Consumer Costs of Caesarean Sections in Public, Private and NGO Health Care Facilities in Bangladesh

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Executive Summary

In the latter half of 1996, the Health Economics Unit, with support for the Canadian International Development Agency, carried out a clinical health economics survey to assess the full economic costs and cost-effectiveness of caesarean sections in a public, a private not-for-profit and a private-for-profit clinic. The study results have timely relevance for the Fifth Health and Population Programme (HAPP5), bearing in mind that this includes a strategy to improve and extending emergency obstetric care (EOC) at the Thana level. This report presents a set of preliminary results from the study, describing the pattern of consumer expenditures for the procedure and introduces concerns about the extent effect of *unofficial fees* and the affordability of EOC services.

The clinics chosen for the study were the hospital of the Lutheran Aid for Medicine Bangladesh (LAMB), in Parbatipur, the Myemensingh Medical College Hospital and the Monowara private clinic, in Dhaka. At each hospital, the consumer costs per procedure, for each patient, as well as socio-economic data, were collected using patient surveys at admission, immediately prior to discharge and both 6 and 20 weeks after discharge.

The results showed consumer costs per patient and per patient day were highest at Monowara and lowest at Mymensingh. However, the length of stay was lowest at Monowara (6 days). Of total expenditures, the operation fee was the most costly item at both Monowara and LAMB's. At Myemensingh the most expensive expenditure item were pharmaceuticals. The mean cost of pharmaceuticals for a caesarean-section patient at Myemensingh is Tk. 3,729 exceeding the costs of pharmaceuticals at each of the other hospitals. It is likely that these high costs result from patient expenditures to make up for supply shortages caused by government resource shortfalls, inefficient logistics and/or leakage from the system.

When analysed by income group, rather than facility, a positive relationship was observed between income and expenditures on caesarean-section and affordability of the procedure was brought into question. It was found that, in the lower- and middle-income groups, average consumer costs exceeded average monthly income. In the higher income group, the consumer cost was 87 percent of mean monthly income. Further, the survey suggests that the public sector patient is paying charges approximately 5 times the expected official user-charge expenses, largely due to the shortfalls in pharmaceutical supplies.

The findings of the study have implications for introduction of emergency obstetric care at lower levels of the health system. First, in assessing the costs of a procedure, it is necessary to evaluate using what economists refer to as *full economic costs* rather than purely supply-side or provider costs. Thus, affordability in the target population and patterns of utilisation can be assessed. Second, shortfalls in supplies must be addressed in order to prevent transfer of these costs to the patients, in the form of pharmaceutical expenditures in the market place. Finally, there should be regular monitoring and accountability in the fee system to ensure charges are kept at an affordable level. In this way, better quality and more affordable services should begin to reach the target population.

Introduction

Bangladesh's Fifth Health and Population Programme (HAPP5) is due to start in July, 1998. Among the priorities of this programme is reproductive health care including the assurance of safe delivery care. As part of HAPP-5, it is planned that emergency obstetric care (EOC) will be made available at the Thana level. As long as the necessary inputs, including skilled personnel, are put in place, it appears that, in terms of cost to the provider, delivery of EOC at this level will be feasible. However, to date, in looking at prioritisation of these activities, consumer costs have not been considered and provider costs are not available in detail. Although, in theory, health care in public facilities is provided free of charge, in reality, the patient is faced with many costs, including payments to obtain drugs, to improve access and services offered, for transport and to cater for those friends and relatives that are in attendance. These costs can become prohibitively expensive or force the patient and her family into debt.

In the latter half of 1996, the HEU, with CIDA support, carried out a clinical health economics survey of patients to assess the full economic costs and cost-effectiveness of surgical procedures in three types of health care facilities. The procedure chosen for this survey was the caesarean section which has timely relevance for the HAPP5, bearing in mind the new EOC strategy. This report presents a set of preliminary results from the study, aimed at describing the pattern of consumer expenditures for the procedure. Section 1 provides background information and states the aims of the report. Section 2 gives an overview of the study design, while Section 3 presents survey findings. Finally, Section 4 concludes the report with a discussion and a set of preliminary recommendations, including concerns about the extent and effect of *unofficial fees* upon the affordability of EOC services.

