

Bangladesh

Demographic and Health Survey 2011



Policy Briefs

The 2011 BDHS, the sixth Demographic and Health Survey conducted in Bangladesh, collected data from almost 18,000 households. Interviews were conducted with over 17,800 ever-married women age 12-49 and almost 4,000 ever-married men age 15-54. Blood pressure and blood glucose levels were measured among women and men age 35 and older in one-third of the households. The survey was conducted under the authority of the National Institute of Population Research and Training (NIPORT) of the Ministry of Health and Family Welfare and implemented by Mitra and Associates, a Bangladeshi research firm located in Dhaka. ICF International, a US-based company, provided technical assistance. The U.S. Agency for International Development (USAID) provided financial assistance.



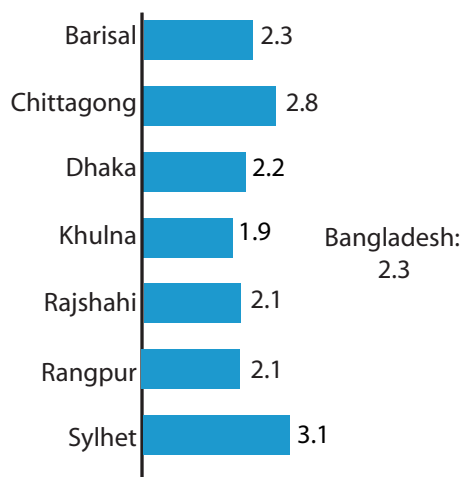
Fertility and Family Planning

The 2010 UN global population projections show for the first time the Bangladesh population peaking below 200 million. The maximum of 194 million (19.4 Crore) will be reached in 2050 then fall to 155 m by 2100. This will occur even with the total fertility rate (TFR) falling to 1.58 children per woman by mid century then rising slowly to 1.9 by 2100.

In order to achieve population stability by mid century the fertility decline must continue for the next four decades until the national TFR, currently at 2.3, levels off at around 1.6. This is lower than the current fertility target of 1.8 in the National Strategic Plan.

- Geographic differences in fertility: The east-west fertility divide persists, with Chittagong and Sylhet well above the national average of 2.3, and Khulna, Rajshahi and Rangpur below the average (Figure 1).
- Dhaka and Chittagong divisions combined account for half the Bangladesh population, so their fertility levels have a large impact on the national TFR (Figure 2)
- There have been encouragingly large fertility declines recently in Chittagong, Sylhet and Dhaka. The Family Planning (FP) Program needs to continue focusing on these three divisions to ensure that the declines continue.
- The different population sizes across divisions means that a TFR reduction of 0.2 children in Dhaka has an impact on the national TFR equivalent to a decline by a full child in Sylhet.
- Birth Intervals: Fertility has declined mostly among women older than 30 years, reflected in longer birth intervals due to use of FP. While birth intervals have increased over the last 2 decades by two years (from 3 to 5 years) among women in the 30s, and one year (from 3 to almost 4 years) among women in the 20s, there has been no increase in birth intervals among teenagers (Figure 3). The proportion of teenagers who begin childbearing (pregnant or mother) by age 20 remains high at 30 percent and is only declining very slowly. This teenage cohort is where major future FP efforts must be directed along with interventions to raise age at marriage.

**Figure 1: Total Fertility Rates
BDHS 2011**



**Figure 2: Population adjusted map
of Bangladesh, 2011
(size proportional to population)**

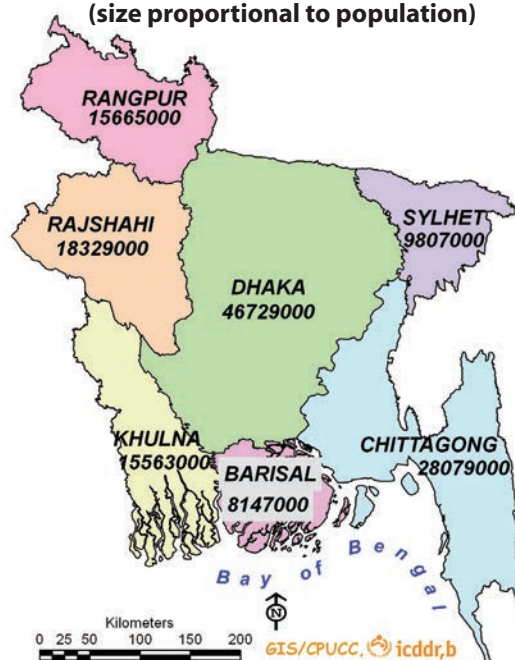
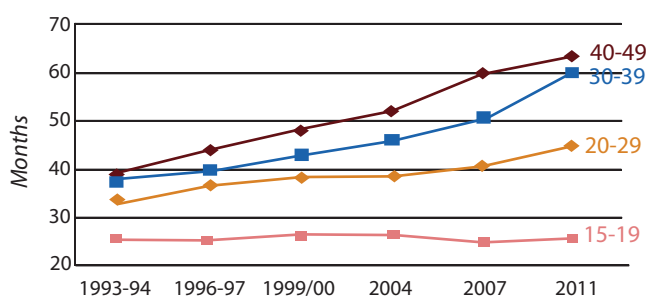


Figure 3: Trends in Median Birth Intervals (months) by Age of Mother Bangladesh, 1993-2011



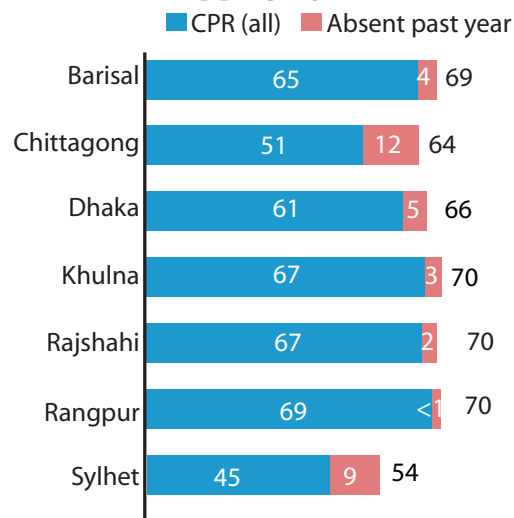
In Bangladesh use of family planning has the greatest direct potential to attain desired fertility. The Government aims to reach contraceptive prevalence rate (CPR) of 72 percent of currently married women by 2016 by reducing unmet need for family planning.

- The CPR of 61 percent for all methods reflects a notable rise from 2007, but much of that rise is due to a rebound in use of injectables after the fall in 2006 due to stock outs, and an increase in the non-program method, periodic abstinence. Since 2000, the annual rate of CPR increase has been less than half of the 1.5 percent annual rate in the 1990s.
- The aim of HPNSDP 2011-16 is to increase use of modern FP in Chittagong and Sylhet divisions by 5 and 15 percentage points respectively, to reach 50 percent of currently married women. Sylhet is well below average in the use of oral pills (19 percent vs. 27 percent national), and injectables (5 percent vs. 11 percent national), but within 1 percentage point of other modern methods. A variety of approaches may be needed in Sylhet to increase adoption of pills. One approach is continuing outreach services by the public sector, as the recent increase in field staff seems to have increased acceptance of pills. It is less clear how the establishment of Community Clinics is affecting outreach service delivery. The Social Marketing Company (SMC) is planning to establish Community Agents in Sylhet to facilitate access to oral pills and other FP and health products for less mobile women.
- The national program can certainly attain the TFR target of 2.0 using the current method mix of mostly temporary methods. This method mix is more costly and logistically complex. For example, a single implant or IUD can substitute for 60 oral pill cycles with 20 resupply visits. Sterilization can substitute for 250+ pill cycles.
- Couples can potentially need FP for more than three decades of reproductive life. Thus, the type of FP should change with the stage of the life cycle. Initially, temporary methods are needed for delaying and spacing births, then when childbearing is complete, long acting or permanent methods (LAPM) can offer considerable convenience for the couples as resupply is less of an issue. Also LAPM are much more cost-effective for the FP Program.
- Most LAPM are provided by the public sector, but for many economically better off couples the public sector is not their preferred source. The private sector and the NGO sector need to be equipped to respond to the requirements of these better off couples.
- Over 90,000 sterilized women pass out of childbearing age every year in Bangladesh; this number of new operations is needed just to maintain the same CPR for female sterilization. In addition, a further 320,000 acceptors of any FP method are required to achieve a 1 percent increase in CPR. This is a huge challenge for the FP Program, and all sectors must be involved. A number of pilot programs trying mobile clinics, and other innovative approaches are underway to increase permanent methods.

