

Out-of-Pocket Spending on Maternal and Child Health in Asia and the Pacific

Impact of Maternal and Child Health Private Expenditure on Poverty and Inequity in Bangladesh

Out-of-Pocket Payments by Patients at Ministry of Health and Family Welfare Facilities in Bangladesh and the Impact of the Maternal Voucher Scheme on Costs and Access of Mothers and Children

TECHNICAL REPORT B



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Technical Report B



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PREFACE

This report was prepared by the Institute for Health Policy in Sri Lanka under an Asian Development Bank (ADB) technical assistance project, *Impact of Maternal and Child Health Private Expenditure on Poverty and Inequity (TA-6515 REG)*. The Institute for Health Policy and authors gratefully acknowledge the funding made possible by ADB that was financed principally by the Government of Australia.

Australia is taking a leading role in global and regional action to address maternal and child health. A key part of this is to strengthen the evidence for increased financial support and the most effective investments that governments and donors can make to meet Millennium Development Goals 4 and 5. Australia supported this technical assistance project as a part of this commitment.

ADB's vision is an Asia and Pacific region free of poverty. Its mission is to help its developing member countries reduce poverty and improve the quality of life of their people. Despite the region's many successes, it remains home to two-thirds of the world's poor: 1.7 billion people who live on less than \$2 a day, with 828 million struggling on less than \$1.25 a day. ADB is committed to reducing poverty through inclusive economic growth, environmentally sustainable growth, and regional integration.

Based in Manila, ADB is owned by 67 members, including 48 from the region. Its main instruments for helping its developing member countries are policy dialogue, loans, equity investments, guarantees, grants, and technical assistance.

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The fieldwork in Bangladesh was carried out with the support of the Health Economics Unit, Ministry of Health and Family Welfare, who collaborated on and facilitated the Facility Efficiency Survey 2011 and its linked Patient Exit Survey 2011, and who provided access to critical data sets and information required for this analysis. The authors express their sincere gratitude, in particular, to Prasanta Barua, Former Additional Secretary and Line Director; Hafizur Rahman, deputy chief; and Ahmed Mustafa, Senior Assistant Chief, Health Economics Unit for their continuous support and encouragement.

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CURRENCY EQUIVALENTS

(as of 21 November 2012)

Currency Unit	–	taka (Tk)
Tk1.00	=	\$0.012
\$1.00	=	Tk79.85

ABBREVIATIONS

DHS	–	Demographic and Health Survey
DSF	–	demand-side financing
FES	–	Facility Efficiency Survey
HIES	–	Household Income and Expenditure Survey
MNCH	–	maternal, neonatal, and child health
MOHFW	–	Ministry of Health and Family Welfare
PES	–	Patient Exit Survey
UHC	–	upazila health complex

NOTE

The fiscal year (FY) of the government ends on 30 June. FY before a calendar year denotes the year in which the fiscal year ends, e.g., FY2007 ends on 30 June 2007.

EXECUTIVE SUMMARY

Asian Development Bank technical assistance funded the Bangladesh Patient Exit Survey (PES) 2011 to understand the challenges in improving the provision of and access to maternal, neonatal, and child health (MNCH) services in Bangladesh. The objectives of the study were to quantify out-of-pocket costs faced by patients in Ministry of Health and Family Welfare (MOHFW) healthcare facilities, with a special focus on mothers and children, and to assess the impact of demand-side financing (DSF) pilot schemes on out-of-pocket costs and utilization of MNCH services.

The PES 2011 involved an exit survey of 2,080 inpatients and 3,080 outpatients at a nationally representative, stratified sample of facilities that had been surveyed by the Facility Efficiency Survey (FES) 2011. The facilities included medical college hospitals, specialized hospitals, district hospitals, general hospitals, upazila (subdistrict) health complexes (UHCs), maternal and child welfare centers, and union subcenters, with facilities involved in MNCH activities being oversampled. At each facility, field investigators interviewed inpatients and outpatients on their background and any costs that they had incurred or were going to incur as a result of their visit. Information about household assets was also collected and used to estimate each patient's living standard relative to that of the national population.

Patients at MOHFW facilities face four different types of out-of-pocket costs: (i) travel costs to reach the healthcare institution, (ii) official fees charged by MOHFW facilities, (iii) informal or unofficial fees paid to persons inside the facility to obtain services or other benefits, and (iv) the costs of purchasing medicines recommended by the medical staff that are not provided by the health facility.

About 75% of outpatients, and over 90% of inpatients, report spending money on travel costs to the facility averaging Tk27 for outpatients and Tk131 for inpatients. However, mothers who had delivered report much higher average costs of Tk220, which may reflect the greater costs of transporting an expectant mother and that many mothers are experiencing complicated deliveries. Further, about 50% of outpatients and 75% of inpatients report having to pay official fees, about Tk6 for the average outpatient and Tk270 for inpatients, with inpatient women who had delivered, reporting higher-than-average fees.

Most (89%) outpatients report that they know about the need to pay official fees before they visited, but 91% of inpatients report that they did not know in advance. This implies that awareness of inpatient fees should be improved to make the costs of care more predictable, and that fear of inpatient fees is unlikely to be acting as a barrier to demand for MNCH inpatient services.

The survey also reveals that the incidence of informal payments is much lower than anticipated. Less than 1.0% of outpatients and only 8.6% of inpatients report making informal payments, and these are most frequent in the case of inpatient mothers, in which the incidence is 33.0%. The typical informal payment is between Tk50–Tk300, averaging Tk0.6 per outpatient and Tk19.0 per inpatient.

The major out-of-pocket cost reported by both outpatients and inpatients is purchasing medicines and supplies recommended by medical staff, which are unavailable at the MOHFW facility. About 50% of outpatients and over 90% of inpatients report being advised to purchase medicines outside of the facility. There is no difference between MNCH and other patients in this respect. The cost of these medicines and supplies is significant, with expected outlays averaging Tk301 per outpatient and Tk980 per inpatient. Most patients (outpatients, 80%; inpatients, 87%) report that they intend to purchase all of the recommended medicines, but many report that they are too expensive to buy.

These results indicate that mothers, children, and other patients making use of MOHFW healthcare facilities incur significant out-of-pocket costs in accessing services, as the average total costs are Tk152 for outpatients and Tk1,189 for inpatients. Costs for child inpatients are somewhat less than average, and those for maternal inpatients are substantially greater than average. These high costs not only cause a financial burden for poor families but also discourage utilization of needed MNCH services. Further, they imply that despite the intention to provide free or nearly free services, 30%–50% of the costs of these services are actually borne by MOHFW patients, with the degree of cost sharing even higher among women who are admitted for institutional delivery.

Maternal voucher schemes, initiated after 2006, use DSF approaches to reduce the financial barriers faced by mothers and to incentivize providers to deliver more services. The impact of these DSF schemes on utilization, out-of-pocket costs, and equity was assessed using FES 2011 and PES 2011 data. The facility-level data reveal that institutional deliveries have increased at UHCs since 2006 with the impact being greatest in those enrolled in the universal DSF schemes. In this respect, the DSF schemes are successful.

However, this increased use of maternity services is not associated with any improvements in the inequality of utilization. This finding is not definitive, since it was not possible to control for the distribution of income in the relevant catchment areas or to compare how the inequality of utilization has changed at each facility since 2006. This finding may be explained by the overall low levels of utilization of MOHFW facilities. As utilization rates are so low, initial increases in utilization of MNCH services may inevitably benefit richer families first, before inequality falls.

The facility data also show that DSF UHCs have higher operating budgets than other UHCs. This difference in spending, which averages Tk3 million–Tk4 million per facility (equivalent to 17%–23% larger budgets), can be explained by the additional incentive payments made to facilities under the DSF schemes. However, the size of the operating budgets of UHCs is not found to be a significant determinant of the number of institutional deliveries, although being enrolled in a DSF scheme is. The results are consistent with the nature of the DSF payments to facilities being important and not just the size of the facility's operating budget.