Section 1: Background of the study

Measuring the full economic costs[2] of an activity requires information on both provider outlays and consumer expenditures. An existing consumer cost study[3] points out the considerable cost burden of secondary and tertiary care, even in public hospitals where services are supposed to be provided free. Service, procedure and investigation-specific studies are required, however, to identify exactly the major cost areas for patients and families who seek the cost of health care at the major hospitals of Bangladesh. The HEU c-section study explores the cost-effectiveness of surgical procedures in secondary and tertiary facilities. In the study, a common procedure was selected and patient cohorts from public, private and NGO facilities were surveyed. Socio-economic information about each patient, outcomes and economic costs were collected in order to carry out a cost-effectiveness analysis.

In order to consider the perspective of provider and the patient and examine issues of affordability, from the view of society, the procedure was evaluated using what

[2] Full economic costs can be defined as the opportunity cost or the value of sacrifice of giving up alternative opportunities when a choice is made to use resources in a particular way.
[3] Begum, Sharifa, *Health Poverty Interface Study* (BIDS, 1995).

economists call *full economic costs* and not simply provider or supply-side costs. As a result, consumer costs were collected for this study, from which this report examines:

- consumer expenditures per procedure at 3 types of facilities.
- consumer expenditures per procedure for various classes of patients at 3 types of facilities.
- generalised estimates of average consumer expenditures for c-section patients treated during the study period.

Section 2: Methodology and Study Design

The consumer expenditure survey formed a part of a prospective, clinical health economic evaluative research study of the c section procedure in Bangladesh. The study conducted was a nine-month case-control study of patient cohorts. Study cohorts were defined as those who sought admission for c-section at a major tertiary care public hospital, a leading private care hospital and an NGO hospital.

Procedure selection and rationale:

The procedure selected for clinical study and cost analysis at the three facilities was based upon the both clinical and cost criteria (see table 1, below). The procedure chosen was pregnancy terminating in either elective or emergency caesarean section.

Table 1: Criteria for selection of surgical procedure for the study.

Clinical criteria	Cost criteria
A common procedure/intervention provided at the public, private and NGO hospital	Required service by GOB as well as by full-service private hospitals/NGO, hospital.
Clinical consequences are of a limited and a readily controlled nature.	Recognised and significant individual and social costs due to morbidity and mortality.
A life-threatening clinical problem	Significant provider costs result from investigation and treatment of the procedure
Severe health effects, if left untreated	Suited to specifiable, fully allocated cost analysis
Frequent occurrence	

Cohort Selection

Cohorts of research subjects chosen for inclusion in the study included one cohort at the public hospital, one at the private hospital and one at the NGO hospital.

1. Public Facility

The public hospital selected for the study is Mymensingh Medical College Hospital (MMCH), a tertiary hospital attached to the Mymensingh Medical College and providing a full range of emergency surgical facilities. The HEU has conducted a full financial analysis of MMCH[4] as well as a baseline survey of the MMCH to examine the impact of cost-recovery through user-fees[5]. The institution provides the required

[4] Kawnine et al. "Myemensingh Medical College Hospital: financial analysis (FY1994-5)" HEU research paper no. 6, forthcoming.

[5] Kawnine et al. "Mobilising resources through hospital user fees in Bangladesh: a report on quality and ability to pay", HEU research paper 4, August 1996

services and meets other basic criteria. In addition, it provides a significant number of c-sections through its emergency obstetric and gynaecological wards.

2. *Private Facility*

The private facility chosen for this study, Monowara Hospital, is a 60-bed clinic. It provides outpatient, accident and emergency services, a fully equipped and modern operating theatre, investigative services, including radiology and pathology, clinical dietary services, central sterilisation and supply departments and an ambulance service. It also offers the services of a High Dependency Unit and pharmacy for the patients. Inpatient treatments include major medical and surgical specialities.

3. NGO Facility

The NGO facility selected was the Lutheran Aid to Medicine Bangladesh (LAMB) Hospital in Parbatipur, Dinajpur District. This 45 bed hospital provides both outpatient and inpatient services, with a focus on maternal and child health. C-sections form the majority of surgeries carried out. Of all deliveries in 1996, the complicated delivery rate was 61.5% and the c-section rate was 18%[6].