Many men leave home to find work, leading to lengthy family separations and a natural protection against pregnancy.

- According to the 2011 BDHS, one in eight women reported that their husbands live elsewhere, and over 40 percent of those husbands did not visit their homes in the past year. This means that about 5 percent of couples are protected against pregnancy by separation. Consequently, attaining a TFR of 2.0 may be possible without reaching the target of 72 percent CPR.
- Figure 4 shows that about two-thirds of couples in six of the seven divisions are protected from pregnancy either by FP or by husbands' absences. Even Chittagong, which performs poorly in FP use, has high protection due to high levels of husbands' absences. Sylhet is the only division still showing low levels of protection.
- Among women who reported husbands living elsewhere (and in addition to those whose husbands have not visited in the past year), one in three, (4% of total couples) have between one and five visits annually. When husbands are absent, many wives stop using FP, particularly the pill and are at risk of pregnancy if the husband returns unexpectedly. A Government policy is needed for such couples with condoms, long-acting methods, or emergency contraception to prevent unplanned pregnancy.
- The high rate of family separation suggests that the unmet need of 13.5 percent reported in the 2011 BDHS may actually be lower, closer to the HPNSDP 2016 target of 9 percent.

**Figure 4: Total Protection (%) from FP and Husband's Absence in Past Year by Division
BDHS 2011**



Behavior Change Communication (BCC) interventions need to be expanded and improved.

- Exposure to family planning messages declined since 2007 BDHS. BCC needs to be strengthened, since only one in three women were exposed to FP messages from any source (radio, TV, newspapers, magazines, community workers, or posters), according to the 2011 BDHS. About half of men were exposed to such messages. The main source is television which should be used more as it appears to 'legitimize' discussion of FP. Media messages are more effective if followed up by one-on-one personal interaction with FP program staff. Unfortunately only 6 percent of women recalled receiving any FP messages from a government community health worker and only 1 percent from a non-government community health worker.
- More than 90 percent of the poorest women have not been exposed to any FP messages via mass media compared to half of the richest women who are obviously more likely to own a television. This inequity hinders adoption of FP methods among the poor.
- BCC has traditionally been directed towards married couples. But adolescents need information before marriage so young couples are prepared to prevent unwanted pregnancy. A new BCC approach for young people is the internet website *Jantechai* (www.jantechai.com) with information on reproductive health. Other innovative approaches of communication with both married and unmarried adolescents on reproductive health need to be introduced.

Teenage fertility has been declining much more slowly than older-age fertility even though many more young women are attending school

- The median age at marriage among women aged 20-24, according to the 2011 BDHS is 16.6, a negligible increase above the median age of 16.4 reported in 2007.
- In most countries, early marriage results in higher fertility. Paradoxically, women in western Bangladesh (Khulna, Rajshahi and Rangpur divisions) marry very young—around age 15—but have the lowest fertility in Bangladesh. In contrast, women in eastern Bangladesh (Sylhet and Chittagong divisions) marry later but have higher fertility.
- A recent study by ICDDR,B suggests that women underreport their age at marriage. The demographic surveillance system in Matlab, Chandpur district which has precise dates of birth found that recently married young women systematically underreported their age at marriage by almost two years. It is not clear if young women knowingly underreport their ages, if this occurs in other parts of the country, or if this is only a recent phenomenon. While the national implementation of birth registration will eventually identify such misreporting, at present more investigation is needed. On a positive note, this implies that about one third of marriages reported to be below the female minimum legal age of 18 were actually already 18 years old. Also one in three of births to women reported to be teenagers were in fact already 20 years or older.
- Young women are enrolling in secondary school in record numbers. Many do not graduate and marry soon after dropping out of school as there are few alternatives in rural areas. The urban formal employment sector, for example, the textile sector, is no longer absorbing the large numbers it did in the late 1980s and 1990s. Greater investment in a diversity of rural employment opportunities for young women is needed to prevent early marriage.

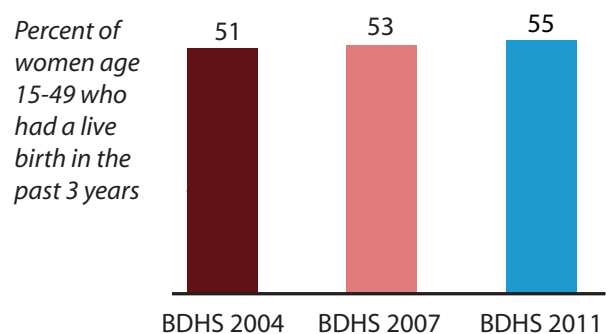
Maternal and Newborn Health

Findings from BDHS 2011 and trends from previous surveys clearly demonstrate significant improvement achieved in key maternal and newborn care indicators. These conform to the remarkable 40 percent decline in maternal mortality over the last decade and about 14 percent decline in neonatal mortality over the last 4 years. A careful look at the differential analysis of the findings is revealing especially in terms of identifying the darker alleys of the journey. While celebration for the achievements is logical, comprehending the policy and program implications of those areas is nonetheless crucial towards planning and paving our way through the most difficult and complex final hundred meters ahead.

In the context of the Health Population Nutrition Sector Development Program (HPNSDP) target of 50% for four or more antenatal care (ANC) by 2016, coverage of ANC from medically trained providers is still low. We should explore all possible opportunities to get women in contact with frontline providers early in pregnancy, opening the gateway to the formal health systems.

There has been slow progress in ANC coverage by medically trained providers over the last three BDHS since 2004, with more than half of pregnant women receiving at least one ANC visit. However, 45 percent of our mothers are not getting any contact with a medically trained provider during pregnancy. Only 26 percent of pregnant women receive the recommended four or more ANC visits. More than half (55 percent) of these mothers eventually delivered in a facility compared to only 9 percent who did not receive any ANC. This indicates that antenatal care is the first contact opportunity and the gateway for a pregnant woman to get into the formal health system.

Figure 1: Trends in Antenatal Care from Medically Trained Provider

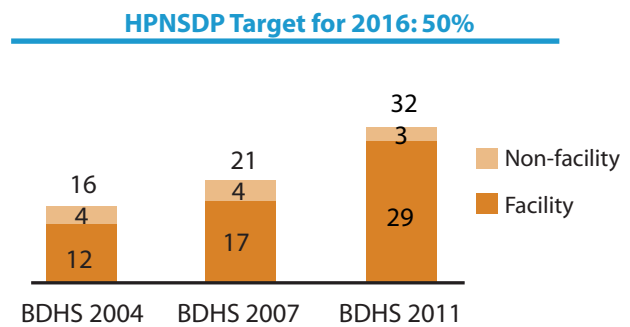


- Ensure optimum utilization of existing providers and promote task shifting
 - o Only 5 percent of our mothers are receiving antenatal care from medically trained providers stationed at union level facilities or below (FWV, CSBA, MA/SACMO). With Union Health and Family Welfare Centers (UH&FWC) and eight scheduled satellite sessions per month in every union, Directorate General of Family Planning (DGFP) should investigate why Family Welfare Visitors (FWV) are providing ANC to only 4 percent of mothers; this cadre is meant to provide MCH-based family planning care at the frontline, including ANC.
 - o Additionally, about 12 percent of mothers are receiving care from Family Welfare Assistants (FWA), Health Assistants (HA) or similar levels of NGO workers who are not considered as medically trained providers. We should consider training (and recognizing) these cadres and potentially the Community Health Care Providers (CHCP) to conduct simple ANC procedures including blood pressure measurement and testing for urine albumin. There is ample evidence that community based health workers can provide initial screening, management and referral.

