues like smoking, drug abuse etc. While it is important to ensure full immunization coverage in Bangladesh, using this method may not be the ideal approach – especially since there is an increased focus on building trust in the health workers. It is more important that the mothers vaccinate their children because they understand the importance of the measure rather than be compelled to do so by a sense of fear. Moreover, a trustful relationship is key if these women are to confide in the health workers for information and advice. It is quite apparent that such measures not only enhances the sense of fear but creates further distance and may further strengthen the perception of social vulnerability of the poor.

Information Diffusion – Role of Mass Media

Access to mass media often depends on the socio-economic status of the households. Nationally, only 3.84% of the households own a television¹¹². As previously mentioned fifty-three (53) of the eighty-five (85) households interviewed had a television. Among the households interviewed almost half the families in Matlab and Cox's Bazaar's non-gas areas did not own either radios or televisions. Not many households owned radios and listening to radios did not appear to be a very common trend. Only one woman in Gazipur stated that she received health related information solely from listening to the radio. Most houses that owned radios also owned televisions and therefore watching TV was more prevalent.

Nationally, the percentage of women exposed to television has sharply increased from 27% to 35% between 1996-97 and 1999 – 2000, whereas the percentage of women listening to radios has sharply declined from 39% to 29% during the same time period¹¹³. In Bangladesh only 11.1% of ever-married women in the urban areas and 2.6% in the rural areas are exposed to the mass media¹¹⁴ – 70.4% urban ever married women watch television weekly compared with 26.5% for rural areas.

In the rural areas people tended to gather in households to watch television programs even if all households did not own a television. However, less than half the women interviewed in Cox's Bazaar got information from televisions. Watching television still appeared to be one of the major sources of health related information and this section will

¹¹² “*Statistical Yearbook of Bangladesh 1999*,” Bangladesh Bureau of Statistics, Division of Planning, Ministry of Planning, May 2001. This data is from 1991 and may have changed in the intervening years.

¹¹³ “*Bangladesh Demographic and Health Survey 1999 – 2000*,” National Institute of Population Health and Training (NIPORT), Dhaka, Bangladesh.

¹¹⁴ Exposure to mass media for women who usually read a newspaper once a day, watch television once a week or listen to a radio once a week.

focus on the various aspects of television and health programs/commercials as a means of communicating relevant information.

It was interesting to find that apart from information received from the mass media like television, radio, and printed matter, none of the respondents identified any other communication channels through which they may have obtained health messages. Studies indicate that using a variety of media can have a significant impact on the adoption of good health practices. Akhter, Aarø and Kvåle¹¹⁵ found that messages delivered through interpersonal communication was not affected by the socio-economic status of women and could play an important role in promoting good health practices among economically impoverished households. In contrast, entertainment approaches (like using folk singers and village projectors), may not be as successful since the audience may be more attentive to the enjoyment value rather than the actual message that is being disseminated.

Generalizing from Other Risk Messages

The various programs broadcast on Bangladesh Television, like any other channel in the world, transmit a mixture of entertainment, informational, health and educational programs. In the last few years, there has been an attempt to show health ads that discuss outdoor air pollution, particularly from vehicles and industries, due to the rapidly deteriorating air quality of urban centers like Dhaka City. During the interviews many women referred to these ads and discussed various aspects of it.

Prothoma's Story

Prothoma moved in with her brother's family in Cox's Bazaar town when her husband passed away a few years ago. She is in her early fifties and both her son and daughter are married and live in Chittagong, which, is about 152 km from Cox's Bazaar. She

¹¹⁵ Akhter Hussain, Leif E. Aarø, Gunnar Kvåle, "Impact of a health education program to promote consumption of vitamin A rich foods in Bangladesh," *Health Promotion International*, 12.2 (1997):103-109.

is an NGO member, but has been unable to attend meetings ever since she came away from her native village. During the day, she helps with housework and watches television whenever she gets some free time. She gets a wide range of information from the television. The health information ranges from proper health care to the adverse effects of smoke. She says, "On television, I saw a traffic junction in Dhaka City...there was very loud noise and smoke...suddenly one man lost consciousness and fell in the middle of the road...I deduced that this must be because of the smoke." During the interview she mentioned that this information led her to believe that smoke from wood stoves may be harmful for the health as well. In addition, she obtained training from World Vision and was given detailed information about the adverse health effects of cooking smoke.

In fact, this ability to correlate the adverse effects of smoke from vehicle exhaust to that from wood stoves was witnessed in most other areas regardless of whether the women had received additional information from health care workers.

Hasina's Story

Hasina is in her late twenties and lives in Matlab with her husband and three sons. She has been using two gas burners for the last two years and before that she was using traditional wood stoves. She has studied up to grade nine and has quite an extensive knowledge about good health practices. For example, she learned from watching television that the vitamin content of vegetables diminishes if they are washed after cutting. Now she is careful to wash the vegetables thoroughly prior to chopping them into small pieces. While discussing the physical discomforts of cooking smoke she goes on to add, "I don't know exactly what adverse effects there are but we know from watching television that smoke is bad for us...they show smoke being emitted from cars, mills and factories...this smoke is bad for the environment...but smoke also comes from the wood stoves so we thought that this might be harmful as well."

Interestingly, women interviewed in the urban area come to similar conclusions from watching television, which was further reinforced by personal experience. *Farhana is in her early thirties and lives with her three children and husband one of the buildings of Mohammedpur Geneva Camp area. Her husband is a fishmonger and she does embroidery work at home. She is familiar with television programs that discuss outdoor air pollution and its adverse effect on the human respiratory system and the environment. In addition she experiences the suffocating environment every time she is sitting inside an auto rickshaw in a traffic jam. These experiences have led her to believe that the “gas” as she terms the wood smoke is also harmful especially for children since it also enters the body through the throat and nose.* Unlike Prothoma and Hasina, Farhana has no formal education however, personal experience in conjunction with information provided by the media has enabled her to interpret the issue in a different set of circumstances.

Time to Watch Television

Life for a rural woman may not appear fast-paced at first inspection however, an entire day is usually organized around activities like gathering fuel, collecting water, preparing food for cooking, the process of cooking itself, taking care of young children and other family members, tending to the domestic animals – the list is endless. In addition, unexpected seasonal events might create more work. For example, during our interview Ayesha of Gazipur, a pro active mother of four, had to rush to her pond since the fishes would escape with the rising flood waters and she had to install fishing nets all around.

