Nepal Safer Motherhood Project
a part of HMGN Safe Motherhood Programme

Coping with the Burden of the Costs of Maternal Health

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Abbreviations

AHWs	Auxiliary Health Workers
ANC	Ante natal care
ANM	Auxiliary Nurse Midwife
ATP	Ability-to-pay
BEOC	Basic essential obstetric care
BOC	Basic obstetric care
C-section	Caesarean section
CEOC	Comprehensive essential obstetric care
CI	Confidence interval (95% interval used throughout report)
CT	Computerised Tomography
DDC	District Development Committee
DHS	Department of Health Services
DOH	Department of Health
EDP	External development partner
EOC	Essential obstetric care
FCHV	Female Community Health Volunteer
HDC	Hospital Development Committee
HEFU	Health Economics and Financing Unit
HH	Household head
HMGN	His Majesty's Government of Nepal
Hrs	Hours
HSSP	Health Sector Support Programme
IEC	Information, education and communication
INGO	International non-government organisation
MBP	Mother and Baby Package
MCHW	Maternal and Child Health Worker
MOH	Ministry of Health
MWRA	Married women of reproductive age
N	Number
NA	Not applicable
NGO	Non-government organisation
NPC	National Planning Commission
NSMP	Nepal Safer Motherhood Project
OLS	Ordinary Least Squares
PHC	Primary health care
PRSP	Poverty Reduction Strategy Papers
Rs	Nepalese Rupees
SDF	Social Development Facilitators
SDK	Safe delivery kit
SES	Socio economic status
SM	Safe motherhood
SPSS	Statistical Package for the Social Sciences (statistical software)
SST	Social Service Team
Std. dev.	Standard deviation
TBA	Traditional Birth Attendant
UNM	United Mission to Nepal
VDC	Village Development Committee
VHW	Village Health Worker
VIF	Variance inflation factor
WHO	World Health Organisation
WTP	Willingness-to-pay

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Executive Summary

Background

The Nepal Safer Motherhood Project (NSMP), funded by the Department for International Development (DFID) and managed by Options, aims to support the National Safe Motherhood (SM) Programme of His Majesty's Government of Nepal (HMGN) by helping to improve service provision and increase access to core services. While there is growing evidence that costs are a major barrier to women seeking essential maternity services, few studies on the extent, content and impact of these costs have been carried out.

This study examines costs from a variety of perspectives. A survey of women recently delivered at home and in health facilities was carried out to obtain information on household costs and maternal health seeking behaviour. In addition, a willingness-to-pay (WTP) study was used to investigate women's preferences for, and valuation of, alternative delivery care services. These household based studies were supported by a facility study to investigate user charge and exemption policies in facilities, plus a study of the costs of providing delivery care in one zonal hospital. Finally, options for addressing the issue of high cost were investigated by looking at international evidence on maternal care financing and existing Nepalese financing schemes.

Study Methods

A survey of 720 women that had delivered in the previous six months across eight districts was undertaken. The districts were divided into NSMP (Baglung, Surkhet, Kailali and Jumla) and non-NSMP (Bhojpur, Gulmi, Jhapa and Dolpa), with a mix of topography terai, hill and mountain. Within each district, Village Development Committees (VDCs) were chosen that were situated near, medium distance and far from the district centre and all women delivering in a hospital in the past year were selected for interview, along with a random selection of 20 women per VDC who delivered at home.

Women were asked a series of questions about the reasons for their choice of place of delivery, people attending the delivery and cost of care. In the case of institutional delivery, formal costs were verified by obtaining the hospital bill. Cost information was also obtained on transport, opportunity (time) and informal (non billed) costs incurred by women. Women were also asked about the source of money used to pay for services.

An additional 720 married women of reproductive age (MWRA) were interviewed about their preferences for alternative delivery care options – namely delivery in Basic Essential Obstetric Care (BEOC) and Comprehensive Essential Obstetric Care (CEOC), facilities, at home with trained or untrained attendance, and alone. We examined how much they valued each one, by asking for their WTP.

The facility survey investigated charging and exemption practices in all the main CEOC facilities in the study areas. Information on pricing, use of user charge fee income and exemptions given was obtained from the facilities.

Summary of Main Results

Delay in reaching care

The decision to deliver in a facility significantly affects the delay in reaching staff and treatment. All attendants, both trained and untrained, reached households within an hour of being called to attend the delivery, which compares to an average of 2.8 hours travel time in the terai districts, increasing to an average of over 8 hours in mountain districts.

Home deliveries are not without cost

Home deliveries are not without cost. Households pay 8-900 Nepalese Rupees (Rs) for a trained attendant at home, which includes mainly a payment to the attendant (in cash or kind) and, in some cases, the purchase of drugs, safe delivery kits (SDKs) and washing materials. This is double the amount paid for delivery at home with an untrained attendant, such as friend or relative. However, within the home, payment methods are flexible – as they can be made in kind. Also, the extent of payment is largely up to the household and how much they are ready to contribute.

Facility-based care results in significant transport and time costs

Delivery in a facility, on the other hand, imposes two additional cost burdens on households: transport to the facility and companion time of going with the woman. In the case of home deliveries, these are passed on to the attendant. Over 50% of women from the hill and mountain districts are carried to the hospital by stretcher or other local means, such as chair, dhoko or bed. This requires the payment of porters - which is significant at an average of Rs 2,900. However, there is no external validation of these figures, which rely on household recall. On average, transport costs represent almost 60% of the total cost associated with a normal delivery in hospital and just over 30% of that associated with a caesarean section (c-section).

All women were accompanied to hospital and, in 55% of cases, this resulted in a loss of income. The average loss to the main companion (husbands in nearly 70% of cases) was estimated at Rs 886. This does not include all the time and financial costs incurred by other relatives and friends visiting the woman during her stay in hospital.

Once at the facility, drug and medical supply costs were the most significant at over Rs 1000 (most of these were purchased outside the facility). This was followed by bed and food charges, including food brought from outside by relatives, at just over Rs 800.

The hospital charges for c-section were eight times higher than normal delivery (Rs 5,500 and Rs 678 respectively), but the additional charges (informal staff payments, drugs and supplies brought from outside, companion costs, food and washing materials) were little different (Rs 1,357 and Rs 932 respectively). Once transport and time costs are added, as well as referral costs (22% of cases were referred from a lower level of care, with the average cost of referral being Rs 891), the total expenditure for a c-section is just under twice that of a normal delivery (Rs 11,961 versus Rs 6,348).

Comparatively, the total household costs of delivery with a trained attendant at home is about half the official and additional costs of a normal delivery in a hospital. However, once transport, time and referral costs are added, the magnitude of difference stretches to seven-fold.

Because households do not know prior to hospital admission what type of delivery will be required and the extent of complications and length of stay, the degree of uncertainty in terms

of the final cost is extremely high. In contrast, those delivering at home have a clear idea of any eventual cost and can control the extent of payments made.

Households do not plan for hospital care and raising money is difficult

Forty one percent of households reported difficulty in raising money. Savings and daily wages were sufficient to cover costs in only 42% of home deliveries and 35% of hospital deliveries. Fifty one percent of those delivering in hospital borrowed money, in 60% of cases from friends/relatives and, in 30% of cases, moneylenders. Very few households (less than 2%) had access to community loan schemes since these had generally not been established in the study areas selected. (In the few cases where NGO supported schemes were available, take up may have been low because the amount available was insufficient to meet the costs of delivery care). A third (32%) of the poorest households reported sale of land and livestock to pay for care. Much more money was borrowed to pay for care in a facility, compared to home, but the total amount borrowed was only sufficient to cover the facility-based costs of care, not transport and time.

Exemptions are failing. Financing the costs of hospital-based delivery care will push more households into poverty

The costs of a home delivery represent 36% of the poorest household's monthly income, compared to 1% of that of the wealthiest. A vaginal facility-based delivery represents ten times that much. This level of expenditure pushes more households below the absolute poverty threshold. There was little difference between the facility-based costs incurred by poor households compared to rich ones. This suggests that exemptions schemes are not working effectively and the poor are not protected from the cost of care.

Households prefer skilled home delivery. Hospital care is perceived as emergency care

Sixty five percent of households reported that they went to a facility because of problems in present or previous pregnancies or because they were referred during antenatal care (ANC) (20%). Absence of complications, cost and/or distance were expressed as the main reasons for delivery at home, as well as the familiar environment and female attendants.

This is supported by the WTP survey that found that most women preferred a home delivery with a trained attendant. They value the fact that payments are made to suit household financial circumstances and can be made in kind. They get faster service compared to those at a facility (due to avoidance of travel time), together with a supportive family environment and food.

Women preferred well equipped (CEOC) services compared to basic (BEOC) facilities because of the ability of the former to treat emergencies (in terms of staff, equipment, blood availability and operating theatre).

Households are willing to pay for care in the case of an emergency

Households are willing to pay for delivery care and will spend (or borrow) up to an average of Rs 4000 for CEOC in the case of emergencies. However, poorer households are less willing to pay and, in some cases, not willing to pay at all.

Differences in NSMP compared to non-NSMP districts

Some observations were made with regards to NSMP districts compared to non-NSMP districts, which could be related to the programme's activities. However, due to the nature of the study, these are only hypothesis-raising and further (qualitative) research is required to explore the reasons for the differences.

Some differences were found in comparing the experience of delivery in NSMP and non-NSMP districts. For women giving birth at home, institutional staff attended more women in NSMP districts and attendants reached the home of respondents more quickly. A higher proportion of women in NSMP districts reported using SDKs (costing Rs 34) during home delivery. The total payment for a home delivery was significantly higher in non-NSMP (Rs 913) compared to NSMP districts (Rs 468).

More households from NSMP districts were found to prefer delivery in CEOC facilities than those in non-NSMP districts. For facility-based deliveries, the surgery fee was significantly lower in NSMP districts, as were reported payments to staff. However, there were no differences with drug and transport costs – which are still equally high, despite revolving drug funds and promotion of community transport schemes.

Report Recommendations: Reducing the Burden on Households

i) Develop a financed strategy for covering costs of maternal care

Scenarios in a typical district of 310,000 population and a birth rate of 4.4% were used to investigate the total cost of delivery care under different assumptions about the extent of use of facility and home-based care. The scenarios assume that 30% of women in terai areas and 70% in mountain/hill areas live more than two hours from the district centre and CEOC facility and, as such, could not obtain timely emergency help in the case of obstetric haemorrhage. These assumptions have a significant impact on the appropriate strategy for providing referral care.

Current patterns of delivery care (93% at home, 5% c-section rate) imply that the per capita cost of services in the terai is around Rs 49, increasing to Rs 68 in mountain/hill areas. If a strategy (emergency referral scenario) is used - that requires a skilled attendant to assist all women during delivery at home and risky pregnancies (15% of the total living less than two hours from a facility and 40% living more than two hours away) to be referred to a CEOC facility - the per capita cost increases to Rs 85 in the terai and Rs 151 in mountain/hill areas. However, a policy of attending 100% of deliveries in institutions would cost more than Rs 317 per capita in mountain/hill areas.

Currently, all costs are supported by households. However, a policy aiming to share the costs of maternal care between users and government needs to take into account both WTP and ability-to-pay (ATP). If all households were to finance opportunity (time) costs and informal payments to staff, while non-poor users also pay for transport and formal facility costs according to their maximum WTP, under the base-case scenario, a public subsidy of around Rs 28 per capita would be required in mountain/hill districts and Rs 6 in the terai. Under the emergency referral scenario, a subsidy of Rs 92 per capita would be required in mountain/hill and Rs 27 per capita in terai areas.

ii) Facility exemption and user-charging strategy

The facility survey emphasised the ad hoc and under-financed nature of most exemptions. Institutional user cost recovery for maternal health appears very high, perhaps nearing 100%, and these high costs, impinge heavily on poor families. Several interventions might be used to improve this situation. One is to improve the transparency and funding for exemptions, perhaps by requiring facilities to put aside a fixed proportion of user charge revenue for exemption purposes that would be matched from external sources (central government or donor). However, this still requires an effective strategy for targeting (or identifying) the poor, based on geographic characteristics or through community peer assessment. Another intervention that would benefit both rich and poor patients would be to establish fixed price tariffs for core delivery related services that could be well advertised in the community.

iii) Funded mechanism for reimbursing costs of travel and reducing time costs

Transport represents a large and variable proportion of total costs in mountain/hill areas. Providing assistance to cover these costs in the form of both transport systems and funding for recurrent costs appears to be a key part of any strategy to increase access to CEOC. One dimension of the strategy is to ensure access to funds to pay for stretcher carriers or other recurrent costs within the community. One possibility, given the difficulty in distributing and maintaining cash accounts in communities, is to develop a system of vouchers distributed to poor communities that can be reimbursed for cash on reaching the CEOC facility. Lastly, if acceptable to households, to reduce time costs to household members, a Female Community Health Volunteer (FCHV) might be encouraged to accompany women from their home to facilities. However, in order to motivate these voluntary staff to carry out this additional task, an appropriate incentive may be required.

Chapter 1. Introduction: Coping with the Costs of Maternal Care

The Nepal Safer Motherhood Project (NSMP), financed by the Department for International Development (DFID) and managed by Options, aims to support the National Safe Motherhood (SM) Programme of His Majesty's Government of Nepal (HMGN) by contributing to improved maternal health in selected districts. It has two components: *service provision,* under which systems to manage services for women of reproductive age are established, including improvements to the physical infrastructure of hospitals, equipment and supplies, and the training of personnel; and *increasing access,* which seeks to improve the social context for, and access to, midwifery and obstetric services in order to enable women to utilise them.

In line with international learning, NSMP works to support the provision of Comprehensive Essential Obstetric Care (CEOC) services in major hospitals and Basic Essential Obstetric Care (BEOC) services, with a referral link, in surrounding hospitals. Its work in relation to increasing access utilises a range of government and non-government organisation (NGO) partners to promote SM messages at the community level and raise the priority given to SM issues at the local institutional level.

All NSMP-supported facilities and transport services make a direct charge to users for services provided. In addition, patients purchase the majority of drugs, blood and surgical supplies in local markets. To these formal costs must be added informal expenditure, such as incentives to health workers, fees to carers and subsistence costs. The combined financial impact of this frequently exceeds household cash reserves and can result in a decision to delay, or decline, care seeking. In cases where treatment is sought, significant family debt can result.

Costs were identified as a major barrier to care-seeking during needs assessment work in 1997 and some important steps have been taken to alleviate them, such as support to Hospital Support Committees and Community EOC funds. However, NSMP has not yet measured the extent of the problem, nor its full impact on household economies. Furthermore, it has not yet been able to describe the full range of coping strategies utilised by households to overcome this problem.

Very few studies on the costs to households of accessing Essential Obstetric Care (EOC) services in Nepal have been carried out, yet this information is essential to provide a complete understanding of the challenge of access to services. A study of this type is, therefore, potentially of high value to the sector – both to the work of the Health Economics and Financing Unit (HEFU) of the Ministry of Health (MOH) and to the forthcoming Health Sector Support Programme (HSSP).

For Nepal as a whole, more than 90% of women in rural areas deliver at home, many without the presence of a skilled attendant[1]. Therefore, it is also important to understand how much women pay for a delivery at home, to assess the extra cost of a facility compared to a home delivery, as well as to determine how much households value the alternatives that are available to them, based on their willingness-to-pay (WTP).

Against this background, we conducted a survey to quantify household costs associated with delivery care in eight districts of Nepal for women giving birth in a health facility, at home with a trained attendant, at home with an untrained attendant or alone. The survey also explored how households paid for care and, for those delivering in a health facility, whether and to what extent the quest for money and transport delayed their decision to seek care.

[1] His Majesty's Government of Nepal, 2001.

In addition to the household survey of costs, a WTP study was conducted in the same districts to assess women's preferences for alternative delivery care services and their relative valuation of each one. In economics, the value of commodities or services is measured by the maximum amount an individual is prepared to give up in order to obtain those goods (Dupuit 1969). WTP is a measure of 'strength of preference' for, or value given to, a commodity (Donaldson 2001). In this context, 'pay' is simply a hypothetical measure of what the patient is willing to sacrifice or forego, rather than a monetary amount (Donaldson 1998). The advantage with using this method to value a service is that individuals should include factors that enhance not just health but an individual's well being, including the quality of the process.

During the household survey, and reported in the analysis, a distinction was made between untrained birth attendants - including friends, relatives or untrained traditional birth attendants (TBAs) - and trained attendants. Trained attendants include medical staff – such as Auxiliary Health Workers (AHWs), Maternal and Child Health Workers (MCHWs), Auxiliary Nurse Midwifes (ANMs), doctors and trained TBAs. Where a trained attendant was named, women were asked to distinguish between the categories of staff. It should be emphasised that 'trained' does not imply skilled attendant or, indeed, the provision of skilled attendance, but was a way to categorise the experience of women during the interview process. Internationally, skilled attendant would only include doctor or midwife, although we have also included MCHW in accordance with current SM practice in Nepal. It should, however, be observed that, when we come to cost options (Chapter 6), we include the full cost of skilled attendance, including skilled staff (nurse, doctor or MCHW), necessary equipment to carry out delivery and provision of a functioning referral system.

The first part of this report provides information from the household survey on the current costs to households of delivery care and their WTP for alternative delivery care options, together with a description of the user charging practice at the main facility in each district included in the sample. The second part explores the experience of financing schemes both in Nepal and internationally. The final section summarises the main messages of the report and attempts to draw out policy implications. Summaries of the main points arising are provided at the end of each Chapter.

Part 1: Current Costs of Maternal Health

In the first part of this report, we examine the current costs to households in poor rural areas of obtaining health services related to delivery and complications of pregnancy. Information was obtained through a survey of households in eight districts, together with interviews undertaken in the main facility in each district. A discussion of the limitations of the study is attached as Annex Eleven.

Chapter 2. Household Costs of Maternal Health and Willingness-to-Pay

2.1. Study Methods

Selection of Districts and Village Development Committees

Four districts were selected from NSMP areas and four from areas where neither NSMP nor other similar SM projects were working. Sites were selected to include districts from each of the main ecological regions, namely terai, hill and mountain (Table 2.1).

Table 2.1: Selected Districts by Topography

Topography	NSMP districts	Non-NSMP districts
Terai	Kailali	Jhapa
Hill	Baglung Surkhet	Bhojpur Gulmi
Mountain	Jumla	Dolpa

In each district, three Village Development Committees (VDCs) were chosen, such that they were situated either near, medium or far from the main government facilities. Distance was defined in terms of time spent walking and was assessed by national consultants who were familiar with each area. Preference was given to VDCs where the field researchers were from, to guarantee easier access to the community[2]. In areas where only a small number of institutional deliveries had taken place, clusters of nearby VDCs were also included. Lastly, VDCs in NSMP districts were included only if they were covered by NSMP activities. The list of selected VDCs features in Annex 1.

[2] Due to the worsening security situation at the time of data collection (cease-fire had just broken down), this was felt to be essential to the success of the study.

2.2. Selection of Households for Survey

A. Household Cost Survey

A list of women who had given birth in the last year was compiled with assistance from the Female Community Health Volunteers (FCHVs) and MCHWs[3]. Hospital records were reviewed for those delivering in a health facility. The final sample of households selected for interview was as follows:

- All those women undergoing institutional delivery in the past year4.
- 10 women at random that had undergone trained attended home delivery.
- 10 women at random that had undergone untrained attended home delivery.

From each VDC, the target sample was 30 households, or 720 households for the whole study.

B. Willingness-to-Pay Survey

Married women of reproductive age (MWRA) (potential mothers) were selected for the WTP survey[5]. Thirty women were selected randomly from each VDC, with a total of 90 per district and 720 for the whole survey. It was felt that education level would be a strong predictor of WTP, as well as being highly correlated with ability-to-pay (ATP). Therefore, field researchers were encouraged to select their sample such that 50% of respondents had some school education and 50% did not.

2.3. Questionnaire Design

A. Household Cost Survey

The study was designed to estimate and compare the actual and informal costs of each of the three options for delivery care available to households: facility-based care; delivery at home with trained attendance; and delivery at home with untrained attendance. The aim was also to assess the impact of delivery-related expenditures on livelihoods and determine to what extent costs, or expected costs, impact on decision-making as to where and with whom the delivery takes place.

Household costs incurred within the facility were estimated using two methods. Firstly households were asked to recall the total amount spent and, where possible, provide a breakdown by resource component. Secondly, where available, bills were obtained from relevant hospitals to compare stated amounts with official amounts paid[6]. These were used as a validity check on household recall and also to give an idea of the discrepancy between formal and informal payments (the bill only capturing formal payment). Households were questioned about transport costs incurred to reach the facility and all medical or non-medical costs incurred (such as food and washing materials) that may differ by place of delivery/attendant type. Expenditure items, such as clothes for the baby or the naming ceremony, were excluded, as we did not expect there to be an a priori difference in cost by place of delivery.

To determine the impact of expenditure on livelihoods, households were asked where the money came from to pay for care, whether this resulted in a delay in care seeking and any

3 In Jhapa, immunisation polls/stations were used to find out the cases required in the study.

4 In Dolpa, it was very hard to find delivering cases. As such, the total number interviewed is smaller than for other districts.