In the last few years skilled birth attendance at delivery has increased steadily owing to greater use of facilities for deliveries. In order to keep the momentum, we need facilities to be available, accessible and ready to provide high quality care.

The proportion of births attended by a skilled provider has doubled to 32 percent in 2011 compared to 16 in 2004. This encouraging trend is mostly due to the increase in facility delivery. The proportion of mothers and newborns receiving a postnatal care (PNC) visit early after delivery and the timing of those visits suggest that these were mostly among those delivered in facilities. The increase in facility utilization observed across all socioeconomic strata indicates overall enhancement in buying capacity in the population. We need proper supply side responsiveness to keep the momentum going.

Figure 2: Trends in Skilled Attendance at Delivery



- Develop a network of facilities to handle normal deliveries and emergency obstetric care services:
 - o It's crucial to conduct a mapping exercise to determine the actual number and locations of facilities that provide normal delivery care and care of emergency obstetric complications (EmOC). Rather than spreading our efforts and resources too thin, we should focus on making these strategically located facilities functional on a priority basis to provide 24/7 delivery care. The ongoing revision of maternal health strategy is a good opportunity to reach a resolution on this high priority issue.
 - o A program on midwives has just started. Lessons from traditional birth attendant (TBA) and community skilled birth attendant (CSBA) programs should be reflected in the design of the midwife program's operational strategies and plans. Training of midwives needs to be complemented by related system supports in a comprehensive manner, and deployment of midwives should be aligned with the need identified in the mapping exercise mentioned above.
 - o The Maternal Child Reproductive and Adolescent Health (MCRAH) operational plan under DGFP is in the process of upgrading 800 more UH&FWCs (in addition to the current 1441) by 2016 to ensure 24/7 delivery care. Reasons behind the current low level of only 0.3 percent delivery by FWV need to be analyzed and addressed in the operational plan. Important issues to consider in this plan are the number of FWVs required for 24/7 delivery care, ensuring availability of FWVs as residential providers, and need-based placement of CSBAs at UH&FWCs to provide delivery care services (task shifting).
- Improve quality and availability of services:
 - o In 2011, 15 percent of the total 29 percent facility deliveries took place in the private sector. Compared to 2007, utilization of the private sector facilities for delivery care increased by 91 percent compared with a 49 percent increase in the public sector. Poor quality of care and non-availability of required qualified providers may have contributed substantially towards the poorer showing in the public sector.
 - o It is not new that designated centers do not have both a surgeon and an anesthetist, resulting in a poorly effective EmOC service delivery system in the public sector. With approximately 1000 anesthetists in the country, a substantial proportion of the EmOC centers do not have an anesthetist retained and cannot provide services. The following approaches are worth considering:
 - Human resource (HR) policy related to transfer, posting, study leave and deputation needs to be revisited and enforced properly

- Provision of incentives in various forms should be enhanced to promote retention at sites of posting
- While many countries allow nurses to be trained as anesthetists, Bangladesh does not. It is unethical not to allow task shifting and thus deprive a large majority of poor women of life saving services. Medical professional bodies should take a proactive role both to facilitate retention of anesthetists at their places of posting and to support anesthetist training for nurses.

Over 70 percent of births take place at home. We need effective strategies to ensure that home births are assisted by skilled birth attendants.

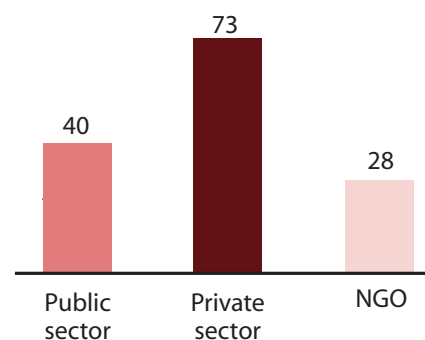
The statistics are grim; only 4 percent of home births are attended by medically trained providers. As the transition to facility delivery will take considerable time, policy makers should seriously explore carefully calculated strategies to increase skilled assistance for home deliveries.

- Ensure skilled care at birth for the large majority delivering at home:
 - o Deploying community based skilled birth attendants (CSBA) is the only on-going public sector program to address skilled care at home. This program has failed to reach pregnant women. CSBAs are providing only 0.4 percent of the total ANC and conducting only 0.3 percent of deliveries. If the decision is to continue with this program, the current program design, which is largely training-only, needs to be reviewed and revised to address the commonly cited weaknesses.
 - o The current system's inadequacies need to be addressed by: revising job descriptions and re-distributing work areas of CSBAs, creating effective supervision and monitoring mechanisms, streamlining CSBA performances in the mainstream management information system and, ensuring the supply chain of essential commodities like oxytocin and delivery kits. Without these improvements, increasing skilled birth attendance at deliveries is unlikely.
 - o Instead of opting for and investing in universal coverage, CSBA programs should focus on hard-to-reach, underserved and low performing areas; lessons from initiatives with private/NGO sector CSBAs should be reviewed and adopted to complement gaps.

Quality of care: are we adhering to the standard indications for caesarian sections?

- Enforce standards of quality
 - o The proportion of births delivered by c-section is an internationally accepted proxy for access to management of complications of delivery. In Bangladesh, the current proportion of 17 percent c-section rate is slightly higher than the globally acceptable level of 15 percent. Every 3 in 5 women delivered in a facility in Bangladesh undergo a c-section. The rate is twice as high in urban as in rural areas and higher among first births than later births. About 73 percent of deliveries in private sector facilities are by c-section. These statistics give rise to several questions: Are we adhering to the standard indications for c-section? Where is the regulation or quality control? Who is responsible?
 - o In Bangladesh, standards of quality of care are neither systematically enforced nor linked to performance appraisal, accreditation or renewal of professional license. This must be addressed immediately. Finalization of the standard operating procedures for maternal-newborn care will serve as a national reference point for quality assurance at all levels. Again, here is a scope for professional bodies to be instrumental in supporting the MOH&FW.

Figure 3: Proportion of C-sections by Place of Delivery among Facility-Based Births, BDHS 2011

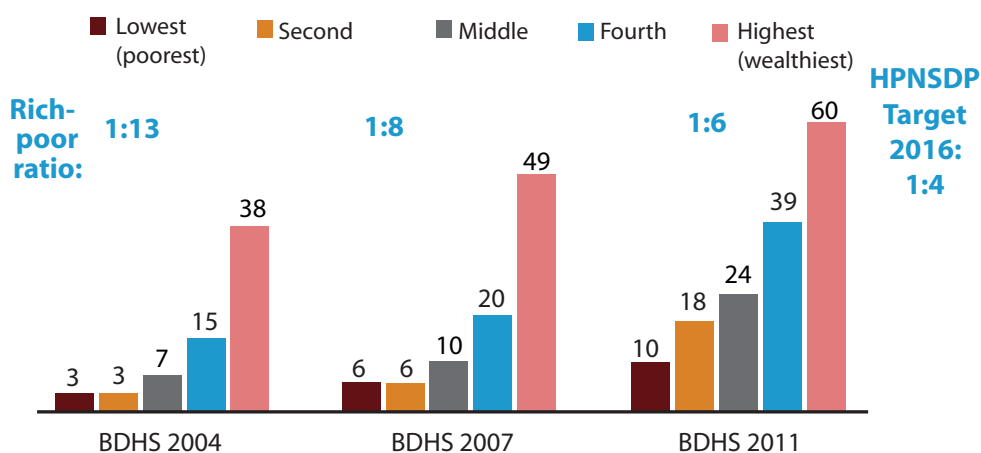


Inequity in use of maternal health services by socioeconomic status and region is common. Programming to address inequities needs to be expanded and sharpened.