Table 2: HEU Study Inclusion and Exclusion Criteria

Inclusion Criteria	Exclusion Criteria
Emergency C-section	Patients unwilling to consent
Elective C-section	Patients not staying in the area during the study period.

At all facilities, patients undergoing C-section were enrolled once the decision to operate had been taken. The cohort "exclusion and inclusion" criteria applied equally and uniformally to all three facilities. The criteria are presented in table 2, above. Patients undergoing emergency or elective surgeries were included in the study. Although these are quite different clinical bases, for the purposes of the study, relevant comparisons between the two seem useful, especially in exploring differences between types of service providers. Due to the size of the hospital 'catchment areas', only patients staying in the catchment area of the hospitals during the study period were included in the study. The final cohort sizes are shown in table 3.

Table 3: C-Section Cohort Sizes at Each Facility

MMCH (Public)	Monowara(Private)	LAMB (NGO)
99	80	30

Survey Design

The consumer cost survey formed part of a comprehensive series of questionnaires, designed to assess full economic costs, facility quality, socio-economic background of the patient and mother and baby outcomes. Initial information on consumer costs was obtained from patient interviews, carried out within two days of hospitalisation by medical students, residents, or other HEU-trained personnel. During hospitalisation, periodic interviews were used to identify expenditure items such as the bed charge, food, transport and drug costs borne by patients. A consumer cost questionnaire was also conducted immediately prior to discharge. In order to capture expenditure

[6] World Mission Prayer League, Annual Report, 1996

information in the post operative period, a follow up household interview was held six weeks after discharge, by an HEU-trained team. A final, follow up household interview was carried out for patients attending Myemensingh and Monowara, twenty weeks after discharge. Due to difficulties of access, this final follow up was not possible for the30 LAMB patients.

Interviews were conducted by medical students (MMCH), junior residents (Monowara) and trained interviewers (LAMB), under the direction of HEU and the principal investigator (PI) of the HEU study.

Consumer expenditure data collected

Consumer expenditure information was collected on bed and operating expenses, supply expenditures (including medicines), food expenses, charges for laboratory services and other investigations and any transport expenses incurred. At Monowara and LAMB, all charges are officially sanctioned by the institution. At MMCH, there are sanctioned fees for admission, some sanctioned bed charges, and official charges for investigations and ambulance services. However, some unofficial 'service' charges were paid, some of which may not have been identified in the survey.

(i) ***Bed charges:*** At both Monowara and MMCH, the bed charge varies with the type of hotel service provided, whereas LAMB only provides a standard ward service[7]. Previous research suggests that bed charges recorded at MMCH may include some service charges that are not officially sanctioned by the institution[8]. It should be noted that students, hospital staff and government employees receive exemptions for cabins.

(ii) ***Supplies:*** Supplies include all medical supplies and medicines not provided by the hospital within the operating fee. At the public facility shortages of stock may lead to a necessity for these supplies to be purchased outside the hospital by the patient.

(iii) ***Food:*** In Bangladesh, food provided by the hospital is rarely adequate to meet nutritional needs and is supplemented by the patients, the cost of which was measured in the survey. Total food expenses include the amount the patient paid for her own and family's food, purchased from or outside the hospital, during her stay in the hospital.

(iv) ***Laboratory services and investigations:*** These include the charges to the patient for any laboratory tests or other investigations that were carried out.

(v) ***Operation charge:*** At public facilities there is no operation charge. LAMB charges a fee to cover recurrent expenditures for the operation and Monowara charges a fee which covers recurrent expenditures for the operation including the surgeon's fee and the costs of other personnel.

(vi) ***Transport expenses:*** Transport costs are those costs incurred for the patient and her attendants to come and go from the hospital.

The consumer expenditures were also analysed according to income group, to give an impression of affordability. The patients were classified into income groups based on

[7] Monowara provides alternatives of air-conditioned or non-air-conditioned cabins; MMCH provides a choice of non-paying beds, paying beds and cabins.

[8] Kawnine et al, "Unofficial fees at health care facilities in Bangladesh: price, equity and institutional issues", HEU research paper no. 10, September 1997.

their own assessment of the monthly household income. An analysis of consumer surplus, exploring the relationship between willingness and ability to pay was not within the scope of the current survey.