There was no reduction in out-of-pocket treatment costs reported, including mothers and children at DSF UHCs. However, mothers covered by the DSF schemes expect to receive cash and in-kind payments in the range of Tk2,500–Tk3,000. The value of these are substantially greater than the out-of-pocket costs reported, which are Tk100–Tk150 by outpatient children and mothers and Tk800–Tk1,700 by inpatient children and mothers. Thus, net costs for mothers at DSF UHCs would still be lower than in other facilities, and this is likely a major reason for the increased utilization rates.

As greater increases in admissions occurred, the net unit cost of services was much lower in the universal DSF scheme facilities. Inpatient unit costs are one-third less in universal DSF UHCs (Tk1,286) than in non-DSF UHCs (Tk1,960), and outpatient unit costs are one-fifth less (Tk60 versus Tk79). Comparable reductions in unit costs are not observed at means-tested DSF UHCs. This implies that the universal schemes are more cost-efficient and will have larger health impacts than the means-tested DSF schemes. Bed-occupancy rates and staff productivity are also much higher in universal DSF UHCs, and this is associated with much lower patient unit costs at these facilities. Given the high average occupancy rates at all UHCs (i.e., more than 85%), this suggests that increases in bed numbers at DSF UHCs are desirable, and they could accommodate more patients without increasing staffing numbers.

I. INTRODUCTION

Background

Bangladesh has made substantial progress since the 1970s in expanding the coverage of healthcare services and in reducing fertility and child mortality. However, despite the substantial gains in child and overall health, most women give birth outside of healthcare facilities, and many sick children do not receive effective medical care. For many health conditions, treatment by qualified providers, based in adequately equipped healthcare facilities using appropriate treatments, is critical to improving health outcomes and reducing mortality (Bryce et al. 2003). Further improvements in maternal, neonatal, and child health (MNCH), and also in overall health outcomes, require that Bangladesh increase access to MNCH services, particularly by poorer women and families (Anwar et al. 2008). This, in turn, implies additional financial investments, reductions in financial barriers that hinder access, and greater efficiency in the delivery and management of healthcare services.

A critical barrier to accessing medical services in Bangladesh is cost. Out-of-pocket expenditures are substantial, and the incidence of catastrophic and impoverishing levels of out-of-pocket expenditures for health are high in comparison to other countries in the region. One common approach to overcome this barrier is to provide free health services. The Government of Bangladesh has adopted such an approach by making available MNCH services through Ministry of Health and Family Welfare (MOHFW) facilities for free or at a nominal cost. However, in practice, government care is not free for most patients, and there is a high incidence of out-of-pocket payments associated with visits to government facilities, especially by mothers and children.

Analysis of the Household Income and Expenditure Survey (HIES) from 2000 to 2010 found that annual per capita out-of-pocket spending on medical care has risen and was over Tk1,100 in 2010 (Anuranga et al. 2012). Such costs may be due to the requirement to make informal payments to MOHFW staff members or others, and the need to purchase medicines and supplies, which are not available in government facilities. However, the importance of these payments and why and how often patients have to make them is not well quantified.

Partly in response, since 2007, the government has been implementing a maternal health voucher scheme on a pilot basis in several districts (Hatt et al. 2010, Schmidt et al. 2010, Ahmed and Khan 2011). The scheme is a form of demand-side financing (DSF), and its main objective is to accelerate progress towards Millennium Development Goal 5 to improve maternal health by stimulating increased utilization of safe maternal health services by poor pregnant women, including antenatal care, delivery by qualified providers, and emergency obstetric and postnatal care. As part of the scheme, poor pregnant women receive vouchers that entitle them to free maternal health services, transport subsidies, cash incentives for delivery with a qualified provider (either at home or at a designated facility), and a gift box containing a large bottle of Horlicks, a towel, two baby dresses and a soap bar. Providers receive cash payments that can be used to remunerate staff for distributing vouchers and for providing services covered by the vouchers.

Previous studies of the DSF pilots have reported significant increases in use of maternal care services in pilot districts. However, less information is available on the impact of the DSF interventions on out-of-pocket expenditures and financial barriers, and inequalities in access to services. Further, it is unclear to what extent different elements of the DSF intervention are responsible for the observed changes. Although a strategy with a baseline evaluation was designed to monitor the implementation of the DSF pilots, full execution has been hampered by loss of crucial data from the baseline surveys.

This study attempts to fill some of these gaps in the evidence on out-of-pocket financial costs faced by patients using MOHFW facilities, and in particular mothers and children, as well as the impact of the DSF pilots. It does so by using data from a national survey of patients at MOHFW facilities, which collected information on costs that they experienced.

Objectives

The objectives of the technical assistance¹ analysis are

- (i) to quantify the nature and level of out-of-pocket costs faced by patients using MOHFW facilities, with special focus on mothers and children;
- (ii) to assess the impact of the DSF pilot schemes on out-of-pocket costs and utilization of MNCH services; and
- (iii) to assess the overall impact on equity in the utilization of all and MNCH services.

The study makes use of the Patient Exit Survey (PES) 2011 that was commissioned as an extension to the Facility Efficiency Survey (FES) 2011.

¹ Asian Development Bank. 2008. Technical Assistance for Impact of Maternal and Child Health Private Expenditure on Poverty and Inequity. Manila.

II. METHODS

Overview

The PES 2011 surveyed a representative national sample of 5,160 patients (i.e., 2,080 inpatients and 3,080 outpatients) in the 133 facilities surveyed in the linked FES 2011. The link with the FES 2011 was to ensure availability of facility-level data to match patient data and to economize on field survey costs by combining field operations.

The survey used a structured questionnaire to collect data on the out-of-pocket costs incurred by sampled patients, as well as their individual and household characteristics. The survey oversampled mothers and children to improve the coverage of this subgroup of patients. The data collected from the patients were then combined with the results of the analysis of data from the FES 2011 to link patient expenditures to facility characteristics and coverage by the maternal health voucher scheme.

Sampling

The FES 2011 sampling frame for facilities consisted of all healthcare facilities with inpatient services operated by the director-general of health services, MOHFW, plus all maternal and child welfare centers and union subcenters. There were four separate subsamples:

- (i) a subsample of 76 facilities, stratified by facility type, randomly selected from a list of inpatient facilities that had been previously surveyed by the nationally representative FES 2007;
- (ii) a subsample of 21 additional upazila (subdistrict) health complexes (UHCs) that were the first to be covered by the universal or means-tested DSF intervention schemes, and of 12 control district UHCs that had been identified and previously surveyed by the Health Economics Unit in its evaluations of the DSF schemes;
- (iii) a subsample of two 10-bed hospitals, one 20-bed hospital, and one trauma center, which were selected randomly without stratification from the national listing to ensure some coverage of these minor facility types; and
- (iv) a subsample of 10 maternal and child welfare centers operated by MOHFW and 10 union subcenters selected randomly from the national listing of such facilities.

From these facilities, the FES 2011 collected data on facility staffing and infrastructure, patient activities and services, and expenditures. The PES 2011 separately sampled inpatients and outpatients leaving these same facilities, except two UHCs where fieldwork was not attempted, owing to problems in the field operations. A total of 133 facilities were included in the final sample. The final PES 2011 sample consisted of 133 facilities distributed as shown in Table 1.

The PES 2011 sampling design was formulated to allow collection of data from a representative cross-section of all patients, with oversampling of mothers and children. Six groups of patients were systematically sampled at each facility:

- (i) inpatient children,
- (ii) inpatient mothers (i.e., pregnant or delivered a child in past 12 months),
- (iii) all other adult inpatients,
- (iv) outpatient children,
- (v) outpatient mothers (i.e., pregnant or delivered a child in past 12 months), and
- (vi) all other adult outpatients.

For each of these, sampling quotas were set for each facility based on the average daily number of patients expected at the relevant facility. Field teams systematically sampled patients leaving the facility until they reached the set quota or the end of the day or days assigned for fieldwork at that facility. This was to ensure balanced samples of data from the key patient groups of interest.

During the data analysis, all data were weighted by age and sex using post-survey sampling weights, to match the age-sex distribution of patients at each type of facility as estimated by the Inpatient Admissions Records Survey 2006–2007 and the Public Hospital Outpatient Morbidity Survey 2007. The weighting also took partial account of the numbers of institutional deliveries reported in each facility type in the FES 2011 data.