5 Even though women are often not the budget holders, we decided against interviewing husbands. This was because, during the pilot, we discovered that many husbands would be working away from home and unavailable for interview. We decided not to include mother in laws as data collectors had some difficulty in distinguishing between mothers and mother in laws in some households. We did, however, urge data collectors to carry out interviews in the presence of other household members and obtain their views where possible.

6 In 84% of public hospital deliveries and 52% of private hospital deliveries.

associated debt servicing charges. Socio-economic status was defined in terms of assets, using the asset index approach outlined by Gwatkin (Gwatkin 2000). To this end, households were questioned as to their ownership of a number of consumer items and other characteristics related to income status. These were then assigned a weight derived by principal component analysis and taken from the study by Gwatkin for Nepal. The asset scores were then standardised in relation to the standard normal distribution with a mean of zero and standard deviation (std. dev.) of one. Finally, these scores were added together for each household and then the total score was ranked and used to create five wealth quintiles. Annex Three provides further information about the assets used and the standardisation and breakdown into wealth quintiles. In addition, households were asked to estimate their average monthly cash income to enable a comparison between the asset index and the income approach to measuring socio-economic status (SES). The complete questionnaire is attached as Annex Five.

B. Willingness-to-Pay Survey

The study was designed to determine women's preferences for place and attendance at delivery and to quantify their strength of preference for this option, based on their WTP. Women were asked to rank each of five options for delivery care in order of preference and whether and how much they would be willing to pay for their preferred option. We used an open-ended questionnaire design, which requires interviewers to convey the notion of maximum WTP. This method has been generally criticised for increasing the risk of non-response and protest bid, since it is more cognitively challenging for respondents. We felt, however, that most women would have the experience of paying for health care in general and maternity care in particular and, therefore, would not find it so difficult to reflect on their valuation. The questionnaire is attached as Annex Six.

Data were collected on perceptions and attitudes towards pregnancy and complications during delivery, as it was felt that women with a better understanding of the risks and possible solutions would be more willing to pay than those with a misinformed view. Data were also collected on SES (using the asset index approach) and education levels, as these are both predicted to affect positively WTP for formal health care.

Respondents who were older than 45 years (not classified as of reproductive age), divorced, separated or widowed (53 cases) were excluded. This was because the study was only interested in the views of MWRA.

2.4. Training and Monitoring of Data Collection

The questionnaires were translated and back-translated. Fifty data collectors were recruited. They were all literate, with post-secondary education and above. A four-day training session was organised in Chitwan from 7th – 10th of September 2003. During this time, one day was spent piloting the questionnaires, after which final changes were made. Due to a shortage of time, a second pilot was not possible. Issues that arose during piloting are described in Annex Two.

National consultants visited all the study sites during data collection to ensure a sufficient sample had been identified, monitor length and quality of interviews, and ensure questionnaires were completed properly. During the training, a leader of each district team was selected. They met with the national consultants and, later, provided a summary report of observations about the questionnaire and any difficult questions or constraints faced during data collection.

2.5. Data Entry and Analysis

Data were entered using Microsoft Excel by two independent researchers who received two days training to this effect. Data were analysed using Statistical Package for the Social Sciences (SPSS) software. The Sterling (UK) exchange rate to the Nepali Rupee used was 1:123.5 (November 2003).

2.6. Results: Household Cost Survey

Survey Process

Households were interviewed on average 169 days after delivery. The interview lasted an average of one hour and 20 minutes. It was not always possible to ensure the presence of husbands during the interviews, due to their working hours and, in some cases, them working in a different village, district or even abroad. In 39% of cases, the delivering woman and her husband were both present during the interview. In 32% of households interviewed, the delivering woman and at least one of her parents in law were present (mother and/or father). In 25% of households, the mother was interviewed alone or without the presence of either husband or mother in law. In 4.7% of cases, the delivering mother was absent at the time of interview, so husbands were interviewed in her place. Table 2.2 indicates the total number of completed household questionnaires by district and place of delivery/attendant.

Table 2.2. Distribution of Completed Household Questionnaires by District and Place of Delivery

District	Delivery at home/ untrained attendant (N)	Delivery at home/ Trained attendant[7] (N)	Hospital delivery (N)	Total (N)
Baglung	30	30	30	90
Bhojpur	39	30	30	99
Dolpa	40	29	10	79
Gulmi	31	32	30	93
Jhapa	30	30	30	90
Jumla	30	34	30	94
Kailali	30	30	30	90
Surkhet	30	32	32	94
Total	260	247	222	729

Description of Interviewed Sample

The average age of mothers from the sample was 24.4 years. The average number of children per household was 2.2. Male household heads (HH) made up 88% of the sample. There was no significant difference between regions or NSMP/non-NSMP districts for these variables. Forty six percent of mothers had no formal education. This varied significantly by region, increasing to 52% in the terai and 72% in the mountain area, compared to 32% in the hill areas. Mothers with no formal education represented 51% of those interviewed in NSMP districts, compared to 42% of those in non-NSMP districts. Of the sample, 39% of HHs were employed in agriculture or other, 35% were self-employed doing agricultural work, 10% were working overseas and the remainder were looking for or unable to work. Reported average monthly cash income per household for the sample as a whole was 3,728 Nepalese rupees (Rs) (95% confidence interval (CI): Rs 3,423 – 4,032). It was significantly higher in households from NSMP compared to non-NSMP districts (at Rs 3,990 compared to Rs

7 Defined as formal government health worker or trained TBA. Doctor in 4.5% of cases (n=10), ANM in 15.8% (n=35), MCHW in 30.6% (n=68), Village Health Worker (VHW) in 3.6% (n=8) and trained TBA in 45.5% (n=101). The numbers were too small to disaggregate by SES.

3,462[8]). There was no significant difference by region. There was a significant association between region and wealth. Twelve percent of all households interviewed in the terai, 19% in the hill areas and 30% in the mountain area were in the lowest wealth quintile, while 37% of those interviewed in the terai, 17% in the hill areas and 11% in the mountain areas were in the highest quintile. Meanwhile, over 94% of the total sample were Hindu and 3% Buddhist, with little variation across regions.

Within districts, there was no significant difference in income between those VDCs situated near, medium and far from the district centre (average income of far VDCs is Rs 3,832 compared to Rs 3,683 for near VDCs). This runs counter to some proxies for wealth status that use distance from the district centre. It is, however, true that those settlements that are farther from the centre are likely to have higher costs of care seeking, mainly because of higher transport and opportunity costs of care.

It was hypothesised that female-headed households may be more likely to deliver in a facility. However, in the observed sample, the sex of the HH was not associated with place of delivery (X^2=0.127; p= 0.116). There was no statistical difference in marital status or religion by place of delivery. On average, those delivering at home were older than those delivering in a facility (25 years versus 23 years; p =0.008[9]) and they were more likely to already have had children (on average 2.4 for home deliveries versus 1.8 for facility deliveries; p=0.000[5]). Surprisingly, women in our sample from VDCs that were close to a facility, were not more likely to deliver in facilities than those from far away VDCs (X^2=0.2795; p= 0.226).

Those delivering at home were more likely to be of lower SES, consistently shown by our two measures (asset index and reported monthly household cash income). This is shown in Table 2.3.

Table 2.3: Place of Delivery by Wealth Quintiles

Income quartiles/ wealth quintiles	Delivery at home/ untrained attendant (%)	Delivery at home/ trained attendant (%)	Facility (%)
Lowest – 1	47	36	17
2	47	33	20
3	37	32	30
4	36	37	27
Highest - 5	18	27	55
Average monthly cash income	Rs 3,045 (median 2,000; std. dev. 3,317)	Rs 3,415 (median: 2,500; std. dev. 3,330)	Rs 4,952 (median 4,000; std. dev. 5,368)

Similarly, women delivering at home were less educated. Fifty six percent of those giving birth with untrained attendance at home had no formal schooling, compared to 48% with trained attendance, 34% in a public health facility and 24% in a private health facility (X^2=24.25; p=0.000).

Home Delivery Costs

Most women delivering at home with a trained attendant were assisted by a trained TBA (45.5% of cases), while the remainder were assisted by institution based health staff (namely a MCHW, nurse, doctor or VHW). Those delivering at home with an untrained attendant were attended by a family member, neighbour or friend in 56% of cases, an untrained TBA in 30%

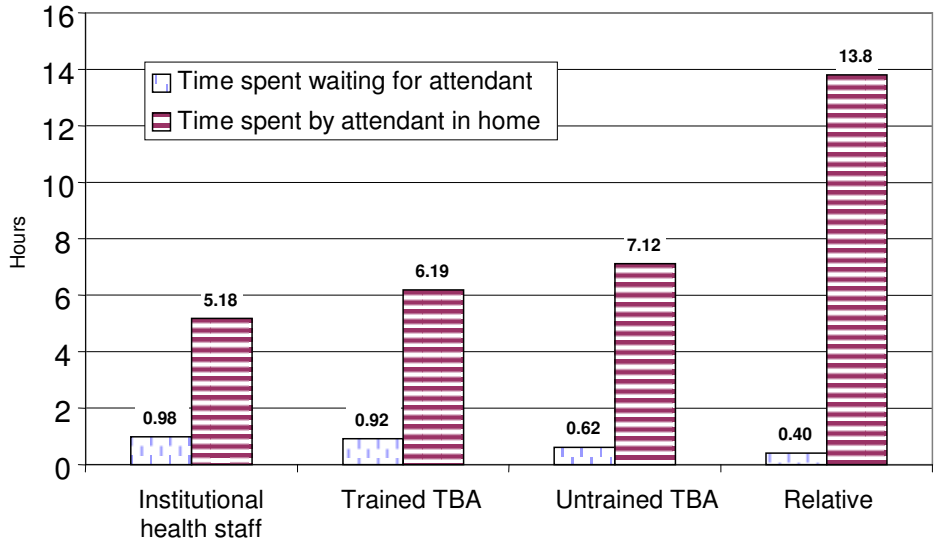
8 Although based on the assets variable, which was considered a more reliable indicator of household resources, NSMP districts were shown to have a similar wealth status (see Chapter 6.1).

9 Mann-Whitney independent sample-test, asymptotic significance, 2 tailed.

of cases and no one in 13% of cases. There was a higher rate of women delivering at home with institutional attendants in NSMP compared to non-NSMP districts (30% versus 21%) (X^2=55.56; p=0.018).

Respondents were questioned about how long they had to wait after calling an attendant for the person to reach their home and, once in their home, how long the attendant stayed there (Figure 2.1).

Figure 2.1: Time Spent Waiting for Attendant and Time Spent by Attendant in Home



Relatives took an average of 24 minutes (95% CI: 11 –39) to reach the home and spent the longest time with the woman (5-21 hours). In contrast, institutional staff took an average of 59 minutes (95% CI: 43 – 74) and spent less time once there. From this sample, untrained staff reach homes more quickly and spend longer once there than trained staff[10]. While there was little difference in the time taken to reach the home by trained and untrained people, attendants reached homes more quickly in NSMP districts (26 minutes; 95% CI: 20 – 32) compared to non-NSMP districts (62 minutes; 95% CI: 47 – 77). Attendants in NSMP areas spent less time in the home (6 hours; 95% CI: 4 – 7) than those in non-NSMP areas (10 hours; 95% CI: 6 –15).

Eighty percent of households delivering with a trained attendant contributed cash, gifts or food, and/or purchased drugs from those present at the birth, compared to 53% of those giving birth with untrained staff or alone [11]. There was no significant difference between trained and untrained attendants in terms of the receipt of gifts or food[12]. Drugs were purchased from attendants in 13% of trained cases and 3% of untrained cases[13].

There was a much higher use of safe delivery kits by those delivering with a trained attendant (27%) compared to untrained (15%)[14]. The reported purchase of safe delivery kits was higher

[10] X^2= 10.39 p = 0.016 and X^2=41.07 p =0.00 respectively.
[11] Mann Whitney U Test; p=0.000.
[12] Mann-Whitney U = 0.499 and 0.867 respectively.
[13] The association was significant (X^2=18.943; p= 0.000).
[14] X^2=9.160; p = 0.001.

in the NSMP (25%) compared to non-NSMP districts (16%)[15]. There was no difference between those delivering with trained versus untrained attendants as to whether they purchased medicines from a medicine shop (occurring in 5% versus 4% of cases respectively). Twenty percent of households reported making payments for materials to wash the baby. Thirteen households explicitly reported also making payments to the person who cuts the cord (not the attendant) and to a barber.

Table 2.4 indicates the total payment made to attendants[16]. This includes the value of food and gifts provided, as well as actual fees and drugs purchased from staff.

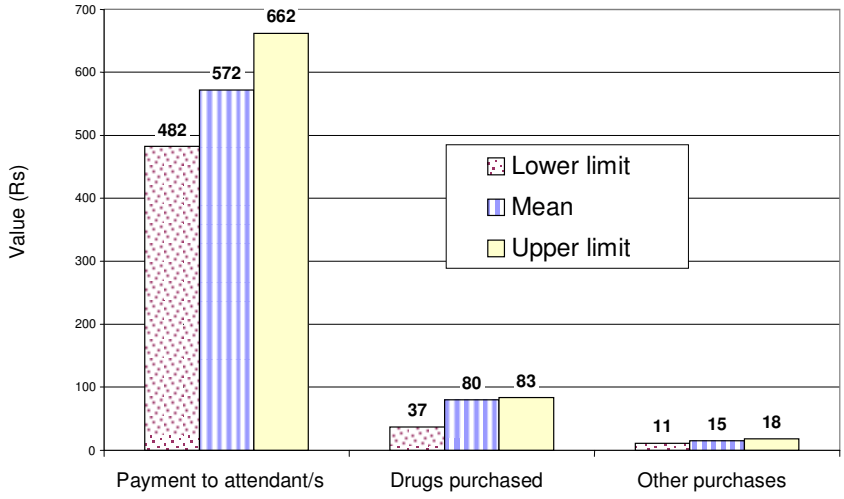
Table 2.4: Total Payment Made by Attendant Type

Type of attendant	Mean total cost (Rs)	Median (Rs)	Std. dev.	95% CI (Rs)
Institution health staff	879	500	1,304	636-1,122
Trained TBA	778	595	659	645-912
Untrained TBA	731	330	1,559	377-1,085
Relative/friend/alone	410	75	816	286-533
All sample	693	400	1,121	592-795

Statistical tests indicate that, while the distribution of payments are similar for each attendant, mean total costs are significantly different[17]. The total payment made was significantly higher in non-NSMP (Rs 913) compared to NSMP districts (Rs 468). The amount paid also differed by region, with more being paid in the terai (Rs 943) compared to the hill areas (Rs 593).

Figure 2.2 indicates the breakdown of the total cost of a home delivery by cost item. It shows that payment to attendants (in the form of food, gifts and formal fees) is the most substantial, but also the most uncertain. Drug purchases include those bought from attendants and those from medicine shops. Other costs include SDKs (average cost Rs 34.30; 95% CI: 22.91 – 45.69), materials to wash the baby and any other additional expenditure incurred at that time.

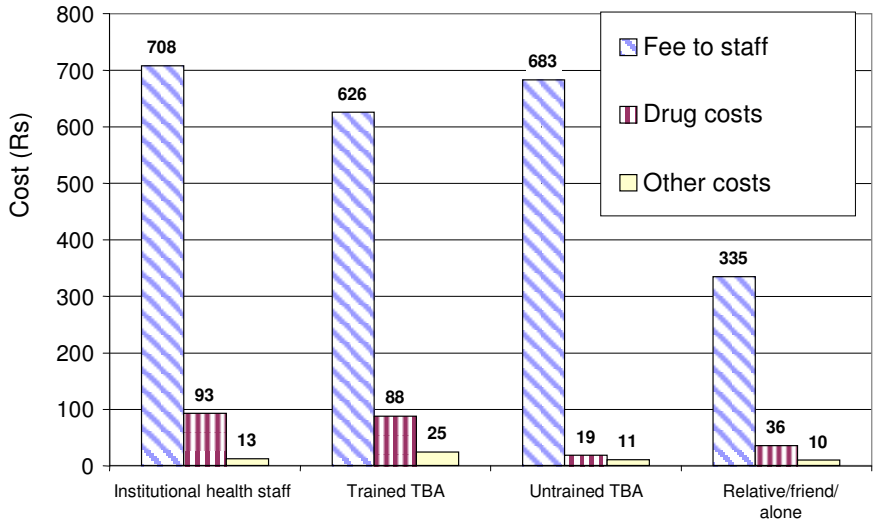
Figure 2.2: Components of Household Cost, Mean and 95% CI



[15] X^2=6.769; p=0.009.
[16] In some cases more than one.
[17] Based on Mann Whitney U Test for difference in means, Kolmogorov Smirnov 7 test for distributions.

Figure 2.3 shows how the distribution of cost varies by attendant type. In all cases, the fee to attendant/s predominates.

Figure 2.3: Components of Total Cost (Fee, Drugs and Other) by Attendant Type



Facility-Based Delivery

Referral Costs

For those delivering in the hospital, data were collected on costs incurred prior to delivery, in the case that they were referred first from a lower level of care[18]. A total of 38 (22%) of households reported visiting a facility on the way to the facility where they delivered. Of these, 66% reported visiting a sub-health post, 16% a health post, 6% a district hospital and 12% a private facility. The average cost incurred was Rs 891 (95% CI: 451 – 1,331) and an average of 10 hours were spent at this first facility (95% CI: 3 - 17).

The Impact of Geography: Time and Transport Costs to the Facility

The main form of transport to the first referral facility was on foot (67% of cases), followed by stretcher (18%), bus (9%) and taxi (6%). Women spent on average 5.4 hours travelling there (95% CI: 1 – 4.5).

[18] There was some confusion among respondents who said that they where referred from the same place that they delivered. Some cases said they were referred, but gave no information about the referral process (from where, how long they spent there, etc.) All these cases were excluded from the analysis (n=164). We also excluded impossibly high figures for first level facility care (n=3).

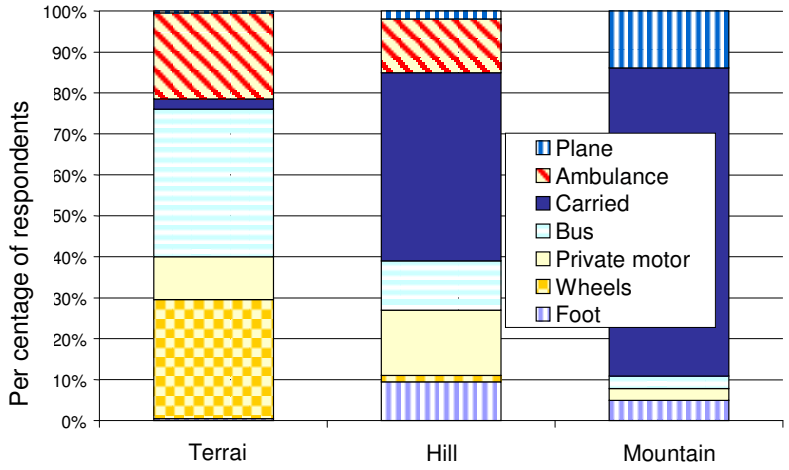
Table 2.5 presents the average travel time spent reaching the facility where the delivery finally took place (from home, including referral time) by geographic region.

Table 2.5. Travel Time to the Hospital by Topography[19]

Topography	Number (N)	Mean (hrs)	Median (hrs)	95% CI (hrs)
Terai	54	2.8	1	1.1-4.5
Hill	106	5.6	2.5	3.9 – 7.3
Mountain	37	8.3	1.0	2.2-14.4
All of sample	197	5.4	2	3.8-6.9

As to be expected, within the same district, those travelling from far away VDCs spent significantly more time reaching a facility than those nearby (2.5 hours, increasing to 4.9 and finally 15.2 in the farthest VDCs). Figure 2.4 illustrates how the main means of transport varies by geographic terain. It is interesting to note the prominence of stretchers in the hill and mountain areas, while, in the terai, bus and rickshaw were used more frequently, indicative of improved accessibility to facilities by road.

Figure 2.4: Transport Type by Topography



[19] There is a significant association between region and time spent travelling (Kruskal Wallis: 0.000).

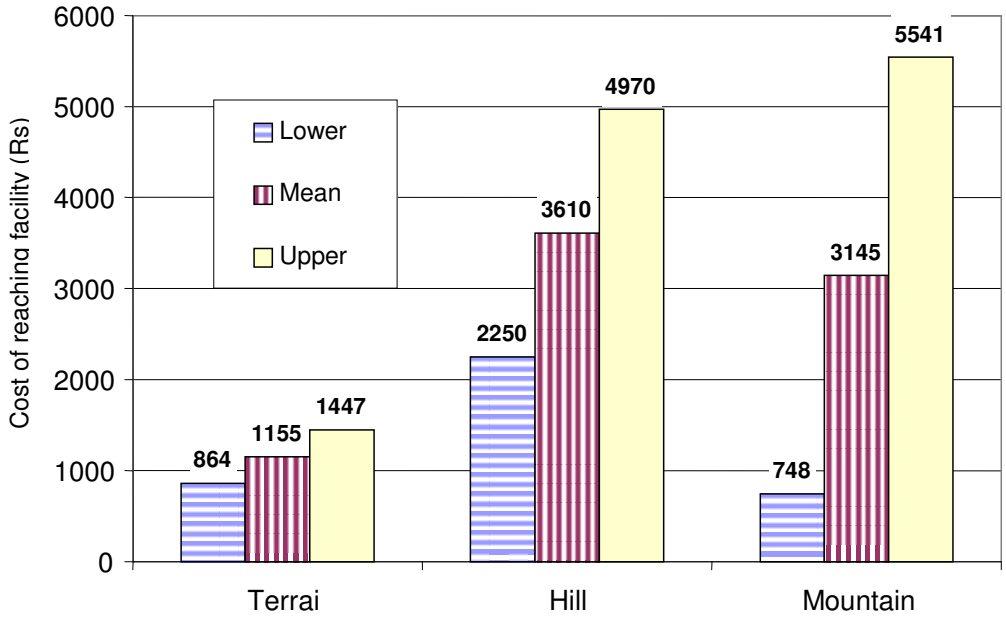
Table 2.6 illustrates how costs vary by main type of transport used. Plane is the most costly, followed by being carried in a stretcher, chair or other, and car, although there is considerable variation in cost in each case.