•Reach the poor

- o A common consistent feature is lower coverage for maternal-newborn care utilization and behavioral practices among the poor. The HPNSDP sets a target for achieving rich-poor ratio (RP) of 1:4 for facility delivery by 2016. The RP has narrowed considerably from 1:13 in 2004 to 1:6 in 2011. The RP ratio is 1:3 for antenatal care from medically trained providers, 1:6 for facility delivery and 1:14 for delivery by c-section; as the service level gets more advanced, the equity gap widens.

Figure 4: Facility Delivery by Wealth Quintiles: the Rich-Poor Ratio

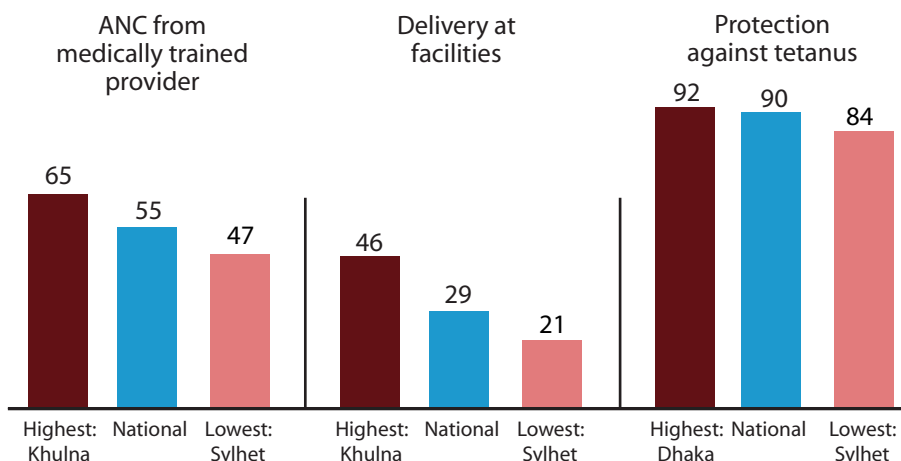


- o With increasing utilization of the private sector, which is likely to grow faster in urban areas, rural mothers, especially the most marginalized, will continue to be deprived of health care. Even the NGO services are reaching more urban mothers compared to rural, and the rich-poor disparity remains in this sector as well.
- o Pro-poor strategies (like the demand side financing) need to expand their coverage as well as sharpen their focus to proactively reach families from lower socioeconomic strata. With more flexibility, NGO services should be able to re-align to prioritize the underserved.

•Improve maternal and newborn care in Sylhet and Chittagong

- o Marked differences are observed among seven divisions in terms of performance. The common feature across all indicators is that Khulna tops the list and Sylhet remains lowest. While around 90 percent of the newborns in most of the divisions are protected against tetanus, the proportion is only 84 percent in Sylhet. This pattern has been a consistent trend over the

Figure 5: Geographical Disparities BDHS 2011



several survey periods. Though some projects are focusing on the underperforming divisions like Sylhet and Chittagong, effective differential or targeted program approaches are yet to be undertaken by the MOH&FW.

- o Forty-nine percent of deliveries in Khulna division were assisted by skilled providers - a level expected to be achieved nationally by 2016 as stated in the HPNSDP. The rate in the remaining divisions ranges from 24 percent in Sylhet to 32 percent in Dhaka. Factors contributing towards Khulna's success need to be analyzed to garner replicable lessons.

Improve newborn care through effective strategies that build caregivers' knowledge and practice of appropriate care and also ensure care takes place soon after birth

•Further improve behavior change

- o Encouraging trends are observed in immediate newborn care practices between 2007 and 2011; more families are following recommended practices including wrapping newborns, properly caring for the umbilical cord and starting breastfeeding soon after delivery. Also, 90 percent protection against neonatal tetanus is a commendable achievement. Over the last decade the care of newborns has been emphasized both internationally and in Bangladesh. National Neonatal Health Strategy and Guidelines (NNHS) have been formulated in 2009, and subsequently large scale programs, including IMCI, have started incorporating newborn-focused approaches. Contribution of a coordinated professional advocacy and monitoring group engendering policy changes has been recognized.
- o Except for use of boiled instruments for cord cutting, levels of other practices still remain low. Alarming, only 2 percent newborns received all recommended elements of immediate newborn care. This indicates lack of information among families as well as a lack of standardization in provider training. Achievement of the MDG4 target by 2015 and the 'Child Survival Call to Action: Promise Renewed' target by 2035 is mostly contingent upon reducing neonatal mortality. National behavior change communication (BCC) campaigns are needed to promote immediate and essential newborn care with special attention to first time mothers.

•Devise consensus approaches for PNC for newborn

- o In line with the WHO-UNICEF Joint Statement, Bangladesh has adopted the policy for early postnatal newborn care visits and management of the sick newborn in the NNHS. A practical operational strategy is yet to be devised to reach the large number of infants born at home. Visits by a trained community based worker within 48 hours of birth have been found to be significantly associated with lower newborn mortality and longer duration of breastfeeding. However, we need to review and document the existing local experiences in providing home- based newborn care and customize strategies thereafter.

Expand newborn related information in BDHS

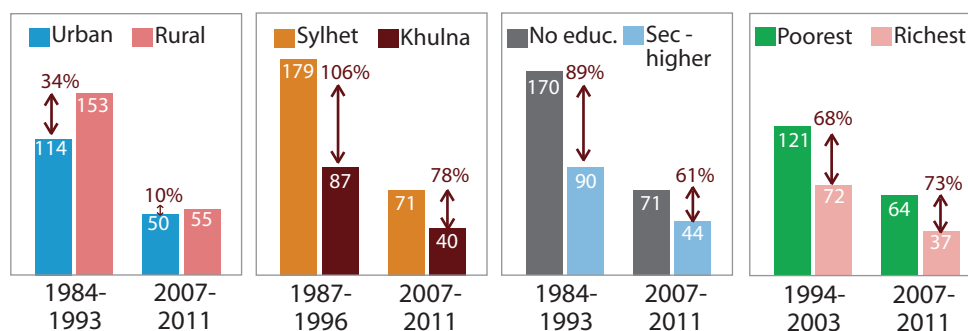
- In the current DHS, data are collected primarily on parental care of the newborn. Indicators related to program performance and care utilization in regard to the largest three newborn killers namely birth-asphyxia, infection, and prematurity need to be included in the BDHS. This will help monitor the progress of national programs to reduce newborn mortality which currently constitutes more than 60 percent of under-five deaths.

Child Health and Survival

Bangladesh is making exceptional progress in improving child health and survival and is on track to achieve MDG 4 targets well before 2015. However, gains have been slow among the poor and the less educated.