Table 1: Healthcare Facilities Surveyed by Facility Type and Division, Patient Exit Survey 2011

Facility Type	Dhaka	Barisal	Chittagong	Khulna	Rajshahi	Rangpur	Sylhet
Medical college hospitals	3	0	1	1	1	1	0
Dental college hospitals	1	0	0	0	0	0	0
District hospitals	6	2	3	1	2	2	2
General hospitals	2	0	1	1	0	0	0
Specialized hospitals	6	0	0	0	0	0	0
Infectious disease hospitals	0	0	0	1	0	0	0
Chest diseases/tuberculosis hospitals	0	1	0	1	0	0	0
Leprosy hospitals	0	0	0	0	0	1	0
Upazila health complexes	20	8	14	6	9	5	7
20-bed hospitals	0	0	1	0	0	0	0
10-bed hospitals	0	1	0	1	0	0	0
Trauma centers	1	0	0	0	0	0	0
Union subcentres	4	1	2	0	1	2	0
Maternal and child welfare centers	1	1	2	2	1	3	0
Maternal and child welfare centers	1	1	2	2	1	3	0
Total	44	14	24	14	14	14	9

The final distribution of the sample by patient category and facility type is given in Table 2. The final sample consisted of 2,080 inpatients and 3,080 outpatients, of which 1,219 belonged to the child samples, 1,257 to the mother samples, and 2,684 to the non-MNCH group.

Table 2: Patients Surveyed by Facility Type and Patient Category, Patient Exit Survey 2011

Facility Type	Inpatient Children	Inpatient Mothers	Inpatient Others	Outpatient Children	Outpatient Mothers	Outpatient Others	Total
Medical college hospitals	51	64	107	76	71	206	575
Dental college hospitals	1	0	14	4	0	16	35
District hospitals	115	123	237	137	161	357	1,130
General hospitals	14	18	32	31	23	90	208
Specialized hospitals	1	1	88	17	3	100	210
Infectious diseases hospitals	0	0	5	0	0	0	5
Chest diseases/tuberculosis hospitals	0	0	10	0	0	0	10
Leprosy hospitals	0	0	5	1	2	17	25
Upazila health complexes	288	244	552	366	362	669	2,481
20-bed hospitals	4	0	7	5	5	6	27
10-bed hospitals	2	2	8	14	16	10	52
Trauma centers	3	0	2	4	0	16	25
Union subcenters	0	0	0	25	17	53	95
Maternal and child welfare centers	3	74	5	57	71	72	282
Total	482	526	1,072	737	731	1,612	5,160

Data Collection

The PES 2011 was conducted by Data International, a survey organization based in Dhaka, with extensive experience in conducting surveys of healthcare institutions and patients. Data collection was done using a structured, paper questionnaire in Bengali, consisting of five sections. The questionnaire was designed to obtain information on the background and socioeconomic status of patients, what travel costs they had incurred in obtaining treatment, and all out-of-pocket expenses that they had incurred when obtaining treatment. The draft version of the questionnaire was piloted with patients at several facilities before finalization.

The first section of the questionnaire was a standard consent form to explain the purpose of the survey and to obtain consent for participation in the interview. The second section collected basic background information about the patients, such as age, sex, education, and household income. In the case of female patients aged more than 15 years, it also asked about their current pregnancy status and any previous births, including births in the previous 12 months. The next section asked details about the assets owned by the patients' households, to later assess their relative living standards. The fourth section had two versions, depending on whether the respondent was an inpatient or an outpatient. Both versions asked about the reason for visiting the health institution, the time and costs to travel to the institution, how much was paid during the visit in official fees, whether additional unofficial payments were made in the hospital and to whom and for what purpose, whether medicines and supplies were prescribed by staff members for outside purchase and whether the patient intended to purchase them, and how much the patient had expected to incur in costs before his or her visit.

Teams of two field investigators, who were all trained, permanent field survey staff members of Data International, administered the questionnaire through face-to-face interviews. Prior to their visits, the questionnaire was forwarded officially to each facility by the Health Economics Unit, with an official request from MOHFW for cooperation. Having obtained the consent of the director of the health facility, the interviewers systematically sampled every *n*th inpatient or outpatient leaving the facility, with *n* being set at the facility, based on the expected daily patient numbers and set sample quotas. Each sampled patient was approached, and the field interviewers first explained the purpose of the survey and obtained consent for their interview by reading a verbal consent form designed for the survey. In the case of patients aged less than 15 years, the questions were asked of their adult caregiver. Fieldwork took place from March to July 2011.

Data entry was done in Dhaka, by Data International data entry staff members using Microsoft Access software. Entered data was then converted into Stata format (Stata Version 10.0), and transmitted to the Institute for Health Policy study team in Colombo for analysis. Stata (Version 12.0) was used for data cleaning and all analysis.

Ethical Review

As the survey involved patient interviews, the study design was reviewed and received ethical clearance by the Institute for Health Policy's Institutional Ethical Review Committee (IHP ERC Approval No. 2011/001). Interviewers explained the purpose of the survey to all patients approached and gave them the option of not participating before obtaining their consent. Child patients were included in the survey only if they were accompanied by an adult caregiver who could give consent and answer the questions on their behalf. Names of patients and other identifying information, except their age and sex, were not recorded during the survey.

Estimation of Living Standards

A major objective of the study was to assess the distribution of out-of-pocket costs and the distribution of patients by income level of households. Although respondents were asked two single-response questions about the average monthly income and expenditure of their households, these data are usually unreliable measures of true household expenditure or consumption levels. In practice, more detailed consumption questionnaires are required, which typically take 2–3 hours to complete, and are not feasible in the setting of a patient exit survey. An additional problem is that while obtaining information on the income or expenditure of households may permit ranking of the patients at the healthcare facility, it is not a reliable measure of their living standards relative to the population, including those who do not use public healthcare facilities. This is of particular relevance in Bangladesh, where use of public healthcare facilities is skewed in favor of nonpoor households (O'Donnell et al. 2007).

To overcome this, all patients were asked questions about key household characteristics and assets that their household possessed. These assets were taken from those used in the Bangladesh Demographic and Health Survey (DHS) 2007 (NIPORT, Mitra and Associates, and Macro International 2009) to generate a wealth index using a principle components analysis (Filmer and Pritchett 2001) as a proxy measure of relative living standards. To minimize the time required to complete the interview, the assets were a subset of those used in the DHS 2007, selected on the basis of their predictive power.

During data analysis, the same list of assets was used to generate a wealth index to rank households in the DHS 2007 using a principle components analysis. The factor scores estimated for each asset in this process were then applied to the asset variables available in the PES 2011 data set to estimate

an equivalent wealth index score for each of the PES 2011 patients. This wealth index score was then compared to the distribution of wealth index scores in the DHS 2007 data set to derive the percentile ranking of each PES 2011 patient in relation to the overall distribution of households in the DHS 2007. From this, the wealth quintile under which each PES 2011 patient household would have been classified if it were a part of the DHS 2007 sample was obtained. This provides a proxy of the national wealth quintile from which the patient came, since the DHS 2007 was a nationally representative survey of all households in Bangladesh.

This procedure allowed the ranking of all PES 2011 patients in relation to the wealth distribution of the overall population. Wealth indexes generated in national surveys, such as the DHS 2007, have been shown to be well correlated with and a good proxy for measuring relative overall living standards (O'Donnell et al. 2008). However, one source of bias exists: the distribution of assets in the population changed from 2007 to 2011. The general trend would have been for asset ownership to increase, for example, that of mobile telephones, so the wealth indexes estimated for the PES 2011 sample would be biased upward and the pro-rich inequalities overestimated. Yet the incidence of most of these assets will change slowly, so this error is assumed to be small. Recomputation of the wealth indexes, using asset scores derived from the DHS 2011 survey, allows future validation and correction of this assumption. This was not done for this analysis, as the DHS 2011 survey data had not been released at the time of this writing.

Once the national wealth ranking of each patient was available, it was possible to compute the concentration index of inequality in use of services. Normally, this would be difficult since the patient data only represent the persons who used the services, and there are no observations of the people in the population who did not use the services. However, by imputing nonutilization for these other persons, it is possible to compute the concentration index using standard methods. This was done using a Stata command developed by the Institute for Health Policy for situations as these, where only the health utilization is observed and not the nonutilization.