In fact, comments like “*I don’t watch television very regularly*” or “*I don’t get time to watch television*” were heard quite often. And when many of these women do get to watch television it is usually with the whole family and other neighbors. The programs viewed are usually the most popular ones like weekly dramas. In addition the proliferation of cable channels, even in rural areas, means that there are now several other programs that compete with programs shown on the national channels. It may be increasingly difficult to get an

adequate audience for health programs, which may not have high entertainment values. Therefore, it comes as no surprise that most participants could not mention specific health related programs and those who did, mentioned short health messages that usually last under a minute and are shown during commercial breaks.

Jobeda is in her late twenties and lives with her husband and three sons in Mohammedpur Geneva Camp. Her husband is a tailor and recently they have set up a shop of their own which offers intricate embroidery work and block printing in addition to tailoring. She divides her time between working as a member of a cooperative society and helping her husband at the shop. She says “Despite all my work I try to keep my family healthy...I don’t use mosquito coils but nets instead, mop the floors everyday, drink boiled water, use Dettol soap...sometimes the workload is too much but still I have to do it.”

She gets most of this information from the television but then adds that, “I actually don’t get much time to watch these (health related) programs...I leave home in the morning and it is almost 10 o’clock when I return at night. Then I don’t feel much like watching television...they show health ads on TV and sometimes I watch those.” Jobeda has studied up to grade eight and although she does not get much time to watch television, her level of education and her involvement outside the home may have exposed her to more health related information.

So, What are People Watching?

Very few respondents were able to mention specific health related programs. Important factors about the television health spots included:

- How tailored they were to various audiences
- The language level
- How relevant they were to the viewers

Josna, lives with her husband and two year old son in Mohammedpur Geneva Camp. She spends most of her day looking after her child and doing embroidery work which she gets on

order. She has studied up to grade eight and has received extensive health care information from attending health classes offered by the local World Vision project. She says, “I have received a lot of information from watching television...I regularly watch health programs like ‘Shasthya Tottho’ (Health Facts) and I think the other one is called ‘Sharir Charchya’ (Health Care)...I like Shasthya Tottho the best because there is a lot to learn from this program, they discuss a lot of issues and explain appropriately...I also watch health ads and have learnt about prevention of night blindness, the causes and treatment of diarrhea and much more.”

Health ads dealing with issues like diarrhea, iodine deficiency were the ones most frequently mentioned by respondents. A brief analysis of these ads¹¹⁶ will illustrate why they may be more memorable than others.

Five TV spots on diarrheal diseases¹¹⁷ are discussed in the following. Each has a duration of about a minute or less. All of these infomercials start with a team of two children (a young girl and boy), known as the “Jhotpot Juti” (Pro-active Duo) whose mission it is to disseminate information about the causes and treatment of diarrheal diseases. All the ads take place in a rural backdrop with a catchy tune and lyric. The duo visits households where a child has diarrhea and emphasizes the importance of feeding solid food, preparation of the oral saline, symptoms of dehydration and when to seek medical help. These issues are illustrated with the help of visual aid like posters, hands on demonstration and interaction with community members like concerned mothers, village elders, young, and poor alike. The involvement of children ensures that the program has appeal for all audiences.

How Tailored Were the Health Messages?

Very few respondents mentioned the health ads discussing iodine deficiency. In fact most of those who did mention the ad live in the Mohammedpur Geneva Camp are. This

¹¹⁶ Diarrhea and Iodine Deficiency Health Spots, BSCIC, CIDD, UNICEF Bangladesh.

¹¹⁷ Broadcasted during June – August, 2002.

might indicate that some infomercials are more suited for urban areas than their rural counterparts. There are currently nine spots on TV that focused on the consumption of iodized salt. One of these ads in particular depicts a woman living in an urban area testing for the presence of iodine in salt at home. This appeared to resonate among many women in the Mohammedpur area as several of them claimed that they not only carried out the home tests but also changed the brand of salt if it did not contain iodine.

Language Level

It was interesting to observe that none of the ads directly addressed the health effects of iodine deficiency in particular conditions like goiter, speech and hearing defects, mental retardation, still births, infant deaths etc. All the ads basically encourage the consumption of iodized salt for proper functioning of body and mind. This message might be too general and might not resonate with mothers with young children – the target audience of this message. Although the ad discussing home tests for the presence of iodine mentions the importance of iodine consumption for pregnant women, there is no visual portrayal and formal terms like “sharirik o manoshik bridhdi” (physical and mental development) and “shontaner medha o budhdhir bikash” (child’s rational and intellectual growth) may make understanding difficult. It is possible to use simpler terms like “bachchar buddhi o chinta shoktir proshar” to spread the message to a wider audience. Therefore it is not surprising that only the relatively more educated women (those who studied up to grade eight or more) interpreted this message and then put it into practice. It might also be possible that although other respondents get the same information from watching television, they did not mention it during the interview.

How Relevant were the Messages?

Many women ventured to say what programs they would like to see more often. These included programs where women discussed health issues in a rural setting, programs where doctors discussed various health issues and clearly explained preventive and curative measures. Other information obtained appeared to depend on how relevant the issue was for

the respondent. For example, Hamida lives in one of Matlab's intervention villages with her husband and two sons. She does not get the opportunity to watch a lot of television but she recalls the television spot that discussed Arsenic contamination of groundwater. Several tube wells in the area have been tested for the presence of Arsenic and she felt that the information she received was helpful. The ICDDR, B and other NGOs have been disseminating relevant information in the area so that may have also led to increased motivation for obtaining more information. Further analysis of health posters and television spots regarding Arsenic contamination has been presented in the 'Findings on Health Communication Media' section.

CHAPTER FIVE

Conclusion

The women of Bangladesh are survivors. Every day of their lives is a battle. This is a battle to live from day to day with minimal resources and still be able to look forward to the future. The women interviewed for this study were not only good homemakers but also experts at using and managing their fuel supply despite various constraints. Their creativity found expression in the way they designed their stoves, stored and prepared their fuel for cooking. Contrary to the general notion, these women are extremely capable of playing an active role in the health and welfare of their families despite the bounds of social norms. Women encountered in various regions have raised issues as diverse as the role of the local government to what they as individuals can do for a healthier life.

