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Domestic violence against women in Bangladesh

We conducted qualitative research and a population based survey on 3,130 women of reproductive age (15-49 years) in urban and rural areas of Bangladesh to study the prevalence and consequences of domestic violence against women and their coping strategies. Sixty percent of women reported ever being physically or sexually abused during their lives. Their husbands were the most common perpetrator. Two-thirds of the abused women have never talked about their experience of violence and almost none accessed formal services for support. To address this major public health problem, the prevailing attitudes that permit and encourage male violence against women must be directly addressed.

Previous studies suggest that violence against women perpetrated by their husbands is a serious problem in Bangladesh. Schuler and colleagues estimated the current prevalence of abuse among poor rural women (1). Koenig and colleagues studied factors associated with abuse of women by husband or in-laws from all socioeconomic strata (2). Neither study used direct and behaviourally explicit questions on physical violence, thus respondents used their own definition. The physical and mental health consequences of this violence on women are unclear. Koenig and colleagues noted that the limited understanding of the linkages between domestic violence and women's physical and mental health problems has prevented existing health and reproductive health programmes from effectively addressing this issue (3). Moreover, what needs to be done beyond service provision has remained unclear.

We conducted a study to estimate the prevalence of domestic violence against women in Bangladesh, to assess the impact of domestic violence on the physical and mental health of women, and to explore the coping strategies of women experiencing domestic violence.

Data were collected from one urban and one rural site between June and November 2001. Qualitative data were collected through 18 key informant interviews, 11 focus group discussions (9 exclusively with men and 2 exclusively with women), and in-depth interviews of 23 rural and 15 urban women who experienced domestic violence.

Quantitative information was collected using a multi-stage cross-sectional population-based survey covering Bangladeshi women aged 15 to 49 years, regardless of their marital status. First, 42 clusters in the rural and 39 clusters from urban sites were randomly selected. The number of households to be interviewed within each cluster was proportionate to the size of the cluster. Then households within each cluster were randomly selected. Within each selected household one woman was interviewed. If there were more than one eligible woman in the household the person to be interviewed was selected randomly.

The study team took precautions to ensure privacy and safety of the respondents and the survey team. The survey team made sure that no third person, except very small children, was present while a respondent answered the survey. The purpose of the study was not disclosed to other members of the household or to the community.

The main focus of the study was violence by husbands. The questions exploring different forms of violence perpetrated by husbands were direct and behaviourally explicit. Thus, the specific items for exploring physical violence included slapping, pushing, shoving, hitting, kicking, dragging, beating, choking, burning, and threatening to use or actually using a weapon against her. The questions used for exploring sexual violence by husbands included use of physical force in sexual intercourse; participation out of fear; and a any sexual act that was considered by the woman to be degrading or humiliating. Regardless of marital status, additional questions were asked about experiencing physical or sexual violence after the age of 15, sexual violence before the age of 15, and the perpetrators.

Table 1: General characteristics of the women in the survey

Characteristics	Urban (n=1,603)	Rural (n=1,527)
Age, mean	29 years	30 years
Unmarried	14%	13%
Ever-married	86%	87%
Never attended school	18%	37%
Primary education	18%	30%
Secondary education	33%	27%
Higher education	30%	7%
Earns an income	19%	19%
Muslim	95%	83%

A total of 3,130 women were successfully interviewed. The refusal rate at the household level was 6% in the urban area and 1% in the rural area. Most of the women had received at least primary education; more than 80% were married (Table 1).

Overall, regardless of their

marital status, the majority of the reproductive aged women surveyed (60% urban, 61% rural) reported either being physically or sexually abused at some point in their lives. There was no difference in the prevalence of physical and sexual violence reported by urban versus rural women (Figure 1). Among women who reported being victimized by physical violence, the most common perpetrator was the husband. (Figure 2).

Figure 1: Prevalence of physical and sexual violence against reproductive aged women

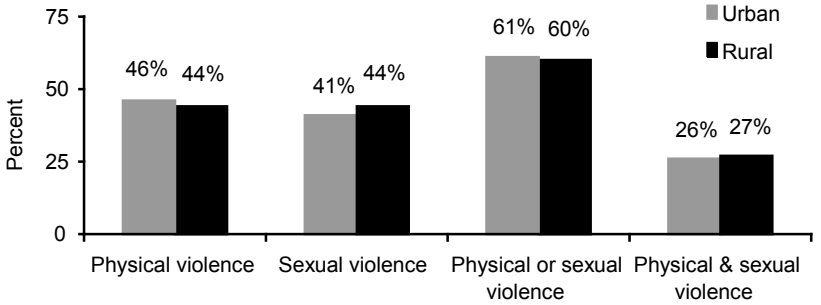
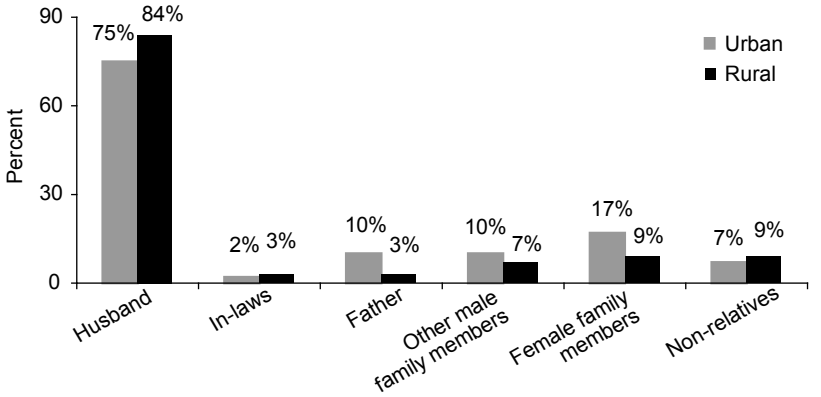