III. FINDINGS

Patient Characteristics

Facilities Used

The weighting procedures adjusted the age-sex distribution of the sample to match that observed in comparable facilities covered by the Inpatient Admissions Records Survey 2006–2007 patient survey. Consequently, the age-sex profile and facility distribution of the weighted sample is comparable to overall patient distribution at MOHFW facilities in Bangladesh, although the survey oversampled mothers and children.

Examination of the patient distribution by facility type shows that the choice of facilities by mothers and children is comparable to that of other patients, except that children are much less likely to be taken to medical college hospitals for either outpatient or inpatient care and are more likely to be taken to UHCs. Overall, two-thirds of mother and child outpatients are treated at UHCs and 10- or 20-bed hospitals, with 75%–95% of all such patients treated at general hospitals, district hospitals, UHCs, and 10- or 20-bed hospitals. Despite their focus on MNCH provision, maternal and child welfare centers and union subcenters only treat 3%–5% of MOHFW MNCH outpatients. Similar proportions of MNCH inpatients are treated at the different facilities, except that inpatients are more likely to be seen at district hospitals than outpatients. Union subcenters see no MNCH inpatients, and only 1%–2% of maternal and child inpatients are treated at maternal and child welfare centers.

Table 3: Distribution of Patients by Patient Category and Facility Type, Patient Exit Survey 2011 Estimates (%)

Patient Category	Medical College Hospitals	General and District Hospitals	Upazila Health Complexes and 10-and 20-Bed Hospitals	Maternal and Child Welfare Centers	Union Subcenters	Other Facilities
Outpatients						
Children (age less than 5 years)	0.5	20.4	72.0	3.8	3.3	0.0
Children (age 5–14 years)	2.4	14.2	76.9	1.9	4.1	0.6
Pregnant women	4.5	17.3	69.9	5.9	2.4	–
Delivered mothers	10.2	36.5	46.4	–	4.6	2.2
Other patients	5.8	19.1	66.5	1.1	4.2	3.2
All patients	4.4	18.7	68.9	2.3	3.8	1.8
Inpatients						
Children (age less than 5 years)	6.4	36.4	57.1	0.1	–	–
Children (age 5–14 years)	11.7	27.6	47.9	0.2	–	12.6
Pregnant women	5.5	27.5	61.7	4.6	–	0.8
Delivered mothers	16.1	36.8	27.2	19.8	–	–
Other patients	12.4	34.4	44.4	0.1	–	8.6
All patients	11.8	34.2	45.1	1.8	–	7.0

Note: Results are weighted to represent national means across all patients.

Socioeconomic Status of Patients

The use of the wealth index permitted classification of patients with reference to national wealth quintiles, as shown in Table 4. Across all patient categories, utilization of MOHFW facilities is highly unequal and pro-rich. There is also little variation in this pattern between MNCH and other patients, and between inpatients and outpatients. Only 6%–9% of MNCH patients at MOHFW facilities are from the poorest 40% of the population, and 30%–40% of all MNCH patients are from the richest 20% of the population. The same level of inequality is seen even at maternal and child welfare centers and union subcenters, except that a slightly higher proportion (19%) of outpatients at union subcenters are from the poorest 40% of the population.

Table 4: Distribution of Patients by Patient Category and Wealth Quintile, Patient Exit Survey 2011 Estimates

Patient Category	Poorest	Q2	Q3	Q4	Richest	Concentration Index
Outpatients						
Children (age less than 5 years)	3.6	4.3	18.7	35.9	37.3	0.39*
Children (age 5–14 years)	3.7	5.4	19.5	40.3	31.1	0.37*
Pregnant women	2.7	5.4	17.6	44.1	30.1	0.39*
Delivered mothers	3.6	4.6	14.4	30.0	47.4	0.46*
Other patients	2.1	6.4	15.4	36.5	39.7	0.42*
All patients	2.6	5.8	16.7	37.9	36.9	0.41*
Inpatients						
Children (age less than 5 years)	3.6	6.1	25.4	38.8	26.1	0.33*
Children (age 5–14 years)	0.8	6.4	19.5	31.9	42.3	0.45*
Pregnant women	0.7	3.3	12.5	43.8	39.6	0.48*
Delivered mothers	1.6	4.9	11.6	43.2	38.7	0.44*
Other patients	2.8	5.2	16.9	37.2	37.9	0.43*
All patients	2.6	5.3	17.6	37.6	36.8	0.42*

Q = quintile

Notes: Results are weighted to represent national means across all patients. Asterisks indicate statistical significance of concentration indexes: * $p < 0.001$.

Out-of-Pocket Costs

Travel Costs

The survey findings indicate that most outpatients (74%) at MOHFW facilities, and most MNCH outpatients, incur out-of-pocket costs for travel (Table 5), to obtain medical care. Average travel costs are Tk15–Tk45 per patient, and are similar between MNCH and other patients, but pregnant women are more likely to incur travel costs. This may be because these women have to travel further to reach a suitable or acceptable facility. No significant variation is observed by income level of patients.

A large percentage of inpatients at MOHFW facilities (95%) incur travel costs, and average travel costs are more than for outpatients. In contrast to outpatient care, pregnant inpatients are less likely to report travel costs. Again, no significant variation is observed by income level of patients.

Table 5: Out-of-Pocket Travel Costs Reported by Mothers, Children, and Other Patients Using Ministry of Health and Family Welfare Facilities, 2011

Patient Category	Reporting Any Travel Costs (%)	Mean Cost if Reporting Any Travel Costs (Tk)	Mean Travel Costs per Patient (Tk)
Outpatients			
Children (age less than 5 years)	70.0	25.6	17.9
Children (age 5-14 years)	71.4	22.5	16.1
Pregnant women	77.5	28.4	22.0
Mothers recently delivered	92.4	45.6	42.2
Other patients	74.3	27.5	20.6
All patients	74.4	27.1	20.2
Inpatients			
Children (age less than 5 years)	95.2	109.4	104.2
Children (age 5-14 years)	87.4	75.4	65.8
Pregnant women	96.5	69.3	66.9
Mothers recently delivered	96.5	219.7	212.1
Other patients	94.8	131.9	125.1
All patients	94.5	131.4	124.2

Notes: Results are weighted to represent national means across all patients.

Official Fees

One-half of all outpatients and more than two-thirds of inpatients (Table 6) reported paying official fees in the form of outpatient or inpatient registration fees, which were reported as Tk5 for outpatient visits, and Tk15 for inpatient visits, consistent with official fee schedules. Further analysis reveals that there is no significant variation in the likelihood of paying official fees by income level of patients, once the facility type is taken into account, nor is the likelihood significantly less for children or mothers.

Most patients (89%) are aware that an official outpatient registration fee is charged, but most patients (91%) are unaware of the existence of an inpatient registration fee. Awareness is related to income level, with poorer patients less likely to be aware of the existence of these fees. Sixty-four percent of the poorest quintile knows about the outpatient fee, and none in this group know about the inpatient fee. No significant differences are observed between MNCH and other patients. The lack of awareness of the existence of inpatient fees extends to knowledge about its amount, with most of those saying they do know of the fee but overestimate the actual amounts. This suggests that although overestimation of the registration fee may act as a disincentive for using inpatient services, it is still unlikely to have much effect since most patients are unaware of the fee before coming.

MOHFW facilities can also charge inpatients official fees for conducting surgical operations or x-rays. Only a small percentage of patients reported such payments (surgical fees, 4%; x-ray fees, 20%), and mothers and children were less likely to report such payments, although this might be because they are less likely to need such services.