Indoor air pollution is a critically important health issue that the researchers and administrators of the country have failed to address for decades. At present there is strong advocacy for maternal health care and the popular slogan states "*A woman's right – healthy life, happy mind.*" Considering the threat posed by indoor air pollution, there is little doubt that it is a woman's right to have information which will help her take preventive measures for the entire family.

Recommendations

Three broad recommendations emerged from the responses and perceptions of the women during the interviews. These are:

1. Disseminate information through existing infrastructures
2. Disseminate tailored, relevant and understandable information
3. Provide access to cleaner cooking technology and fuel
4. Future Research

Formatted: Bullets and Numbering

While some recommendations are addressed to specific organizations and programs, others are more general in terms of implementation.

1. Disseminate information through existing infrastructures

Interviews with women in different areas of Bangladesh and analysis of health communication materials have indicated that at present there is no initiative to address indoor air pollution issues or disseminate information regarding the associated health risks of exposure to cooking smoke. Not only are these women faced with a host of competing health issues, the planners and administrators have to constantly contend with one public health crisis after another.

In Bangladesh, Acute Respiratory Infections (ARI) is responsible for about 120,000 deaths associated with symptoms of pneumonia in children under five. Although much attention is being paid to the early detection of symptoms and the necessary care, critical information about the potential threat of cooking smoke and its correlation with ARI is still not circulated. It may be argued that at this time there are no epidemiological studies in Bangladesh to substantiate this claim, however as Yasmin Von Schirnding, WHO's focal point for Agenda 21, says "Lack of research should not be used as an excuse for not taking action."¹¹⁸ Studies in neighboring countries, like India¹¹⁹ have indicated that a correlation exists between adverse health effects and exposure to indoor smoke. Moreover, there is evidence that women and small children are disproportionately affected by cooking smoke. Considering the fact that this phenomenon disproportionately affects the poor and vulnerable, immediate measures should be taken to start disseminating preliminary information about indoor air pollution.

¹¹⁸ "Energy and Health for the Poor Issue," Indoor Air Pollution Newsletter, Dec 2000:2.

¹¹⁹ Kirk R. Smith, "National Burden of Disease in India from Indoor Air Pollution," National Academy of Sciences, 2000.

While it is true that complete prevention from smoke exposure may not be possible as long as households continue to use wood stoves and burn biomass fuels, there are some simple measures that can be taken to reduce exposure, like using dry wood in place of damp wood, keeping children away from cooking area (may be relatively easily achieved since many households have several other members).

In light of this situation, the following recommendations are focused on the initiatives that various sectors can take within their existing framework of health related activities.

Role of the World Health Organization

As already mentioned, WHO in Dhaka has conducted a study to measure the quality of indoor air in rural and urban areas of the country. Although this was a preliminary study, there are indications that the high concentration of particulate matter that was recorded may be found in other areas of the country as well. The organization can go one step further and take a more active role regarding indoor air pollution.

Reducing mortality and morbidity associated with ARI is already one of the major activities of WHO in Bangladesh¹²⁰. The organization is also involved in the training of community volunteers and forming new collaborative working relationships between Health Assistants and Family Welfare Assistants as part of its efforts to strengthen the primary health care service of the country¹²¹.

Over 100,000 such volunteers have been trained and their aim is to provide health education, assist with growth monitoring, make referrals etc. It is evident from the description that the health volunteers can play an important role in disseminating information about indoor air pollution and measures to reduce exposure.

¹²⁰ *Major WHO activities in Bangladesh*, November 30, 2002.
<<http://www.whoban.org/programs/major-activities.html>>

¹²¹ This is under the “Primary Health Care Intensification and District Health System Development Project” currently underway in 12 districts of the country.

In 1995 WHO launched the Healthy City Project (HCP) in five developing countries. At present in Bangladesh, four cities are under this project¹²². One of the main objectives of this project is to increase awareness about health issues and improve the living condition of the urban poor by working with the municipal governments. A study¹²³ that evaluated the Healthy City Projects found that implementing the program in Cox's Bazaar helped to reduce health inequalities in the city. Although most urban households visited during the field study were more affluent, the households in Mohammedpur Geneva Camp's slum clearly had various health and environmental issues, and indoor air pollution issues need to be addressed without delay. One can imagine that there are urban slums around the country where the conditions are far more critical and this is where the Healthy City Program can have a significant impact.

Any measure that involves government counterparts would require preliminary epidemiological studies to establish the correlation in the context of Bangladesh. The Environmental Health division of the WHO in Dhaka is contemplating working with the Center for Disease Control in Atlanta for such studies.

The division also conducted the initial study on indoor air pollution. The section could play a vital role in bringing the issue to the forefront by increasing awareness and providing the impetus for collaboration between various organizations in the field. Indoor air pollution issues can be addressed along with outdoor air pollution, an issue that has received much attention from all sectors. Activities under the 'WHO banner' will legitimize the issue, generate further interest amongst the development and planning communities, and hopefully lead to further studies and much needed research. There are plans underway to raise awareness by publishing relevant articles in local newspapers and hosting seminars. This Thesis will also

¹²² These are Cox's Bazaar, Chittagong, Sylhet, and Rajshahi.

¹²³ Trudy Harpham, Salma Burton, Iona Blue, "Healthy city projects in developing countries: the first evaluation," *Health Promotion International*, 16.2 (2001): 111-125.

be used as an awareness raising report and distributed to various health and environmental organizations in the country.

The feasibility of the following proposals has not been verified with the respective organizations since the primary recommendations of this Thesis have been addressed to the World Health Organization.

The Role of Private Practitioners and Pharmacies

As already discussed, most households seek treatment from private practitioners or local pharmacies, which are usually staffed by a physician. As cited by Perry, H.B., there are about 220,000 private health care practitioners throughout the country. Considering that only 8% of the rural population avail themselves of treatment at government facilities and that the village doctors have received some formal training, they could be a potential resource for disseminating relevant information about indoor air pollution and primary preventive measures. Areas like rural Cox's Bazaar where there is limited health worker intervention could benefit from information disseminated by these sources. The Social Marketing Company¹²⁴ has an existing Health Providers Training Program under which non-certified doctors are given information on mainly family planning and oral re-hydration therapy methods. An ARI component can be added to this program that includes information regarding the health impacts of kitchen smoke. These practitioners can be encouraged to disseminate the information with the help of posters, charts, and other visuals. In addition, the company has had tremendous success in distributing contraceptives and oral saline at the local pharmacies and there are over 85,000 such outlets nationwide, these centers can be equipped to disseminate information about indoor air pollution as well.