Table 2.6: Average Cost of Return Journey by Main Type of Transport Used

Main type of transport	Number (N)	Average cost of return journey (Rs)	95% CI (Rs)
Foot[20]	12	318	-208 – 844
Rickshaw/two-wheeler	13	429	236 – 622
Ambulance[21]	23	1,065	750 –1,381
Bus	29	1,424	847 – 2,000
Stretcher	69	2,817	1,735 – 3,899
Car, jeep or taxi	22	2,986	1,449 – 4,524
Chair, bed, bullock cart or dhoko	10	4,778	1,869 – 7,687
Plane	7	22,714	4,067 - 41,361
All of sample	185	2,812	1,968 – 3,656

Figure 2.5 indicates significant differences in travel costs between regions, with the highest occurring in hill districts.

Figure 2.5: Transport Costs and CI by Geographic Region



Within districts, there was also a significant difference in travel costs incurred by those living in VDCs that were far away from the district centre compared to those who lived close, incurring an average of Rs 1,750 (95% CI: 1,273 – 2,228), increasing to Rs 7,668 in the most distant VDCs (95% CI: 3,357 – 11,979).

[20] A few households explicitly indicated that they had to pay for someone to carry them (n=4), at an average cost of Rs 5,650 (2,900 Median; 7,141 std. dev.). Hence, the average cost on foot is not zero.
[21] Average travel time for ambulance passengers is 1.6 hours (95% CI: 1-2 hours).

Opportunity Costs of Time

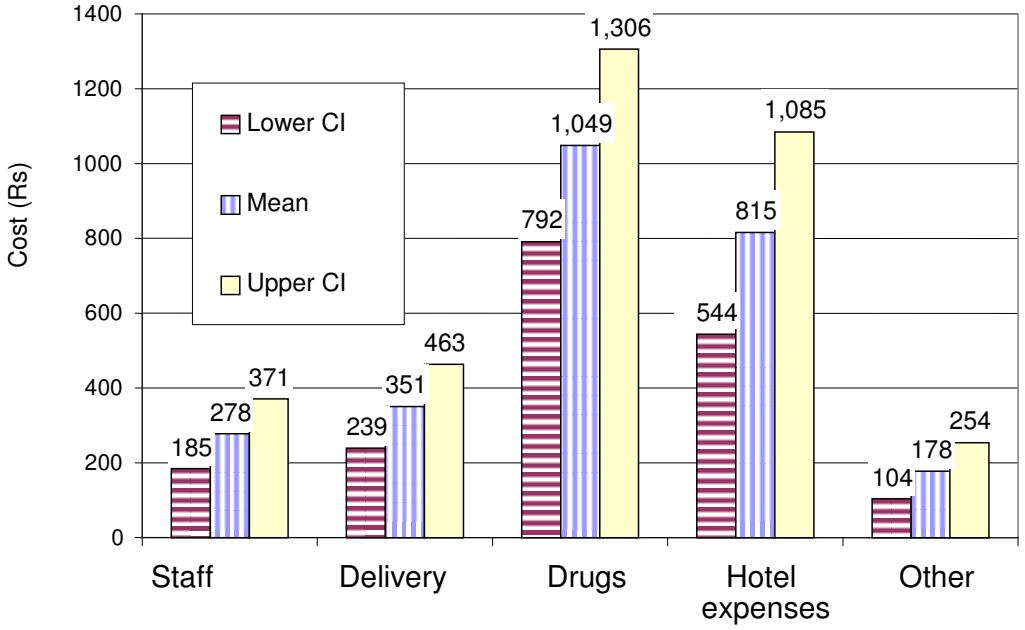
In all cases, women were accompanied to the hospital, often by more than one person. In 67% of cases, they were accompanied by their husband, 15% by their mother, 40% by their mother in law and 49% by a neighbour or friend. The companion/s spent an average of 2.83 days with the woman (median, 1.00; std. dev. 3.99). Fifty five percent of households reported the companion/s losing income as a result of accompanying the delivering woman. The average loss for the whole sample was Rs 886 (95% CI: 550–1,223).

Delivery Costs in the Facility

Of those delivering in the health facility, 51% were attended by a nurse, 47% a doctor and just 1.4% an MCHW. Most women (86%) delivered in public hospitals (district or regional)[22], 12% in a private or mission facility and the remaining 2% in a health post or primary health care (PHC) centre.

Households reported paying a deposit in 71% of cases, on average Rs 641 (95% CI: 394 – 888). This was significantly higher in the private compared to public facilities. In order to obtain an overview of formal versus informal costs of care, we combined data from the hospital bill with that recalled by households. To those fees included in the hospital bill[23] we added the payments made to staff recalled by households[24] and the value of drugs and supplies purchased from outside[25]. We also added food brought from outside, costs of supporting companions[26] and washing materials for babies. The mean payments and CIs for all deliveries are presented in Figure 2.6.

Figure 2.6: Components of Cost for Delivery in Public Hospitals



[22] As only 18 women gave birth in a regional hospital, hereafter we keep all public facilities (district, zonal and regional) grouped together.
[23] Registration, drugs purchased in the facility, lab tests, delivery fee, food, laundry and bed charge.
[24] The payment to health staff reported by households may already be included in the formal delivery fee cost on the patient bill. However, by including as zero values households who may have paid staff, but were unable to recall how much, we feel that these two effects will cancel each other out.
[25] The difference between total drug payments reported by households and those listed on the patient bill.
[26] All women were accompanied to the facility by two or more people as described above.

Figure 2.6 indicates that, in public facilities, drugs and supplies constitute 39% of the total cost, followed by 31% for hotel fees (food and accommodation for self and companion/s), while the delivery fee and staff payments together contribute 23% to total spending.

Using the hospital bill and the records of type of procedure, we are also able to examine the total expenditure by type of delivery (Table 2.7). We did not consider the assisted deliveries, due to the large variation and small sample (only six). We were unable to differentiate between vaginal deliveries with and without episiotomy for the calculation of informal costs, so we grouped them together as vaginal delivery.

Costs for vaginal deliveries are shown by cost component as well as for public and private facilities. We distinguish between formal costs charged within the facility (and included in the hospital bill) and informal costs which are incurred in addition to the bill, such as unofficial payment to staff, drugs and supplies purchased from outside the facility, costs of supporting companions and food and washing materials brought by relatives from outside.

Table 2.7: Formal and Informal Costs of Vaginal Delivery in Public and Private Facilities

Cost component	Public facility (n=114)			Private facility (n=16)		
	Mean (Rs)	**95% CI (Rs)**	**Per-centage of total (%)**	**Mean (Rs)**	**95% CI (Rs)**	**Per-centage of total (%)**
Registration	11	9–13	0	26	2 - 49	1
Bed charge	52	30–74	2	214	3 – 426	7
Drugs/supplies charged	292	196-388	13	355	267 – 444	11
Delivery fee	186	155–218	8	684	459 - 910	22
Lab tests	17	0.3–39	1	3	-4 – 10	0
Food charges	56	20–92	3	13	-14 – 39	0
Laundry	61	34–87	3	16	-18 – 49	1
Total formal costs	**678**	**534 – 817**	**31-39**	**1,311**	**1,041 – 1,581**	**42-47**
Staff payments[27]	86 - 275	25-373	4 – 12	352 - 688	2 –1,253	13-22
Drugs/supplies from outside	661	533–788	30-33	0	0	0
Food from relatives	332	181– 482	15-16	231	79 – 384	7-8
Washing materials for baby	31	10 –52	1-2	52	1 – 103	2
Companion costs	245	150–341	11	840	540 – 2,219	27-30
Total informal costs	**1,352 – 1,544**	**899–2,036**	**61 – 69**	**975 – 1,811**	**622 – 3,959**	**53 – 58**
Total sum	2,030 – 2,222	1,676 – 2,586	100	2,286 – 3,122	1,663 – 5,540	100
Estimated total[28]	3,208	2,520 – 3,897		-	-	

Note: We excluded 42 cases where only the estimated total was given without any breakdown by cost component. Although many households could not recall the complete breakdown, we assumed all missing values were legitimate zeros. Hence the sum of each component of informal cost will be an underestimate of the true total.

[27] The payment to staff was estimated in two ways. Firstly, we considered all payments to staff reported by households. Secondly, we considered only gifts made and/or payments to staff other than the delivery attendant. Some of the payment to delivery attendant may already be captured in delivery fee, so the second figure avoids any risk of double counting. The range of values provided incorporates both these values.

[28] In addition to the sum of formal and informal costs, we also provide the estimated total from households themselves. Due to recall bias, this may not be accurate, but we can assume that the actual amount paid lies somewhere between the sum of stated amounts and this estimated total expenditure.

On average, women spent a reported 45 hours (95% CI: 35 – 51), or median 28 hours, in public facilities for a vaginal delivery (there was no external validation of these reported times). For private facilities, the reported average length of stay was 52 hours (95% CI: 10 – 105, median 13 hours).

Drugs and supplies constitute the main part of formal costs charged in the public facilities, followed by the delivery fee. In private facilities, the delivery fee predominates.

Informal payments in public facilities are dominated by gifts to staff, including delivery attendants (34 people) and other staff (9 people). Women also paid informally for food, drugs and supplies. These numbers suggest that the practice is not as common as sometimes thought, although women may be reluctant to report payments and may even confuse unofficial for official payments. In private facilities, companion costs dominate, followed by staff payments.

For vaginal delivery, the registration fee, surgery fee, drugs and supplies purchased in the facility were significantly higher in the private compared to public facility (Mann Whitney U test). The cost of drugs and supplies purchased outside the facility was higher in the public compared to private facility. Formal costs on aggregate were also significantly higher in private facilities. There was no significant difference in all other costs between facilities, although, due to the small number of mothers delivering in private facilities in our sample (the original design did not anticipate the inclusion of these facilities), this finding needs further exploration in future studies.

There was a significant difference (p value 0.007) in surgery fee for normal deliveries in public facilities in NSMP (Rs 171) versus non-NSMP districts (Rs 228)[29]. There was also a significant difference in payment to staff in NSMP (Rs 187) compared to non-NSMP districts (Rs 514). No other significant difference was found. In addition there was no significant difference in total payment by socio-economic group, suggesting that exemptions are not functioning effectively.

[29] There were not enough valid cases to test for c-section or assisted deliveries.

Table 2.8: Formal and Informal Costs of Operative Delivery in Public Facilities (n=12)

Cost component	**Mean (Rs)**	**95% CI (Rs)**	**% of total (%)**
Registration	18	1 – 34	0
Bed charge	788	85 – 1,492	11
Drugs and supplies charges	1,837	-72 – 3,746	26
Delivery fee	1,917	1,119 – 2,714	27-28
Lab tests	116	-31 – 264	2
Food charges	483	-147 – 1,114	7
Laundry	342	-220 – 904	5
Total formal costs	**5,500**	**2,697 – 8,304**	**78-79**
Staff payments	58 - 100	-37 - 284	1
Drugs from outside	258	36 – 478	4
Food from relatives	971	-115 – 2,056	14
Washing materials for baby	49	-42 – 140	1
Companion costs	133	-71 – 338	2
Total informal costs	**1,469 – 1,511**	**-229 – 3,296**	**21-22**
Total sum	6,970 - 7,011	2,422 – 11,600	100
Estimated total	7,475	2,759 – 12,190	

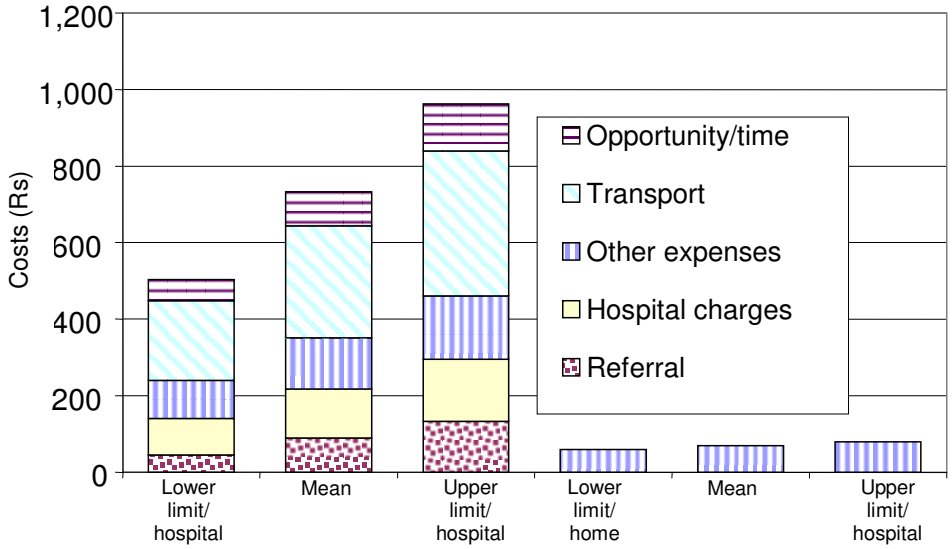
Table 2.8 indicates the cost of caesarean section (c-section) within public facilities. There were only 3 cases with expenditure records in the private facilities, so we present only public hospital cases (n=12). Women having a c-section spent a median of 5 days in the facility. A c-section represents more than three times the cost of a vaginal delivery, which is largely attributable to differences in the formal facility cost. However, caution is needed when interpreting these results due to the small sample of household costs for c-section cases. The small sample also means that we were unable to look at how costs differed by region or SES.

The delivery fee and drugs together constitute more than 50% of the total cost of a c-section. Formal costs predominate and, within informal costs, food brought by relatives is most significant. The surgery cost was significantly higher than for a vaginal delivery, as was the cost of lab tests. All other variables did not differ significantly by type of delivery (Mann Whitney U).

Comparison of Home and Facility-Based Costs

Figure 2.7 indicates that the difference between home and facility-based delivery is significant, while the 95% CI is much greater for facility-based deliveries. This suggests that uncertainty about price is much greater for those delivering in institutions. Transport costs in themselves contribute more to total cost than costs within facilities. Those delivering at home economise on these costs as well as the opportunity costs of time of companions accompanying women to the facility.

Figure 2.7: Average Costs by Component and Place of Delivery with CI



Affordability of Care

Access to Cash and Sources of Finance

Overall, 41% of households said they found it difficult to raise the money to pay for care, although, unsurprisingly, those giving birth in a facility found it harder (56% versus 35% respectively)[30]. Significantly more households said they found it difficult to raise money in non-NSMP districts (49% versus 35% in NSMP districts). There was no difference by region. Those who said they found it difficult to raise money were of lower socio-economic status (Mann Whitney U[31]).

Households who delivered in a facility said that it took them an average of 8.8 days (95% CI: 5.2 – 12.4) to raise the money they needed to go to the facility and 34% said that it delayed their decision to go to the facility by an average of 8.2 hours (95% CI: 3.9 – 12.4). There was no significant difference by region, NSMP area or SES.

[30] Significant based on X^2=27.022; p =0.000.
[31] Using average monthly cash income as indicator of SES.

The sources of finance varied by place of delivery, with more than half of those giving birth in a facility needing to borrow money, as shown in Table 2.9. Those delivering at home relied more upon the sale, use or mortgage of grains, livestock or other assets (32%).

Table 2.9: Main Source of Money to Pay for Care by Place of Delivery

Main source of money	Home delivery (%)	Facility based delivery (%)
Daily wage	21	19
Sell assets (grains, livestock or other)	32	14
Savings	21	15
Borrow money	24	51
Other (reduce consumption/investment, donations, delay payment or NGO scheme)	2	1

More households in hill areas borrowed money than in other regions. Similarly, more households sold assets in mountain areas. No other differences were significant.

Eight out of 12 households that reduced consumption or received donations were from the bottom 40% of the wealth distribution. Forty percent of those in the highest income quintile paid from their daily wage, 20% from savings, 26% borrowed money and 11% sold their assets. In the lowest income quintile, 35% borrowed money and 32% sold assets, while 16% used their daily wage and another 16% their savings.

The main source of borrowed money was friend/relative (59%), moneylender (31%), shopkeeper (4%) and lastly community loan fund (2%). This did not differ significantly by place of delivery, region or SES. Despite the promotion and support of community loan funds in the NSMP districts, for those households included in our survey, only 2% had recourse to one of these funds in order to raise money for delivery care-seeking.

Table 2.10 shows how the total amount borrowed varies by place of delivery and attendant (in the case of home deliveries). It indicates that those delivering in a facility borrowed significantly more than those delivering at home. However, whilst the amount borrowed covers over 60% of the total cost of a home delivery, the amount borrowed for those delivering in a facility covers less than 40% of the total and nearly 100% of the hospital-based costs (excluding referral and transport fees).

Table 2.10: Total Amount Borrowed by Place of Delivery and Type of Attendant

Place of delivery/ type of attendant	Total amount borrowed (n = 730)		As percentage of total cost of delivery[32] (%)
	Mean (Rs)	95% CI (Rs)	
Home/untrained	362	226 – 498	68
Home/trained	498	294 – 701	57
Home: Total	422	305 – 540	61
Public facility/vaginal delivery	2,386	1,522 – 3,250	41 – 46
Public facility/c-section	3,906	790 – 7,023	36
Private facility	7,360	3,791 – 10,930	47
Facility: Total	3,506	2,517 – 4,494	39

[32] Includes transport, referral and delivery costs.

Table 2.11 provides more detail on the amount raised and terms of loans taken out to finance costs of delivery. It should be noted, however, that few households were able to complete this section of the questionnaire. More significant amounts of money were raised from moneylenders or shopkeepers. The monthly rate of interest was also highest for moneylenders, followed by friends. In six cases, friends allowed repayment of loan in days of labour. In some cases, they also required additional cash payments.

Table 2.11: Amount Borrowed, Duration of Loan and Monthly Interest Rate by Source of Money

Source of money	Amount borrowed			Duration of loan			Interest rate (monthly)		
	Number (N)	**Mean (Rs)**	**95% CI (Rs)**	**Number (N)**	**Mean (months)**	**95% CI (months)**	**Number (N)**	**Mean (%)**	**95% CI(%)**
Community fund	4	5,275	-1,581 - 12,132	3	24	17-30	4	17	5-28
Friend	109	3,781	2,825 - 4,737	44	9	7-11	59	27	22-32
Money lender	57	8,581	5,549 - 11,613	11	10	6-15	50	33	17-50
Shopkeeper	8	8,875	-2,283 - 20,033		NA		8	22	14-29

In order to finance this loan, 20% of households mentioned that they would use, sell or mortgage livestock, 16% other assets and 7% land, while 6.2% would reduce food or other essential consumption, 18% would use savings and 28% would use their salary.

Table 2.12 indicates that the burden of delivery care costs in a hospital on the household economy is significant, especially for the poorest income quintile, representing more than 3.5 months household earnings (to this end we estimated the average cash income for each wealth quintile). The costs of delivery at home are still a larger burden to the poorest, but account for 36% of monthly earnings. Table 2.13 shows that the mean payment for care does not differ significantly between the wealthiest and poorest wealth quintiles for facility-based care (Mann Whitney U). However, the wealthiest quintile paid significantly more for home-based care than the poorest (Mann Whitney U).

Table 2.12: Cost as a Proportion of Reported Monthly Cash Income (Classified by Wealth Quintiles)

Place of delivery	**Percentage of monthly cash income**	
	Poorest quintile **(%)**	**Wealthiest quintile (%)**
Home	36	1
Public hospital/vaginal	366	113

Finally, we considered the impact of the payment on the subsistence living allowance. We subtracted the total delivery care cost by the number of people living in the household[33] to obtain the per capita monthly cash income. This was compared with the monthly income after payment for delivery care in terms of the proportion of people living below a subsistence level, determined at Rs 400/month (approx. US $6/month). At baseline (pre-delivery), 50% of households were already below this level. After payment for delivery care, the proportion below subsistence increased to 66%. However, if we consider hospital deliveries alone, the initial proportion below subsistence income was 36%, increasing to 81% after delivery care payments.

Table 2.13: Mean Payments (and 95% CI) for Care by Wealth Quintiles

Wealth quintile	**Home care (Rs)**	**Public facility based care/ normal delivery (Rs)**
Lowest	593 (423 – 764)	1,598 (943-2,252)
Highest	823 (593 – 1,051)	2,260 (1436-3,083)

[33] Missing values for numbers in home were replaced by the sample average.

What Could Be Done to Increase Trained Attendance at Delivery?

Reasons for Home Delivery

The majority of households suggested that absence of complications was the main reason for having a home delivery (35%), followed by cost (22%). They also indicated that they valued the flexible payment mechanism allowed by informal attendants at home.