Table 6: Out-of-Pocket Costs of Official Fees Paid to Facilities Reported by Mothers, Children, and Other Patients Using Ministry of Health and Family Welfare Facilities, 2011

Patient Category	Reporting Official Fee Expenses (%)	Mean Cost if Reporting Official Fee Expenses (Tk)	Mean Costs of Official Fees per Patient (Tk)
Outpatients			
Children (age less than 5 years)	46.4	5.2	2.4
Children (age 5-14 years)	41.9	6.8	2.8
Pregnant women	42.4	5.9	2.5
Mothers recently delivered	80.0	7.5	6.0
Other patients	50.2	6.2	3.1
All patients	47.8	6.1	2.9
Inpatients			
Children (age less than 5 years)	67.7	50.0	33.9
Children (age 5-14 years)	73.9	137.5	101.6
Pregnant women	59.6	120.4	71.8
Mothers recently delivered	62.9	506.7	319.0
Other patients	75.6	298.6	225.9
All patients	73.2	270.2	197.8

Notes: Results are weighted to represent national means across all patients. Official fees consist of registration fees (outpatients), admission fees, surgical fees, x-ray fees, and bed fees (inpatients).

Informal Payments

The survey asked patients about informal payments, defined here as payments, other than the official MOHFW charges, made to persons inside of the healthcare facility for services or other benefits. Few outpatients (0.4%) and only a minority of inpatients (9.0%) report such payments (Table 7). Inpatients are most likely to make such payments at medical college hospitals (29%) and maternal and child welfare centers (32%). When the facility type is controlled for, there is little variation in the frequency of payments by the income level of patients. However, 33% of mothers who had delivered report having made informal payments, a much higher percentage than other patient categories. Informal payments by all outpatients average Tk0.6, and by inpatients, Tk19.0.

The overall frequency of informal payments is much less than anticipated. It is possible that respondents underreport such payments due to concerns about confidentiality. However, the overall structure of costs found by this study is comparable to that reported in household surveys such as the HIES, so informal payments are not a major expense faced by patients.

Outpatients report only four reasons for making these informal payments: (i) to obtain medicines, (ii) to ensure that the doctor or nurse saw the patient, (iii) to ensure that the provider gave the patient better treatment, and (iv) to ensure laboratory tests or x-rays were carried out. Inpatients report the same reasons, plus (v) to transfer from the floor to a bed, (vi) to transfer to a paying bed, and (vii) to obtain assistance for the care of an inpatient. No particular reason predominates for making informal payments, with the most common reasons for both MNCH patients and others being to obtain medicines, to get better treatment, and to ensure laboratory tests or x-rays are done.

Table 7: Out-of-Pocket Costs of Informal Payments Reported by Mothers, Children, and Other Patients Using Ministry of Health and Family Welfare Facilities, 2011

Patient Category	Reporting Informal Payments (%)	Mean Cost if Reporting Any Informal Payments (Tk)	Mean Cost of Informal Payments per Patient (Tk)
Outpatients			
Children (age less than 5 years)	0.1	60.0	0.1
Children (age 5–14 years)	0.3	145.9	0.4
Pregnant women	1.2	176.8	2.7
Mothers recently delivered	0.0	0.0	0.0
Other patients	0.4	86.1	0.3
All patients	0.4	127.0	0.6
Inpatients			
Children (age less than 5 years)	7.1	253.8	18.0
Children (age 5–14 years)	7.6	115.8	8.7
Pregnant women	1.3	121.0	1.6
Mothers recently delivered	32.9	293.7	96.8
Other patients	6.4	179.7	11.5
All patients	8.6	218.5	18.9

Note: Results are weighted to represent national means across all patients.

Outside Purchase of Medicines and Supplies

The most frequent out-of-pocket medical costs experienced by patients is the purchase, outside of the healthcare facility, of medicines and supplies that the medical staff in the facility had advised them to buy, presumably because they are out of stock at the facility. Almost one-half of all outpatients (48%), and almost all inpatients (93%) report that they had been told by the health personnel to buy medicines or supplies outside of the healthcare facility. The expected cost of the recommended medicines and supplies averaged Tk100–Tk200 per patient in different outpatient groups, and Tk450–Tk1,000 per patient in different inpatient groups.

Most outpatients (80%) and inpatients (87%) plan to purchase all the recommended medicines, while 14% of outpatients and 12% of inpatients plan to purchase only part of the recommended medicines. Consequently, the average actual cost of medicines and supplies purchased outside of the healthcare facility is Tk128 per outpatient and Tk848 per inpatient (Table 8). Child (i.e., less than 5 years) outpatients, on average, experience costs of Tk277, and pregnant women, Tk354. Child (i.e., less than 5 years) inpatients experience average costs of Tk660 and mothers who had just delivered report costs of Tk1,109.

The leading reason why some patients plan not to purchase all the recommended medicines is their cost (55% of outpatients and 82% of inpatients). There is little difference in the pattern of responses between MNCH and other patients, or between the different wealth quintiles.

These results indicate that the largest financial cost and barrier that mothers and children face in using MOHFW facilities is the cost of purchasing medicines, which are prescribed to them by healthcare personnel. The anticipation of these costs is also likely to deter utilization, since most patients expected to make such

payments before they visited the facility. The average cost of medicines expected by patients before their visits is Tk124 for outpatients and Tk2,355 for inpatients. The average expectation is accurate in the case of outpatient medicines but overestimated in the case of inpatient medicines. Despite this, the expectation of these costs can be contrasted with the limited pre-visit awareness of the much smaller official charges.

Table 8: Out-of-Pocket Costs of Medicines, Supplies, and Equipment Reported by Mothers, Children, and Other Patients Using Ministry of Health and Family Welfare Facilities, 2011

Patient Category	Reporting Need to Purchase Medicines and/or Supplies (%)	Mean Cost of Recommended Medicines and/or Supplies (Tk)	Mean Costs of Medicines and/or Supplies per Patient (Tk)
Outpatients			
Children (age less than 5 years)	56.2	277.1	137.5
Children (age 5–14 years)	58.3	197.3	105.1
Pregnant women	41.0	354.1	121.9
Mothers recently delivered	61.4	343.0	198.3
Other patients	45.4	327.5	130.2
All patients	48.4	301.3	128.0
Inpatients			
Children (age less than 5 years)	93.4	659.9	587.3
Children (age 5–14 years)	94.7	526.4	469.8
Pregnant women	82.5	675.8	532.3
Mothers recently delivered	93.6	1,108.8	987.0
Other patients	92.5	1,077.9	926.4
All patients	92.7	979.9	848.3

Notes: Results are weighted to represent national means across all patients. When patients reported they planned to buy only some of the recommended medicines, the expected cost was taken as 50% of the expected cost of all the medicines.

Overall Out-of-Pocket Costs

Owing to the mixture of formal fees and other direct and indirect costs, almost all patients at MOHFW facilities have to incur substantial financial costs in utilizing MOHFW services. Average costs for outpatients are Tk152, and for inpatients, Tk1,189 (Table 9), which implies that around one-half of all treatment costs for outpatients at MOHFW facilities are paid directly by patients themselves, and around one-quarter of treatment costs in the case of inpatients. The magnitude of these costs as measured by the PES 2011 is comparable to the estimates of costs associated with visits to MOHFW facilities as reported in the HIES 2010, which were in Tk1,800–Tk1,900 per patient.²

Child outpatients and inpatients, on average, incur direct out-of-pocket costs of Tk158 and Tk743, respectively. Pregnant women incur average out-of-pocket costs of Tk149 in using outpatient services, and mothers who had had institutional deliveries experience average out-of-pocket costs of Tk247. These costs are high in relation to the disposable income of most families, and provide a sufficient financial barrier to discourage most poor mothers and children from being brought to a government facility. A conclusion that is supported by the survey's findings is that poor families do not take their children for treatment because the treatment is too expensive.³

² The HIES 2010 does not distinguish between inpatients and outpatients, so the HIES estimate is an average for all patients.

³ See Anuranga et al. 2012. *The Impact of Out-of-Pocket Expenditures on Poverty and Inequalities in Use of Maternal and Child Health Services in Bangladesh: Evidence from the Household Income and Expenditure Surveys 2000-2010*. Manila.