Further information was also obtained on days of work and resultant income lost by the patient, for calculation of the opportunity cost of the c-section. However, due to the low numbers of income earning mothers in the sample and ambiguities in the patient responses, these indirect costs have not been included in the analysis.

Section 3 Survey Findings

Income Groups served by the facilities

As few of the patient cohort were income earners, household income was used to define different economic groupings. The mean household income for c-section patients was, as expected, highest at Monowara (22,893 Taka) per month. At MMCH and LAMB, the mean household incomes were 8,015 Taka and 4,826 respectively (see table 4). For both the lower and higher income groups, defined in table 4, the mean household income was highest at Monowara and lowest at LAMB. This pattern was reversed in the middle income group which maybe a result of the different per household incomes and income distributions between the catchment areas.

Table 4: Average total income by income group (per month in Taka)

	LAMB	MMCH	Monowara	Overall
<Tk. 5000	2,466	2,553	3,833	2,585
Tk. 5000-10000	9,875	7,477	7,115	7,723
>Tk. 10000	14,000	19,390	26,992	24,985
Mean household income	4,826	8,015	22,893	13,253

Patient Expenses

Table 5 presents the main findings of the consumer survey. Overall, it was found that patients paid most at Monowara, where the mean expenditure per patient were 20,782 Taka and the mean patient expenditure per day was 3,790 Taka. MMCH mean patient charges are the lowest of the three facilities. At LAMB and MMCH, the mean expenditures per patient were 6,752 Taka and 5,669 Taka respectively. The expenditure per patient day, at these two hospitals, was less than one sixth of that at Monowara. If a greater role for the private sector is to be encouraged and they are to provide such services to a wider population, these differences in charges need to be evaluated relative to the clients' willingness and ability to pay. The differences in the average lengths of stay, which were 12 days, 11.3 days and 6 days at LAMB, MMCH and Monowara, in that order, would also need further evaluation. Currently, a faster turnover rate is achieved at Monowara. However, the success of this can only be measured with indicators of outcome (this will be explored further, in a subsequent report on cost-effectiveness).

On a closer look at the results, an interesting pattern emerges. As expected, Monowara charges are highest for the bed charge, investigation charges and the

operation fee. The low expenditure on transport is likely to be due to the combination of a shorter length of stay and the central Dhaka location of Monowara. The other two hospitals that have both longer lengths of stay and rural catchment areas, which will result in greater travel distances to the hospital. The low food expense at Monowara is probably also due to the shorter length of stay.

Table 5: Mean patient expenses by facility (Value in Taka)

	Facility			
	LAMB N=30	**MMCH N=99**	**MONOWARA N=80**	**Total N=209**
Bed Charge	642	356	3,977	1,783
Supplies (including drugs)	529	3,729	2,967	2,978
Food Expenses	860	1,089	557	852
Lab/Investigation Charges	174	81	223	148
Operation Charge	4,065	0.00	12,964	5,546
Transport Expenses	483	415	93	301
Total	6,752	5,669	20,782	11,609
Expenditure per patient day	666	537	3,790	1,800

Mean patients' expenses for medicines, other supplies and medical equipment are highest in the MMCH cohort[9]. The lowest expenditures on medicines was found at LAMB where the mean charge for supplies was 14 percent and 17 percent of the mean charge for supplies at MMCH and Monowara, respectively. The high expense of medicines at MMCH can be attributed to a number of factors. Firstly, the survey found MMCH tended to prescribe expensive and high-powered antibiotics[10], for which physician interviews found the reasons to be: a) scarcity of the drugs required in their own medical store; b) limited time and a rapid turnover; and, c) a high probability of infection. Further anecdotal evidence suggested ineffectual drug logistics controls, where higher cost drugs were prescribed and paid for by the patients, while less expensive drugs were actually used.

The expenditures were assessed through a patient questionnaire and therefore the numbers above are likely to concealing unofficial fees, as well as the possible excessive charging for pharmaceuticals. For example, a patient at MMCH should pay an admission fee of 5.5 Taka, a one off surgery fee of 550 Taka plus investigation and bed charges for paying beds (Tk.53.5) and cabins (Tk. 140), if applicable[11]. The survey suggests the consumer could be paying charges approximately 5 times the expected expenses.