Additionally:

- 15% said that they preferred the home environment, where they could get care from females who were known to them, plus better food.
- 11% mentioned shyness as a primary reason for not going to the health facility, indicating that they did not feel comfortable with male attendants.
- 11% said that they couldn't travel to the health facility as their labour started during the night or during the rain.
- 7% said that the facility was too far from their home.
- 3% said that their family did not approve of them going to the hospital or that their husband was overseas and they could not go without his authorisation and presence.

Reasons for Hospital Delivery

The majority of women who gave birth in the hospital did so because of the onset of complications and prolonged labour (59%) or complications in previous pregnancies (6%). Twenty percent were referred to hospital during ANC care check ups, while 7% felt that the hospital would be safer for the mother and baby, or they knew someone else who had delivered there (1%). Seven percent said the hospital was close to their home or that they had a friend or relative who lived nearby.

Perceptions of Quality of Care, Suggestions for Improved Care and Willingness-to-Pay

Households were asked about their suggestions as to how to ensure that women who are pregnant and need to get to the hospital for delivery can access care more easily. Thirty six percent of households suggested that hospital services and/or drugs should be provided for free. Twenty six percent suggested that trained attendants and necessary equipment need to be more readily available, while 25% said that transport schemes need to be improved or set up: either public transport systems or community-based stretchers, dhokos, etc. Four percent mentioned the related theme of distance as a barrier to utilisation and 8% suggested that staff should change their attitude toward and way of talking to women, as well as their care. A few households mentioned that health facilities need to be more accountable to women and their needs.

In terms of perceived quality of care, nearly all households expressed satisfaction with the level of staff experience and training and found them to be respectful. Only 3% of households said they thought staff did not spend enough time with the pregnant woman, while 57% were dissatisfied with the availability of essential drugs. Twenty-five percent of households found the condition of the treatment room to be good, 68% medium and 6% poor.

Did Costs Present a Barrier?

Those who delivered at home were asked to estimate what they thought it would cost to have a normal and complicated delivery in the hospital, plus travel expenses. They estimated that a normal delivery would cost an average of Rs 1,734 (Median: 1,200; std. dev.: 1,756), a complicated delivery Rs 7,164 (Median 5,000; std. dev.: 10,078) and transport Rs 874 (Median: 400; std. dev.: 1,672). This indicates that women delivering at home had a fairly accurate notion of both transport and facility-based costs and, clearly, this is factored into their decision-making equation as to where to deliver. The unpredictability of facility-based cost

emerges again as an important issue for household decision-making, as they are aware that the onset of complications would increase the cost several fold.

Those who said that cost was the main reason for not using the facility estimated a normal delivery would cost Rs 1,602, increasing to Rs 7,963 in the case of complications. We can infer that they would not have been able to pay these amounts (i.e. their ATP is below these sums).

On average, those delivering at home said they would be willing and able to pay a maximum of Rs 6,754 (Median: 4,000; 9,610) for a delivery (average for both normal and complicated). However, mean WTP fell to Rs 3,522 in the lowest income quartile.

2.7. Results: Willingness-to-Pay Survey

General Descriptive Statistics

The average duration of interview was 66 minutes (95% CI: 65-68). The number of completed questionnaires retained for analysis varied by district (52 in Gulmi, 60 in Bhojpur, 61 in Jhapa and Baglung, 74 in Surkhet, 78 in Jumla and 79 in Kailali).

Socio-Economic and Demographic Characteristics

Respondents were equally distributed between the 5 wealth quintiles (approximately 20% of respondents falling into each category). A higher proportion of high-income households were from the terai and NSMP districts, as shown in Table 2.14[34]. On average, 42% of all respondents had not received any formal education, which increased to 60% in the mountain areas. Similarly, the proportion was higher in non-NSMP compared to NSMP districts. The average age of respondents was 29 years (95% CI: 28.4 –29.6). Respondents were younger in the mountain areas compared to terai and hill areas, and also in NSMP compared to non-NSMP districts.

[34] The p-value for the Chi Squared Statistic (X^2) less than 0.05 indicates a positive association between a given variable and topography or whether a district is under the NSMP.

Table 2.14: Socio-Economic and Demographic Characteristics of Respondents[35]

District/ variables	Measurement	Terai	Hill	Mountain	X^2 (p value)	NSMP districts	Non-NSMP districts	X^2 (p value)
SES	**=1** **=5**	0.20 0.32	0.18 0.17	0.25 0.12	2.35 0.309) 17.12 (0.000)	0.15 0.67	0.28 0.15	12.76 (0.000) 4.64 (0.031)
Education	**=0, None** **=1, Formal**	0.41 0.59	0.30 0.70	0.60 0.40	54.45 (0.000)	0.46 0.54	0.38 0.62	3.86 (0.05)
Age	**Mean** **95% CI** **(Yrs)**	29.5 (28.5 –30.6)	29.7 (28.7 – 30.6)	27.5 (26.4-28.5)	10.75 (0.005)	28.4 (27.5 – 29.2)	29.8 (28.9 – 30.6)	Mann Whitney p=0.015
People living in household	**Mean** **95% CI** **(N)**	7 (6-8)	6 (5.8-6.3)	7 (6-7)	7.7 (0.02)	6.5 (6.1 – 6.9)	6.5 (6.2 – 6.9)	Mann Whitney p=0.248
Number of children	**Mean** **95% CI** **(N)**	2.5 (2.3 – 2.7)	2.6 (2.4 – 2.8)	2.7 (2.5 – 2.9)	0.318	2.3	2.9	Mann Whitney p=0.000
Ever visited facility	**1=Yes** **0=No**	0.49	0.55	0.57	1.93 (0.381)	0.60	0.47	8.90 (0.003)

On average, there were 6.5 people living per household (95% CI: 6.3 – 6.8) and women had borne 2.6 (95% CI: 2.5-2.7) children, the rate being higher in non-NSMP compared to NSMP districts. The average distance to the nearest health facility (in time on foot) was 1.32 hours (1.27 – 1.36). Thirty eight point nine percent of respondents reported experiencing complications during a previous pregnancy. Fifty three point nine percent reported having already visited a facility for maternity reasons. This was significantly higher in NSMP compared to non-NSMP districts. The predominant religion was Hindu in 95% of cases.

[35] There was no significant association with topography or NSMP areas for variables not shown in the Table.

Perceptions of Maternal Health and Care

Respondents were asked what they thought were the main causes of the different maternity problems which may occur during delivery. The majority (68%) said they thought it was due to the weakened physical condition of the mother, 26% the behaviour of the pregnant woman, 19% the cold and 16% witchcraft, malevolent spirits or the evil eye. As to be expected, beliefs were highly related to SES status and education level. Women with no education stated witchcraft in 24% of cases, compared to 9% of those with some formal education. Table 2.15 indicates how beliefs vary by topography. Witchcraft, cold and karma were stated significantly more frequently in the mountain compared to hill and terai areas. More respondents from terai and hill associated maternal problems with their weak physical condition, while a larger number of respondents from NSMP districts associated problems with weakness and less with cold and behaviour. There was no significant difference between NSMP and non-NSMP areas for other reasons.

Table 2.15: Reasons Stated for Complications During Delivery by Topography

Topography	Witchcraft		Cold		Behaviour		Weakness		Karma		Tradition	
	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)
Terai	15	11	16	11	21	15	107	76	1	1	21	15
Hill	16	7	51	21	73	30	167	68	28	11	43	17
Mountain	57	39	41	29	50	35	84	58	34	24	5	3
X^2 (p value)	76.01	(0.00)	12.53	(0.00)	15.14	(0.00)	11.09	(0.00)	35.38	(0.00)	16.45	(0.00)

When asked how they thought maternal ill health could be prevented, 66% said through improvements in the formal pre-delivery services, while 26% said call the TBA and 21% said call the traditional practitioner or 'dhaami jhankri'. More respondents from the mountain regions would call the dhaami jhankri and TBA than in other regions. More respondents from NSMP districts reported recalling to formal care than non-NSMP districts (Table 2.16).

Table 2.16: Beliefs About Ways of Preventing Maternal Ill Health by Topography and NSMP/Non-NSMP District

Topography	Formal health care		Dhaami jhankri		TBA	
	(N)	(%)	(N)	(%)	(N)	(%)
Terai	102	73	16	11	17	12
Hill	178	72	32	13	55	22
Mountain	71	49	68	45	71	49
X2 (p value)	25.72	(0.00)	73.73	(0.00)	53.77	(0.00)
NSMP	237	81	59	20	99	34
Non-NSMP	114	48	57	24	44	18
X^2 (p value)	66.51	(0.00)	0.97	(0.33)	16.03	(0.00)

Forty nine percent of respondents said that the health of the pregnant mother was of some concern to the household, 38% said it was of great concern and 12% said no concern. Nineteen percent of respondents from mountain area said it was of no concern compared to 6% in the hill area (X^2=15.25; p=0.00), and 8% in NSMP compared to 15% in non-NSMP districts (X^2=5.93; p=0.02).

In total, 40% of respondents reported complications during a previous pregnancy. The differences were not significant by geographic area or between NSMP and non-NSMP districts.

Preferences for Care and Reasons for Preferences

The majority of women preferred to give birth at home, 39% with a trained attendant, 11% with an untrained attendant and 6% alone. A third of women preferred delivery to take place in a CEOC hospital and 11% in a BEOC facility[36]. More respondents preferred a CEOC facility in hill areas and least preferred this option in mountain areas (Table 2.17). More respondents from NSMP districts preferred the CEOC facility compared to non-NSMP districts. Respondents from mountain and terai areas preferred home deliveries with trained attendants.

Table 2.17: Proportions Preferring Different Delivery Care Options by Topography and NSMP District

Area	Prefer CEOC hospital (%)	Prefer BEOC facility (%)	Prefer home delivery/ trained attendant (%)	Prefer home delivery/ untrained attendant (%)	Prefer alone delivery (%)
Terai	28	9	39	21	4
Hill	44	13	32	4	7
Mountain	17	10	48	16	8
X2 (p value)	29.12 (0.00)	2.1 (0.35)	9.78 (0.00)	29.44 (0.00)	2.54 (0.29)
NSMP	43	13	37	7	1
Non-NSMP	21	9	41	17	13
X2 (p value)	26.86 (0.00)	2.09 (0.15)	0.98 (0.32)	11.65 (0.00)	31.13 (0.00)

A majority of those preferring CEOC hospital were from the highest wealth quintile (34%) compared to only 8% in the lowest wealth quintile. An equal proportion of each wealth quintile preferred a BEOC facility. There were fewer respondents from the highest income quintile preferring home delivery with either trained (11%) or untrained attendants (12%), compared to 22% and 39% in the lowest income quintile. A total of 41% of those preferring to deliver alone were from the lowest income quintile, compared to only 5% in highest quintile. Seventy-one percent preferred a facility-based delivery in the highest quintile compared to 25% in the lowest.

Respondents were asked to give reasons for selecting their preferred delivery care option (Table 2.18). Those who preferred a health facility, mentioned safety and staff experience as reasons for their preference in the majority of cases. Availability of drugs and equipment were also mentioned, with blood supplies and operating theatre explicitly stated by 13% of those preferring the CEOC facility. Meanwhile, those preferring a BEOC made reference to lower cost and closer distance as reasons for their preferring this option.

Those preferring trained attendance at home emphasised safety and the experience of the attendant as the main reasons for preference. For all those preferring home delivery, lower cost and flexible payment method were mentioned as reasons for preference in 40% of cases. The fact there was no need to travel ('they come to our home') was also mentioned, as well as having the support and attention of the family. Four percent of those preferring untrained home delivery mentioned the availability of care at any time as a reason for their preference. Eighty-four percent of those preferring to deliver alone gave reasons of shyness and fear.

[36] These were carefully defined for the women interviewed. In summary, BEOC facilities were defined as health centres or hospitals where a midwife or sometimes a doctor would provide care, but where there was no equipment and/or skills for obstetric emergencies.

Table 2.18: Reasons for Preferences by Place for Delivery

Reason for preference	CEOC (%)	BEOC (%)	Home delivery/ trained attendant (%)	Home delivery/ untrained attendant (%)	Alone (%)
Safety	65	47	25	13	3
Staff experience /behaviour	19	30	44	2	-
Availability of drugs	16	14	5	-	-
Availability of equipment	18	7	3	-	-
Availability of blood	7	-	1	-	-
Availability of operating theatre	6	-	-	-	-
Good facilities (general)	13	7	-	-	-
Cost/payment method	7	14	37	45	31
Transport/distance	1	15	21	4	6
Family support	1	-	13	32	6
Easy and quick delivery	2	7	6	-	6
Can get assistance at any time	-	2	0.5	4	-
Shyness/fear	-	-	4	20	84
Problems with previous pregnancy	1	-	1	-	-
Hygiene/cleanliness	1	-	-	-	-
Trust	-	2	2		3

We ran a binary logistic regression to assess which variables best predict preferences for facility rather than home-based care. The dependent variable was dichotomous, taking 1 if the respondent preferred delivery in a CEOC hospital and 0 if anything else. The parameters for the explanatory variables are presented in Table 2.19. The predictor variables fell into four categories, socio-demographic data (age, education, income, number of people in household), childbirth history (number of children, previous visit to facility for maternity problems), attitudes towards maternal health (beliefs and practices), geography (topography and distance to nearest facility).

Table 2.19 shows that those from hill areas are three times more likely to prefer CEOC compared to those from terai areas. Those from higher wealth quintiles are also nearly three times more likely to prefer CEOC. Those who believe that the weakness of the pregnant mother or their behaviour is a cause of ill health during delivery are less likely to prefer CEOC. Other variables, including age, distance from nearest facility, whether health is of concern to household, education level and parity which were predicted to impact on preference, had no significant effect[37].

Table 2.19: Logit Equation Explaining Preference for CEOC Facility[38]

	B	S.E.	Wald	df	Sig.	Exp(B)	95.0% CI for EXP(B)	
							Lower	Upper
Mountain	.513	.400	1.641	1	.200	1.670	.762	3.658
Hill	1.313	.322	16.618	1	.000	3.719	1.978	6.993
Behaviour	-.867	.304	8.158	1	.004	.420	.232	.762
Witchcraft	-.933	.552	2.856	1	.091	.393	.133	1.161
Concern	.117	.418	.079	1	.779	1.124	.496	2.551
Age	-.031	.021	2.150	1	.143	.970	.931	1.010
Child no.	.171	.104	2.666	1	.103	1.186	.966	1.455
No. house	-.024	.041	.355	1	.552	.976	.900	1.058
Distance	.267	.200	1.781	1	.182	1.306	.882	1.935
Asset score	.969	.218	19.783	1	.000	2.636	1.720	4.042
Education	.039	.037	1.087	1	.297	1.040	.966	1.118
Cold	-.559	.352	2.518	1	.113	.572	.287	1.140
Weak	-.676	.321	4.440	1	.035	.508	.271	.954
Karma	-.930	.494	3.540	1	.060	.395	.150	1.040
Tradition	-.339	.377	.808	1	.369	.712	.340	1.492
Formal 1	.394	.332	1.413	1	.234	1.483	.774	2.842
Dhaami	.246	.519	.225	1	.635	1.279	.462	3.540
TBA	-.155	.349	.196	1	.658	.857	.432	1.699
Use facility	-.406	.255	2.532	1	.112	.666	.404	1.099
NSMP	1.393	.303	21.152	1	.000	4.026	2.224	7.289
Constant	-1.185	.901	1.732	1	.188	.306		

NOTE TO TABLE: The Exp(B) value indicates the impact of each variable on whether or not the respondents preferred delivery in a CEOC facility. For example, a Exp(B) value of 4 for a given variable, say NSMP,indicates that respondents living in NSMP districts are 4 times more likely to prefer delivery in CEOC than respondents who are not living in NSMP districts. The Sig column indicates whether this relationship is significant or may be due to chance. A value of less than 0.05 confirms that the relationship is not due to chance.

We ran diagnostic tests for multicollinearity (or the lack of independence between variances) by observing the Variation Inflation Factor (VIF) statistic which was less than 10 in all cases

[37] The inclusion of the included explanatory variables increased the predictive power of the model from –2Log Likelihood 541 to 436, which was significantly higher (X^2 = 104.9; p=0.000). The Hosmer and Lemeshow's test indicates a test statistic of 12.98 (p=0.112), indicating that the observed data does not differ significantly from the regression model.

[38] Binary Logistic Regression: Hierarchical forced entry was conducted. Mountain= live in mountain area; hill=live in hill area; terai is the reference variable; behaviour = belief that mother's behaviour is cause of ill-health; witchcraft=belief that witches cause maternal ill-health; concern = maternal health is of concern to respondent; age=age of respondent; child no. = number of living children; no. house=total number of people living in household; distance=walking distance in minutes from nearest health facility; asset score=the total score obtained from asset ranking and used to create wealth quintiles (i.e. low score is lowest wealth quintile and highest score is highest wealth quintile); education=number of years of formal education; cold=belief that cold is cause of maternal ill-health; weak=belief that weak physical condition is cause of maternal ill-health; karma=belief that bad karma is cause of maternal ill-health; tradition=belief that traditions are cause of maternal ill-health; formal 1=go to health facility to treat maternal problems; dhaami=go to dhaami jhankri to treat maternal health problems; TBA=go to TBA to treat maternal health problems; use facility=been to a facility for maternal health problems; and NSMP=from NSMP districts.

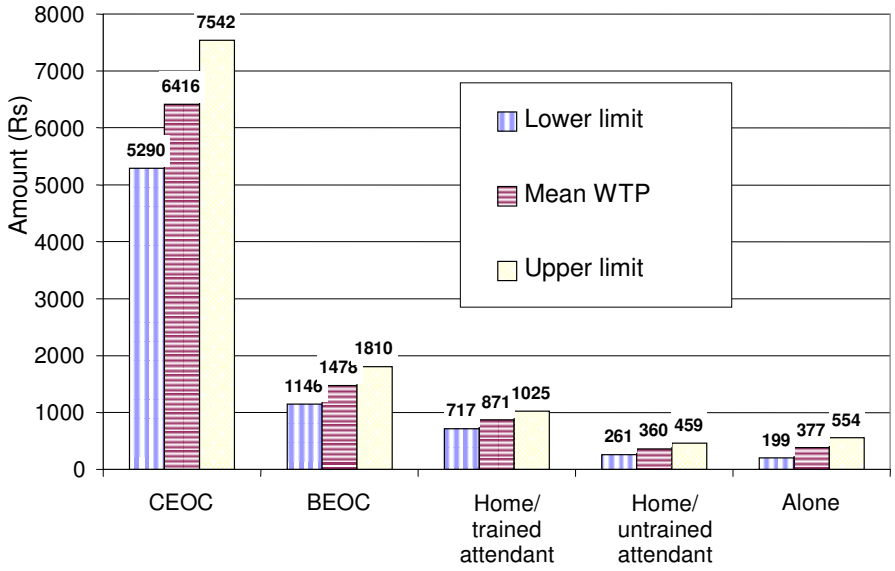
(<than 4) and tolerance was more than 0.1 in all cases. Similarly, we examined the condition indices that were not significantly different. Therefore, we can assume there was no multicollinearity in the data.

We ran diagnostic tests for collinearity by observing the variance inflation factor (VIF) statistic, which was less than 10 in all cases (<than 4), while tolerance was more than 0.1 in all cases. Similarly, we examined the condition indices that were not significantly different. Therefore, we can assume there was no multicollinearity in the data.

Description of Stated Willingness-to-Pay

Figure 2.8 presents mean WTP (and 95% CI) by preferred place of delivery. It indicates that those who preferred delivery in a CEOC facility were willing to pay an average of Rs 6,416, although the distribution is quite skewed (the median is Rs 4,000). This drops dramatically for those preferring a BEOC facility, to approximately Rs 1,500. For those preferring home delivery, WTP ranges from almost Rs 900 with a trained attendant to just under Rs 400 for untrained attendant delivery or alone.

Figure 2.8: Mean WTP (and 95% CI) for Preferred Place of Delivery



To obtain a normal distribution, we obtained a logarithmic (base 10) transformation of the WTP variable and ran an Ordinary Least Squares (OLS) regression, to explore the determinants of WTP. The results are shown in Table 2.20, on the next page. Those who preferred to deliver in a health facility had a positive association with WTP, while those who preferred home delivery were less willing to pay for care. Those in NSMP districts were also less willing. WTP was not associated with topography, however SES was a significant predictor of WTP, as predicted by theory. Those believing maternal ill health was due to a mother's weak physical condition were less willing to pay. One explanation for this seemingly counter-intuitive result might be that these respondents are of a weaker physical condition, due to their being less highly valued within the home and, therefore, a low priority for use of the household budget. It could also indicate misunderstanding of the question on the part of the respondent.

Attitudes towards maternal ill health are generally poor predictors of WTP, with signs running counter to expectations. Treatment practises did have the expected signs, with those opting for traditional healers being less willing to pay than those opting for formal care, although the effect was not significant. Age was positively associated with WTP as was number of children - which could be because these women have experienced problems in previous pregnancies, although again the effect is not significant. Distance had a positive effect on WTP, potentially because women are including transport costs in their valuation, but without significant effect. Those who were concerned by maternal health were less WTP, which is a surprising finding.