- The under-5 mortality rate in Bangladesh has been declining by more than 5 percent per year, and is now 53 deaths per 1,000 live births in the period 2007-11 (mid-year: 2009). At this rate of reduction, the current under-5 mortality in Bangladesh may already be lower than the MDG 4 target of 48.
- A key aspect of Bangladesh's achievement is a significant reduction in disparities in under-5 mortality (Figure 1):
 - o Girls are biologically stronger than boys and are less likely to die during childhood. However, in many developing countries, particularly in South Asia, discrimination against the girl child often reverses natural mortality risks, and girls are more likely to die than boys. This has certainly been true in Bangladesh. Recent data suggest that this situation may be improving. In the 2011 Bangladesh Demographic and Health Survey (2011 BDHS), girls are 12 percent less likely to die by age five than boys.
 - o Urban-rural and regional disparities have also declined substantially, for example, the differences between Khulna and Sylhet.
 - o In contrast, disparities by education have declined only slightly, and by wealth, not at all. The poor are not gaining at the same rate as the rich.
- These findings highlight the need to target programs and interventions to the poor. In Bangladesh, public health programs have not done very well in targeting poorer populations. Reaching the poor will require redesigned program approaches and investments in tools, human resources and skills.

Figure 1: Disparities in Under-5 Mortality
Deaths per 1,000 live births



The causes of under-5 deaths are changing in Bangladesh (Figure 2). The intervention package being delivered by the public health system must also adapt to this change.

- Diarrhea has been considered a major cause of child morbidity and mortality in Bangladesh; it accounted for almost one-fifth of all under-5 deaths in 1988-93. In contrast, diarrhea caused only 2 percent of all under-5 deaths for the period 2007-11. This is very good news. Bangladesh has sustained the use of oral rehydration salts (ORS), at about 77-78 percent of all children sick with diarrhea since 2007. The use of zinc along with oral rehydration therapy (ORT) has increased from 20 percent in 2007 to 34 percent in 2011. This is an intriguing achievement given the spotty supply of zinc in the public sector, but probably not a surprise since almost four-fifths of the ORS used was obtained from private sector

sources which are also now the primary source of zinc. Since zinc is considerably more expensive than ORS, further increases in its use may be unlikely unless it becomes available in the public sector.

Figure 2: Trends in under-5 cause of death pattern in Bangladesh

Bangladesh DHS	Main Cases of Under-5 Deaths
1993-94	ARI/Pneumonia, Diarrhea, Perinatal
1996-97	ARI/Pneumonia, Perinatal, Diarrhea
2004	ARI/Pneumonia, Possible serious infection, Diarrhea, Birth asphyxia
2011	ARI/Pneumonia, Possible serious infection, Birth asphyxia, Drowning

- Drowning is the one cause of death that has not declined over time. With reductions in other causes of deaths, drowning is now responsible for 43 percent of all deaths between ages one and five. Data from the ICDDR,B surveillance in Matlab indicate that the highest risk of drowning is in the second year of life¹. Even though the risk of drowning is very age specific, the number of deaths from drowning is large enough that it is now one of the most important causes of under-5 deaths.
 - o Tested and effective interventions to prevent drowning are not yet available, and our understanding of the behavioral factors that contribute to drowning is limited. Possible interventions being evaluated now include playpens and crèches. Still, it is likely to be a few more years before effective interventions can be scaled up.
- Respiratory (mostly pneumonia) and other serious infections are associated with almost two-fifths of all under-5 deaths. This is despite a 37 to 60 percent reduction in death rates attributable to these causes. Most deaths due to infections occur in the neonatal period.
 - o Reducing the number of deaths from pneumonia requires both prevention and management strategies. The government introduced the *Haemophilus influenzae* type b (Hib) vaccine in its Expanded Program on Immunization in 2009 and is planning to introduce vaccines against pneumococcal disease in 2013. Hib and pneumococcus are the two most frequent bacterial agents of childhood pneumonia, and the introductions of vaccines against them will go a long in reducing the number of cases and deaths².
 - o Management of children sick with respiratory and other serious infections remains a challenge. According to the 2011 BDHS, only slightly more than one-third of sick children received care from a health facility or health worker for treatment of acute respiratory infection (ARI), and this has changed only slightly since 2007. In about half of all ARI cases, care was sought from drug stores and village doctors.
 - o While seeking treatment from a trained provider is the program objective, the true goal is treatment with an appropriate antibiotic. The 2011 BDHS measured treatment with antibiotics for the first time in Bangladesh, with some surprising results. Seventy percent of all ARI cases identified in the survey were being treated with an antibiotic. This is a surprisingly high level of antibiotic use, possibly due to the high rates of care received from informal providers (drug stores/village doctors), but which may also explain the declines in deaths due to ARI and infections. Still, the unregulated distribution of antibiotics by these informal providers carries real potential for overuse and inappropriate use, and consequent risk of increasing drug resistance.
 - o In order to improve treatment of infections among children, programs in Bangladesh have adopted community case management approaches through the training and deployment of community-based health workers and also interventions to improve the quality of care of informal providers. While the jury is still out, experiences with both approaches have not been very promising in Bangladesh. Some rethinking is needed to find the best approach for Bangladesh, which is the most densely populated

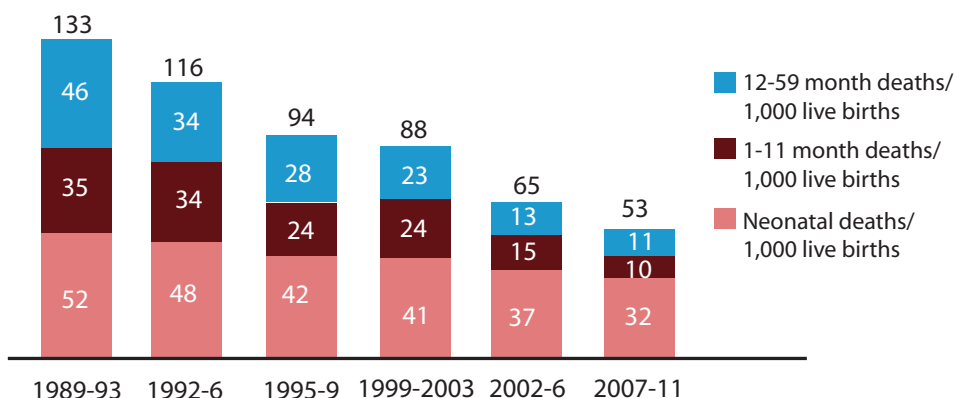
country in the world (excluding city states) and where distances to formal health facilities is usually not a limiting factor. Community case management through community-based health workers may best be used in areas with limited access to health facilities, which will also allow the logistic and supervision systems to be focused in these program areas.

- o Case management in the community or at first-level facilities still needs to include referrals to hospitals for the more severe cases. As we have mentioned after the 2007 BDHS, critical investments are needed to improve and sustain the quality of care at the referral hospitals. This should involve human resources and skills, health system support, standard operating procedures, and quality assurance systems.

Reducing neonatal mortality is absolutely key to future progress and will require effective strategies for preventing and managing neonatal infections and prevention of deaths due to asphyxia and preterm birth

- Deaths in the first month of life now account for more than 60 percent of all under-5 deaths, up from 39 percent in 1989-93. While rate of reduction of neonatal deaths has accelerated (3.3 percent since 2001 compared to 2.4 percent per year in the previous 10 years), the increasingly high proportion of neonatal deaths presents very specific challenges for the future (Figure 3).

Figure 3: Trends in Under-5 Mortality in Bangladesh

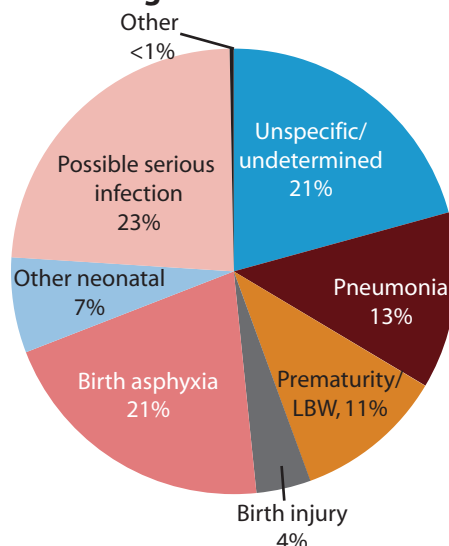


- Infections, including pneumonia, kill just over one-third of neonates in Bangladesh (Figure 4).