¹²⁴ The Social Marketing Company was established by USAID in 1975 for the dissemination of family planning commodities.

Role of Community Health Worker and Volunteers from NGOs

Most of the NGOs have an extensive network of community health workers and volunteers whose main responsibility is to provide a range of primary health care services. Most notable among them are the 25,000 strong Shasthya Shebikas working under BRAC. Indoor air pollution issues can be incorporated into the existing set of health care information and various concerns can be illustrated with the help of posters and flip charts that these workers use on a regular basis. In addition, many NGOs like World Vision have various local committees, which can provide a platform to foster discussion about the issue and further preventive measures.

Role of Family Welfare Visitors in addressing non-NGO households

In recent years there has been considerable criticism of NGO activities, the most common being that these organizations mainly target the 'rural elite' since the well off are more capable of timely loan repayments. This issue has also surfaced during interviews with the participants.

Virtually all Union Health and Family Welfare Centers have a Family Welfare Visitor (FWV) and there are nearly six thousand such women nationwide. In addition to providing extensive family planning services these women also provide mother and child care services by conducting health and nutrition sessions and attending to women visiting the center. These FWVs have an existing relationship with their clientele and it can be safely assumed that ARI issues are discussed while communicating relevant information. Therefore, incorporating indoor air pollution related information would be another step to further substantiate the information that is currently being disseminated about acute respiratory illnesses. The information provided can be illustrated with the help of posters and charts that not only depict the dos and don'ts but goes a step further to show the functioning of the human body and how it is affected by diseases related to indoor air pollution.

Although, under the Essential Service Packages (ESP) program doorstep involvement of family welfare assistants (FWAs) is slowly being phased out, these thirty thousand women could play an important role in fostering a relationship of trust and understanding between their clients and the FWVs at the union health centers. This would not only encourage more women to seek treatment at the government centers but would also lead to further diffusion of indoor air pollution related information from the health worker to the health care seekers.

Qualitative studies should be conducted to understand the dynamics of relationship between various types of health care providers and their clients. Unless issues like trust, communication etc. are addressed there will continue to be disparity between the advice given and the health measures adopted.

Strengthen ESP's 'Behavior Change Communication' Aspect

Despite the drawbacks of reducing health worker involvement at the household level, the inclusion of the 'Behavior Change Communication' component¹²⁵ is a novel approach and has wide ranging implications as far as dissemination of indoor air pollution issues are concerned.

Fostering a Relationship of Trust

Among other major issues, the component emphasizes on changing attitudes and behaviors so that people can improve their health status. The ESP has prompted extensive involvement by all sectors to consolidate the existing primary health care delivery services. Most notable is the 'Green Umbrella' Campaign discussed previously where there is also focus on proper behavior of health care workers to encourage the client's use of these centers. Many of the women interviewed have expressed concern about their relationships with the health workers and their role in disseminating health information. Proper integration of this aspect into the activities of various government and NGO initiatives would help address many

¹²⁵ Refer to "Primary Health Care System in Bangladesh" for description of this component.

of the distrust issues. In addition, the inclusion of indoor air pollution information would result in information dissemination along with possible behavioral change to reduce exposure.

Addressing Men's Understanding of the Issue

The other important aspect of this initiative is increasing men's understanding of and respect for the special health needs of women and girl children. One of the recurring criticisms of previous government health initiatives has been that the women were the main targets and this has excluded men from getting involved in the health issues of households. Consequently men's attitude or understanding for health issues like maternal and child health care has not shown any significant improvement. The 14,000 male health assistants employed in the union health centers can be a powerful force in disseminating information regarding indoor air pollution to the men and highlighting the need to get involved in household health issues due to the special health risks to women and children. This can be done during satellite clinic sessions or when male clients visit local health centers for health or family planning advise.

2. Disseminate Tailored, Relevant and Understandable Information

Use Media Programs to Promote Discussion and Understanding

Entertainment education appears to be an effective medium to disseminate health information and influence health seeking behaviors. Over half the households in the survey were located in urban areas and fifty-three (53) of the eighty-five (85) households had televisions. Studies have shown that drama serials like 'Shabuj Shathi' and 'Shabuj Chhaya' have had a significant impact on health awareness and behaviors. In most rural areas, where all households do not own a television, health workers can encourage households to watch certain programs together and issues raised in various episodes can be discussed in local meetings like the satellite clinic health sessions held monthly. A family welfare visitor and a paramedic usually conduct these sessions. These workers can act as 'Health Care Intermediaries' by translating the information to local dialects while discussing various health issues.

Programs Highlighting Indoor Air Pollution Issues

Use Drama Serials

Television dramas, which put greater emphasis on indoor air pollution issues in addition to other health and social messages, would help to disseminate information and bring about the desired health care behavior changes. However, adequate attention must be given to ensure that there are no mixed messages and that the audience does not misinterpret the information provided.

Although, these programs usually have high production values in terms of cost, strong support from government, NGO and donor sectors can ensure that more such programs are not only broadcasted but there is adequate promotional events and material to attract a large audience. Involving popular artists and piloting the initial episodes can go way long way in ensuring the success of the effort. Since such forms of communication reach both men and women, addressing men's role in keeping the family healthy may promote better understanding¹²⁶. In fact, relevant messages can be weaved together with other related issues like avoiding exposure to environmental tobacco smoke to have a multi pronged effect.

Create Health Spots

Considering that many women have limited time to watch television, incorporating health spots that address indoor air pollution issues may reach a wider audience. Although issues regarding health ads on television have been discussed in greater detail in the "Main Themes" section, the following are some recommendations for how health spots may be made more effective.

¹²⁶ Messages may be as simple as helping women buy or collect fire wood (which is cleaner burning than other biomass fuels), taking care of the child while the wife is cooking, taking the wife to local health centers for smoke related illnesses.