Table 2.20 presents the regression results. We included all variables that were hypothesised to impact on WTP. Those preferring CEOC hospital delivery were willing to pay significantly more than average, while those preferring delivery at home with untrained attendance were not.

Table 2.20: Predictors of WTP for Delivery Care [39]

Model		Unstandardised coefficients		Standardised coefficients	t	Sig.	95% CI for B	
		B	Std. error	Beta			Lower bound	Upper bound
1	(Constant)	3.146	.142		22.146	.000	2.867	3.425
	Hill	2.455E-02	.047	.021	.518	.605	-.069	.118
	Mountain	-2.955E-02	.057	-.022	-.521	.603	-.141	.082
	Education	8.137E-03	.006	.057	1.432	.153	-.003	.019
	Hospital pref.	.463	.064	.370	7.259	.000	.338	.589
	Untrained	-.694	.073	-.451	-9.492	.000	-.838	-.550
	NSMP	-.199	.045	-.168	-4.469	.000	-.287	-.111
	Asset score	.131	.032	.153	4.069	.000	.067	.194
	Use facility	-2.399E-02	.038	-.020	-.636	.525	-.098	.050
	Distance	4.461E-02	.028	.049	1.573	.116	-.011	.100
	Child no.	1.936E-02	.016	.046	1.213	.226	-.012	.051
	Age	2.589E-03	.003	.032	.846	.398	-.003	.009
	Concern	-4.255E-02	.060	-.023	-.707	.480	-.161	.076
	Trained home pref.	-.271	.062	-.224	-4.376	.000	-.393	-.149
	Weak	-.124	.048	-.099	-2.577	.010	-.219	-.029
	No. house	-4.345E-03	.006	-.023	-.733	.464	-.016	.007
	Witchcraft	.102	.080	.065	1.286	.199	-.054	.259
	Cold	-2.107E-02	.051	-.014	-.413	.679	-.121	.079
	Behaviour	-.154	.046	-.116	-3.324	.001	-.244	-.063
	Karma	-1.933E-02	.065	-.011	-.296	.768	-.148	.109
	Tradition	-7.661E-02	.057	-.044	-1.334	.183	-.189	.036
	Formal 1	.109	.050	.088	2.168	.031	.010	.208
	Tradition	-7.809E-02	.076	-.055	-1.033	.302	-.227	.071
	TBA	6.029E-02	.051	.045	1.171	.242	-.041	.161

NOTE TO TABLE: The beta value indicates the extent of linear relationship between each of the explanatory variables and WTP. The Sig column shows to what extent the slope of the line (Beta) is significantly different from zero.

[39] Dependent variable: LN10WTP. The adjusted R sq is 0.595 and the Durbin Watson is 1.795. The value of the F ratio is significantly greater than 1 (29.5, p=0.000), suggesting that our model significantly improved our ability to predict the outcome variable. Hierarchical forced entry was conducted. New variables: hospital pref.=prefer a CEOC Hospital; untrained=prefer delivery at home with an untrained attendant; and trained home pref.=prefer delivery at home with trained attendance.

Table 2.21 indicates average WTP for each option, including all respondents (not just those whose preferred option it was). It also indicates the proportion that were not willing to pay for anything. Interestingly, many respondents were willing to pay more for CEOC care than they were for their preferred option. The average WTP for those who did not prefer CEOC hospital care was Rs 4,130 (95% CI: 3,469-4,799). This indicates, firstly, that, whilst they would not ordinarily choose to go to the facility, in the case of complications arising, they are willing to pay for the service. Secondly, the high value given to CEOC care indicates that the expected cost of services influences people's valuation of the service (i.e. they will pay the going price). Whilst the values given are a function of household income (the poorest are less willing to pay), WTP still does not reflect ATP in most households (i.e they would find the money to pay for care in the case of an emergency, but this would require borrowing significant amounts of money, as seen in the household cost survey).

Table 2.21: WTP for Different Delivery Care Options

	Number	Number and percentage of total not willing to pay (N and %)	Mean WTP	Median WTP	CI
CEOC hospital	529	45 (9)	4,886	2,000	4,299 - 5,473
BEOC hospital	514	78 (15)	1,452	1,000	1,280 – 1,625
Trained home	520	64 (12)	733	500	656 -810
Untrained home	520	159 (31)	276	200	241 - 312
Alone	520	340 (65)	136	0	102 - 169

Table 2.22 indicates the reasons why people were not willing to pay for care in a facility. In the case of basic obstetric care (BOC) and EOC, the majority not willing to pay said that they couldn't afford to pay. Distance was also a deterrent from payment in the case of CEOC facilities, as well as shyness and negative staff behaviour. For BEOC facilities, lack of equipment and poor quality facilities were highlighted as reasons for not being willing to pay.

Table 2.22: Reasons for Not Being Willing to Pay for Facility Based Delivery Care

Reasons why not willing to pay for care in a facility	For EOC hospital care		For BEOC care	
	(N)	(%)	(N)	(%)
Lack of safety			1	3
Negative staff behaviour	2	6	8	26
Lack of equipment			2	7
Poor facilities/general			7	23
Cannot afford it/should be free	12	40	6	20
Transport/distance	6	20		
No family support	1	3		
Long delays	1	3		
Shyness/fear	1	3		
Problems of previous pregnancy	7	23	3	10
Lack of trust			3	10
Total	30	100	30	100

We ran a binary logistic regression to assess which factors explain non-WTP for facility-based care (Table 2.23). Those who were not willing to pay were less likely to be from mountain areas or to believe poor maternal health is due to the mother's behaviour or weak physical condition, as well as less likely to be from NSMP districts and more likely to be of lower SES.

Table 2.23: Logistic Regression of Factors Determining Unwillingness to Pay for Services[40]

	B	**S.E.**	**Wald**	**df**	**Sig.**	**Exp(B)**	**95.0% CI for exp (B)**	
							Lower	**Upper**
Mountain	-2.154	.802	7.207	1	.007	.116	.024	.559
Hill	.071	.590	.014	1	.905	1.073	.338	3.412
Behaviour	-1.729	.537	10.352	1	.001	.178	.062	.509
Witchcraft	-.203	.095	4.593	1	.032	.816	.678	.983
Concern	-.286	.401	.507	1	.476	.751	.342	1.650
Age	-.155	.443	.122	1	.727	.857	.359	2.042
Child no.	-.345	.206	2.807	1	.094	.708	.473	1.060
No. house	-.074	.081	.842	1	.359	.928	.792	1.088
Distance	.028	.039	.516	1	.472	1.028	.953	1.110
Asset score	-1.090	.588	3.439	1	.064	.336	.106	1.064
Education	.738	.565	1.706	1	.192	2.091	.691	6.327
Cold	.917	.808	1.288	1	.256	2.502	.513	12.189
Weak	1.588	.528	9.063	1	.003	4.896	1.741	13.769
Karma	.346	.559	.382	1	.536	1.413	.473	4.224
Tradition	-.129	.511	.063	1	.801	.879	.323	2.393
Formal 1	.630	.680	.859	1	.354	1.878	.495	7.127
Dhaami	-.627	.724	.750	1	.387	.534	.129	2.209
TBA	.211	.562	.141	1	.707	1.236	.410	3.720
Use facility	.017	.785	.000	1	.983	1.017	.218	4.739
NSMP	-1.648	.573	8.264	1	.004	.192	.063	.592
Constant	-.679	1.406	.233	1	.629	.507		

Discussion

The WTP study indicates that most households prefer home delivery. Preference for hospital care is significantly determined by SES. Attitudes, beliefs and education have little or no effect. WTP estimates are close to actual amounts, suggesting that people have a good idea of the real costs of care. Whilst most prefer home delivery, many would pay for hospital care at the onset of complications even if reported WTP is higher than ATP, a problem found in other studies (Abel-Smith and Rawal 1992). The reasons being that, if women feel their situation requires treatment, they will find the means to afford it by borrowing, etc., as we have seen in the household survey.

The availability of drugs and equipment is an important predictor of preference for facility-based care and explains higher preference for CEOC compared to BEOC. This suggests that households are sensitive to the 'process' of care as well as the final health outcome (Donaldson and Shackley 1997). It also highlights the importance of guaranteeing the availability of essential drugs and functioning equipment within CEOC facilities, to increase uptake of services. Staff attitudes were also highlighted as reasons for non-use of facilities, as well as shyness.

[40] The inclusion of the included explanatory variables increased the predictive power of the model from –2Log Likelihood 231 to 168, which was significantly higher. The Hosmer and Lemeshow's test indicates a test statistic of 8.539 (p=0.383), indicating that the observed data does not differ significantly from the regression model.

Several concerns with WTP have been raised in literature. In the Western world, concern arises about asking for hypothetical monetary valuations of services that are typically publicly funded (Shackley and Donaldson, 2000). However, in Nepal, where households are familiar with paying for public health care, the hypothetical payment should not cause cognitive difficulties. Indeed, our findings suggest that most women's WTP value for facility-based care was influenced by expected cost (similar findings are reported in Papua New Guinea (Benjamin, Sapak et al. 2001)). The difference between values given by the richest versus the poorest quintiles also indicates that respondents considered, to some extent, their budget constraint (or ability to loan money) when responding.

Reliability, or whether respondents can understand and answer the question, is an additional concern associated with this method (Foreit and Foreit 2003). However, most women in our sample had more than one child and, therefore, were familiar with at least one of the services in question. Furthermore, non-response rates were low (13 cases). They were identified as those who said they would be prepared to pay for their preferred option, but then refused to give a valuation and were deleted from the sample. Protest[41] bids were also deleted.

The concern with excluding these cases is that it could result in systematic bias if they have similar characteristics such as low WTP (Bateman, Ozdemiroglu et al. 2002). However, after comparing protest and non-response cases with the rest of the sample, no systematic difference was found in terms of SES, education, age and preferences for care (Annex Four).

The association between WTP and SES supports the theoretical validity of the method. However, other variables that were hypothesised to affect WTP, such as age, education and attitudes, did not have the expected effect. The predictive validity of responses (i.e. that respondents would actually pay what they say they are willing to) is demonstrated by the similarity in magnitude of WTP estimates with costs incurred by respondents from the household survey. However, two qualifications need to be made. Firstly, that poorer households are willing to pay less, and, in some cases, not willing to pay at all. Secondly, that the majority of those willing to pay for hospital care would prefer home-based care, suggesting that they would only be willing to pay for emergency care (i.e. at the onset of complications).

Throughout the two surveys a number of differences between NSMP and non-NSMP districts were found. These are summarised in Table 2.24. It should be stressed that, while these differences may be attributable to the NSMP project work, the study design did not permit an investigation of causation. It should be noted that, while there is a difference in type of care used between NSMP and non-NSMP districts, there is no significant difference within NSMP districts in the use of care by SES.

[41] Identified as those with an unrealistically high bid (defined as a WTP that was beyond their ATP). WTP was said to be beyond ATP were 10 times or more than an household's monthly cash income (this was the case in 53 cases). Those respondents who gave a zero value for their preferred option, but were prepared to pay for other delivery care options, were also classified as protest bids and excluded (67 cases).

Table 2.24: Summary of Main Differences Between NSMP and Non-NSMP Districts

Variables differing significantly for the whole sample	NSMP districts	Non-NSMP districts	Reserachers' comments
Time for attendants to reach the home of woman (mins)	26 (20-32)	62 (47-77)	Need to explore further reasons for this.
Time spent by attendant in the home of woman (hrs)	6 (4-7)	10 (6-15)	Ibid.
Percentage reporting purchase of SDK (%)	25	16	Probably due to NSMP information, education and communication (IEC) campaign. Use is higher for those delivering with an untrained attendant than a trained one.
Average total reported expenditure for home delivery (includes all zeros; Rs)	468	913	In NSMP districts, women are paying less to staff (Rs 388 versus Rs 746) and less for drugs (Rs 35 versus Rs 83), but more for SDK (Rs 19 versus Rs 10). Further research is required to explore if the difference is real and to understand why it is so.
Surgery fee for normal delivery in public facilities (Rs)	187	228	This suggests a different charging strategy, but looking at the data on typical charges (Table 3.2), the reverse appears to be true for women with normal delivery. Could be that exemptions are working better in NSMP districts, but unable to tell from SES data as sample sizes are too small.
Percentage reporting difficulty in raising money (%)	35	49	No difference between NSMP and non-NSMP districts in reported delays or in use of loan funds, stretchers, etc.
Percentage reporting they would use formal care in case of complications (%)	81	48	Indicates better awareness of formal care. Likely result of NSMP IEC activities.
Percentage preferring CEOC facility (%)	43	21	Ibid.

2.8. Summary

The findings of the household cost and WTP surveys can be summarised as follows:

- Those delivering in a facility face a significantly greater delay in reaching staff and treatment than those delivering at home.
- Home deliveries cost Rs 8-900 for a trained attendant. This is double that of an untrained attendant, but payment methods are flexible (cash or kind) and largely up to the household.
- Facility-based deliveries result in significant transport costs. In hill and mountain areas, women mainly travel by stretcher - which means paying porters, the average cost of which was Rs 2,900.
- Women delivering at a facility are usually accompanied by their husband. This can result in significant opportunity costs of time in terms of his lost income.
- Drug and medical supply costs were the most significant in the facility at over Rs 1000 (most of these were purchased outside the facility).
- The hospital charges for a c-section were eight times higher than normal delivery (Rs 678 and Rs 5,500 respectively). But, once transport, time and referral costs are added, the total expenditure is just under twice that of a normal delivery (Rs 11,961 versus 6,348 respectively).

- The total household costs of delivery with a trained attendant at home is about half the official and additional costs of a normal delivery in a hospital. But, once, transport, time and referral costs are added in, the magnitude of difference stretches to seven-fold.
- Because households do not know prior to hospital admission what type of delivery will be required and the extent of complications and length of stay, the degree of uncertainty in terms of the final cost is extremely large. In contrast, those delivering at home have a clear idea of any eventual cost and control the extent of payment made.
- Households do not plan for expenditure and find it difficult to raise money. Fifty one percent of those delivering in hospital borrowed money from friends/relatives (60% of cases) or moneylenders (over 30% of cases). Very few households (less than 2%) had access to community loan schemes since these had generally not been established in the study areas selected. A third of the poorest households reported sale of land and livestock to pay for care (32%).
- The costs of a home delivery represent 36% of the poorest households' monthly income compared to 1% of those from wealthiest groups. A vaginal facility-based delivery represents10 times that much.
- There was little difference between the facility-based costs incurred by poor compared to rich households. This suggests that exemptions schemes are not working effectively and the poor are not protected from the cost of care.
- Households prefer trained home delivery. Hospital Care is perceived as emergency care.

Chapter 3. Facility Charging and Exemption Practice

3.1. Background

To complement the household survey, interviews were undertaken in the highest-level public facility in each of the eight districts to obtain information on user charge policies, charging practice and the process of providing exemptions for the poor. Six of the areas have district hospitals. One, Dolpa, has no hospital, just a PHC centre, and patients must cross to another district for EOC. Patients in the household survey from this district all delivered in a private nursing home in Banke district. Kailali is served by a larger zonal hospital. The questionnaire is attached as Annex 7.

Table 3.1: Basic Statistics on the Facilities in the Research Areas

	Baglung	Bhojpur	Gulmi	Jhapa	Surkhet	Kailali	Dolpa PHC	Jumla
District wide								
Population of district	268,937	203,018	296,654	688,109	288,527	616,697	29,545	89,427
Expected deliveries (1)	12,024	8,639	14,030	29,954	12,846	25,725	1,243	4,345
Birth rate (%)	4.5	4.3	4.7	4.4	4.5	4.2	4.2	4.9
Facility Data								
Facility	District Hospital	District Hospital	District Hospital	Mechi Zonal	District Hospital	Seti Zonal	PHC Centre	District Hospital
Beds	25	17	15	80	25	100	4	15
Inpatients discharges	3,053	1,048	1,474	5,988	2,936	6,359		766
Occupancy (%)	64	44	85	49.0	68.1	96.86	50	50
Delivery Care (2)								
Deliveries	590	62	200	1557	889	1531	6	44
C-sections	27	NA	NA	171	70	134	NA	1
Hospital delivery rate (%)	4.9	0.7	1.4	5.2	6.9	6.0	0.5	1.0
C-section rate (%)	4.6			11.0	7.9	8.8		2.3

Notes:
Taken from management information system and based on the population and birth rate in the district
Statistics reported by the district during the survey. In some cases, these vary slightly from those presented in the Statistical Yearbook of the MOH, 2002.

The hospital delivery rate, as measured by the number of deliveries in district hospitals as a proportion of all expected deliveries, ranges 0.5-7 % (Table 3.1). This rate is based on the assumption that people generally attend the public facility of their own district. This is not always the case, with some women crossing to other districts or going to PHC centres or higher-level public or private hospitals. Nevertheless, even if this adjustment is made, the rate would still be extremely low. There is no district hospital in Dolpa, so women requiring hospital level (CEOC) care must seek care in neighbouring districts or deal with problems themselves, either at home or at the health centre[42]. Bhojpur and Gulmi district hospitals do not have sufficient equipment and staff to provide c-sections.

The hospital c-section rate in the five districts offering this service varies 2.3-11%. Higher rates are, not surprisingly, found in the two zonal level hospitals in the study. However, even these rates are not particularly high, given that the denominator represents only a small fraction of total deliveries in the district.

There are slight differences between the statistics reported in the survey and those obtained from annual statistics assembled by the Department of Health (DOH) Services. In one case, Mechi Zonal Hospital, no statistics are reported in the Department's own statistics.

[42] There is one medical officer at Dolpa, but without the capacity to handle pregnancy complications.

3.2. Policy on User Charges

National policy requires that hospitals should exempt children under five, the elderly[43] and disabled from all user charges. This is well recognised by hospitals and appears to be respected. Some hospitals also mention the guideline that 5% of user fee income is to be used to cross-subsidise poor patients. The definition of poor appears to be haphazard, left largely up to the discretion of the facility management.

Beyond these requirements, user charge and exemption policy is largely developed locally. All the hospitals questioned mentioned that policy is mostly developed by the hospital management committee/board. Two of the districts mentioned that fees are set in consultation with the District Development Committee (DDC).

All hospitals mentioned that the poor were subsidised, although treatment is not necessarily given free. In one case (Jhapa) the hospital mentioned that any user fee rebate would not exceed Rs 5000. As suggested by the charges in Table 3.2, this should just cover most obstetric care, although obstetric emergencies, particularly those requiring large quantities of blood, could exceed this level.

3.3. Average Payments for Key Services

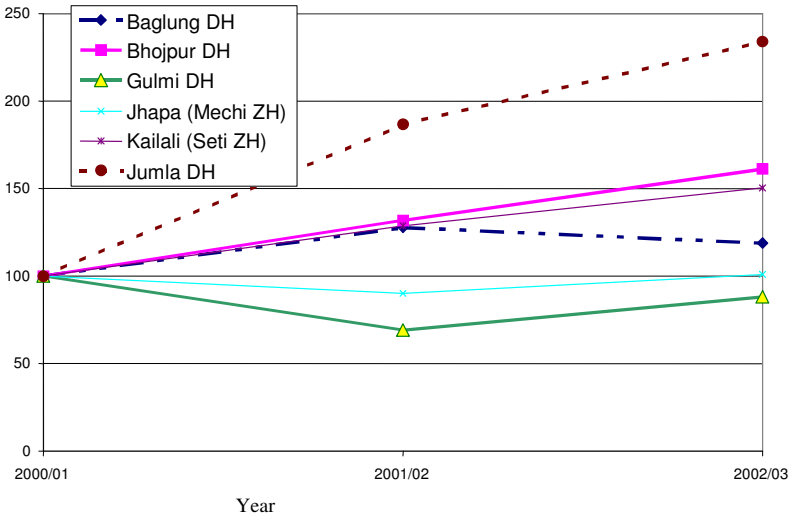
Hospitals mostly collect user charges at a similar point in the treatment process. Patients in all the hospitals pay an admission charge on entering the hospital. Charges for laboratory tests, x-rays and single rooms (cabins) are paid in advance, while payment for operating theatre, delivery and bed charges are sometimes made on discharge, although there is a preference in all hospitals for advance payment[44].

Most of the hospitals had price lists. These are based on procedures such as lab tests, operations and days of hospital stay, rather than a price for a complete episode in hospital (sometimes known as package services). According to hospital managers, prices for services are determined by a variety of factors, including quality and complexity of services. A number of hospitals mentioned that it was impossible to cover the full costs of services[45] and that the ability of the local population to pay for services was a major determining factor. Assessment of ATP appears to be based on a rough assessment of the circumstances of those living in the locality rather than more sophisticated methods. One hospital (Mechi Zonal, Jhapa) also mentioned that the price of services in other local NGO hospitals was an important determinant so that the facility remained competitive.

Hospital revenue from fees is reported to have grown in most districts over the last three years, coinciding both with a general policy to decentralise control over services and the need to raise revenue given the lack of additional budgetary support (Figure 3.1). At constant (2000/01 prices), there was a rise in revenue from charges in all districts, with the exception of Gulmi. In Jumla, revenue rose by almost 140%, while other districts saw more modest increases. This trend mirrors that in user fee income at zonal hospitals that has also increased significantly over the last few years (HEFU 2003).