- o After the 2007 BDHS, we had recommended that management of neonatal infections can be done most effectively through community-based efforts. This has not happened. Results are expected soon of a recently concluded operations research study assessing alternative approaches to managing neonatal infections in the community. Preliminary findings from this research and other programs in Bangladesh, indicate that using community-based health workers (CHW) to recognize and treat neonatal infections may not be very effective. There is increasing emphasis instead on improving use of health care facilities, by improving the quality and reliability of services and making transportation more available and dependable.

- Asphyxia is the second most important cause of neonatal deaths (Figure 4), despite the 51 percent reduction in this

Figure 4: Distribution of Neonatal Causes of Death, Bangladesh 2006-2011



cause of death since 2004. It is not exactly clear what has contributed to this decline. The percentage of deliveries attended by skilled birth attendants has increased, reducing the likelihood of asphyxia which is usually associated with prolonged and difficult labor and other complications of delivery. In addition, there has been an increased emphasis on newborn health in most community-based programs currently being rolled out.

- o Increasing facility-based deliveries and home deliveries with assistance from a medically trained provider are key approaches to reducing asphyxia. These approaches must receive continued and adequate attention and investments.
- o The Helping Babies Breathe (HBB) initiative was rolled out nationally in mid-2011. Thus it would have had limited impact on neonatal mortality as measured in the 2011 BDHS. A process evaluation of HBB is underway, and results are expected in early 2013.
- Preterm birth is another important cause of neonatal deaths. Bangladesh is now at an early stage of discussions on interventions to prevent preterm birth and subsequent mortality. The initial focus is on testing the use of steroids to reduce the risk of death in babies born too early.
- In the last few years, we have also seen an effort to establish specialized newborn care units at district and upazilla hospitals. While these units are very much needed, they also require ongoing health systems' support to sustain them.

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Nutrition

Childhood malnutrition in Bangladesh is still common.

Childhood undernutrition includes growth restriction of the child in the mother's womb, low birth weight (LBW), malnutrition, and micronutrient deficiencies. It seriously impairs children's physical growth and mental development. A child suffering from undernutrition is likely to grow into a malnourished adult who will not be able to contribute adequately to the society and to national development. Eliminating and controlling undernutrition is essential. Over the last decade, childhood undernutrition in Bangladesh has declined. But the rate of decline is not sufficient.

- Stunting or chronic malnutrition is the most common manifestation of protein-energy malnutrition (PEM). The rate of reduction in stunting from 2004 to 2011 is only 1.3 percentage points per year. This should ideally have been 2-3 percentage points per year. Table 1 compares childhood PEM in Bangladesh with Uganda in sub-Saharan Africa and Nepal in South Asia. Despite its greater gross domestic product (GDP), Bangladesh has a higher rate of stunting among children under age five than Nepal and Uganda (Figure 1).

Figure 1: Childhood protein-energy malnutrition rates of Bangladesh compared with Uganda and Nepal

Country	GDP per capita, US\$	Stunting prevalence (%)	Wasting prevalence (%)	Underweight prevalence (%)
Bangladesh	687	41.3	15.6	36.4
Nepal	436	40.5	10.9	28.8
Uganda	523	33.4	4.7	13.8

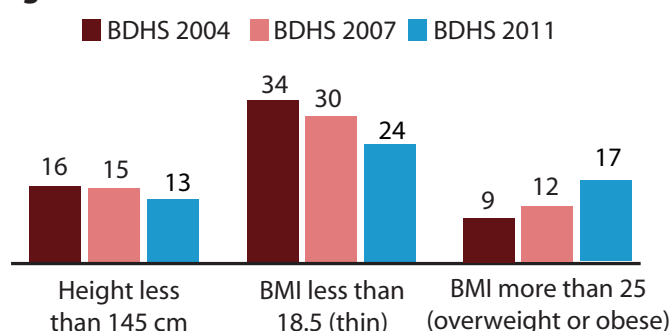
Stunting, wasting and underweight are height-for-age, weight-for-height and weight-for-age below -2 SD, respectively; data are from country-specific 2011 Demographic and Health Surveys.

- The prevalence of wasting or acute malnutrition has remained virtually unchanged over the last decade. A total of 16 percent of under-five children in Bangladesh are wasted, higher than Uganda and Nepal. About 600,000 children under age five suffer from severe acute malnutrition and are at risk of death and severely impaired mental development.
- More than one-third of children in Bangladesh are underweight compared to 29 percent of children in Nepal and only 14 percent of children in Uganda. Given the current rate of underweight children, Bangladesh is unlikely to achieve the MDG1 target of 28 percent by 2015.

Maternal nutrition has not improved much

- In spite of reduction in maternal malnutrition over the last decade, a quarter of women still suffer from malnutrition (Figure 2). Thirteen percent of women age 15-49 are shorter than 145 centimeters; this has decreased by only 2 percentage points since 2004.

Figure 2: Trends in Maternal Nutritional Status



- An alarming finding from the 2011 BDHS is the increase in overweight and obesity (BMI over 25) among women from 12 percent in 2007 to 17 percent in 2011. This has grave implications for health since overweight increases the risk of chronic diseases such as type II diabetes, elevated blood pressure and heart disease.

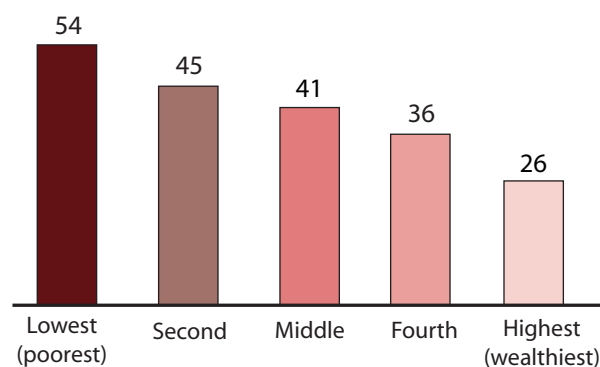
Anemia continues to be a major nutritional problem in children and women

- Anemia results in poor body defense against infections, lower physical work capacity, poor physical growth and impaired learning. In women, anemia increases the risk of complications during childbirth, LBW and maternal and neonatal deaths. The economic cost of anemia in Bangladesh is estimated to be 7.9 percent of GDP. Although deficiency of iron in the diet is the most common cause of anemia, the results of the recently conducted National Micronutrient Survey suggest that vitamin B12 and folic acid deficiencies are also important causes of anemia.
- Half of all infants and young children aged 6-59 months suffer from anemia. Its prevalence is highest (79 percent) in the age group 9-11 months, a period when complementary feeding practices are poor, and diets often lack animal source food which provides most of the iron and protein required for producing hemoglobin. Approximately 16.5 million women of childbearing age in the country suffer from anemia. Their infants are also more likely to have low iron stores and to become anemic.

Food availability does not necessarily imply good diet

- Although 65 percent of women live in households with food security, one in five food secure women are malnourished. Even in the wealthiest households, 26 percent of children are stunted (Figure 3). Therefore, availability and access to staple food is not enough for good nutrition – a balanced, nutritious diet is required for optimal growth, nutrition and mental development.