Tailor Messages to Urban vs. Rural Audience

Since there are several versions of each health spot, some effort should be made to customize the information provided for both rural and urban audiences. It was found that the saliency of an ad often depended on whether the women were living in rural or urban areas. Therefore ads should be designed keeping different audiences in mind.

Use Clear, Easy to Understand Language

It was found that many of the health spots provide information in languages that are often difficult for the layperson to understand. Formal language and the use of jargon can confuse audiences since these spots are shown between programs and women tend to watch these ads in between their household chores. Explanations in relatively simple language with a good mixture of visual aids can get the message across to audiences of various age, class and literacy levels.

The same principle would apply for any health ad directed at indoor air pollution. Different areas use various local terms to refer to the same fuel. For example cow dung can be addressed as 'gobor', 'gohi' or 'ghoshi', depending on the area. Although it is not possible to tailor these television spots to each dialect spoken, it may be possible for Health Care Intermediaries to convey the information. However, further ethnographic studies are required to understand the type of messages that resonate with women, the appropriate language level etc.

Present Relevant Information

In addition to what has been discussed so far, the type of information disseminated is equally important. Due to the short durations of these advertisements, it is essential to project only the relevant information and convey the urgent need to adopt the health measures propounded. Vague messages might not produce the required behavior change. While it is not advisable to utilize scare tactics and give rise to wide spread panic, it is important to inform the audience about the eventual health consequence.

In terms of indoor air pollution issues, as with the charts and posters discussed earlier, explanations with visual aids, testimonies of actual victims (where possible) may help to bring the point across and provide the impetus for taking action or seeking further information about the issue.

Design Health Posters

A poster dedicated solely to the causes and prevention of acute respiratory infections would help to address the issue more comprehensively. Information about the health effects of exposure to indoor air pollution and preventive measures could be incorporated into the presentation. Since the posters analyzed address a range of childcare issues, there is a substantial amount of information that is presented in writing. To reach a less educated audience, a health care intermediary would need to convey the information in an easily understandable way. Clear visuals and fewer words would have more appeal for the target audience. Moreover, it is important that the male health workers refer to these posters during health sessions.

3. Provide access to cleaner cooking technology and fuel

Design and Promote Improved Cook Stoves

The Government of Bangladesh launched the improved cook stove dissemination programs during the mid nineties¹²⁷. As already discussed, the program has been cited as a failure and the government stopped funding for the project at the end of 2001. It should be noted that for the vast majority, changing to a cleaner fuel is not a feasible option and using an improved wood stove would be an option for the most deprived and vulnerable segment of the population. Barnes et. al¹²⁸ further indicate that aside from the fuel saving potential the

¹²⁷ *“Improved Stove Dissemination Projects Mid-Term Review,”* October 1996, Institute of Fuel Research and Development, Bangladesh Council for Scientific and Industrial Research (BCSIR).

¹²⁸ Douglas F. Barnes, et al., “What Makes People Cook with Improved Biomass Stoves? A Comparative International Review of Stove Programs,” May 1994, *World Bank Technical Paper*: 242.

environmental and health benefits for improved stoves amount to potential savings of \$25 to \$1.00 per stove per year. The study recommends focusing on users who are most likely to benefit from switching to an improved stove, making the projects self-sustaining, providing negligible subsidies for the stoves themselves and extensive interaction between the designers, producers and users of the stove.

If another improved stove program were to be launched then further studies would be required on what is 'appropriate'. There is some skepticism about the actual efficiency of these stoves since many are developed in a laboratory setting, which is rarely replicable in reality. Moreover, user participation is key when it comes to designing and implementing the stoves. This has been one aspect that has been absent from previous government projects. The wide variety of stoves encountered suggest that any effort should address 'area-specific' needs in particular – what fuel is used, whether the area is prone to flooding, the availability of raw materials to build the stoves etc. Lastly, unlike the government project, the stoves should not aim to make radical changes to cooking methods, which would make adoption an impossible task.

Increase Access to Cleaner Fuels

Promote Village Forestry

From the interviews it was evident that many women were using residual fuels because they did not have access to firewood. Almost all women had suggested using firewood exclusively in order to reduce exposure to cooking smoke. This meant that given adequate access, the women would readily shift to burning this cleaner fuel. The agro-forestry project¹²⁹ currently underway in some regions of Bangladesh could have important

¹²⁹ In response to the shortage of firewood, the Swiss Agency for Development and Cooperation (SDC) initiated the Village Farm and Forestry Project (VFFP) in northwest Bangladesh in 1987. At present the project is being implemented in more than 80 sub-districts by 17 partner NGOs. Between 1994 - 1996 cropland planting increased at a rate of 66% per year however, there was significant difference among the regions.

implications for fuel wood supply. The project mainly aims to encourage the planting of various tree species on agricultural lands (generally along the field boundaries) in order to have better access to wood which can be either sold in the market for a profit or used as fire wood.

Although increasing access to household fuel use is not the main motivation for the farmers or the project administrators, it can be argued that with greater availability of firewood from these projects, the households may have increased access to this commodity. At present the farmers are planting these trees to generate money during emergencies and for future needs like a daughter's marriage¹³⁰. This is where ESP's Behavior Change Communication approach can play an important role by raising men's awareness about the adverse health effects of kitchen smoke. However, this may be an intermediary solution since it does not completely eliminate exposure to smoke and those who do not follow preventive measures will still be susceptible to high exposure. Future plans of the project also include promoting homestead planting to increase tree cover and provide an important source of forest products for women and community members.

Expand Gas Supplies

Many respondents have expressed their preference for using gas as cooking fuel and have also recommended using gas as one of the ways to avoid exposure to cooking smoke. Bangladesh has large natural gas reserves. Although the exact amount is still unknown current estimates point in the range of 15 to 16 trillion cubic feet (TCF)¹³¹. Natural gas already provides about 70 percent of the commercial energy needs of the country. Increasing domestic supply of gas will not only address indoor air pollution issues but will also resolve the fuel

¹³⁰ M. A. Quddus, "The Cropland Agroforestry Experiences of the Village and Farm Forestry Project in Northwest Bangladesh," *Proceedings of National Workshop on Agroforestry*, (Bangladesh Agricultural Research Institute, Gazipur, Bangladesh), September 2001: 229-239.