[43] Over 60 years for women, over 70 for men.
[44] Confirmed by the household data on high prevalence of deposits paid for treatment.
[45] Based on their awareness of the total cost-recovery rate for spending of the entire hospital. Hospitals do not appear to be aware of the full average cost of each case treated although they may know the variable costs of supplies of treating individual patients.

Figure 3.1: Growth (Inflation Adjusted) in Revenue from User Charges, 2000/01 =100



Note: Incomplete data were provided for Surkhet district hospital.

Admission charges (usually Rs 10) vary little across the hospitals. More variation is evident in the price of other services. The basic charge for normal delivery ranges Rs 200-800. All service pricing is based on fee for item of service (not case based[46]), so the patient is often uncertain about the total cost of service when admitted into hospital. Laboratory tests, X-rays, investigative and surgical procedures all carry a separate charge. Because of this, it is difficult to estimate the precise cost of a typical maternal health case as the final price charged will depend on the extent of individual complications and required procedures. Some illustrative cases are presented in Table 3.2.

Table 3.2: Typical Charges for Key Maternal Health Services [47]

District	Normal delivery (Rs)	C-section (Rs)	Post-partum haemorrhage (Rs)
Baglung	300	2,500	3,500 + 1000 per pint of blood
Bhojpur	200	NA	NA
Gulmi	200	NA	NA
Jhapa	210	1,500	1,800 + 650 per pint of blood
Jumla	380	4,200	1,500+ 750 per pint of blood
Kailali	610	4,510	3,010+750 per pint of blood
Surkhet	760	2,110	810+750 per pint of blood

The charge for a c-section at the five hospitals providing the service ranges from Rs 1,500-4,510, not including any blood transfusion. Treatment of complication, such as haemorrhage, varies Rs 810-3,500. Meanwhile, a pint of blood costs Rs 650-1,000. Overall, the charges are somewhat different from those reported as being paid in the household survey (Chapter 2). In the survey, women reported around Rs 800 for a normal delivery and Rs 4,600 for a c-section as the formal charges of the facility. The actual patient bills verified this. The discrepancy appears mainly because the hospital charges do not include the additional costs of accommodation, food and drugs that are added to the bills presented to the women. Both sets of charges also only reflect official service costs and do not include any unofficial payments to staff or the costs of reaching the facility.

[46] Case-based payment is where a patient pays a fixed amount for an episode of care according to a price list that is known in advance. The provider, therefore, bears the risk of any variation around the average cost of providing the service for that particular patient.

[47] Although Dolpa recorded six deliveries during the year, no official charges were levied apart from a nominal Rs 1entrance charge.

3.4. Exemptions

In all the hospitals, identification of the poor is done on an ad hoc basis, initially by the treating doctor, based on characteristics, such as appearance and ethnicity. Cases may be referred to a senior member of staff and, in one hospital, reference was made to referral to the hospital management board in order to decide on the exemption procedure. Several hospitals mentioned that giving exemptions to poor pregnant women was considered a priority by the facility and as many were assisted as possible.

None of the hospitals kept information on the number of exemptions given. When asked to estimate the number of women paying full, part and no charges for obstetric services, the majority were thought not to pay (Table 3.3). This contradicts the results from the household survey, which indicate that most women pay both formal and informal charges across all wealth groups.

Table 3.3: Estimates of Those Paying Full, Partial and No Charges for Obstetric Services

District	Full charge (%)	Partial charge (%)	No charge (%)
Baglung	20	30	50
Bhojpur	10	25	65
Gulmi	25	25	50
Jhapa (Mechi ZH)	10	15	75

Source: Estimated by interviewee for patient survey by either the superintendent or a deputy. Other hospitals could not provide an estimate.

The emergency fund implemented in Jumla, with support from NSMP, is developing a more consistent approach to exemptions for referral. A referral committee assesses need, based on both observable characteristics and interviews with the woman and her family. The fund will pay for transport to a referral facility (zonal hospital) for surgical delivery or pregnancy complications.

3.5. Financial sustainability

Income from user charges represents a significant and growing source of revenue for district and zonal hospitals. At the zonal level, user charges accounted for an average of 38% of total hospital expenditure (HEFU 2003). At the two zonal hospitals in the sample, Mechi and Seti, the rate was 26% and 39% respectively. User charge revenues are not generally earmarked for specific purposes, but finance variable cost items such as medicines, some new equipment and staff bonuses. Three of the hospitals (Seti Zonal, Surhket and Jumla) provided detailed accounts on the use of revenue. These indicate that between 23% and 35% of revenue is spent on the operating costs of the hospital. In two cases, the remainder is divided more or less evenly between staff bonuses and medicines. In the third case, all the additional funding is used for staff bonuses.

At the district level, user charges provide the main source of additional revenue, although hospitals also obtain significant income from rentals for shopping outlets on hospital premises. The Hospital Development Committee (HDC) manages income arising from off-budget activities, such as user charges and rentals. Much of this revenue is spent on staff salaries and bonuses, with the remainder being spent on medicines, operating costs and some capital items.

There is very little information available to establish whether the exemption 'systems' used in hospitals are sustainable. To the extent that funds are largely obtained through cross-subsidy from other patients, a limit is automatically placed on the number of exemptions that can be given. The lack of data on poor patients admitted to hospitals, exemptions given or their value, makes it is impossible to assess the level of funding that is required to cover the needs of the poor based on hospital data alone. The household cost survey indicates that there is no difference in costs incurred at the hospital by SES. This suggests that exemption schemes in practice may not function effectively or that hospital staff are unable to successfully identify the poor, without more objective measures of poverty.

Exemptions for services within hospitals, including maternity services, are financed largely from the income of the hospital, largely public budget and user charges – effectively a cross-subsidy. This places a limit of the number of exemptions that can be provided by the hospital. Since much of the user fee income goes towards salaries and bonuses for staff there is a potential disincentive to treat exempt patients. Since most of the facilities, as measured by occupancy rates, appear under-utilised this may not result in patients being refused admission, but may mean that they receive less attention and medical supplies once in hospital.

The only example, among the hospitals examined in the study areas of a separate fund for the poor was the emergency loan fund scheme organised at Jumla district hospital, with support from NSMP. Although this was set up in 2001, difficulties in establishing the fund and problems with losing money to the Maoists, meant that it was only really operational during 2003. Funds are collected mainly from a Rs 10 departure tax on all flights, which accounted for more than 90% of revenue. The remaining funds have been obtained from local businesses, together with a large counterpart contribution from NSMP. Funds have so far been allocated to cover the cost of treatment and airfares of two women, one with ante-partum haemorrhage and one with cardiac problems who required treatment at the zonal hospital. In the latter case, the woman actually delivered on the way to the airport and the fund is now attempting to recover the cost of the flight already paid to the woman.

Staff at Gulmi district hospital mentioned that a local business provides free fuel for women referred to the mission hospital at Tansen, Palpa district. This is a higher-level facility to which women requiring c-section or with delivery complications are referred.

Discussing the future role of government in the provision of low cost services, a number of hospitals emphasised the need to provide funding for concessionary schemes for management of referral and transport costs. The need to develop a system for identifying the poor was also mentioned.

3.6. Summary

District hospitals appear to be obtaining an increasing volume of resources from user charges in both zonal and district hospitals. This reflects the relatively slow pace of budget growth. To the extent that official charges are replacing unofficial fees, this may lead to a more transparent charging regime, although it was not possible to verify trends in this cross-sectional study. In most cases, deciding on exemption is left up to the treating doctor, although decisions may sometimes be referred to senior staff or the facility management board.

Charges do impose a burden on households, as suggested by the household survey. All facilities in the study districts report that some part or full exemptions are given to the poor. In all cases, with the exception of the emergency referral fund in Jumla, exemptions operate on a largely ad-hoc and self-financed basis. Hospitals do not appear to put funds aside for exemptions, but rely on an informal cross-subsidy from other revenue sources.

Part II: Reducing the Burden on Households

Part II of this report examines ways in which the financial burden of maternal health care can be alleviated. Chapter 4 examines international evidence on financing schemes, while Chapter 5 analyses schemes that are currently in use in Nepal.

Chapter 4. Literature Review

In this Chapter, we review the international literature for experiences of alternative financing options for maternal health to highlight policy implications and key lessons learned.

Financing mechanisms are broadly defined to include ways to make funding available when required, setting incentives to encourage good appropriate service provision and reducing or eliminating the possibility that an individual will be unable to pay. These functions can be fulfilled by: an MOH; social security organisation (a system of compulsory health insurance); community or provider-based pooling organisation (voluntary contributions of monetary or non-monetary resources by individuals or communities) (Mwabu, Wang'ombe et al. 1992); private health insurance fund; or a household, through out-of-pocket payments. We begin by outlining the theoretical function of each of these financial organisations, then outline the potential impact of alternative financing mechanisms on the three delays and, finally, we present the review methods and main lessons learned.

4.1. Organisational Forms for the Financing of the Health System

Ministry of Health
The MOH finances the health sector through tax revenue. This allows for a maximum separation between contributions and utilisation, yet also relies upon a strong institutional and organisational capacity. The government also plays a role in strategic purchasing, in terms of the choice of provider payment mechanisms and resource management.

Donor Funds
International donor finance, in the form of loans and grants, provide support to the health systems in developing countries. Similarly, through research projects, donors provide technical assistance to health officials and health workers in the form of training and the provision of supplies and equipment. In some countries, such as Bangladesh and Nepal, there is a high degree of donor dependency with more than a third of the total health budget financed by donors.

Social Security Organisations
Health insurance involves prepayment for health services, avoiding or reducing the direct out-of-pocket payments for these services. Health insurance can be voluntary or compulsory. National or social health insurance is usually compulsory for certain segments of the population. Deductions are made through income, which limits the coverage to formal sector workers (Asenso-Okyere and Dzator 1997). A co-payment may be introduced with the aim of rationing the use of a particular intervention. Prepayment enables risks to be shared, providing effective access to high cost personal care. Larger pools are preferable to smaller ones because they increase the resource availability for health services, while taking advantage of economies of scale for administration (World Health Organisation (WHO) 2000).

Community-Based Pooling Organisations
Community finance consists of voluntary contributions of monetary and non-monetary resources by individuals or community groups to pay for the cost of providing health care and related services (Mwabu, Wang'ombe et al. 1992). One form of community finance is health insurance that is organised at the community level, on a voluntary basis. Here, households

opt to pay premiums, which are not based on risk assessments. This offers a means of providing insurance to rural communities unlikely to benefit from social or private health insurance. As a result of the Bamako Initiative[48], African Ministries of Health agreed to encourage community participation through committees at different levels of the health system, to upgrade facilities to improve maternal PHC coverage and provide better outreach and expanded services and the provision of essential drugs with revolving drug funds (Anonymous 1988; McPake 1993). Similar efforts have been promoted at the secondary care level to improve the capacity for providing EOC (Kamara, 1997). However, the size and organisational capacity of community pooling arrangements often threatens their financial viability (WHO 2000).

Provider-Based Pooling Organisations

Employer-based insurance schemes are undertaken for the employees of a company. The premiums, that are uniform for all employees, are usually paid by the employer as part of the benefits to the employee. Deductibles or co-payments are sometimes introduced to limit cost escalation (Asenso-Okyere and Dzator 1997).

Private Health Insurance Funds

Private health insurance involves the voluntary payment of premiums determined by individual risk assessments and includes employer-based schemes. This form of insurance is usually expensive for vulnerable groups and, hence, unable to cover those in need.

Out-of-Pocket Payments

In addition to contributions to the above, citizens also contribute to health systems through out-of-pocket payments at the point of service delivery. The introduction of user charges has the aim of recovering part of the recurrent costs of care typically for drugs, maintenance and services. According to Vogel, the percentage of the budget which the MOH collects through user fees ranges between 0-15% (Vogel 1987). The theoretical advantages of user fees are in the enhancement of efficiency of service provision, by reducing frivolous demand for health care at the household level and, on the provider side, reducing the temptation to over-prescribe (Waddington and Enyimayew 1990)[49]. Indeed, fees can be a powerful tool for enforcing referral systems and improving the quality of health services (Vogel 1987; Litvack and Bodart 1993). However, there is much debate surrounding the impact of user fees on equity and utilisation of service due to the restriction of access to those who can't afford them and the difficulty of exempting the poorest.

4.2. Finance and Maternal Health: The Three Delays

Alternative models of financing have a number of effects on the health care provider and user, with implications for the utilisation of maternal health services, equity, sustainability and, ultimately, maternal health outcomes. This is well illustrated using the 'three delays' model (Thaddeus and Maine 1994).

As Table 4.1 illustrates, financing mechanisms can influence each delay. The chosen fee level, household access to cash and the existence of an exemption scheme to protect the poorest, influence household decisions to seek care (Delay I). Once the decision has been made to seek care, community-financing schemes (such as loan funds) can serve to improve access, as can government's financing the extended reach of health services and improved infrastructure. A system of co-payments can be introduced to ensure a well-functioning referral mechanism (Delay II). Finally, once at the facility (Delay III), drug funds and

[48] Defined as a range of strategies to improve effectiveness, optimise efficiency, ensure sustainability and promote equity within PHC (McPake 1993).

[49] Although this assumes a level of consumer sovereignty that may not be present. If providers are able to induce demand substantially, then the additional revenue from user charges may even lead to an increase in prescriptions.

prepayment schemes can help guarantee a supply of essential drugs. Similarly, alternative methods of staff remuneration and government investment in essential equipment and fund management capacity all serve to improve the human and technical quality of care.

Table 4.1: Role of Financing Mechanisms in Addressing the Three Delays to Maternal Care

Delay	Factors for consideration in choice of financing model	
	MOH, donors, health facilities	**Users, households, communities**
Delay I: Decision to seek care	♦ Existence of exemption scheme for poorest – difficulty of direct targeting	♦ Affordability of service – level of user fee ♦ Access to capital: prepayment, loan fund
Delay II: Identifying and reaching a health facility	♦ Location of service ♦ Infrastructure ♦ Adequate referral mechanism: reimbursement	♦ Transport availability and cost ♦ Loan funds
Delay III: Receipt of adequate and appropriate treatment	♦ Appropriate management of funds – reinvested in health facility ♦ Staff attitude: remuneration system ♦ Staff availability: training capacity ♦ Functioning equipment, blood bank	♦ Revolving drug funds ♦ Access to capital to purchase drugs: credit union, prepayment

4.3. Review Methods

The following databases were systematically searched to identify relevant published and unpublished studies: Medline + Premedline (1990-Oct 2 2003), HealthStar (1990-June 2003), Econlit (1990-Sept 2003), PUBMED and Lilacs. Reference lists were searched for secondary references. The publications from the websites of numerous organisations working in reproductive health were searched and obtained if relevant.

To be included, studies had to concern the provision of maternal health services (or a basic package of health services that include maternal health), discuss issues of financing health services and be set in a developing country. Titles and abstracts of identified studies were first reviewed and studies not meeting the above criteria excluded. The full text of remaining studies was obtained and reviewed and a final selection of studies was made. Included studies were then ranked according to a two-level quality scale, in terms of their generalisability to other settings (Annex Nine).

Fifteen class A studies were identified and 26 class B studies. Lessons learned from selected A and B studies are presented below.

4.4. Lessons Learned

The review enabled the following conclusions to be drawn with regards to each financing organisation. We review first those organisations acting at the national level and then consider the role for community-based financing schemes.

4.4.1. Financing at the National Level

The MOH and donors are still the main source of funds for maternal health care (Borghi and Lissner forthcoming), although, due to weak institutional capacity and a large informal sector, the tax-base of many low-income countries is insufficient. Government funds are required to finance staff salaries, construction and equipment costs, although are inadequate in many countries to meet the needs of maternal health. Increased funds are required to support the training of additional obstetricians and midwives, to ensure adequate transport and to extend

maternal health services supporting obstetric care to more remote rural areas (Ogunbekun, Adeyi et al. 1996). Some argue that governments also have a greater responsibility for financing delivery compared to ANC, as childbirth cannot be funded predominantly from private sources in most poor countries, without the risk that many mothers will go without (Rannan-Eliya, Berman et al. 2000). Furthermore, government subsidies are required to cover the costs of care for the poor and women who are excluded from maternal health services.

The sustainability of voluntary insurance schemes such as the Thai health care has also been dependent on government contributions, matching whatever amount was raised through the sale of health cards (Pannarunothai, Srithamrongsawat et al. 2000). Without government contributions, the scheme was financially unsustainable, as demonstrated in earlier years of its development (pre-1993). Donors also have an important role to play in financing the start-up costs of community-based finance schemes, mobilising the community, providing technical assistance and helping to create the necessary organisational and institutional capacity, covering 55-100% of the cost (Kamara 1997). Further research is required to determine how many governments and donors are currently investing in maternal health care and the minimum level of investment needed to ensure good maternal health.

Compulsory health insurance offers another model of health care financing that is little developed in the dispersed, largely rural populations of Sub-Saharan Africa or more populous South Asia. A World Bank survey of 21 countries identified only four with a social security scheme (Abel-Smith and Rawal 1994) and suggested that, in Tanzania, only 3% of the population could initially be covered by national health insurance. The scope for increasing coverage is limited in such settings due to an insufficient institutional and administrative capacity to collect funds and ensure premium payment. In Latin America, where social health insurance schemes are widespread, the lower socio-economic groups are still marginalised, with, in Mexico, the poorest mothers having coverage in 20% of cases, compared to 72% of cases in the highest socio-economic group (Gonzalez Block 1994).

Social insurance schemes can be specifically directed at maternal health care as the case of the Maternal and Child National Insurance Programme in Bolivia illustrates (Dmytraczenko, Aitken et al. 1998). In this example, services for pregnant women and children under five were provided free, facilities receiving reimbursement by their municipal government from national revenues on a per service basis, with fixed reimbursement rates, based on the average treatment costs. The scheme successfully increased utilisation of antenatal and delivery care by 50% in public facilities and had positive equity implications as new users were from poorer households and geographic areas where utilisation had previously been low. However, utilisation increased mainly in higher-level facilities with perceived higher quality, as patients bypassed the referral system. The introduction of a co-payment to users who had not been referred would overcome this problem and avoid the potential overload of higher-level facilities.

The financial sustainability of the Bolivian scheme was also called into question due to the underestimation of average costs. In practice, higher-level facilities face higher average costs and this needs to be reflected in the chosen levels of reimbursement. Finally, the costs of labour and building maintenance were not covered for NGO and social security facilities collaborating in the scheme, resulting in financial difficulty for these facilities with personnel accounting for up to 56% of total cost. So, while offering free of charge services served to increase use of maternal health services, this came at the detriment of quality of care and staff motivation in higher-level facilities. This demonstrates the need for appropriate demand incentives at lower levels and the importance of piloting schemes before scaling-up nation-wide.

4.4.2. Financing at the Community Level

At the community level, user fees offer a means of supplementing government funds in the public sector by recovering a portion of the costs. The introduction of fees was initially encouraged in 1987 by the World Bank and subsequently supported by the Bamako Initiative (1988), which promoted community financing of recurrent costs of PHC. By 1995, 28 out of 37 African countries had introduced fee schedules in government health facilities. Unlike other means of revenue generation, such as pre-payment of community/social health insurance, for user fees, the timing of payment coincides with the need for treatment (Arhin-Tenkorang 2001). The level of the fee may be purely nominal or include the cost of drugs and medical supplies and, in some cases, staff. User fees may be applied to specific services and/or facilities.

Regarding the impact of user fees on maternal health, a recent review of the literature suggests that the rate of institutional deliveries, where fees applied, fell in all studies identified and the use of ANC fell in all but one. For example, in Nigeria, hospital deliveries fell by 46-50% following the introduction of fees (Owa, Osinaike et al. 1995) and a 12% reduction in maternity admissions was noted in Kenya (fees were withdrawn a year after their introduction) (Mbuga, Bloom et al. 1995). Conversely, the use of delivery care increased by 5% after fees were removed in South Africa (Wilkinson, Gouws et al. 2001). Antenatal care (ANC) use fell in all but one study, which documented a highly significant increase at the PHC level in Benin and Guinea, but a non-significant increase in safe deliveries (Soucat, Bruhl et al. 1997). The explanation given is that ANC was largely subsidised, at US$ 1.8 (compared to US$ 7.6 for actual provider cost), and, therefore, was affordable for households, whilst the fee for delivery care was similar to the average cost of care. This emphasises that the actual fee level, or perceived cost, is an important factor determining demand for maternal care. In the case of an EOC, demand may be less price elastic, yet women reaching care can be subject to rapidly escalating costs, with a potentially catastrophic impact on the household budget. User fees need to be publicised and stable over long periods of time, so that patients can prepare ahead (Kowalewski, Mujina et al. 2002).

A number of measures could be taken to protect the poorest when fees are in place and ensure utilisation of services does not fall. One example is through a system of direct (based on SES) or characteristic (such as households living further away from facilities pay less) exemption. Although, in practice, those in charge of health facilities tend to use their discretion about exempting patients, with only one out of 27 Sub-Saharan African countries with an official income ceiling below which people are exempt (Shaw and Ainsworth 1996). Indeed, hospital managers are faced with the inconsistent objectives of raising revenue on the one hand and protecting the poor on the other (Kowalewski, Mujina et al. 2002). Often women do not know that exemptions are available and unless there is a process of formally informing or advertising that they are, illiterate or semi-literate women are unlikely to benefit. In Zimbabwe, the government focused its cost recovery effort in urban facilities, as few patients in rural areas had sufficient income to be liable for charges (Taylor, Sanders et al. 1993), although no evidence was found assessing the impact of this policy on service use in poorer groups.