Figure 3: Stunting among Children under Age 5 by Wealth Quintile, BDHS 2011



The way forward to improve nutrition in Bangladesh

•Life cycle approach to break the vicious cycle of undernutrition

Most marriages in Bangladesh take place during adolescence, and conception soon follows marriage. Since one-fourth of adolescent girls are malnourished in the country, the risks of growth restriction of the child in the mother's womb, LBW and subsequent child malnutrition form a vicious cycle. This cycle needs to be broken by strategies directed to the life cycle to improve nutrition of adolescent girls, infants and young children and women. As an intervention, adolescent girls should receive nutrition education from community outposts and schools. They also should take iron-folic acid tablet once a week.

•Scaling up of proven nutrition interventions is key to improving nutrition

- o Interventions that can improve nutrition include: counseling for change in behavior, breastfeeding, appropriate complementary feeding, vitamin A supplementation, zinc as part of treatment of childhood diarrhea, iron-folic acid or multiple micronutrient supplementation during pregnancy and lactation, use of iodized salt, treatment of acute malnutrition, and others. Complementary feeding can be improved by counseling mothers to prepare home food using multiple food ingredients, such as rice, lentils, vegetables, small fish, and vegetable oil and to feed their children three or four times daily. Fruits and vegetables should also be given to the children as finger food.

- o Nutrition-sensitive or indirect interventions include improving female literacy, women's empowerment, and creating livelihoods, etc. Childhood malnutrition is linked with poor sanitation and hygiene. Mothers should be counseled on hygienic preparation of food. Communities need to be mobilized for making collective efforts for sanitary latrines and for safe disposal of animal feces.

- Promoting dietary diversity through nutrition-friendly agriculture**

Production of pulses, fruits and vegetables, poultry, livestock and dairy has to be increased and made accessible so that diet becomes balanced and nutritious and does not consist only of staple foods

- Preventing overweight and obesity**

For averting the increase in the burden of overweight and obesity, preventive interventions should be implemented in educational institutions and communities, especially in urban areas where women are more than twice as likely to be overweight or obese as women in rural areas.

- Health care outposts should be made fully functional**

It is imperative to have a workforce assessment in terms of staff number, competency and training requirements especially at the primary health care level (the Community Clinics, Union sub-Centers, etc) for ensuring appropriate staff-beneficiary ratio and job descriptions that specifically addressing nutrition. These primary health care outposts need to be made fully functional by providing the required staff and other resources.

- Multisectoral approach to combat undernutrition**

The Ministry of Health and Family Welfare should involve relevant ministries and other stakeholders for a meaningful multisectoral approach to improve food security, safety nets for the marginalized, hygiene and sanitation, and creation of livelihoods.

Hypertension and Diabetes

Similar to other developing countries, Bangladesh is experiencing a shift from infectious, communicable diseases to chronic, non-communicable diseases (NCDs) like cardiovascular diseases, diabetes, cancer, chronic respiratory diseases, and injury. The key to prevention and control of NCDs is having up-to-date, population level information on the major NCDs as well as the biological intermediate risk factors. Globally, high blood pressure and elevated blood glucose and plasma lipid levels are the most prevalent¹ NCD risk factors. In Bangladesh, cardio and cerebrovascular diseases are the leading causes of death², and by 2030, the country will have one of the world's largest populations living with diabetes³ The changing population age structure, primarily due to fertility decline and a steady increase in life expectancy, will continue to fuel the shift towards these two diseases in the future.

The 2011 Bangladesh Demographic and Health Survey (BDHS) includes for the first time, measurements for blood pressure and fasting blood glucose among a subsample of women and men age 35 and older.

Current Health-sector program strategies for NCDs in Bangladesh

- **GOB identifies NCD as a priority issue.** NCDs are now considered to be a major health threat and the Government emphasizes the management of NCDs. The current health sector program, HPNSDP 2011-2016, includes expanding access to health services for NCDs as one of the major program strategies.
- **Updated NCD policies and strategies available.** The Strategic Plan for Surveillance and Prevention of Non-communicable Diseases in Bangladesh has been updated for 2011-2015, focusing on the preventive measures. As tobacco use is a major risk factor for developing NCDs, Bangladesh has ratified the Framework Convention on Tobacco Control (FCTC) and passed the Smoking and Tobacco Product Usage (Control) Act in 2005. The National Cancer Control Strategy and Plan of Action 2009–2015 has also been adopted.
- **NCD Control Operational Plan (OP) implements MOHFW's NCD-related activities.** The OP on Non-communicable Diseases Control (NCDC) under the Directorate General of Health Services (DGHS) is primarily responsible for carrying out the GOB's initiatives. In HPNSDP, the OP on NCDC has been allocated USD 70 million for 2011-16, which is substantially higher than the USD 31 million allocated for the period of 2003-2011. The major activities of NCDC are to conduct training on NCD screening and management for health care providers at district and upazila levels, organize awareness-building workshops on injuries and pilot screening and management of selected NCDs at the upazila level facilities.

Hypertension and Diabetes: Current Scenario

- **The population with hypertension and diabetes in Bangladesh is alarmingly high.**
 - o Overall, one in three women and one in five men age 35 and older are hypertensive. In addition around one in four women and men are at pre-hypertensive stage (Figure 1). Thus, approximately 12 million people in Bangladesh are hypertensive and another 13 million are pre-hypertensive. As the population is aging, by 2025, about 19 million people will be hypertensive and another 20 million will be pre-hypertensive (Figure 2). This projection is based on the very optimistic assumption that current prevalence rates will remain the same for the next 15 years.

- o One in nine women and men age 35 and older has diabetes and one in every four is pre-diabetic (Figure 1). This translates into 5 million people with diabetes and 12 million people with pre-diabetes. These figures are projected to be 8 million and 19 million people respectively in 2025 if current prevalence rates remain (Figure 2).

Figure 1: Prevalence of Hypertension and Diabetes among Men and Women Age 35 and Older

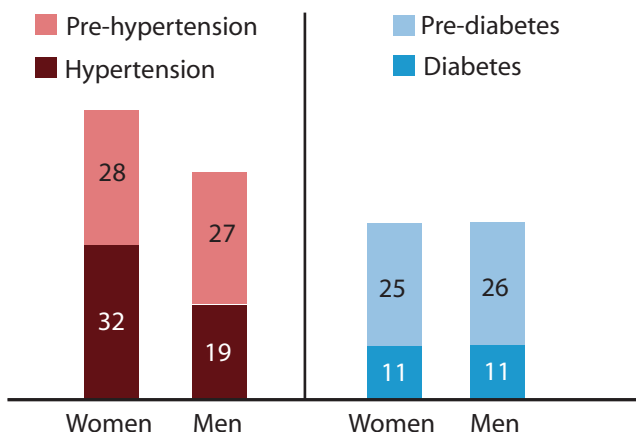


Figure 2: Current and Projected* Number of People Living with Hypertension and Diabetes

*The projection is based on the current (BDHS 2011) prevalence rate for both hypertension/pre-hypertension and diabetes/pre-diabetes. However the prevalence is likely to go up with the change in the population age structure and associated risk factors – obesity and overweight, unhealthy diet, substance abuse and physical inactivity.

	2011	2025
Hypertensive	12 million	19 million
Pre-hypertensive	13 million	20 million
Hypertensive AND pre-hypertensive	25 million	39 million
Diabetic	5 million	8 million
Pre-diabetic	12 million	19 million
Diabetic AND pre-diabetic	17 million	27 million

•**Costs for treatment are very high.** Because NCDs are chronic and lead to serious complications, costs associated with treatment and time off work are huge. Given the current estimated size of the diabetic population in Bangladesh, nearly USD 150 million (estimated as USD 28 per person per year, IDF 2012) will be required every year. This figure will increase to USD 262 million in a short time, as one-third of the people with pre-diabetes will go on to develop diabetes⁴. USD 262 million is equivalent to 24 percent of the total MOHFW budget in 2010-11⁵.