¹³¹ "Policy Brief on Development and Governance of the Energy Sector," CPD Task Force Report, Center for Policy Dialogue, August 2001.

wood crisis. As was seen in the Matlab area some areas of country can be readily supplied by piped gas. However, there are other areas, which may be too remote in which case, cylinder gas supplies could be encouraged. From the interviews conducted, using biogas does not appear to be an option since the initial costs are quite high¹³² substantial quantities of raw materials are required for constant gas supplies.

Lessons can be learned from the Indian Deepam Scheme, which encourages people to shift from using wood stoves to cleaner fuels like LPG (liquefied petroleum gas)¹³³. Currently underway in the Indian state of Andhra Pradesh, the scheme aims to reduce costs by offering smaller cylinders, subsidizing initial connection fees, focusing on areas where availability of biomass is increasingly scarce coupled with an ongoing educational campaign that advertises the health benefits of reduced exposure to emissions.

4. Future Research

As already mentioned, conducting further ethnographic and epidemiological studies on indoor air pollution is critically important. The report has also revealed an urgent need to carry out further ethnographic studies to look into the role of the media in disseminating health information. It is important to analyze what types of messages will be more effective. It is quite possible that men and women relate to different elements of a presentation. This is particularly important since many media communications have special focus on men. For any indoor air pollution related media campaign to be effective, further research into women's perception of health issues in both rural and urban areas is essential

¹³² Ranging from US\$ 200 – 775.

¹³³ “*Energy and Health for the Poor Issue*,” Indoor Air Pollution Newsletter, March 2002:6.

APPENDICES

APPENDIX A: Interview Protocol

Name of respondent _____

Name of Village:

Location of Village:

Hello, My name is Lutfiyah Ahmed. Thank you for taking the time to talk to me about health issues in your family. I am a university student and am collecting information on attitudes toward health issues and practices.

Everything said in this interview will be confidential. Feel free ask me if you have questions or if you do not want to continue. I will start with a few general questions about health issues in your family.

I would like to tape record this interview. This will allow me to review the conversation later to make sure I didn't miss anything and also reduce the amount of note taking. Do I have your permission to tape?

The interview should last about 35 min. May I begin now?

Questions reg. Health Impacts

1. a) What type of care do you use or receive when you or your family member(s) get sick?

How do you decide when to seek professional help? Can you give a few instances?

b) Where do you go for treatment?

- i. Govt health facilities
- ii. NGO health center
- iii. Village doctors
- iv. Traditional healers

- v. Home remedies
 - vi. Others (specify)
2. a) What health issues are you most concerned about?
- b) What measures do you take to prevent these illnesses?
- i. Boil drinking water
 - ii. Use tubewell (arsenic free) water
 - iii. Use sanitary latrine
 - iv. Wash hands with ash/soap
 - v. Eat vitamin A fortified vegetables/small fish
 - vi. Use iodized salt
 - vii. Immunize children
 - viii. Immunize expectant mothers
 - ix. Practice family panning
 - x. Practice safe sex
 - xi. Breast feed infants
 - xii. Avoid exposure to cooking smoke
 - xiii. Others (specify)
3. Where do you get information regarding preventive measures?
- i. Media (Radio/Television/Posters/Pamphlets)
 - ii. Children (from school)
 - iii. Neighbors
 - iv. Village elders
 - v. Other family members
 - vi. Govt health workers
 - vii. NGO health workers
 - viii. Govt health facilities

- ix. NGO health centers
 - x. Village doctors
 - xi. Others (specify)
4. Apart from the measures that you have mentioned above are there any steps that you have taken (as an individual or group) to ensure that your home is a healthy one?
 5. Do Govt. health workers visit you?
 6. a) Do NGO health workers visit you? If yes, what is the name of the organization?
b) Are you a member of this NGO(s)?
 7. How often do the health workers visit?
Weekly Every fortnight Monthly Others
 8. What type of information have you received through the media?
 9. Could you give a short description of the campaign that is most memorable?
 10. (probe) Why do you think it was effective?

Now, I would like to turn our conversation towards cooking issues to discuss what implications these practices have for good health.

Cooking Questions

11. Who does most of the cooking in your household?
12. Do other family members contribute?
13. (If you have small children) Do your children stay near you or in the kitchen area while you cook?
14. How many chulhas¹ do you have?
15. How many families cook with this chulha?
16. a) Where are they located during the a) dry season and b) rainy season?
17. How many times do you cook everyday?

¹ Chulha is Bangla for cook stove

18. How many items are prepared each time?
19. How long does it take to prepare each item?
20. Do you use the chulha to boil rice during harvest?
21. Imagine that you have access to any type of cooking fuel (with no financial or time constraints), which fuel would you choose and why?

Fuel Use Questions

22. What types of fuel do you use for cooking?

Firewood Cow Dung Dry leaves Crop residue

Others (specify)

23. Do you buy any of these fuels?
24. How much does this fuel cost?
25. Which of these fuels would you say you use most often (or in the greatest quantity?)
26. Can you give an estimate of the total amount of fuel you use every month?
27. Depending on the type of fuel used, what process is used to make the fuel ready for combustion?
28. Do you do this everyday or only at certain times of the season?
29. Do any of your family members help you with this task?
30. What do you think are the drawbacks of the fuel that you currently use?

Take out show-card - The card will contain 3 pictures of traditional stoves in use emitting 1) no smoke, 2) little smoke and 3) large amount of smoke.

31. Which of the following pictures look most like the condition in your kitchen?
32. a) Do you believe this is harmful?
b) (Probe) Why?
33. Did you do anything to reduce exposure/ smoke and if not, what do you think you could have done?

34. What do you know about the health impacts of cooking smoke?
35. Exposure to cooking smoke has been shown to cause a range of diseases, especially in young children. What measures do you think you can take to reduce exposure?
36. a) Which one of these posters do you like best?
 b) (*Probe*) Why?
37. Do you have suggestions for other such campaigns that you would like to see?
38. Finally, is there anything else you would like to add that did not come up in our conversation?