Figure 2: Perpetrators of physical violence against reproductive aged women



Among ever-married women, 40% of those in the urban area and 42% in the rural area reported physical violence by their husband, and 37% of the urban and 50% of the rural women reported sexual violence by their husband.

Nineteen percent of the ever-married women at both sites experienced severe physical violence defined as being hit with the fist or something else, kicked, dragged, beaten up, choked, burnt, threatened with or actually injured by a weapon or some other tool.

During the preceding 12 months physical abuse by a husband was reported by 19% ever-married women in the urban area and 16% of them in the rural

area. Most commonly there were multiple episodes of abuse (Figures 3 & 4).

Figure 3: Frequency of physical assault by husband reported by physically abused women in past 12 months in urban site

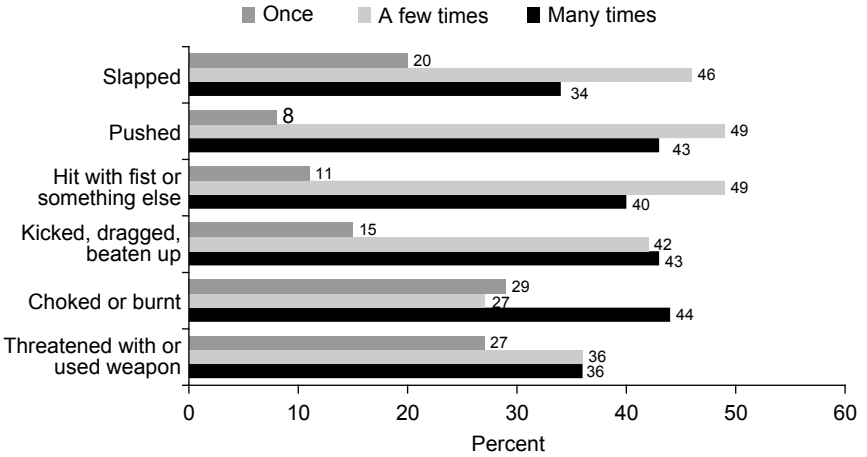
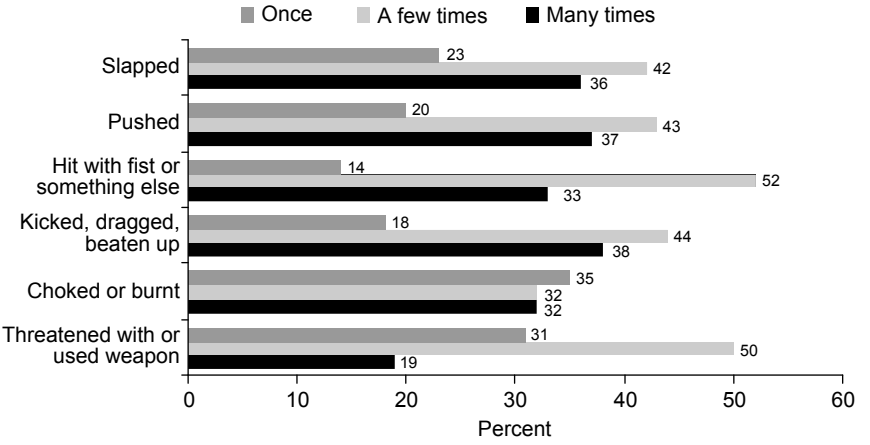


Figure 4: Frequency of physical assault by husband reported by physically abused women in past 12 months in rural site



Twenty-seven percent of the urban and 25% of the rural physically abused women reported being injured by their husbands. The injuries ranged from cuts, bruises and bites to broken limbs, broken teeth and burns.

Married women reported various health problems including walking difficulties (18% urban, 24% rural), pain (26% urban, 36% rural), dizziness (44% urban, 64% rural), and memory loss (13% urban, 20% rural). In a logistic regression

analysis controlling for age, educational level and area of residence compared to married non-abused women, married women who reported physical or sexual abuse by their husbands were 1.5 times (95% CI: 1.2-1.7) more likely to report problems in walking, 1.7 times (95% CI: 1.4-2.0) more likely to report pain, 1.7 times (95% CI: 1.5-2.1) more likely to report dizziness, and 1.4 times (95% CI: 1.2-1.6) more likely to report problems with memory.

Compared to the wives from violence-free homes, wives experiencing partner-violence bore more children (3.0 versus 2.5), more commonly underwent induced abortion (0.17 versus 0.09 per woman), and reported higher rates of child mortality (36 versus 26 per 1000 children).