Secondly, women have been found to be willing to pay for care if there are observable improvements in the quality of service (Yoder 1989; Litvack and Bodart 1993; Lavy and Germain 1994). Good fund management at the health facility level is, therefore, essential to ensure funds are reinvested in facilities to improve service quality and ensure availability of essential drugs (Waddington and Enyimayew 1990). The timing of payment at the point of service use is a further issue for households in poor rural areas who often face the constraint of limited or no access to capital. In the event of an obstetric emergency, access to capital is required immediately.

In the Sub-Saharan African setting, two approaches have been successfully adopted at the community level to overcome the seasonal availability of cash. On a small scale, loan funds have been set up by communities to cover costs of specific items of care (Chiwuzie, Okojie et al. 1997; Fofana, Samai et al. 1997; Ottong, Asuquo et al. 1997; Shehu, Ikeh et al. 1997; Thuray, Samai et al. 1997). People pay what they can as there is no official premium. The funds are pooled and managed by community leaders and can be used by community members to cover the costs of parts of service, such as drugs, transport or essential equipment. Good financial management and strong leadership have been shown to be essential to the success of the system, including the capacity to follow-up on defaulters, collect money and mobilise contributions.

On a larger scale, but still operating at the community level, prepayment schemes cover the cost of specific services with units (individuals or families) offering voluntary pre-specified contributions, entitling them to free or reduced cost (in the case of co-payment) services from selected facilities. Funds are collected and managed more formally through a third party, either a health facility or an insurer. Successful examples include Rwanda and Zaire. In Rwanda, prenatal care use increased by 43%-49% and delivery care by 24-27% (Schneider, Diop et al. 2001). In Zaire, there was a seven-fold increase in the rate of hospital deliveries in the insured versus uninsured (Criel, Vanderstuyft et al. 1999). Funds generated were successful in recovering 49% of total costs. In Rwanda, provider incentives for improved quality were created, with health centres receiving a payment in addition to capitation (quality bonus) if they met certain criteria: drug availability; staff numbers; ANC; and delivery coverage. The introduction of co-payments at higher levels of care can encourage appropriate consumer incentives to re-enforce the referral system. However, a case study in China indicates that delivery care should be included in the package of services offered by the scheme and women need to be made aware of their service entitlements in order to guarantee service uptake (Kaufman, Kaining et al. 1997). Community mobilisation is, therefore, essential to ensure and sustain contributions from members, although not without cost, which calls into question the financial sustainability of such schemes.

4.5. Summary

Table 4.2 provides a summary of the main types of financing methods, their strengths and limitations and further issues described in this Chapter.

Table 4.2: Summary of Financing Mechanisms: Main Lessons Learned

	Strengths	Limitations	Issues to consider
National level financing			
MOH/donors	- Essential role in financing infrastructure, staff salaries and training - Without government/donor, support most supplementary financing schemes prove unsustainable - Financing the costs of pilot studies	- Weak institutional capacity - Limited tax base - Often insufficient investment in staff training - Ineffective management of exemptions	- Cost of providing delivery care needs to be subsidized, as it is unaffordable for most households - Importance of assessing the long term sustainability of pilot financing schemes
Social/compulsory health insurance	- Can be tailored to cover MCH services	- Insufficient institutional base in many poor countries - Need strengthened capacity for premium collection and administration	- Lower SES groups still marginalised in some Latin American countries - Appropriate demand incentives also need to be considered
Community level financing			
User fees	- Supplement government funds	- Cause a reduction in maternity admissions after introduction - Unless regulated, user charges for delivery care quickly escalate, covering more than just drugs and supplies. Results in households paying for the full cost of the service	- Need to be publicised and stable over time - Need for clear cut exemption schemes - Need for a parallel increase in quality and good fund management – which is usually not observed in practice
Loan funds	- If well managed, can help households to cover some of the costs of care (e.g. transport, drugs or SDK)	- Poor record of long term sustainability - Limited revenue- raising capacity	- Need for good financial management and community leadership and prior community mobilisation
Pre-payment	- Positive evidence from Sub-Saharan Africa of increase in utilisation	- Sustainability concern, need for donor or government support in initial stages	- Need for community mobilisation

Chapter 5. Nepalese Schemes

5.1. Introduction

In this Chapter, we examine the operation of Nepalese health financing schemes used to spread the cost of health services and so alleviate the high costs of treatment at times of illness. The aim was to review the general experience in Nepal with the intention of drawing out lessons for the future development of schemes to assist households with the costs of maternal health care.

The schemes examined were not drawn by random sampling, but from a list prepared from the experience of those working within NSMP that are well-known and operating in different parts of the country. The schemes reviewed were:

1. United Mission Hospital, Palpa
2. Lalitpur Medical Insurance Scheme
3. Hario Kharkha Hospital, Kaski
4. Community Drug Programme, Nawalparasi
5. Health Micro Insurance Scheme, Chitwan
6. Micro Insurance Scheme, Koirala Institute of Health, Sunsari
7. Community Health Insurance, Phect Nepal, Kathmandu
8. Gefont Health Cooperative Clinic, Kathmandu
9. Patan Hospital, Patan
10. Tilgana Eye Hospital, Lalitpur

(In the text, the above numbers will be used to refer to each scheme. The questionnaire for the survey is attached as Annex 8.)

Financing schemes have a number of dimensions. One is the population from which those that are entitled to benefit are drawn. This includes schemes aimed at users of a particular facility (provider based pooling), those aimed at a particular community (community based pooling) and those aimed at a particular employment group (employment based pooling). These groups may then be further partitioned to restrict qualification for entry, for example by the poor in a particular district.

A second dimension describes the nature of the financing available. Some schemes are basically established to help individuals and households to pool the costs of ill health across a population. Systems of insurance that pool risk across a larger group or pre-payment that helps spread individual risk across time, are sub-categories of this approach. It is often difficult to distinguish between pre-payment and insurance, particularly when benefits and financial accounting are not well specified. A second type of financing scheme is particularly aimed at the poor or other vulnerable groups as a way of alleviating their costs through targeted subsidies. In principle, either of the systems can be established with a facility, community or employment focus.

Table 5.1:Typology of Concessionary Financing Schemes

	Group covered	Insurance or prepayment scheme	Exemption scheme
Provider based pooling	All or subset of patients and potential patients	Health Micro Insurance Scheme, Chitwan (5) Micro Insurance Scheme, Koirala Institute of Health, Sunsari (6)	United Mission Hospital, Palpa (1) Hario Kharkha Hospital, Kaski (3) Patan Hospital, Patan (9) Tilgana Eye Hospital, Lalitpur (10)
Community based pooling	All or subset of people living in a geographic area	Lalitpur Medical Insurance Scheme (2) Community Health Insurance, Phect Nepal, Kathmandu (7)	Community Drug Programme, Nawalparasi (4)
Employment based pooling	All of subset of employment group/trade union	Gefont Health Cooperative Clinic, Kathmandu (8)	

The study reviewed ten schemes that fall into the above categories (Table 5.1). Six of these turned out to have prepayment or insurance characteristics where the aim is for the scheme to be partly or wholly self-funding from the regular contributions of members. Most of these schemes are facility based, although examples of community and employment mechanisms were also found.

Four exemption schemes were reviewed, all of which are facility based. They were established by the facilities, or related organisations, to provide access to their services to the poor and vulnerable. In three cases, the schemes are financed from a combination of external donation and cross-subsidy from surplus accumulated by the hospital. In one case, Tilgana Eye Hospital (10), the scheme is financed exclusively from cross-subsidy from richer to poorer patients.

5.2. History of schemes

Schemes reviewed in this Chapter have a variety of backgrounds. Some (1, 2, 3, 9 and 10) basically originate from hospitals supported by international non-government organisations (INGOs) that have a concern for providing a good quality service at low cost. Many of these are mission based. With the exception of the Tilgana Eye Hospital (10) scheme, all continue to receive substantial external subsidies from international organisations, although most also generate their own funds through user charges for selected services. Other schemes have been developed as research activities of teaching institutions (5 and 6), by trade unions for their members (8) and by professionals for community members (7). All of them have received initial support from external agencies. In some cases, this support remains substantial, while, in a small number of cases, it has tapered off to leave the schemes 'sustainable' within certain limits.

5.3. Rules of Entitlement

Rules of entitlement are designed to ensure that the scheme is attractive to potential members while, at the same time, ensuring that benefits are affordable and can be sustained.

1. Entry Rules

The key issue is to ensure that a balanced mix of risks can be enrolled into the scheme. Adverse selection occurs when a scheme attracts high risk people and deters low risk people from enrolling and paying for a scheme. It is a concern in a partly or wholly self-funded scheme where low users of service are required in order to cross-subsidise the high risk users. Strategies to reduce adverse selection include:

- Compulsory enrolment for a population. This is not usually feasible in a community scheme, although it may be possible where a scheme is targeted at a specific employment group.
- Delays in benefiting following enrolment. This prevents people joining only once they are sick.
- Rules that require whole families or communities to join together before entitlement becomes effective. This increases the chance of a mix of low and high-risk enrolments.

Two of the schemes reviewed (6 and 7) require that a minimum number from a village, cooperative, NGO or employer enrol at the same time. This helps both to ensure that a mix of risks is enrolled and reduces the probability that only the sick register. All the schemes are run on a voluntary basis by NGOs, so making the schemes compulsory is not really a viable option.

The issue of adverse selection is not relevant for concessionary schemes since, by their nature, they will attract those requiring care subsidised from a secondary source.

2. Level and Scope of Benefits

Third party coverage of health costs can introduce a ‘moral hazard’ whereby consumers make greater use of services by demanding more treatment when sick, attending too frequently for trivial illness or taking less care of their health and, thus, increasing the risk of illness. It arises because patients are not directly responsible for the costs of ill health.

Several methods are used to restrain moral hazard. These include:

- Co-payment, so that consumers remain responsible for at least part the costs of health care.
- Financial maximum on the limit of reimbursement.
- Exclusion of certain high cost services.
- No-claims discounts on future premiums.

Another, more sophisticated, option is for the insurer to take an active role in the management of disease by encouraging providers to deliver only care that is necessary and cost-effective. The large range of measures used are collectively known as ‘managed care’. These are, in many ways, superior to demand side methods, since they only aim to curb unnecessarily expensive or inappropriate care. In contrast, demand side restraints tend to reduce consumption of both necessary and unnecessary services.

Techniques used to restrain demand in the financial schemes reviewed are almost exclusively concerned with restraining demand. A number of schemes require patients to contribute to the costs of care (2, 3, 4 and 5). One of the schemes (6) limits the extent of reimbursement to Rs 7000 and two schemes do not cover medicines (7 and 8) while another (6) explicitly excludes expensive procedures such as Computerised Tomography (CT) and echocardiography. One of the schemes (8) offers increasing no-claims discounts on future premiums ranging from 60% for four years to 100% for 10 years. The possibility that some schemes may also use supply side disease management cannot, however, be excluded, since most of the schemes are organised by hospitals which may have their own protocols for case management and internal controls over cost.

5.4. Process of Granting Exemptions

Most of the insurance schemes are dependent on the payment of premiums by members and none have really evolved a system for providing explicit insurance entitlement (with ID cards) to the poor and vulnerable. Where exemptions are provided to the poor, this is as part of the general policy of the hospital to serve the poor rather than incorporated into the design of the insurance scheme. One scheme (6) does, however, provide a 33% discount on the insurance premium for those assessed as poor.

There are two principle ways of differentiating premiums or charges according to economic group. Characteristic targeting provides exemption to those that have an easily identifiable characteristic that is thought to be strongly, although not perfectly, related either to poverty or high need. Characteristics include people who are living in a poor area, have a disability, are pregnant and have a large number of children. The second method is through a direct assessment of economic status. Each of these methods has costs. Characteristic targeting is relatively easy to implement, but inevitably leads to error where the poor are not granted exemption because they do not have the required characteristic or the relatively rich are given exemption because they do. In the case of the direct approach, the problem is largely that it is an expensive process requiring assessors and the collection of information. It can also be lengthy and so may delay treatment, although emergency care may proceed before the assessment has been completed. It also can lead to errors not the least of which is the problem that influential patients may pressure assessors into granting them exemption.

The four concessionary financial schemes (1, 3, 9 and 10) for the poor all make use of direct assessment of economic circumstance when granting exemptions. All have Social Service Teams (SSTs) that are required to assess patients on application from the family or suggestion from admitting medical staff. These assess the patient's circumstances through personal interview with the patient or relatives. Teams base their decision on criteria, such as asset and land holding, employment and physical appearance. In one case (9), a patient should, if possible, bring a referring letter from his or her own VDC. It is worth observing that, while assessment is individual, it may make use of general characteristics, such as place of residence or employment, in order to arrive at a decision.

Several schemes (1 and 9) define levels of expense that can be approved by different categories of staff. The most complex (9) permits social workers to authorise spending up to Rs 5000, a supervisor up to Rs 10,000 and nursing officer up to Rs 15,000, while the internal management committee authorise spending beyond this level.

The system for funding of exemptions varies. Three (1, 3 and10) of the institutions mentioned that the cost of exemptions are incorporated into their annual business planning process, although the budgeted sum does not necessarily act as a maximum.

The well-developed scheme at Tilgana Eye Hospital (10) has developed a system of four graduated payment categories ranging from 100% payment (A) to zero payment (D), leading to an internally financing cross-subsidy (Table 5.2). The annual business plan estimates the proportion of patients falling into each category and the resulting revenue generated. These are adjusted to cover the costs of services.

Table 5.2: Pricing in Tilgana Eye Hospital (10)

Category of patient	Price (US $)	Percentage of patients (%)	Revenue (US $)
A	84	61.5	125,328
B	56	7.1	9,744
C	28	7.9	5,432
D	0	23.3	0
Totals		100	140,504

The limits placed on the proportion of patients do appear to dictate how many exemptions can be given during the year, although the relatively simple pricing of services (the bulk of hospital business is cataract operations) in an organisation that is very well established, must mean that projections can be made reasonably accurately. It is also worth observing that Tilgana Eye Hospital is a national, and even international, referral centre and has relatively little market competition. This makes it easier to enforce a policy of the rich subsidising the poor. In other markets, where there is more public and NGO competition, such cross-subsidy may be harder to enforce - since richer patients faced by higher prices to pay for the poor are more likely to seek care elsewhere.

The Community Drug Programme (4) appears to operate on similar principles to Tilgana Eye Hospital. Initiated in 1996, it provides a revolving fund that is replenished from fees charged to richer patients. Three categories of fees are charged – full, part and none - according to economic status. The scheme covers medical supplies, laboratory tests and some other services, such as delivery care.

Both exemption and insurance schemes often rely on external funding to sustain their operation and/or cover the costs of poor patients. One of the concessionary schemes (3), for leprosy and disabled patients, mentioned that exemptions for the cost of artificial limbs are dealt with on a case-by-case basis, with applications made to a UK based charity that may cover the cost of treatment.

5.5. Paying Providers

The methods of paying providers can have a profound impact on the incentives present in a system and, therefore, the type of medical care offered. There are at least four types of payment in use around the world.

- Fee for service is where a facility is paid according to the amount of treatment, number of medications, lab tests, etc, based on a predetermined tariff. A variation is fee per case, where a fixed amount is paid for an episode of treatment, regardless of the number of days or level of medications provided. The amount may vary with the complexity of case. Initially, there tends to be an incentive to over-provide services, while, in the latter, the incentive is to admit more patients.

- Capitation is a system used that pays a facility an amount to look after a member of a scheme throughout the course of a year, regardless of whether a patient uses the facility. It is most likely to be used for PHC.

- Global budget is where a fixed sum is transferred to a facility to cover costs during the course of a year that bears no direct relation to the number of patients to be treated or population covered.

- A final variation is where the payer and the provider is the same. In this case, no explicit transfer is made and the funds are collected and used internally to finance the medical needs of patients.

Since most of the schemes are operated by or in close collaboration with health providers, there is little variation in the provider payment mechanisms. In these cases, the payment method is the internal model where funding is collected and used by the facility. The one exemption to this is the Community Health Insurance scheme (7) that organises PHC with 50% of the funding and then transfers the remainder to the local hospital for secondary care. The transfer is equivalent to a global budget since the entire sum is paid to look after any members of the scheme requiring treatment at the facility. The system places the facility at risk since it must manage any shortfall in funding resulting from high costs of scheme members. In practice, the service exclusions, that include laboratory tests, medications and transfusions, will help the facility to manage these risks.

5.6. Financial Sustainability of Schemes

There are different levels of financial sustainability and it is important to be careful in defining which is relevant. In some cases, a guaranteed funding source may mean that it is not necessary to cover the full costs of operation from internally generated revenues, so that sustainability can be achieved with less than 100% cost recovery.

Costs can be divided into two main categories. There are the basic staffing and operating costs[50] that must be covered whatever the number of patients treated. Then there are costs that rise as more patients are treated, such as medicines and bonuses. Costs are incurred for two main categories of patient contributors (either paying insurance premiums and/or user charges) and non-contributors. Non-contributors might include the poor and other vulnerable or priority groups. This simple division defines four basic categories of cost that a scheme might cover (Table 5.3).

Table 5.3: Categories of Financial Sustainability

	Fixed and base staff costs	**Variable costs, including medicines and staff bonuses**
Contributors	A	B
Non-contributors	C	D

One level of sustainability is for a scheme to cover an agreed proportion of self-financed costs. The intention may never be to cover all costs, just those not financed from some other regular source. Examples include an institution that self-finances variable costs and, perhaps, staff bonuses, while government pays for core salaries, so that the scheme covers costs of type B. Another is where an institution is provided with a regular budget from an NGO.

A second variant is where all costs, including variable and fixed items, of fee or premium-paying patients are covered (costs A and B) by internally generated funds, but where an explicit subsidy is provided to cover the costs of exempt patients.

A third variant is where the institution covers all the costs of all patients through internally generated funds, covering the costs of the poor and other vulnerable groups through a cross-

[50] These are sometimes thought of as semi fixed since they vary with workload only once the number of patients has reached a threshold and new members of staff must be employed to cope with the work.

subsidy from richer patients (costs A, B, C and D). A variation is where all variable costs of all patients are covered through a cross-subsidy from contributors to non-contributors (B and D).

A final category of scheme is where costs are basically financed on an ad hoc basis, dependent on donors and the availability of spare cash.

It is important to realise that none of these arrangements is necessarily superior, but that the organisation should be clear what it is expected to achieve with an external agency consistently supporting any deficit. Problems arise when an organisation fails to cover the cost proportion that is implied by the category into which it has been placed.

All of the insurance schemes reviewed appear to rely on some external subsidy although the level of this subsidy varies considerably. While one scheme (2) recorded that premium income amounted to only 4% of total funding, in another (8) premium income appears to account for more than 90% and the proportion of external funding is falling each year.

Table 5.4: Levels of Sustainability Achieved by Concessionary Schemes

	Scheme	Premium basis	Premium (per person per year) (Rs)	Membership (N)	Main benefits	Details of funding	Sustainability (type and extent)
1.	**United Mission Hospital, Palpa**		NA	NA	Treatment for poor	Some cross-subsidy supplemented by grants	A, D
2.	**Lalitpur Medical Insurance Scheme**	Individual	225		Treatment and medicines (on essential drugs list)	Funding for variable costs of contributors	B
3.	**Hario Kharkha Hospital, Kaski**		NA	NA	Treatment for poor	Funding for non-contributors from ad-hoc external resources.	Ad hoc
4.	**Community Drug Programme, Nawalparasi**		NA	NA	Free essential drugs and lab tests for poor, subsidies for near-poor	Cross-subsidy for drugs and some treatments	A, D
5.	**Health Micro Insurance Scheme, Chitwan**		306		Treatment including maternal health care, 20% cost of hospital services and five free days in hospital, plus minor surgery and 50% of ambulance costs	Funding for variable costs of contributors	B
6.	**Micro Insurance Scheme, Koirala Institute of Health, Sunsari**	Individual, but join in groups of 50	15 village, 50 municipality		Consultation and treatment; medicine up to Rs 3,500, surgery up to Rs 10,000	Funding for variable costs of contributors	B
7.	**Community Health Insurance, Phect Nepal, Kathmandu**	Individual, but join in groups of 25	150	3,500	Admission, consultation and treatment, but no medicines, lab tests or transfusion	Funding for variable costs of contributors	B

	Scheme	Premium basis	Premium (per person per year) (Rs)	Membership (N)	Main benefits	Details of funding	Sustainability (type and extent)
8.	**Gefont Health Cooperative Clinic, Kathmandu**	Rs 1 per day from union members (and non-members)	365	5,000	Consultation, 15% of medicines, treatment	Insurance finances most of the variable costs	B
9.	**Patan Hospital, Patan**		NA	NA	Free essential drugs and lab tests for poor, subsidies for near-poor	Funding for non-contributors from ad-hoc external resources.	Ad hoc
10.	**Tilgana Eye Hospital, Lalitpur**		NA	NA	Graduated charges	Cross-subsidy	A,B, C and D

Across the sample, few, if any, of the schemes unambiguously cover all costs (A, B, C and D). The Tilgana Eye Hospital (10) may be closest, since it cross-subsidises the poor through payments from the rich, while the external subsidy from international agencies is extremely minimal. Yet even this scheme does sometimes have to place a limit on exemptions and, given so, may not always be able to exempt those it considers to be poor. In general, exemption schemes tend to be 'sustainable' under any measure only by restricting the number of exemptions granted to qualifying groups (Table 5.4).