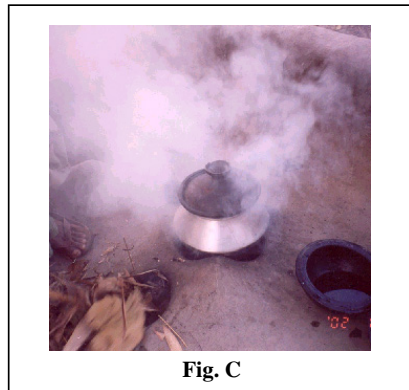
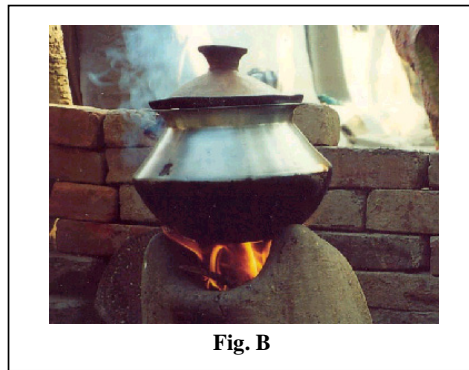
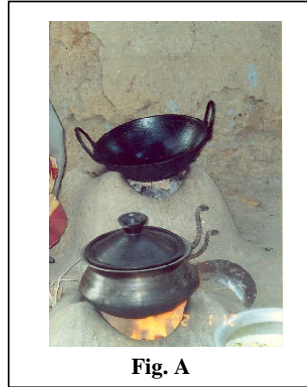
Background Information

To end with, I would like to ask a few general questions about your family. This information will help me to get a better understanding of the issue.

	Name	Relationship to resp.*	Age	Marital Status	Educ.	Occupation	Income/ Month or yr. (Tk.)
1.	Resp.						
2.							
3.							
4.							

- Household head indicated with **H**

Thank you again for your time and interest



APPENDIX B: NGO Activities in Health Care Sector

Bangladesh Rural Advancement Committee (BRAC)

BRAC is the largest NGO of its type in the world and offers a variety of development initiatives at the community level. The organization serves more than 38 million people and promotes the utilization of government immunization services, and offers a range of primary health and family planning services. In addition there are almost 20,000 full time employees, 34,000 part time teachers, and 25,000 non-salaried community health workers (Shasthya Shebikas – Health Volunteers). Shasthya Shebikas are indigenous semi-literate or illiterate middle-aged women who are trained in a 12-week course and supervised by BRAC staff along with a local village committee. During their monthly visits, these volunteers provide a range of services and act as depot holders (Women who keep a stock of supplies for community members).

Grameen Bank

The Bank has about two million borrowers in about thirty four thousand villages and receives daily payments of about US\$ 1.5 million from villagers who took loans. The Grameen Health Program operates 11 primary health programs around the country. Each program has six health assistants, each of whom is responsible for 500 families. Each family is visited two or more times a year for health education (especially acute illnesses) and family planning services. The assistants also arrange for referral services with private hospitals in and around Dhaka City. The Grameen Health Program is coordinated with local MOHFW services to some extent. Enrollment in the Bank's program provides opportunity for the members to purchase medicine and services at prices below that offered in the market, receive home visits for maternal and child health care issues and obtain discounted treatment at health centers.

World Vision

The NGO works in the Dhaka, Chittagong, and Khulna divisions. The organization emphasizes on the formation of Community Volunteers, Mothers' Groups, and Neighborhood

Health Committees to work in partnership with project staff and government health and family planning staff who are working in the area. Services provided include maternal and child health and family planning services, health education and promotion, immunizations, treatment of acute illnesses and hospital referral services. Extensive community involvement ensures that every family in the project area has access to health workers and those who need basic services can obtain them at the project area facilities. This has resulted in very thorough coverage for example, full immunization coverage for children aged 12-23 months some areas. There is a sub center, for every 15,000 persons, equipped with a paramedic who provides health services mentioned previously. Regular censuses ensure that births and deaths are registered thus providing accuracy to the estimation of childhood mortality rates – important for a country with no vital registration system in place.

**International Center for Diarrheal Diseases Research, Bangladesh – ICDDR, B
Matlab MCH-FP Project**

This is one of the most extensively documented field sites in the world and has a comprehensive demographic surveillance system. The fertility and mortality rates in the project area are significantly lower than the rest of the country. The Project has been serving a population of about 10,000 persons through a comprehensive package at the household level with the help of indigenous community health workers who make bi-weekly visits. This package includes health education, immunization, birth control supplies, antenatal and postnatal care, detection and treatment of childhood pneumonia, administering ORT and referral. In addition, these services are also available at nearby sub centers and the ICDDR, B hospital in Matlab. Since mid 1996 the Center has attempted to deliver ESP at the union level. Family Welfare Assistants and Health Assistants have been retrained to provide both health and family planning services. In addition, the number of FWVs has been increased to strengthen the joint EPI Outreach Sites/ Satellite Clinics.

APPENDIX C : Fuel and Stove Use Issues in Rural and Urban Areas

Access to Fuels in Rural Areas

The price of firewood varied by region from Tk. 150 – 200 (US\$ 2.5 – 3) in Gazipur to Tk. 250 – 300 in Matlab. In Cox's Bazaar where the families were larger, households spent about Tk. 500 (US\$ 8) monthly for a cartful of wood. In Gazipur, many family members worked at nearby brickfields where they had access to coal free of cost. The households relied on this fuel during dry seasons. During the monsoon, they reverted to using other biomass fuels.

In rural Cox's Bazaar, coconut husks, rice husks and saw dusts were primarily used as cooking fuels. Coconut trees grew in abundance and the rice husks were obtained free of cost from rice mills where families de-husked the rice. Saw dust was available from the wholesale timber shops. In addition, solid woods made of compressed rice husks (locally known as "*ghoshir lakri*") were also sold in the markets. Coconut leaves are also used in the rural Matlab area. The stalk of the jute plant (otherwise known as "Patkhari") was not also used.

In addition to using biomass fuels, the more affluent households in Gazipur used kerosene stoves. These stoves were used for short periods of time, mainly to cook or heat breakfast in the morning. Women also used the stove when there was too much rain and cooking in the semi-open kitchens became difficult.

Fuel Management

Different types of biomass fuels required different management methods. It comes as no surprise that these women were expert managers and users of these fuels. The fuel is usually chopped or shaped and then dried. Time to dry ranges from a day to a week during the monsoon. Drying dung cakes and sticks is a more difficult task and are usually hung over stoves. Other fuels like leaves are dried and stored in baskets or bags. It was interesting to note that all households were using residual fuels to start the fire.