Among urban women 7% of those who were never-abused contemplated suicide compared to 21% among abused urban women. Among rural women, 4% of the never-abused compared to 15% of abused women contemplated suicide. Among women who contemplated suicide, abused women were twice as likely to attempt suicide (29%) compared to the never-abused group (14%).

Two-thirds of the physically assaulted wives in both the urban and rural areas did not talk with anyone about the violence and almost no one sought institutional help. Reasons for staying silent included not considering violence as serious enough to report (57% urban, 52% rural), stigma or fear of not being believed or being blamed (30% urban, 40% rural), disgracing her family with disclosure (26% urban, 34% rural) and a belief that seeking help would not bring them any respite (11% urban, 10% rural).

Among women who sought help, the most common reason was they could not endure the violence anymore (79% urban, 84% rural). Other major reasons for seeking help were when children were threatened or harmed (32% urban, 37% rural) and when the woman was badly injured or feared being killed (21% urban, 31% rural). Those few who sought help generally relied on informal networks (e.g. relatives and neighbours), most often on their parents (18% urban, 19% rural), siblings (16% urban, 14% rural), and neighbours (10% urban, 12% rural). But the majority disclosing violence (60% urban, 51% rural) reported that no one helped them.

Parveen's case provides a typical example of helplessness among abused women. She said, "For me it's not a question of accepting or not accepting violence. I will have to depend on my husband for food, however painful be the accompanying experiences. Fate will take its course. On one occasion I had left him and took shelter with my mother. After a few months my husband went there to get me back. How would my mother feed me? The wives of my brothers told me, 'What would you do? We have our own families to run. We know it's tough there but it's better if you go back'…" So, Parveen went back.

Reported by: Public Health Sciences Division, ICDDR,B

Supported by: Urban Primary Health Care Project of Bangladesh (UPHCP) under the auspices of the Government of Bangladesh and Asian Development Bank (ADB)

Comment

This population study confirms the high levels of domestic violence suggested by earlier work (1,4-6) and confirms that it remains a major public health problem in Bangladesh. Since husbands are the greatest perpetrators of violence against women, effective interventions would need to target them.

High levels of domestic violence in Bangladesh imply that a large proportion of the women accessing health services are victims of violence. Interventions to support women victimized by violence might be piloted in this setting.

Since only a small proportion of abused women access formal services, simply setting up services for victims of domestic violence will not improve the situation for most. The prevailing attitudes that permit and encourage male violence must be directly and creatively addressed. Part of this effort involves careful research to identify messages and interventions that can change these attitudes. Education in the classroom and at community level as well as use of mass media are essential to diffuse these messages.

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Surveillance for pneumococcal disease, Bangladesh – Implications for prevention

Streptococcus pneumoniae (pneumococcus) is a leading cause of childhood pneumonia worldwide. New, safe effective vaccines have been developed, but the burden of pneumococcus in Bangladesh is unclear. We conducted surveillance for pneumococcus at seven hospitals and two community sites in Bangladesh. Between April 2004 and February 2006 we identified 117 isolates of pneumococcus from blood or cerebrospinal fluid (CSF) culture. All seven hospitals and both community sites identified patients with invasive pneumococcal disease. Most strains (72%) were resistant to co-trimoxazole. Fifty-eight percent of strains identified in community surveillance would be covered by the 9-valent pneumococcal conjugate vaccine. Pneumococcal conjugate vaccine would be expected to meaningfully improve child survival in Bangladesh.

Pneumonia is the leading cause of death among children under 5 years of age in Bangladesh (1). While it is difficult to know which pathogen is responsible for a specific child's death from pneumonia, infections caused by ***Streptococcus pneumoniae*** (pneumococcus) are believed to be a major cause of fatal childhood pneumonia and meningitis worldwide (2).

Different strains of pneumococcus have molecular differences in their external capsule. Currently available pneumococcal vaccines are directed against this capsule. Each pneumococcal vaccine is active against only a handful of the more than 100 different pneumococcal serotypes. Because a minority of serotypes cause the majority of the pneumococcal disease, vaccines developed against 7-11 serotypes have been remarkably effective in reducing pneumococcal disease. A vaccine against 7 serotypes of pneumococcus has been used in children in the U.S. since 2000 and has reduced the incidence of invasive pneumococcal disease among children under 5 years of age by 75% (3). A vaccine against 9 serotypes of pneumococcus was tested in The Gambia, and reduced radiologically-confirmed pneumonia by 37%, laboratory-confirmed invasive pneumococcal disease by 77%, and overall child mortality by 16% (4).

A previous hospital-based study concluded that the most common serotypes of pneumococcus isolated among hospitalized patients in Bangladesh are different from the serotypes that are included in the available vaccines (5). Moreover, there is a lack of data on the burden of pneumococcus in Bangladesh. This hampers reaching an evidence-based decision on introduction of pneumococcal conjugate vaccine to Bangladesh.

We established surveillance at seven hospitals and two community sites to better understand the burden of pneumococcal disease in Bangladesh, and the coverage that would be expected by introducing a new vaccine.

Beginning May 2004, specimens were collected from children under 5 years

of age admitted to the seven participating hospitals with pneumonia, meningitis or very severe disease according to WHO clinical case definitions[1]. Blood and cerebrospinal fluid specimens were sent to local laboratories for culture and antimicrobial susceptibility tests. A reference laboratory, located in Dhaka Shishu Hospital, received isolates from local laboratories for confirmation and serotyping.