Table 9: Out-of-Pocket Costs (Mean per Patient) Reported by Mothers, Children, and Other Patients Using Ministry of Health and Family Welfare Facilities, Patient Exit Survey 2011

Patient Category	Travel Costs (%)	Official Charges (Tk)	Informal Payments (Tk)	Medicines and/or Supplies	Total Costs (Tk)
Outpatients					
Children (age less than 5 years)	17.9	2.4	0.1	137.5	158
Children (age 5–14 years)	16.1	2.8	0.4	105.1	125
Pregnant women	22.0	2.5	2.7	121.9	149
Mothers recently delivered	42.2	6.0	0.0	198.3	247
Other patients	20.6	3.1	0.3	130.2	154
All patients	20.2	2.9	0.6	128.0	152
Inpatients					
Children (age less than 5 years)	104.2	33.9	18.0	587.3	743
Children (age 5–14 years)	65.8	101.6	8.7	469.8	646
Pregnant women	66.9	71.8	1.6	532.3	673
Mothers recently delivered	212.1	319.0	96.8	987.0	1,615
Other patients	125.1	225.9	11.5	926.4	1,289
All patients	124.2	197.8	18.9	848.3	1,189

Note: Results are weighted to represent national means across all patients.

Catastrophic Healthcare Payments

Substantial out-of-pocket costs can impose serious burdens on households, reducing their living standards and forcing them to borrow or sell assets. The incidence of such catastrophic payments was assessed by comparing the reported out-of-pocket costs of patients with their average household monthly consumption. Table 10 shows the estimated incidence of catastrophic payments associated with visits to MOHFW facilities, when catastrophic expenditures are defined as occurring when out-of-pocket healthcare costs (inclusive of travel costs) exceed 25% of average household monthly expenditures. The results show that childbirth is more catastrophic than other healthcare services. Ten percent of the women who were admitted to MOHFW facilities for childbirth ($n = 403$) within the last year reported out-of-pocket costs that were more than 25% of their average household monthly expenditures. Compared to childbirth services, inpatient treatment of children, both under 5 years ($n = 301$) and children age 5–14 years ($n = 181$) was less likely to be catastrophic.

It is difficult to assess the extent to which the incidence of catastrophic spending varies between income levels, as the sample sizes were small and the number of patients in the poorest quintiles very small. Nevertheless, the negative concentration indexes for all the patient categories suggests that catastrophic expenditures are more likely to be faced by poor patients than by nonpoor patients.

Table 10: Catastrophic Payments for Inpatient Healthcare that Exceed 25% of Average Household Expenditure by Quintile and Patient Type, 2011

Patient Category	Poorest	Q2	Q3	Q4	Richest	All	Concentration Index
Including Travel							
Children (age less than 5 years)	0.00	0.21	2.55	1.34	0.00	1.18	(0.41)***
Children (age 5–14 years)	0.00	0.00	0.00	1.70	0.00	0.54	(0.17)*
Delivered mothers	0.00	26.58	6.12	14.79	5.07	10.35	(0.30)**
All patients	2.76	3.80	5.03	4.46	2.54	3.77	(0.18)*
Excluding Travel							
Children (age less than 5 years)	0.00	0.21	1.59	0.00	0.00	0.42	(0.57)***
Children (age 5–14 years)	0.00	0.00	0.00	0.00	0.00	0.00	
Delivered mothers	0.00	26.58	6.12	5.04	3.34	5.47	(0.38)*
All patients	2.76	2.02	4.87	1.57	1.72	2.26	(0.23)*

() = negative, Q = quintile.

Notes: Results are weighted to represent national means across all patients. Asterisks indicate statistical significance of concentration indexes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Impact of Demand-Side Financing

The PES 2011 data confirm three important facts about MNCH care use in Bangladesh and public sector provision:

- (i) Use of MNCH and overall healthcare services provided by MOHFW is highly unequal and pro-rich in Bangladesh, paralleling similar inequalities in use of private medical services, confirming the findings of the DHS 2007 (NIPORT, Mitra and Associates, and Macro International 2009). Not only do MOHFW hospital services fail to reach significant numbers of the poor, but lower-level maternal and child welfare centers and union subcenters also fail to reach the poor.
- (ii) Mothers and children using MOHFW services face significant financial costs, a fact that is supported by other survey data such as the DHS 2007, which indicate that financial barriers to access are the most important reason why mothers and children who need medical care do not obtain such care.
- (iii) The financial barrier to use of MOHFW services results from the cost of using services, and the leading cost that mothers and children face is the need to purchase medicines and supplies not available or provided by the healthcare institution. The second leading cost is that of travel to and from the healthcare institution. The costs of formal fees and informal payments at institutions are relatively modest in comparison.

Compounding the general problem of financial barriers is the low levels of health awareness in the population and norms associated with infrequent use of formal medical care. Recognizing this, MOHFW has attempted various strategies to reduce the barriers and increase utilization of needed care by mothers and children, and to expand uptake of services by poor families. The DSF schemes are one important effort in recent years.

Impact of Demand-Side Financing Schemes on Utilization of Maternal, Neonatal, and Child Health Services

The FES 2011 survey collected data on the number of deliveries and cesarean sections carried out by surveyed facilities in the previous 5 years, as well as the total number of admissions in 2010. These data

can be used to examine trends in childbirth and overall levels of admissions in UHCs, distinguishing between those enrolled in the DSF schemes, those previously identified by the Health Economics Unit as being in control areas, and other UHCs in the country. UHCs enrolled in the DSF schemes report much higher numbers of institutional deliveries (universal, 2,284; means-tested, 1,352) than other UHCs (248), and also report modestly higher numbers of nonchildbirth admissions (Table 11). Numbers of institutional deliveries are also higher at UHCs enrolled in the universal DSF scheme, than in UHCs enrolled in the means-tested DSF scheme.

Table 11: Average Deliveries and Admissions at Upazila Health Complexes by Coverage of Demand-Side Financing Schemes, 2010

Upazila Health Complex Category	Number	Deliveries	Non-deliveries	Total
Universal demand-side financing	9	2,284	5,081	7,365
Means-tested demand-side financing	12	1,352	5,282	6,634
Health Economics Unit control UHCs	12	267	5,348	5,615
Other UHCs	36	248	3,571	3,819

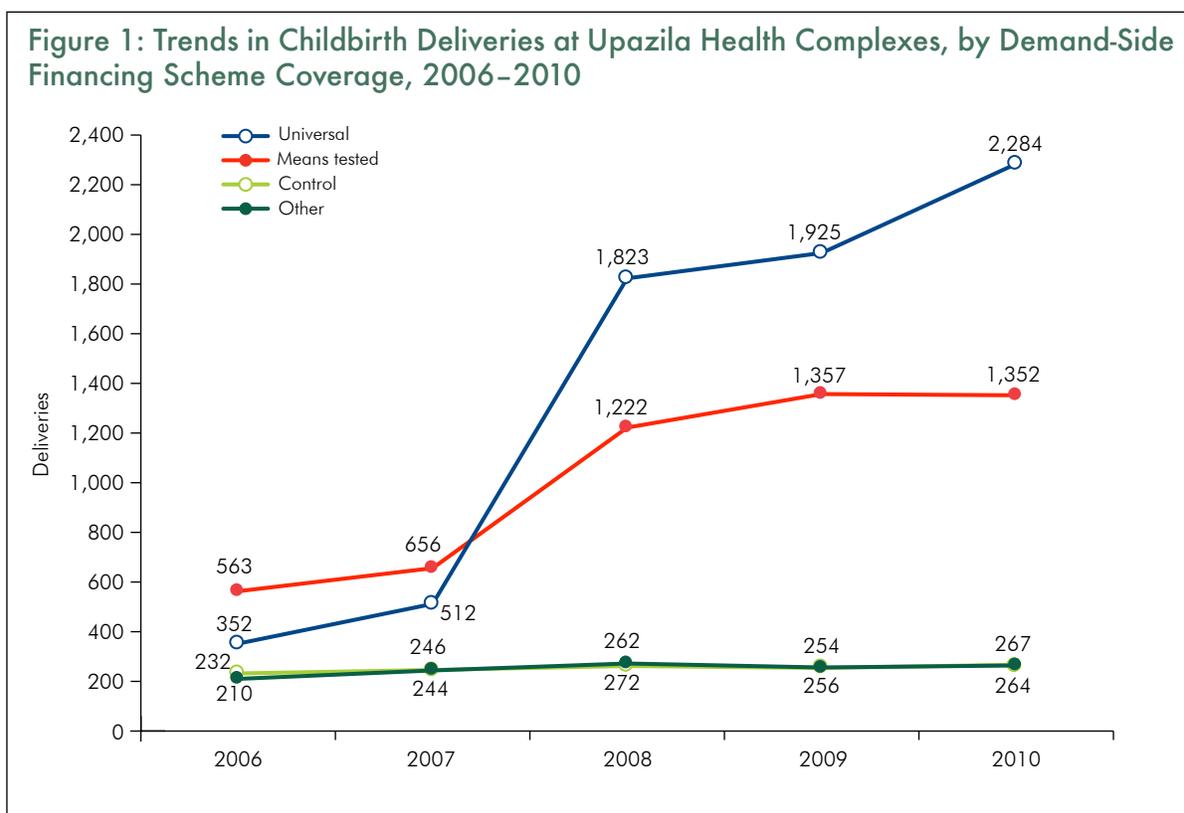
UHC = upazila health complex.