Graph 1, overleaf, shows each of the items of consumer expenditure as a percentage of total consumer expenditure, at each of the facilities. The graph emphasises the

[9] It was found in the survey that over 90% of this amount were expenditures for medicines.
[10] See, Kawnine, et al, An Agenda for Health Economics Research Concerning Antibiotics Usage Standards in Developing Countries: the Case of Bangladesh, HEU Research Note no. ,6, 1996.
[11] Kawnine, N. et al "Mobilising resources through hospital user-fees in Bangladesh: a report on quality and ability to pay", HEU research paper no. 4, August 1996.

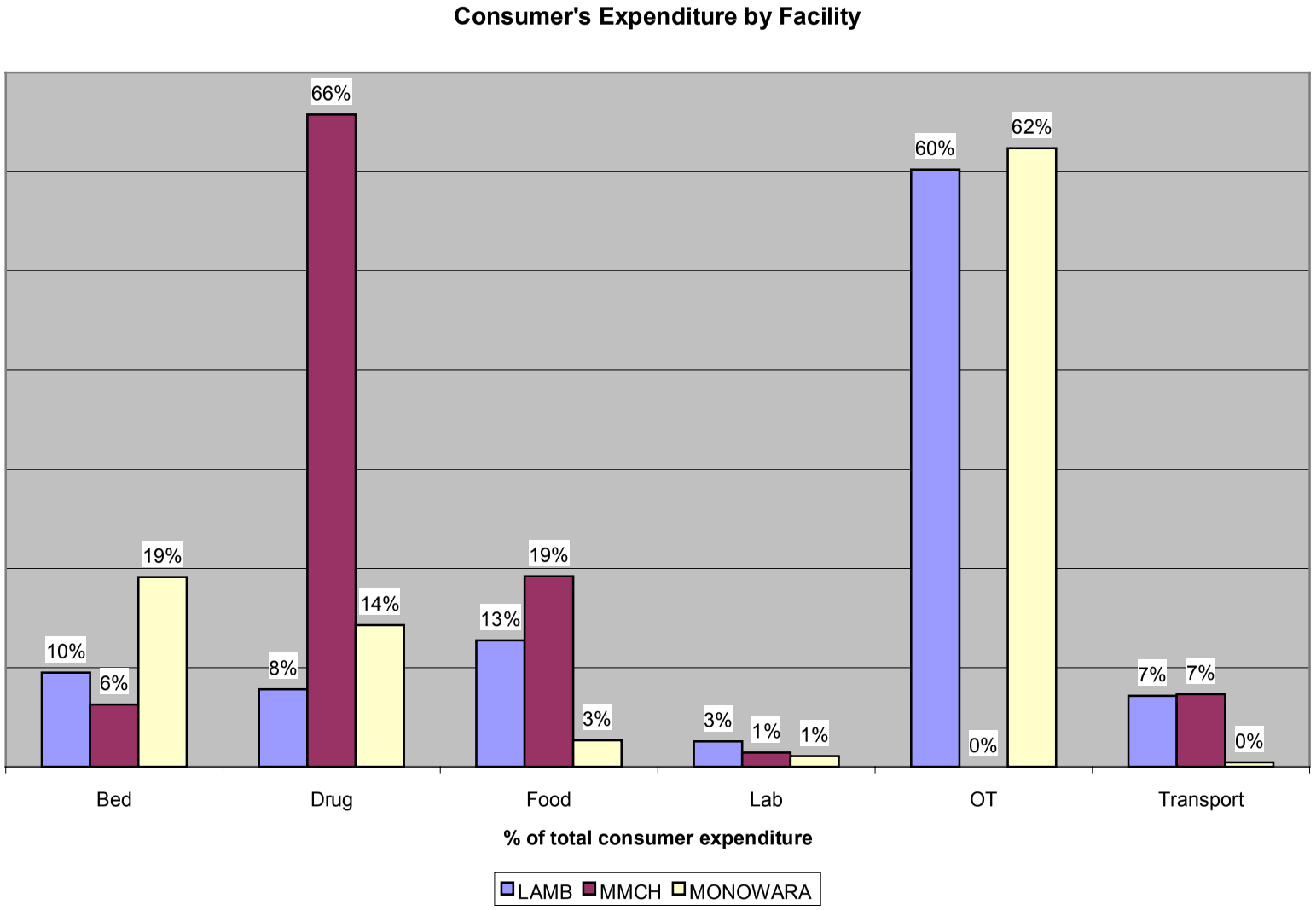
importance of the operation fee (except at MMCH) and the overwhelming costs of drugs for MMCH patients.