In Kamalapur, a densely populated low-income community in Dhaka city, households were randomly selected and beginning in April 2004, approximately 5000, children under 5 years of age were actively followed. Each week, field workers visited every participating household, and using a standardized questionnaire for each child, asked about signs of illness for each day of the week since the last visit. Children with one major sign of illness - fever (either measured or reported), rapid, laboured, or noisy breathing, lethargy, cyanosis, inability to drink or convulsions were referred to ICDDR,B's clinic in Kamalapur for medical evaluation. Similarly, children with at least two minor symptoms or signs of illness including cough, runny nose, sore throat, muscle or joint pain, chills, headache, irritability, decreased activity or vomiting, were also referred to the clinic. All clinical evaluations were conducted at no cost to the patient. Participating families were also encouraged to self refer – to bring their children to the clinic if they developed signs or symptoms of illness on days that the field worker did not come to visit them in the home. In the clinic, physicians performed a standardized examination and ordered additional tests based on specific findings. Children with axillary temperature ≥38°C had blood drawn for culture.

Beginning August 2004 in Mirzapur, a rural setting, health workers visited households with approximately 13,000 children under 5 years of age each week. If a child had possible severe pneumonia (rapid respirations plus a danger sign), high fever (≥102˚F or ≥101˚F if <2 months old) or suspected meningitis or very severe disease, the child was referred to Kumudini Hospital. At Kumudini Hospital patients who met the WHO clinical case definitions for pneumonia, severe pneumonia, meningitis or very severe disease had blood or cerebrospinal fluid (CSF) collected and were enrolled in the surveillance.

From April 2004 through February 2006, 15,228 patients were enrolled, and 117 strains of pneumococcus were isolated (Table 1). Each of the seven participating hospitals were successful in isolating pneumococci from blood or CSF cultures. ***Haemophilus influenzae*** Type B (Hib), another bacterial pathogen for which an effective vaccine is available, was also commonly isolated (Table 1). Meningitis was much more common among patients with pneumococcus enrolled from the 7 hospitals (63/74, 85%) than from the community surveillance sites (4/43, 9%).

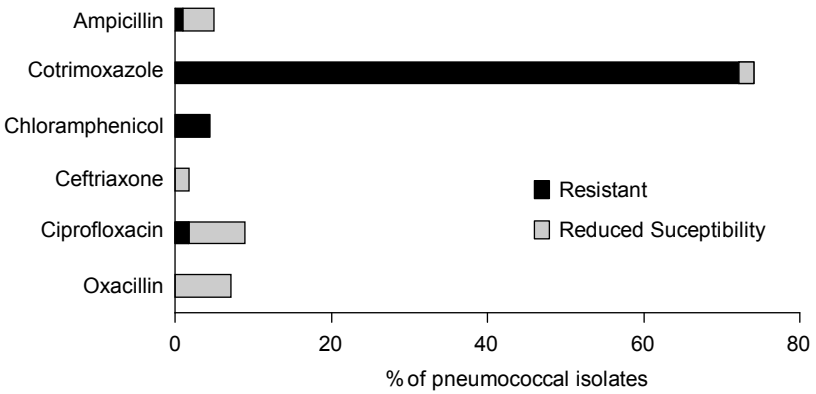
[1]A child is classified with 'very severe disease' if she/he presents with inability to drink, prostration or lethargy, severe malnutrition, stridor in a calm child, hypothermia, central cyanosis and fast breathing or severe chest indrawing in children less than two months

Table 1: Patients enrolled and culture results

	7 Hospitals	Rural	Urban
Number of patients who met case definitions (eligible)	19322	1669	5931
Number of patients who had a blood/CSF collected	8622	1027	5579
Proportion of eligible patients enrolled (%)	44.6	61.5	94.1
Number of patients who yielded a bacterial pathogen	661	32	302
Bacterial isolation rate	7.7	3.1	5.4
Number of pneumococci isolated	74	10	33
Isolation rate for pneumococci (%)	0.9	1.0	0.6
Proportion of bacterial isolates that were pneumococcus	11.2	31.3	10.9
Number of *Haemophilus influenzae* Type B isolations	60	6	1
Isolation rate of *Haemophilus Influenza* Type B	0.70	0.58	0.02
Proportion of bacterial isolates that were *Haemophilus influenzae* Type B	9.1	18.8	0.3

The antimicrobial resistance patterns were similar for strains isolated from patients identified through community surveillance and those identified during hospital surveillance (data not shown). Most strains (72%) were resistant to co-trimoxazole, the first line agent recommended for treatment of acute respiratory tract infection in children under 5 years of age by the World Health Organization (6) (Figure 1).

Figure 1: Antimicrobial resistance for all pneumococcal strains



The distribution of pneumococcal serotypes differed among cases enrolled in the community compared with cases enrolled in the hospital. Among hospitalized patients, 30% had strains of pneumococci that would be covered by the currently marketed seven-valent vaccine (4, 6B, 6A, 9V, 14, 18C, 18F, 19F, 23F) and 45% would be covered by the nine-valent vaccine (4, 6B, 6A, 9V, 14, 18C, 18F, 19F, 23F, 1, 5) tested in The Gambia. For illness identified

in the community, 40% of the strains would be covered by the seven-valent vaccine and 58% would be covered by the nine-valent vaccine.