Note: Estimates are unweighted means from Facility Efficiency Survey 2011 data.

These higher numbers of admissions and childbirth deliveries are a recent outcome and follow substantial increases in numbers of childbirths at DSF-enrolled UHCs since 2006, in comparison with only modest changes at non-DSF enrolled UHCs (Figure 1). However, the higher number of annual institutional deliveries is statistically significant only in the case of universal DSF UHCs ($p < 0.001$). The higher number of institutional deliveries at DSF-enrolled UHCs is associated also with a higher number of births by cesarean section. However, the increase in births by cesarean section is seen in all facilities, and in more detailed analysis, the difference in the higher ratio in DSF-enrolled UHCs is not statistically significant to that in other UHCs.

These findings confirm and are consistent with earlier studies of the DSF schemes that examined changes in individual UHCs in 2008 and 2009 (Ahmed and Khan 2011, Schmidt et al. 2010). The FES 2011 indicates that the initial improvements in numbers of institutional deliveries observed during 2008–2009 in DSF scheme UHCs was sustained and continued through 2010. In addition, in contrast to these earlier studies, which compared DSF-enrolled UHCs only with a limited number of comparison UHCs, this study shows that the comparisons hold even when these facilities are compared with representative samples of all UHCs in Bangladesh.

The DSF schemes have clearly increased the numbers of institutional deliveries at UHCs, and this impact is most marked for UHCs enrolled in the universal form of the scheme. There are also increases in the number of cesarean sections provided, but this increase is not significantly greater than observed in all UHCs.



Note: Computed from Facility Efficiency Survey 2011 data. Statistics are only for upazila health complexes that provided data for all 5 years, so it does not match the overall averages reported for 2010 in Table 11.

Impact of Demand-Side Financing Schemes on Maternal, Neonatal, and Child Health Out-of-Pocket Costs

In terms of the likelihood of making direct payments for treatment, fewer outpatient mothers in the universal DSF scheme UHCs report payments than in other UHCs, but the difference is not statistically significant. There is no corresponding reduction observed in the case of the means-tested DSF scheme UHCs or with inpatients in any of the groups.

Average out-of-pocket direct costs for maternal outpatients at universal DSF scheme UHCs are lower than at other UHCs, while out-of-pocket direct costs are higher at means-tested DSF scheme UHCs than in the non-DSF UHCs. However, these differences are not statistically significant, except the higher out-of-pocket direct costs at means-tested DSF scheme UHCs. There are no statistically significant differences observed in reported out-of-pocket costs of maternal inpatients between the different types of UHCs.

Average patient costs reported in the PES 2011 are lower in universal DSF schemes, but this difference is not statistically significant. On the other hand, there is no evidence at all that direct costs are lower in means-tested DSF schemes. This finding is in contrast to the earlier Health Economics Unit study that reported that out-of-pocket costs were lower in DSF facilities (Hatt et al. 2010).

Impact of Demand-Side Financing Schemes on Inequality in Maternal, Neonatal, and Child Healthcare Utilization

The inequality in use of services at DSF-scheme UHCs versus others was examined using a concentration index. This shows no difference in the inequality of utilization of outpatient or inpatient services at the different UHCs, or in different groups of patients. It should be noted that the concentration index

computation assumes that each UHC draws its patients from the same national population, so does not control for differences in the average income level of populations around different UHCs. However, to the extent that the comparison between DSF-scheme UHCs and control area UHCs is valid, and that DSF-scheme UHCs were not systematically selected from richer areas, the conclusion of no impact on inequalities in utilization will still hold.

The lack of impact of DSF-schemes on inequality is in contrast to one other study that reported a reduction in inequality (Ahmed and Khan 2011), but that study was confined to only one district.

Relationship of Increases in Maternal, Neonatal, and Child Health Utilization with Facility Budgets

UHCs in the universal DSF (Tk21.3 million), means-tested DSF (Tk22.4 million), and Health Economics Unit control areas (Tk21.5 million) have significantly higher recurrent operating costs than other UHCs (Tk17.5 million). The higher costs of DSF-scheme UHCs are due largely to higher personnel expenditures (average Tk3 million–Tk4 million) and higher expenditures on diet and kitchen expenses (Tk200–Tk3 million). These differences are to be expected in the case of DSF-scheme UHCs, and can be explained by the additional financial incentives provided to DSF-scheme UHCs, of the order of Tk300 per normal delivery to Tk6,000 per cesarean section. However, this does not explain the higher costs of UHCs in the control areas, and suggests that UHCs in the control sites are systematically more costly than average UHCs, which implies that the control sites are not representative of the overall national situation.

The improvement in MNCH utilization in DSF facilities could be due simply to the increased financing, some of which is channeled through the DSF schemes. However, a multivariate analysis of numbers of deliveries controlling for the number of beds, doctors and nurses, as well as DSF-scheme coverage, found that overall operating costs are not a statistically significant determinant of delivery admission numbers. This suggests that it is not simply the larger financing provided to DSF scheme UHCs that makes the difference, but the way in which it is spent. This would support the idea that it is the DSF scheme that is the cause.

Impact of Demand-Side Financing Schemes on Facility Operating Efficiency

The DSF scheme UHCs have seen increased numbers of admissions, primarily due to institutional deliveries, but also received increased budgets. A critical question is what the overall impact was on operating unit costs and efficiency.

The increase in admissions and outpatient visits at DSF scheme UHCs was achieved primarily through more intensive use of resources, with the greatest increase in resource use seen at universal DSF scheme UHCs (Table 12). Substantial increases in the use of available inpatient infrastructure is evidenced by more than 50% increases in bed turnover rates and bed-occupancy rates at universal-DSF scheme UHCs, and one-quarter increases at means-tested scheme UHCs. This is associated with occupancy rates greater than 100% in universal DSF scheme UHCs, with bed occupancy being greater than 100% in 4 out of 9 universal DSF scheme UHCs.

The data suggest some additional efficiency gains might have occurred through reductions in average length of stays, but the differences are trivial, and it is unlikely that with an average stay of less than 3 days that shortening hospital stays represent an area with much potential for efficiency gains. Thus, increasing occupancy rates has accommodated the major part of the increased inpatient throughput. At the same time, staff productivity is much higher in universal DSF scheme UHCs, with doctors and nurses seeing one-half to double as many patients. At the same time, this has not been associated with

worsening of case fatality rates, which are almost one-half the rate in universal DSF scheme UHCs as in non-DSF UHCs. This may be explained by the additional patients who attend UHCs being less sick than average and by improvements in quality through increased patient numbers.

This combination of much larger increases in patient throughput than increases in operating budgets is associated with substantially lower unit costs in universal DSF scheme UHCs. Inpatient unit costs are one-third less in universal DSF scheme UHCs (Tk1,286) than in non-DSF UHCs (Tk1,960), and outpatient unit costs are one-fifth less (Tk60 versus Tk79). Comparable reductions in unit costs are not observed at means-tested DSF scheme UHCs.

Overall Impacts of Demand-Side Financing Schemes

The nationally representative data from the FES 2011 and PES 2011 surveys show that the DSF schemes have had some positive impacts on MNCH utilization and overall health systems efficiency, but that the most consistent impacts are seen only in the universal DSF scheme.