Consumer expenditures by income group

Table 6: Consumer expenditures by income group

Total family income per month (in taka)	Mean monthly income	Total Consumer Expenditure		
		Mean	S. D.	N
Less than Tk. 5000	2,585	5,744	3,243	64
Tk. 5001-Tk. 10,000	7,723	9,185	6,085	59
More than Tk. 10,000	24,985	17,637	7,783	86
Overall	13,253	11,609	8,096	209

When analysed by income group, rather than facility, a positive relationship is observed between income and expenditures on c-section, as expected. It was found that in the low-income group, consumer expenditures exceeded the 5,000 Taka boundary for the income group by 744 Taka and was more than twice the average monthly income for the group as a whole. In the middle income group, consumer expenditures again exceeded average income by 20 percent. In the higher income group, the expenditure was 87 percent of mean monthly income. All these figures bring into question the procedure's affordability from the point of view of the patient.


Consumer's Expenditure by Facility
10%
6%
19%
8%
66%
14%
13%
19%
3%
3%
1%
1%
60%
0%
62%
7%
7%
0%
Bed
Drug
Food
Lab
OT
Transport
% of total consumer expenditure
LAMB
MMCH
MONOWARA

Conclusions and Recommendations

The patient survey found a large variance in patient expenditures for c-sections across the hospitals. The public facility has the lowest expenditure for the patient and the private the highest. At Monowara and likewise at LAMB, all charges are officially sanctioned by the institution. As a result, the total consumer expenditure falls within an expected range at both these facilities. However, the survey suggests the consumer could be paying charges as much as 5 times the expected expenses at MMCH. As a part of these expenses, they are required to pay for medicines - the most part of their expenditure. These expenditures result from supply shortages caused by government resource shortfalls, inefficient logistics and/or leakage from the system. This has implications for introduction of emergency obstetric care at lower levels of the health system: if the same shortages of drugs and supplies are likely at the Thana facilities, perhaps compounded by laboratory and blood supply quality, a consequent transfer of the cost to the patient may also occur.

Whether this transfer of costs is a good thing is not up to this report to answer. However, evidence suggests that the consumer expenditure for the procedure, relative to income, is very high across all facilities. In the survey, the expenditure exceeded monthly incomes for both lower and middle income groups. This brings into question the affordability of the c-section procedure. If the patient cannot afford the procedure within their monthly income, they will draw upon their savings or, if there are not enough savings, attempt to borrow. Worse still, if the cost barrier is too high, they may delay treatment until complications force them into the procedure and, hence, the expense and dramatically higher risks. This will only worsen the condition of the patient and further inflate consumer costs. Where consumers face significant unofficial fees over and above official charges, this situation will be compounded. Since other HEU surveys suggest a widespread practice of unofficial fee collection[12], this is a reality.

It is likely that the majority of Thana patients are those individuals from lower and middle income groups who, based on the survey results, are little able to afford a c-section operation. It is vital, therefore, that if HAPP5 continues with the plan to extend EOC to the Thana, systems are in place to minimise the cost to the patient. However, in the absence of quality improvements, the expansion of EOC activities at the Thana level may lower consumer transport costs, but, otherwise, the incidence would still fall heavily on the poor.

The HEU consumer expenditure survey aimed to quantify patient expenditures on c-section surgery, observe the difference between different types of providers and assess the affordability of these procedures in the context of the widening EOC programme. From the findings, the following recommendations are made:

1. Reduce shortfalls of drugs and other supplies
2. Prevent the transfer of the costs of shortfalls to the lower income or vulnerable patient groups

[12] See above, note 6 concerning unofficial fees.

3. Introduce regular monitoring and accountability in the fee system, including unofficial fees.
4. Ensure charges for EOC are kept at an affordable level

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