Reported by: Dhaka Medical College and Hospital; Sir Salimullah Medical College and Hospital; Chittagong Medical College and Hospital; Shishu Sashthya Foundation; Chittagong Maa Shishu O General Hospital; Kumudini Hospital; Dhaka Children's (Shishu) Hospital and the Programme on Infectious Diseases and Vaccine Science, ICDDR,B

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Comment

Even in ideal situations pneumococci are difficult to isolate, and so the vast majority of pneumococcal infections are unrecognized. However, this surveillance activity demonstrates that in all sites in Bangladesh where it was systematically looked for, pneumococcus was an important pathogen. In hospital settings, most pneumococcal isolates came from patients who had meningitis. Cultures are much more likely to be positive in patients with meningitis in contrast to patients with pneumonia (5). However, pneumococcal pneumonia, which is more difficult to diagnose, represents a substantially larger burden of disease. Vaccine efficacy studies suggest that pneumococci account for at least 20% of severe pneumonia (4,7).

The distribution of serotypes suggests that the majority of cases of invasive pneumococcal infections in Bangladesh could be prevented using current vaccines. Indeed, 58% of the pneumococcal strains isolated from the community, which are likely more representative of the total burden of infection, would be prevented with current vaccines. With rates of pneumonia that are 20 times the rates in the U.S., a vaccine that would be effective against 58% of strains would be expected to have an important effect on child survival in Bangladesh.

The high rate of in vitro resistance to co-trimoxazole suggests that it is not an appropriate first line agent for the treatment of presumed pneumococcal infection, especially severe illnesses associated with danger signs. Many pneumococcal strains which are associated with resistance are of serotypes included within vaccine formulations. One of the consequences of an effective pneumococcal vaccine programme in the United States was a marked reduction in the incidence of disease from antimicrobial resistant pneumococcal strains (8).

It is also notable that while searching for pneumococcus, this surveillance activity identified a large number of Hib infections. A vaccine against Hib is also available. In a study in Bangladesh, children who received Hib vaccine had a 50% protection against purulent meningitis and 34% protection against pneumonia (9). As pneumonia is the leading cause of childhood death in

Bangladesh and as purulent meningitis has a high case-fatality ratio, introduction of the conjugate Hib vaccine into Bangladesh would be expected to notably improve child survival.

Several new lifesaving childhood vaccines are now in regular use in higher income countries, including vaccines effective against pneumococcus, Hib and rotavirus. Introduction of these new, safe, and effective vaccines within Bangladesh could produce the next substantial improvement in child survival, and keep the country on the path to achieve the millennium development goals for child survival. However, each vaccine carries with it a significant cost burden. For pneumococcus, investigations to measure local effectiveness and cost effectiveness would help government officials and donors reach timely informed decisions on vaccine introduction.

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Selected maternal health indicators obtained by geographical reconnaissance

We calculated maternal mortality ratio estimates and proportion of facility-based deliveries using large-scale population-based data collected by the fieldworkers of the Ministry of Health and Family Welfare, Government of the People's Republic of Bangladesh under an activity termed geographical reconnaissance. We then compared these estimates with those from the Bangladesh Maternal Health Services and Mortality Survey, and the results obtained through the sample vital registration system of the Bangladesh Bureau of Statistics. The national estimate of the maternal mortality ratio using geographical reconnaissance was 50% lower than the other estimates, but divisional estimates vary greatly and the number of facility-based deliveries is increasing in some areas. We also assessed whether annual changes in maternal mortality can be monitored at the sub-district level. Substantial yearly variation in the number of maternal deaths and large confidence intervals characterize sub-district maternal mortality ratio estimates. The government commits substantial resources for the geographical reconnaissance and the quality of the mortality data it collects deserves critical examination that will support important decision-making about the future of geographical reconnaissance.

The maternal mortality ratio and the proportion of deliveries attended by skilled personnel are key performance indicators for assessing the functioning of a wider health system and monitoring progress made towards achieving the Millennium Development Goals. We calculated national estimates of these two indicators using large-scale population-based sub-district level data collected by the fieldworkers of the Ministry of Health and Family Welfare under an activity termed geographical reconnaissance (1). These were compared to results obtained from Bangladesh Maternal Health Services and Mortality Survey (2) and from the sample vital registration system of the Bangladesh Bureau of Statistics (3).

Geographical reconnaissance does not sample the population but annually attempts to enumerate all household members, births, and deaths, including pregnancy related deaths, stratified by age and sex. To identify deaths that were maternal, the field workers were instructed to ask about "deaths of a married woman of reproductive age while pregnant or within 42 days termination of pregnancy, irrespective of duration and location, from any cause related to or aggravated by the pregnancy or its management, but not accidental or incidental causes" (1). This reporting is not validated by verbal autopsy. In the Bangladesh Maternal Health Services and Mortality Survey interviewers inquired about the deaths among women of reproductive age in the previous three years from a nationally representative sample. Reported deaths were then followed by verbal autopsy to identify deaths from maternal causes. For the sample vital registration system, the Bangladesh Bureau of Statistics used a nationally representative sample of 1,000 primary sampling

units. Each primary sampling unit consisted of 250 households that are monitored by a local registrar to record all vital events. The local registrars are instructed to use the definition of maternal death recommended in the tenth revision of the international classification of diseases by World Health Organization (3). The supervisors of the local registrar then checked the quality of data collected.