DSF schemes are associated with large increases in the number of institutional deliveries, and in overall admissions and outpatient visits at covered UHCs, with the largest increases seen in UHCs enrolled in the universal DSF scheme. As overall operating budgets are similar in both universal DSF scheme UHCs and means-tested scheme UHCs, the larger increase in institutional deliveries and admissions at universal DSF scheme UHCs imply that the universal schemes are most cost-efficient and will have larger health impacts than the means-tested DSF schemes. There was increased funding at DSF scheme UHCs, which was primarily in the form of increased personnel expenditures, but the large increases in patient utilization has been accommodated mostly by increases in operating efficiency.

Bed-occupancy rates and staff productivity are much higher in universal DSF scheme UHCs, and this is associated with much lower patient unit costs at these facilities. Given the high average occupancy rates at all UHCs (i.e., more than 85%), this suggests that increases in bed numbers at DSF UHCs would be desirable, and they could accommodate more patients without increasing staffing numbers.

There was no reduction in out-of-pocket treatment costs reported in the exit survey by patients, including mothers and children at DSF scheme UHCs. However, mothers covered by the DSF schemes expect to receive cash and in-kind payments later, in the order of Tk2,500–Tk3,000. The value of these are substantially greater than the out-of-pocket costs reported, which were Tk100–Tk150 by outpatient children and mothers, and Tk800–Tk1,700 by inpatient children and mothers. Thus, net costs for mothers at DSF scheme UHCs would still be lower than in other facilities, and this is likely a major reason for the increased utilization rates.

Despite the large increases in MNCH utilization at DSF scheme UHCs, no differences are found in overall inequality in patient utilization at DSF UHCs versus other UHCs. This finding contrasts with other recent studies, but this study's findings are based on nationally representative survey data. The only caveat is that the method used to estimate relative wealth status of patients may have been biased upwards, but this bias would have applied equally to patients at all facilities. This finding of no impact on inequality might be explained by the overall low levels of utilization of MOHFW facilities, observed in Bangladesh generally. As utilization rates are so low, initial increases in utilization of MNCH services may benefit richer families first before utilization become less equal.

Table 12: Operating Indicators and Efficiency Ratios at Upazila Health Complexes, by Demand-Side Financing Scheme Coverage, 2010

Patient Category	Universal DSF (n = 9)	Means-tested DSF (n = 12)	Non-DSF (n = 48)
Outputs			
Beds	37	42	34
Admissions	7,365	6,634	3,871
Deliveries	2,284	1,352	249
Outpatient visits	159,512	95,143	76,455
Efficiency Ratios			
Bed turnover rate	198	156	116
Bed occupancy rate (%)	143	112	84
Average length of stay (days)	2.6	2.8	2.8
Inpatient case fatality rate (%)	0.22	0.39	0.39
Staff Productivity Ratios			
Admissions per doctor	1,132	807	829
Admissions per nurse	801	610	496
Unit Costs			
Cost per bed per year (Tk)	212,635	250,070	208,207
Cost per bed-day (Tk)	563	639	709
Cost per admission (Tk)	1,286	1,661	1,960
Cost per outpatient visit (Tk)	60	100	79

DSF = demand-side financing

Note: Estimates are weighted means using data from the facilities sampled in the Patient Exit Survey 2011.

REFERENCES

- Ahmed, S., and M. Khan. 2011. Is Demand-Side Financing Equity Enhancing? Lessons from a Maternal Health Voucher Scheme in Bangladesh. *Social Science & Medicine*. 72. pp. 1,704–1,710.
- Anwar, I., et al. 2008. Inequity in Maternal Health-Care Services: Evidence from Home-Based Skilled Birth Attendant Programmes in Bangladesh. *Bulletin of the World Health Organization*. 86. pp. 252–259.
- Bryce, J., et al. 2003. Reducing Child Mortality: Can Public Health Deliver? *Lancet*. 362. pp. 159–164.
- Chandrasiri, J., et al. 2012. The Impact of Out-of-Pocket Expenditures on Poverty and Inequalities in Use of Maternal and Child Health Services in Bangladesh: Evidence from the Household Income and Expenditure Surveys 2000–2010 - RETA 6515 Country Brief. Manila: Asian Development Bank.
- Filmer, D., and L. Pritchett. 2001. Estimating Wealth Effects without Income Data or Expenditure Data— or Tears: Educational Enrollment in India. *Demography*. 38 (1).
- Hatt, L., et al. 2010. Economic Evaluation of Demand-Side Financing (DSF) for Maternal Health in Bangladesh. Bethesda: Health Economics Unit, Ministry of Health and Family Welfare.
- National Institute of Population Research and Training (NIPORT), Mitra and Associates, and Macro International. 2009. Bangladesh Demographic and Health Survey 2007. Dhaka.
- O'Donnell, O. et al. 2007. The Incidence of Public Spending on Healthcare: Comparative Evidence from Asia. *World Bank Economic Review*. 21 (1). pp. 93–123.
- O'Donnell, O., et al. 2008. Analyzing Health Equity Using Household Survey Data: A Guide to Techniques and Their Implementation. WBI Learning Resources Series. Washington, DC: World Bank.
- Schmidt, J. et al. 2010. Vouchers as Demand-Side Financing Instruments for Health Care: A Review of the Bangladesh Maternal Voucher Scheme. *Health Policy*. 96 (2). pp. 98–107.

For More Information

This AusAID financed ADB RETA 6515 project, with support from the Health Economics Unit of the MOHFW, conducted several studies on out-of-pocket expenditures on maternal, newborn, and child health (MNCH) in Bangladesh including an analysis of household OOP expenditures, public sector facility costs, an exit survey of OOP expenses, and overall MNCH expenditures.

Publications on these findings are available from:

ADB: www.adb.org/publications/

Health Economics Unit of the MOHFW: www.heu.gov.bd/

Other publications from this project on the impact of out-of-pocket expenditures on MNCH in Asia and the Pacific are available at www.adb.org/publications/

Impact of Maternal and Child Health Private Expenditure on Poverty and Inequity in Bangladesh

Out-of-Pocket Payments by Patients at Ministry of Health and Family Welfare Facilities in Bangladesh and the Impact of the Maternal Voucher Scheme on Costs and Access of Mothers and Children: Technical Report B

The Government of Bangladesh has made it a priority to expand access by the poor to maternal, neonatal, and child health (MNCH) services. Central to its strategy is the provision of healthcare services at free or nearly free prices through Ministry of Health and Family Welfare (MOHFW) facilities. However, poor families make less use of MOHFW services than the non-poor, and many patients are reported to incur significant costs at MOHFW facilities.

The Patient Exit Survey (PES) 2011 carried out exit interviews of over 5,000 inpatients and outpatients at a representative sample of MOHFW facilities in order to find out why patients incur out-of-pocket expenses at MOHFW facilities, to quantify their size, and to assess the impact of demand-side financing (DSF) pilot schemes on patient out-of-pocket costs and utilization of MNCH services.

Almost all outpatients and inpatients report out-of-pocket expenses associated with their healthcare visits. These fall into four categories: (i) travel costs to reach the healthcare institution, (ii) official fees charged by MOHFW facilities, (iii) informal or unofficial fees paid to persons inside the facility to obtain services or other benefits, and (iv) the costs of purchasing medicines recommended by the medical staff that which are not available at the health facility.

The major out-of-pocket expense reported is purchasing medicines and supplies that are recommended by medical staff but are not available at the facility. About 50% of outpatients and over 90% of inpatients report such costs, which average Tk301 per outpatient and Tk980 per inpatient. Travel costs to the facility average Tk27 for outpatients and Tk131 for inpatients, however, travel costs for expectant mothers are much higher and average Tk220. About 50% of outpatients and 75% of inpatients report having to pay official fees, with inpatient women who had delivered, reporting higher-than-average fees. The incidence of informal payments is much lower than anticipated, with most outpatients reporting no such expenses.

There have been large increases since 2006 in facility childbirths at facilities enrolled in the DSF schemes, with the greatest impact seen in those enrolled in the universal DSF schemes. However, findings show that the DSF actual out-of-pocket costs incurred at the time of treatment are no lower at DSF enrolled facilities, and that equity of utilization does not seem to have been improved.

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