Access to Fuels and Stoves in Urban Areas

Piped Gas

All families in urban Matlab had access to piped gas supply from the nearby Bakhraabad gas fields. About five years ago these households switched to gas once it became readily available. The fuel was also cheaper than firewood. Most families used a two - burner gas stove which cost around Tk. 325 –350 (~US\$ 5.60 – 6.00) per month. The cost was a little less for a single burner stove. This figure may be higher than those in the rural areas because these affluent urban families cooked more often and was perhaps more generous with the use of wood. Faster cooking times and increased control over heat intensity were some of the main advantages of this stove. However, safety concerns were raised since compared to wood stoves these stoves are easier to light .

Bio-gas

In urban Cox's Bazaar, five of the fifteen households interviewed were using biogas and four had their own biogas plants. The plant is basically a concrete structure which stores farm animal waste (usually poultry) . The waste is digested anaerobically by bacteria, which then produces bio-gas or methane. Installation costs for these plants ranged from Tk. 12,000 (US\$ 207) to Tk. 45,000 (US\$ 776). The government provided an initial installation cost of Tk. 5000 (US\$ 86) but this amount was not adequate to build a functional plant.

The impetus to install these plants was provided by the unbearable smell of poultry droppings, which were eventually put into good use. Biogas production also reduced fuel costs and the wastes from these plants were used as high quality fertilizer. Maintenance costs were quite low however, families used wood stoves when the gas supply got interrupted. Feasibility of these plants is an issue since households will only use biogas as long as their poultry business is profitable. This interdependency may be an obstacle in increasing biogas usage.

The WHO in Cox's Bazaar has provided technical assistance to some homes for the installation of these plants.

Cylinder Gas

Households in the same vicinity were also using cylinder gas. Although this was more expensive (ranging from Tk. 400 to 600, US\$ 7 - 8), fluctuating biogas supplies was one of the main reasons behind their decision. Most houses had two burner stoves and used more than one cylinder a month. All other households appeared to use a wood stove side by side with gas. It was generally agreed that the cost of firewood was more than that of gas.

Electric Stoves

Electric stoves were used in the buildings of Mohammedpur where the Red Cross subsidized the electricity. The stoves were sold in the markets as ready-made or in parts. The latter cost around Tk 80 –90 (~US \$ 1.40 – 1.50) while the ready-made version was more expensive. Most families cooked two or three times a day and it took about 1.5 - 2.5 hours each time.

Constant precaution was required while using these stoves. In some households the stoves were kept on a raised platform, away from the reach of small children. Frequent power failures and voltage fluctuations made cooking a difficult and time consuming process. During such times, many women used kerosene or wood stove in the common verandah outside.

Kerosene Stoves

In the urban areas, use of kerosene stoves depended on 1) Access to biomass fuels, 2) Access to constant gas supplies and 3) Cooking load. In the Mohammedpur slum area, women started using kerosene stoves when firewood became scarce during the 1988 floods. Kerosene appeared to be cheaper [Tk. 30 – 40 (~US\$ 0.52 – 0.69) per kg whereas wood costs around Tk. 60 (~US\$ 1) per kg] and more convenient to use. Each household used around 0.5 to 1 kg of kerosene and about 3 kg of wood everyday when using the wood stove. Advantages of kerosene included ease of storing, ease of lighting stove, shorter cooking time etc. At least two

Deleted: ,

households in urban Matlab and five in Cox's Bazaar were using kerosene stoves along with gas stoves. Disadvantages of kerosene included its distinctive smell and longer time to clean utensils.

Wood Stoves

Wood stoves were also used as a substitute stove. However the type of fuel used varied greatly and included scrap material in addition to biomass fuels. This was true for the affluent households as well and indicated that awareness regarding the health affects of kitchen smoke was practically non-existent even for families who were well informed about other health issues. In Mohammedpur, about ten wood stoves were shared amongst some families in the building and six out of seven families in the slum area were using wood stoves as well. Due to the scarcity of biomass many households were using scrap material like newspapers, wood shavings, paper etc.

APPENDIX D : Visuals of Biomass Fuels



Firewood – the best biomass fuel



Dry leaves stored in a kitchen corner



Patkhari drying in the front yard in Matlab



Dung sticks and leaves hung to dry





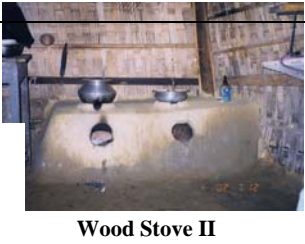
Dry leaves, twigs and coconut fronds drying in a courtyard



Husks of date palms drying next to a kitchen wall

APPENDIX E: Visuals of Various Stove Types

Wood Stove III	Electric Stoves
 <p>Cylinder Gas Stove Wood Stove I</p>	 <p>Wood stove using saw dust in Cox's Bazaar</p> <p>Kerosene Stove</p>



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LIST OF ACRONYMS

AIDS – Acquired Immune Deficiency Syndrome

ARI – Acute Respiratory Infection

BCCP – Bangladesh Center for Communication Program

BIRDEM – Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine and Metabolic Disorder

BRAC – Bangladesh Rural Advancement Committee

COPD – Chronic Obstructive Pulmonary Disorder

DSS – Demographic Surveillance System

EPI – Extended Program on Immunization

ESP – Essential Service Packages

FP – Family Planning

FWA – Family Welfare Assistant

FWV – Family Welfare Visitor

GDP – Gross Domestic Product

HCP – Healthy City Program

HDI – Human Development Index

HIV – Human Immunodeficiency Virus

HPSP – Health and Population Sector Project

IAP – Indoor Air Pollution

ICDDR, B – International Center for Diarrheal Diseases Research, Bangladesh

LPG – Liquefied Petroleum Gas

MCH – Maternal and Child Health

MOHFW – Ministry of Health and Family Welfare

NGO – Non-Governmental Organization

ORT – Oral Rehydration Therapy

SMC – Social Marketing Company

SPM – Suspended Particulate Matter

TCF – Trillion Cubic Feet

TFR – Total Fertility Rate

WHO – World Health Organization