The geographical reconnaissance data for this report comes from two rural sub-districts in each of the six administrative divisions in Bangladesh. The two sub-districts were selected by the Unified Management Information System Unit of the ministry for joint monitoring with ICDDR,B as part of the implementation of a new information system for the five-year (1998-2003) Health and Population Sector Programme (4). The sub-districts had socio-economic characteristics and health care service delivery infrastructures that were judged typical for the division. Maternal mortality ratio estimates were calculated using three years of aggregated data from geographic reconnaissance from two rural sub-districts in each division and were then projected for the whole division. These estimates vary markedly from those reported in the Bangladesh Maternal Health Services and Mortality Survey (Table 1), except in one division. These discrepancies raise concern about the accuracy, and thus utility, of the geographical reconnaissance estimates.

Table 1: Total population, married women, live births, maternal deaths and maternal mortality ratios* by division according to geographical reconnaissance during 2000-2002

Divisions	Total population	Total married women	Total live births	Total maternal deaths	Maternal mortality ratio		
					Geographic reconnaissance**	BMHSMS	Difference (%)
Barisal	908,129	144,347	21,042	9	43	387	89 (-)
Chittagong	1,360,443	211,157	33,866	23	68	325	79 (-)
Dhaka	1,885,998	323,385	47,600	90	189	320	41 (-)
Khulna	1,242,447	236,685	24,723	32	129	351	63 (-)
Rajshahi	1,470,269	256,287	38,514	102	265	223	19 (+)
Sylhet	1,215,310	323,385	30,396	52	171	471	64 (-)
All divisions	8,082,596	1,495,246	196,141	308	159	322	51 (-)

* Per 100,000 live births
** Division rates are projected from 2 sub-districts per division
(-) Lower (+) Higher

Neither the Bangladesh Maternal Health Services and Mortality Survey nor the Bangladesh Bureau of Statistics sample vital registration system produce sub-district level maternal mortality ratio estimates; the only estimates available to sub-district managers are those from geographical reconnaissance. We compared geographical reconnaissance estimates for Mirsarai and Abhoynagar sub-districts with estimates from Matlab where ICDDR,B maintains a large-scale surveillance system (5). The Matlab data were used for comparison because they represent the only sub-district level maternal mortality ratio estimates outside of geographical reconnaissance.The numbers

varied substantially each year and confidence intervals are large in both systems (Table 2). Maternal mortality ratio estimates from the Bangladesh Bureau of Statistics during the corresponding years show an upward trend.

Table 2: Total maternal deaths, live births and estimated maternal mortality ratios* in Mirsarai, Abhoynagar and Matlab (intervention and comparison areas) and national maternal mortility ratio estimates from the Bangladesh Bureau of Statistics

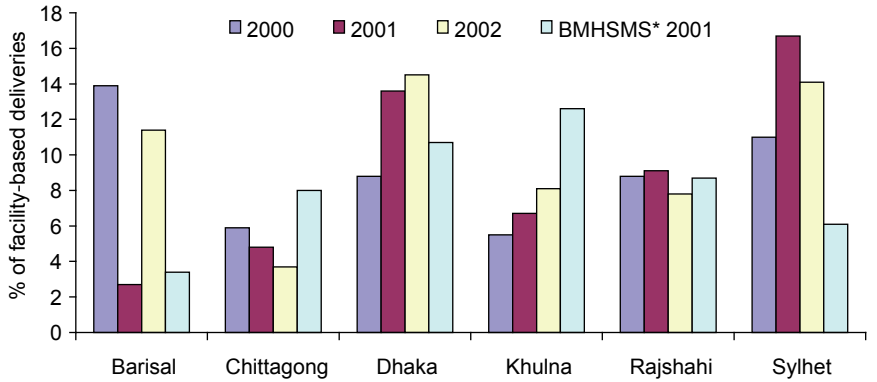
Area\Year	2000	2001	2002	2003	2005	Total
Mirsarai						
Maternal deaths	15	13	23	11	20	82
Live births	8,621	8,744	9,083	8,906	9,148	44,502
Maternal mortality ratio	**174**	**149**	**253**	**124**	**219**	**184**
(CI at 95%)	(94-277)	(77-247)	(156-369)	(60-215)	(133-337)	(143-223)
Abhoynagar						
Maternal deaths	1	8	12	3	6	30
Live births	4,619	4,920	5,156	5,022	5,036	24,825
Maternal mortality ratio	**22**	**163**	**223**	**60**	**119**	**121**
(CI at 95%)	(5-116)	(68-313)	(116-394)	(13-187)	(36-214)	(78-165)
Matlab (Comparison)						
Maternal deaths	13	3	**	**	**	131
Live births	3,086	3,001	**	**	**	36248
Maternal mortality ratio	**421**	**100**	****	****	****	**361+**
(CI at 95%)	(224-720)	(21-292)	**	**	**	(300-423)
Matlab (Intervention)						
Maternal deaths	6	2	**	**	**	76
Live births	2,612	2,809	**	**	**	31890
Maternal mortality ratio	**232**	**71**	****	****	****	**238**
(CI at 95%)	(85-504)	(9-257)	**	**	**	(188-298)
Bangladesh Bureau of Statistics						
Maternal mortality ratio	**329**	**326**	**417**	**402**	****	****

* Per 100,000 live births + Rate for 1991-200 ** Not available

We also examined yearly trends in facility-based deliveries by division as collected through geographical reconnaissance and compared them with data from the Bangladesh Maternal Health Services and Mortality Survey. Home and hospital/clinic is used to denote place of delivery in the geographical reconnaissance. The results, highly variable by division, are presented in Figure 1.