•**Awareness and medication compliance are low.**

- o According to the 2011 BDHS, 45 percent of hypertensive women and 57 percent of hypertensive men are not aware that they have the disease.
- o In the case of diabetes, the rates are even higher with almost 60 percent of diabetic women and 65 percent of diabetic men not aware that their fasting plasma glucose levels are higher than normal.
- o Forty five percent of women and 36 percent of men with hypertension are taking medication for their condition, but more than half of them do not have their blood pressure controlled.
- o About one in three women and men with diabetes is taking medication, but over 60 percent still have fasting plasma glucose above the normal levels.
- o Uncontrolled hypertension and diabetes lead to severe complications⁶. Low level of awareness also indicates that only a minority of people with hypertension and diabetes gets diagnosed and an even smaller proportion receives proper treatment.

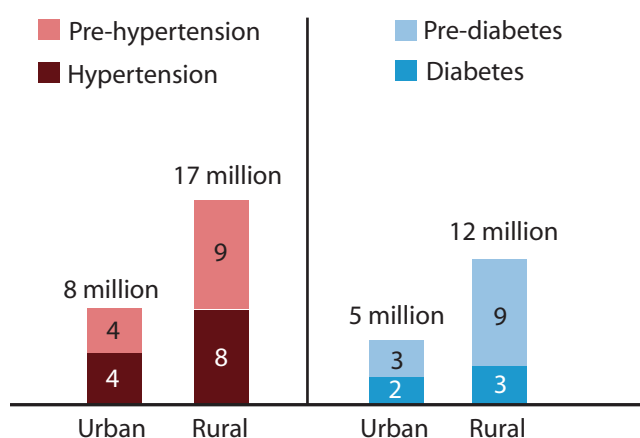
• **Population with hypertension and diabetes is higher in rural areas than in urban areas.** Although the rate of hypertension and diabetes is higher in urban areas, the actual number of people with hypertension and diabetes is higher in rural areas reflecting the greater rural population in Bangladesh. The rural-urban difference in the number of people with pre-hypertensive and pre-diabetic conditions is even greater (Figure 3).

• **NCD management is available at tertiary levels of care.** In the public sector, management of major NCDs is primarily provided by the tertiary-level national institutes (NICVD, NCCRF&HD, NIKDU, NICRH and NIMHR), all based in Dhaka.

These institutions emphasize acute clinical management and control, rather than reducing and preventing risk factors. Outside the public sector, large, not-for-profit organizations like the Diabetic Association of Bangladesh (BADAS) and National Heart Foundation Hospital and Research Institute (NHFH&RI) have been providing diabetic and cardiac services. However, BADAS has an extensive network of clinics across the country for people with diabetes. Other than this, all public medical college hospitals provide department-based clinical support for NCD management.

• **Primary Health Care delivery largely overlooks the population groups most at risk for hypertension and diabetes.** The Government's health service delivery system focuses mainly on women of reproductive age and on children. Around three-fourths of the total public health sector program financing is directed to maternal and child health and family planning services delivery, physical facilities development, and drug procurement. The health needs of adult males and older populations are not met by the primary health care facilities. Non-government organizations (NGOs) also focus on providing primary health care services in both urban and rural areas.

Figure 3: Number of Persons with Diabetes and Hypertension in Urban and Rural Bangladesh
Number in millions



Policy Recommendations

• **Focus on hypertension and diabetes as a public health threat.** Hypertension and diabetes affect a significant proportion of the population. This number will rapidly swell, as Bangladesh's population ages. Hypertension and diabetes are chronic conditions, requiring lifelong monitoring and management and massive health care costs. To deal effectively with this major public health threat the following three broad strategies should be considered:

Prevention:

- o Effective prevention strategies are absolutely critical if the country is to avoid the huge treatment cost burden. Evidence shows that prevention of diabetes and hypertension is much less expensive and offers greater population benefits than treatment.
- o Building awareness in the community, among health care providers, and among policy makers is essential for preventing hypertension and diabetes. Prevention messages should address the lifelong consequences of having these health conditions.
- o A multi-sectoral approach to prevention is needed including the use of traditional and mass media to promote healthy diet, physical activity, and to prevent tobacco and drug use. Mass awareness and promotion activities should be complemented by regulatory options that provide an effective package of incentives and disincentives to support life style changes.

Screening:

- o Periodic screening leads to early detection and delays complications. Establishing simple, low-cost screening for hypertension and diabetes at the community level through primary health care facilities, backed up by adequate health system support as well as encouraging older men and women to come in for screening is essential.
- o NCDC OP has been piloting hypertension and diabetes screening in one Upazila Health Complex (UHC). This needs to be expanded to all UHCs and gradually down to the Community Clinics (CC) as well.
- o The private sector, including pharmacies in both rural and urban areas, and “workplace based prevention and screening intervention” can play an important role in screening and referral.
- o An efficient referral system needs to be established from the screening points to facilities for effectual management and treatment of people diagnosed with NCDs.

Management:

- o The 2011 BDHS shows low levels of treatment compliance and limited success in controlling diabetes and hypertension. Greater efforts are needed to raise the quality of care provided by health care workers and in facilities, to include effective counselling of patients, and to improve clinical management. As noted above, behaviour change communication (BCC) can also promote compliance with medication. Prevention, early detection and compliance with medication can achieve substantial savings in national health expenditures. Studies indicate, for example, that the cost of amputating a diabetic foot is 5.5 times higher than the appropriate treatment to properly manage the condition⁷
- Learn from, and implement best practices.** There exist large, community-based interventions which have successfully prevented hypertension, diabetes and associated risk factors. Bangladesh may learn from these programs—the Isfahan Healthy Heart Program⁸ in Iran, CINDI Program⁹ in Europe and Canada, and the North Karelia Project¹⁰ in Finland—and adapt and implement successful models for promoting healthy lifestyle, optimizing treatment through community-level pharmacies, and reducing the burden of hypertension and diabetes in the general population over time.
- Expand and strengthen the provision of clinical management.** Establishing effective referral system at the community and union-level health facilities would ensure that the patients are getting proper and timely treatment. Proper training, on-the-job practice with guidelines and effective supervision and monitoring can ensure proper treatment protocol. Availability of essential drugs for managing hypertension and diabetes at the UHC and District Hospital levels needs to be ensured to strengthen service provision.
- Interventions identified in the HPNSDP Strategic Plan need to be implemented fully.** The Strategic Plan for HPNSDP 2011-2016 outlined a number of priority activities to address the increasing burden of major NCDs. From the identified activities, the following should be implemented on a priority basis:
 - o Creating greater awareness through mass-media campaigns for the control of unhealthy diet and lifestyle related major NCDs with the assistance of the Bureau of Health Education and in partnership with local government bodies and the private sector
 - o Strengthening BCC activities at the community level for promoting healthy lifestyle and injury prevention
 - o Carrying out screening activities for early detection of hypertension, diabetes and cancers
 - o Exploring other cost-effective prophylactic measures, including drugs, to reduce hypertension, and
 - o Establishing an effective NCD surveillance system under DGHS in public and private sector.

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The Policy Briefs have been prepared by:

Dr. Peter Kim Streatfield, icddr,b
 Dr. Shams El Arifeen, icddr,b
 Dr. Tahmeed Ahmed, icddr,b
 Dr. Ishtiaq Mannan, MCHIP, Save the Children
 Dr. Shamim H. Talukder, Eminence
 Mr. Karar Zunaid Ahsan, MEASURE Evaluation

With contributions from:

Dr. Kanta Jamil, USAID, Bangladesh

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