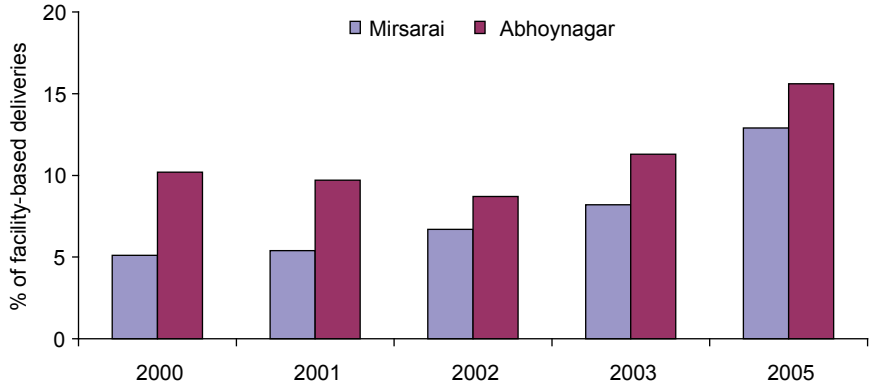
We examined data on facility-based deliveries in the geographical reconnaissance to determine whether the local sub-district managers can monitor annual changes. Similar to the divisional level trends, home deliveries continue to predominate, but facility-based deliveries are consistently increasing in Mirsarai and in Abhoynagar (Figure 2).

Figure 1: Yearly trend in facility-based deliveries by division by geographical reconnaissance from 2000 to 2002 and Bangladesh Maternal Health Services and Mortality Survey in 2001



* Bangladesh Maternal Health Services and Mortality Survey.

Figure 2: Yearly trend in facility-based deliveries by year in Mirsarai and Abhoynagar as estimated by geographical reconnaissance*



* No geographical reconnaissance was undertaken in 2004

During the past several years considerable effort has been made to improve the coverage of comprehensive emergency obstetric care services in Bangladesh. This resulted in improvement of many of the existing facilities in the public sector and growth of new facilities with appropriate maternity care service providers at the sub-district level. This was done to encourage facility-based deliveries and increase caesarean section rates. We evaluated data from Mirsarai and Abhoynagar sub-districts to determine the feasibility of providing the local sub-district level managers data on annual changes in the utilization of maternal heath services.

All live births reported in the geographical reconnaissance have been used as the denominator in calculating these local utilization rates. The percentage of pregnant women seeking care at any facility was 14% in Mirsarai and 24% in Abhoynagar, which is higher than national estimates. Among women who sought care at any facility for a delivery, 48% in Mirsarai and 35% in Abhoynagar had normal vaginal deliveries. The majority of all facility-based normal vaginal deliveries occurred in public facilities (>85%) and the majority of all cesarean births occurred in private facilities (>90%) within both sub-districts.

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Comments

The inaccuracy of demographic indicators such as the neonatal and post- neonatal mortality rate estimated thorough geographical reconnaissance has been documented elsewhere (6). This analysis suggests that maternal mortality data from the same source also has a problem with validity. The collection of maternal mortality data without a follow-up verbal autopsy, insufficient professional supervision and lack of critical review produces results that are difficult to interpret. The field workers of the ministry use a uniform definition of maternal deaths, yet recorded levels of mortality vary greatly with those from alternative sources. Aside from the expected fluctuation in the maternal mortality ratio in sub-district populations, variances in geographical reconnaissance may be due to misclassification of maternal deaths, recall bias with limited probing, and inadequate critical systematic review of the quality of the data collected at all levels. By targeting selected outcomes such as maternal deaths, representative data could be provided more quickly and at lower costs for the local managers. For example, all maternal deaths identified should be validated at the household level and supported by independent review of data quality. The government field workers, being local residents, can provide added value in conducting household level validation of all adult female deaths.

One advantage of geographical reconnaissance is the large sample size which enables a more stable calculation of maternal mortality ratios. However, it is this same large sample size that presents technical and logistical challenges to collecting valid mortality data. The government should consider redirecting resources dedicated to geographical reconnaissance to more efficient data collection activities. Annually conducting geographical reconnaissance in areas where the Bangladesh Bureau of Statistics conducts the sample vital registration system would provide an opportunity to assess the quality of data produced by both systems.

Considering the absence of sub-district estimates for key demographic and health indicators in the Bangladesh Demographic and Health Survey and the Bangladesh Maternal Health Services and Mortality Survey, the need for data by sub-district managers to plan and monitor their programmes should be addressed. Generating key demographic and health indicators through annually conducted geographical reconnaissance in the sample areas where the Bangladesh Bureau of Statistics collects data would enhance both systems and provide sub-district managers with data to assist in their decision making.

In view of the increase in facility-based deliveries and the rapid rise in caesarean section rates, especially in the private sector, the possibility of incorporating data on caesarean sections in the private sector into the government's management information system should be carefully considered. Increased facility-based deliveries and caesarean sections in either the public or private sector can have an impact on the opportunity for Bangladesh to achieve the Millennium Development Goals of reducing maternal mortality.

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Surveillance updates

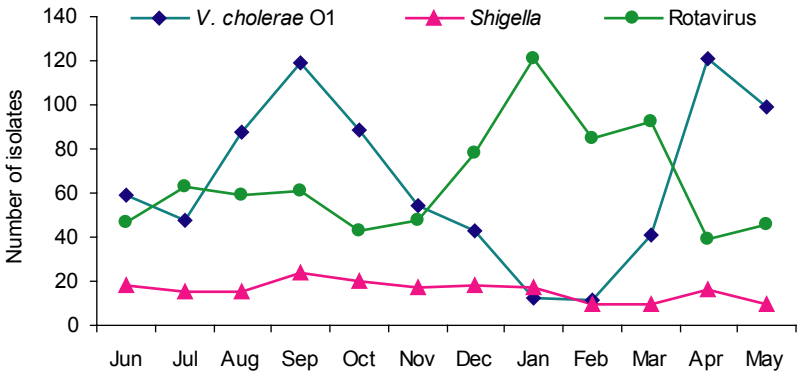
With each issue of the HSB, updates of surveillance data described in earlier issues are provided. These updated tables and figures represent the most recent observation period available at the time of publication. We hope these updates will be helpful to health professionals who are interested in current patterns of disease and drug resistance.

Proportion of diarrhoeal pathogens susceptible to antimicrobial drugs: June 2005-May 2006

Antimicrobial agent	*Shigella* (n=190)	*V. cholerae* O1 (n=784)
Nalidixic acid	31.6	NT
Mecillinam	98.9	NT
Ampicillin	56.8	NT
TMP-SMX	40.0	2.7
Ciprofloxacin	100.0	100.0
Tetracycline	NT	25.2
Erythromycin	NT	29.2
Furazolidone	NT	0.1

NT=Not Tested

Monthly isolation of V. cholerae *O1,* Shigella *and Rotavirus: June 2005-May 2006*



Antimicrobial resistance patterns of 102 M. tuberculosis ***isolates*****:**
September 2004-March 2006

Drugs	Resistance type		Total (n=102)
	Primary (n=88)	Acquired* (n=14)	
Streptomycin	27 (30.7)	4 (28.6)	31 (30.4)
Isoniazid (INH)	12 (13.6)	4 (28.6)	16 (15.7)
Ethambutal	8 (9.1)	2 (14.3)	10 (9.8)
Rifampicin	9 (10.2)	4 (28.6)	13 (12.7)
MDR (INH+Rifampicin)	3 (3.4)	3 (21.4)	6 (5.9)
Any drug	37 (42.0)	7 (50.0)	44 (43.1)

( ) column percentages * Antituberculous drugs received for 1 month or more

Antimicrobial susceptibility of N. gonorrhoeae ***isolated during January-March 2006 (n=15)***

Antimicrobial agent	Susceptible (%)	Reduced susceptibility (%)	Resistant (%)
Azithromycin	100.0	0.0	0.0
Ceftriaxone	100.0	0.0	0.0
Ciprofloxacin	13.3	0.0	86.7
Penicillin	40.0	33.3	26.7
Spectinomycin	86.7	13.3	0.0
Tetracycline	6.7	13.3	80.0
Cefixime	100.0	0.0	0.0

Antimicrobial susceptibility pattern of S. pneumoniae ***among children <5 years during February-April 2006***

Antimicrobial agent	Total tested (n)	Susceptibile n (%)	Reduced Susceptibility n (%)	Resistant n (%)
Ampicillin	10	10 (100.0)	0	0 (0.0)
Cotrimoxazole	10	6 (60.0)	0	4 (40.0)
Chloramphenicol	10	9 (90.0)	0	1 (10.0)
Ceftriaxone	10	10 (100.0)	0	0 (0.0)
Ciprofloxacin	10	10 (100.0)	0	0 (0.0)
Gentamicin	9	0 (0.0)	0	9 (100.0)
Oxacillin	9	9 (100.0)	0	0 (0.0)

Source: Data obtained from children participating in PneumoADIP surveillance - a joint collaboration of ICDDR,B and Dhaka Shishu Hospital which has been conducted in Dhaka Medical College Hospital, Chittagong Medical College Hospital, Sir Salimullah Medical College Hospital, ICH-Shishu Sasthya Foundation, Chittagong Maa Shishu O General Hospital, Dhaka Shishu Hospital, Kumudini Hospital-Mirzapur, and ICDDR,B's urban surveillance in Kamalapur, Dhaka and rural surveillance in Mirzapur, Tangail.

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Photo: Laboratory technicians at work in one of the participating hospital in PneumoADIP surveillance (Courtesy: Dr. Aliya Naheed)

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