Two of the concessionary schemes (1 and 4) attempt to cover the variable costs of non-contributors through the contributions of contributors. The Community Drug Programme (4) raises sufficient funding to cover the costs of medicines, remuneration of two staff and bonuses for other PHC staff. The government covers other costs. This scheme essentially taxes patients paying for a range of services in order to finance a revolving drug fund for the poor. The United Mission Hospital (1) is financed from a number of sources including a United Mission to Nepal (UMN) grant, user charges and other external donors. The hospital has created an endowment fund from the surplus of the hospital, the income from which is used to finance exemptions. The hospital readily admits that, without the external subsidy from donors, exemptions could not be adequately financed.

The insurance schemes (2, 5, 6, 7 and 8) mostly only aim to cover the variable costs of contributors, with the funding for fixed costs paid for by donors or the government. There is some variation in the extent to which these schemes can be classified as sustainably financing these variable costs. The Gefont Health Cooperative Clinic (8) scheme now generates most of its funding from insurance premiums. The premium of Rs 1 a day appears to be sufficient to finance the costs of what is a relatively low risk section of the population (able bodied trade unionists). Furthermore, the restriction in benefits means that members must share in the costs of some of the most frequently used services, such as outpatient medicines. In contrast, several of the schemes (5 and 6) admitted that their systems cannot currently cover the costs of their members. Two reasons were given: low membership and insufficient premium. The Health Micro Insurance Scheme (5) suggested that around 4,000 people would be required to make the scheme sustainable to cover variable costs. The Micro Insurance Scheme (6), which is operating on an experimental basis as an action research project, suggested that the premium was not sufficient. Furthermore, since a different premium is charged for village and urban residents, they had found that many people living in the municipality actually register as villagers in order to pay a lower premium.

Several of the schemes reviewed basically rely on ad-hoc contributions to finance exemptions. One such is the artificial limb service of Hario Kharkha Hospital (3), which is self-financed for all non-poor. The poor can appeal to several donors for assistance with costs, but there is no allocated budget that provides for these exemptions. This is also likely to be awkward for those requiring assistance and makes planning for exemptions provided difficult. Another is Patan Hospital, Patan (9), which finances free essential medicines, lab tests and treatment for the poor using financing from a number of donors. The external financing sources for both these hospitals is not particularly stable.

In some cases, the truth is likely to be that there is simply not enough information or analysis of information to assess to what extent schemes are sustainable. Part of the problem, in the case of facility based schemes, is that there is often no explicit separation of scheme accounts from those of the parent institution. Deficits (or surpluses) are simply absorbed within the overall funding of the institution.

5.7. Summary

Although none of the schemes covered in the survey are subject to separate audit, all are subject to the NGO or medical facility auditing process. This helps to ensure that spending across the organisation is well accounted for. However, it provides little information on the financial integrity of the scheme. The lack of separation in accounts makes it extremely difficult to assess sustainability and draw lessons from experience. Despite this, a number of features of good financing systems have begun to emerge from the analysis:

- Schemes rarely finance more than variable costs of services, such as medicines and supplies, plus some staff bonuses. Fully financing fixed and semi-fixed costs is likely to prove unaffordable for most contributors particularly in rural areas.

- Schemes appear most successful (sustainable) where the scope of services subsidised or financed is limited. This means that it is much easier to maintain control over costs and ensure that schemes keep going.

- Subsidising part or all of the costs of the poor from the internal resources of the facility is unlikely to be possible for most facilities. An additional external source, from government or donors, is likely to be required. It is notable that the only facility that appears to have achieved a strong sustainable cross-subsidy for most costs is an internationally recognised hospital that appears to be a near monopolist in its field. For most general hospitals, offering maternal health services this is not achievable.

- In common with district facilities reviewed in Chapter 3, there is a dearth of information on the level and value of exemptions granted to the poor. This may not be the result of a lack of expertise to establish required systems. Those schemes attached to research institutions would, in particular, be well equipped to set up these systems. Rather the need for such systems does not appear to have been recognised.

- Facility schemes do not, in general, finance demand-side costs, such as travel. In the Nepalese context, this is an important omission, since the household survey data indicate that the non-facility costs of services are a substantial burden on the household and a significant deterrent to using services.

Chapter 6. Conclusion

6.1. Summary of Results

The survey of recently delivered women suggests that childbirth and puerperium leads to considerable financial and time costs that are mostly borne by the household. For poorer families, these costs can leave a considerable dent in household finances and lead to the sale of assets and loans at high rates of interest.

Cost of Delivery

- The cost of normal delivery in a facility is reasonably stable across facilities and regions included in the survey (Table 6.1). The hospital bill ranges Rs 539-817 and, when the costs of medicines brought from outside the facility and unofficial payments are included, the average amounts to just over Rs 2,000. Opportunity costs to the household of the time of the woman's main companion (relative or friend) amount to just under Rs 500.

Table 6.1: Summary of Household Costs of Delivery: Mean and 95% Confidence Interval (CI)

	Vaginal (Rs)	**C-section (Rs)**	**Home (Rs)**
Transport costs	2,935 (2,081 – 3,790)		0
Hospital charges	678 (539 – 817)	5,500 (2,697 – 8,304)	0
Additional charges[51]	1,352 (899–2,036)	975 (622 – 3,959)	693 (592 – 795)
Opportunity costs to companion[52]	492 (368 – 616)	1,660 (15 – 3,305)	0
Referral charges	891 (451 – 1,331)		0
Total cost	6,348 (4,754 – 9,390)	11,961 (5,866 – 20,689)	693 (592 – 795)
As proportion of mean monthly income (%)	170 (139 – 233)	321 (171 - 513)	19 (17-20)
As proportion of lowest income quintile (%)	319 (296 – 396)	601 (365 – 873)	35 (34-37)

- Delivery complications impose high and uncertain costs on households for several reasons. There appears to be considerable variation in the hospital price of interventions for delivery complications. The sample size is too small to assess whether the difference is due to different charging practises within facilities. So, we can only explore the variation between individuals across all facilities. Facilities report fees for an average c-section at Rs 2,100-4,500, while individuals in the survey reported making payments ranging Rs 2,700-8,300. Once additional costs are added together with the opportunity cost of accompanying the woman, the total non-transport household costs is around Rs 8,100, rising to a maximum reported of over Rs 17,000.

[51] Including gifts to staff and medicines and other items purchased by patients, together with the value of food and washing materials brought in from outside the facility.

[52] Opportunity costs are assumed to be zero for those at home as, while attendants at home can continue with other activities, those accompanying women to facilities must devote all their time to attend the woman (or, at least, cannot undertake other household or income generating activities).

Cost Recovery in Facilities

- Based on an analysis of costs in one zonal hospital, much of the facility costs of delivery and treatment for complications appear to be passed on to consumers (see Annex 10). The facility reported charges in Chapter 3 (Table 3.2) cover more than 50% of the cost of a normal delivery and more than 65% of the cost of c-section and haemorrhage. Based on the expenditure estimates from the household survey, the cost-recovery rates are even higher, at 93% and 102% for normal delivery and c-section respectively. While it is often the case that household reported costs can over-estimate actual costs, it should be remembered that these costs are based on actual hospital bills. These recovery rates are high, but are based on the cost structure of only one hospital. Further verification, based on a larger sample of hospitals, would be useful.

Cost of Complications

- The household sample is too small and unreliable to obtain good information on the costs of delivery complications other than c-sections. Yet it is clear even from the facility sample that other complications can impose an even larger burden on households. The reported official facility cost of a post-partum haemorrhage, for example, ranges from Rs 810-3,500, plus the cost of blood payable by the pint.

Transport Costs

- Unsurprisingly, the costs of transport to a facility vary substantially depending on the terain. In terai areas, the cost is around Rs 1,155, with little variation, but in mountain areas it is more than Rs 3,100. The average cost of travel in hill areas is actually slightly higher than in mountain areas. The variation is, however, much larger in mountain areas. Not only this, but the average time to a facility in mountain areas, is more than 2.5 hours longer than in the hill areas. In hill and mountain areas travel costs are 100-150% of the non-travel costs of normal delivery (see Table 6.2 - cost of normal delivery is Rs 2,522). For all areas, transport costs account for 59% of total direct costs of normal delivery and 31% of a c-section, which is higher than reported in other studies[53]. Furthermore, the survey revealed that a majority of households used stretchers to reach facilities in hill and mountain areas and that the costs incurred for these was significant. Further research as to the nature of these stretcher schemes would be valuable, especially in relation to who owns and manages the stretchers, who benefits from the payments made and whether they are being made available through community groups, NGOs or other.

Table 6.2: Transport Costs to Get to CEOC Facilities

Topography	Mean (Rs)	Minimum (Rs)	Maximum (Rs)
Terai	1,155	864	1,447
Hill	3,610	2,250	4,970
Mountain	3,145	748	5,541
Percentage of cost of normal delivery (%)			
Terai	46	34	57
Hill	143	89	197
Mountain	125	30	220
Percentage of cost of c-section (%)			
Terai	14	11	18
Hill	44	28	61
Mountain	39	9	68

[53] This compares with 30% of total direct costs in Indonesia (Berman, Ormond et al. 1987) and 12% of vaginal delivery and 2% of surgical delivery costs in hospitals in Tanzania (Kowalewski, Mujina et al. 2002).

Impact of Costs on Household Finances

- Costs of delivery care and, particularly, complications, place an extremely heavy burden on household finance. A vaginal delivery costs from 170% of average monthly income to more than three times the income of households in the poorest wealth quintile (Table 6.2). A c-section costs on average more than half a year's income for the poorest wealth quintile. As found in other studies, households may sell livestock, land or other assets (Sauerborn, Adams et al. 1996), although we found that the most common source of revenue is borrowing – which leads to increasing household indebtedness. Although we were not able to explore the seasonal effect on borrowing patterns, the seasonal availability of cash for those dependent on agricultural income (nearly 30%) has implications for the affordability of care at different times of year (Muela, Mushi et al. 2000). According to a very low level of subsistence (Rs 400 per month per capita), 50% of households already fall below this level. Consumption of facility-based delivery care pushes more households below this level

- Opportunity costs are significant, with husbands being the most common companion and, in 55% of cases, reporting a loss of income. The concern over time costs may not only delay the decision to seek care (a husband's permission is usually sought prior to seeking facility based care), but, once care is sought, contributes a substantial amount to the total cost. We only considered the opportunity costs of time to the main companion, yet, in most cases, there was more than one companion. Findings from other studies suggest that, during a hospital stay, many relatives visit the woman, incurring further transport and time/hotel costs (Kowalewski, Mujina et al. 2002). Encouraging community health workers to accompany women to the hospital in place of relatives, or at least husbands, could contribute to reducing the time costs to households of seeking care.

Exemption Mechanisms

- Exemption mechanisms do not appear to protect the poor from the costs of delivery care, since, in the sample, the poor paid, on average, no less than the rich. There appear to be a number of reasons for this. First, facilities have few resources to finance exemptions, despite the fact that they are recovering over 100% of costs. Exemptions are self-financed and allocated on an ad hoc basis. Poor patients that decide to seek care are faced with the dilemma of raising sufficient funds to cover the long distances to reach facilities, uncertain costs within the facility and no guarantee that any of these costs will be financed by the facility exemption scheme. For vaginal delivery, only around 10% of the cost of delivery is made up of the official facility charge, so that, even if an exemption is granted for this amount, most of the cost must still be financed by the household. For all deliveries, households must still finance transport costs and, in many cases, incur opportunity costs of a companion's time.

Willingness-to-Pay for Delivery Care

- Most households are willing to pay for delivery care. The amount rises substantially from around Rs 1,400 for a normal delivery at a BEOC centre to more than Rs 4,000 for an obstetric emergency at a well equipped (CEOC) hospital. Households value services that are well equipped and can provide necessary medicines. The much lower value placed on delivery in BEOC centres reflects consumer preference for CEOC facilities with the potential to offer a safer delivery environment in the event of emergencies.

- Conversely, many households express a preference for home delivery with a trained attendant. They value the flexible payment arrangements (there are no fixed costs, payments are made to suit household financial circumstances and can be in kind), faster

service compared to those at a facility (avoidance of travel time), lower travel costs, a supportive family environment and food.

Differences Between NSMP and Non-NSMP Districts

- Some differences were found in comparing the experience of delivery in NSMP and non-NSMP districts. Differences are noticeable in terms of the practice of home and hospital based deliveries. Firstly, of those women giving birth at home, institutional staff attended more women from NSMP districts. Furthermore, attendants reached the home of respondents more quickly in NSMP compared to non-NSMP districts (half the time). A higher proportion of women in NSMP districts reported using SDKs (costing Rs 34) during home delivery. The total payment for a home delivery was significantly higher in non-NSMP (Rs 913) compared to NSMP districts (Rs 468).

- In our sample, significantly more households from NSMP districts prefer delivery in CEOC facilities compared to those in non-NSMP districts. For facility-based deliveries, the surgery fee was significantly lower in NSMP districts, as were reported payments to staff. However, there were no other differences, suggesting that drug and transport costs are still equally high, despite revolving drug funds and promotion of community transport schemes. It should be noted that households interviewed from NSMP districts appeared to be comparable in most respects to those in non-NSMP districts, although a slightly higher level of deprivation in NSMP areas was recorded[54].

6.2 Resource Scenarios

In order to examine the total population resource requirements to finance the cost of delivery care over a one-year period, we developed some scenarios based on a typified district from the eight in the survey. The average population size of the districts in the sample was around 310,000. They had a birth rate of 4.4%, with an expected 13,601 deliveries per year. We assume that the average desirable c-section rate is 5%, although it is clearly lower in some of the districts in the sample, implying 680 c-sections per year.

Now, if we assume that the true average costs of vaginal delivery and c-section are represented by the sample, we can extrapolate these costs to the typified district differentiated between mountain/hill and terai. These translate into per capita costs, further broken down into cost components.

We show three scenarios here. The first, a base case, is based on current patterns of use, as reported in the 2001 Department of Health Services (DHS), with 93% home delivery and a c-section rate of 0.8% (HMGN 2001).

A second scenario is constructed based on the assumption that all pregnant women deliver in a facility and the c-section rate rises to 5%.

A third scenario assumes that complicated cases are referred to and deliver in a facility, while the remainder give birth at home with a trained attendant so that the level of home delivery falls. The level of institutional delivery depends on how conservative the referral strategy needs to be in order to ensure that women can get to a facility if required. It is usually assumed that women need to be within two hours of a facility providing CEOC services to ensure that assistance can be provided in the event of haemorrhage. If it were assumed that

[54] While household reported cash income was higher in NSMP districts, there was no difference in wealth status using the asset index approach and women's illiteracy rates were slightly higher in those areas.

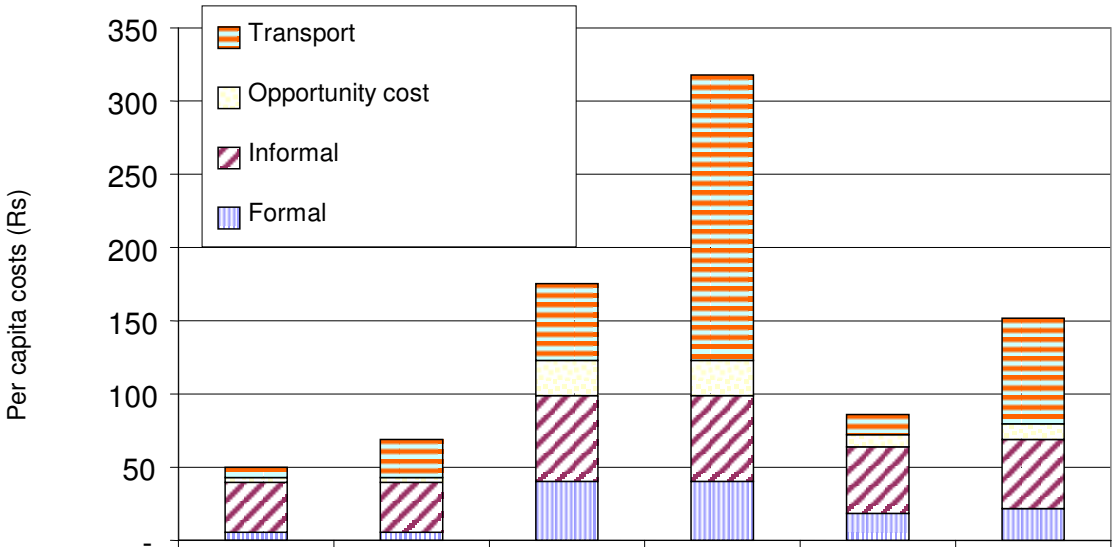
around 15% of women will require assistance with complications, the level of home delivery would fall to 85%[55]. In remote areas, where local facilities are unable to provide CEOC services, it may be necessary to refer a considerably larger number of women to a facility for delivery in order to ensure that those requiring intervention are within reach of services. For this scenario, it is assumed that the level of prior referral to facilities would increase to 40% in those areas situated more than two hours from a CEOC facility. The number of referrals depends on the proportion of the population within two hours of a facility. Based on a small survey in one district and expert opinion, we assume that the proportion in the terai living within two hours travel time is 70%, while in hill/mountain areas it is only 30%.

The third scenario also assumes that, rather than taking the average spending on home delivery, spending is increased on home deliveries to the level required to provide a skilled attendant (formally trained, institutionally based medical worker, not trained TBA). This includes both the cost of the worker and supplies required to provide a safe delivery. Together with a financed referral strategy outlined in the previous paragraph, this would go a considerable way towards financing a skilled attendance strategy.

The cost of a formally trained medical worker was Rs 879. A cost of Rs 950 is assumed to cover the cost of the attendant, drugs, if required, and SDK. The cost of spending per capita for each scenario, broken down by type of spending, is shown in Figure 6.1. It should be noted that, since the total costs of c-section are not widely different from the costs of other complications and that, in any case, transport is a major component of this cost, they can be considered, to a large extent, as a proxy for the general level of CEOC for obstetric emergencies.

[55] Based on international consensus that at least 15% of deliveries will require an institutional setting and 6-10% of deliveries are likely to require referral following initial examination during early labour (Jahn and De Brouwere 2001).

Figure 6.1: Scenarios for Per Capita Costs of EOC under Different Scenarios for Institutional Delivery[56]



	Scenario One (terrai)	Scenario One (mountain/hill)	Scenario Two (terrai)	Scenario Two (mountain/hill)	Scenario Three (terrai)	Scenario Three (mountain/hill)
Transport	6.96	25.85	52.48	194.88	13.84	72.23
Opportunity cost	3.27	3.27	24.14	24.14	8.25	10.56
Informal	34.09	34.09	58.46	58.46	45.48	47.37
Formal	5.64	5.64	40.31	40.31	18.42	21.59

Note on scenarios:
Scenario One: Existing pattern of home and institutional delivery.
Scenario Two: Fully institutional delivery.
Scenario Three: Skilled attendance with referral of cases likely to be complex (estimated at 15% and 40% in remoter areas).

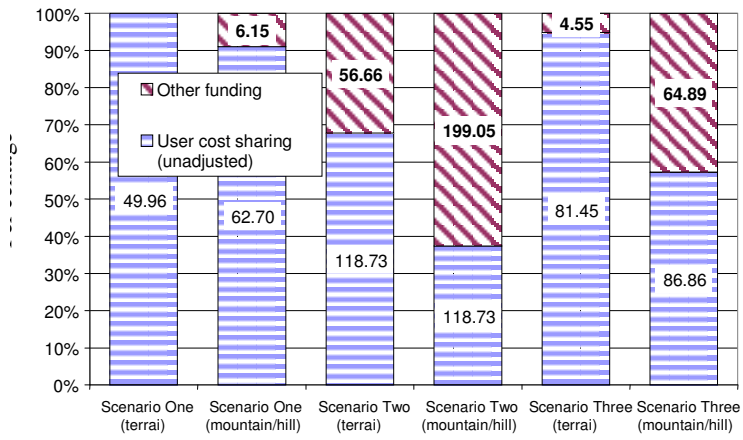
The results for these three scenarios suggest widely different costs. The base case is essentially an income protection strategy, which indicates the level of resources that are required to finance existing patterns of service use. The per capita spend in terai and mountains vary Rs 50-69. There is relatively little variation, since the predominant costs are for women delivering at home without the need to travel. Providing public support to financing part of the costs of maternal health care, particularly amongst the poor, could certainly help to alleviate financial distress and may, in doing so, encourage more poor women to seek skilled attendance at home or in a facility. It is, however, unlikely to have a large impact on behaviour and, particularly, may have little impact on care seeking a per capita and, in mountain/hill areas, Rs 317. Even this may be an underestimate, since it is very probable that many women currently delivering at home would face costs that are much higher than average if they were to attend a facility.

The third scenario hypothesises a higher institutional delivery rate than baseline, significantly higher level of c-section and skilled attendance at home (this may also require additional staff from facilities, as well as transport to facilitate their availability). This results in per capita costs of between Rs 75 in the terai and Rs 90 in the hills. In the latter case, 30% of this cost is composed of transportation.t CEOC facilities, where transport and formal costs are significant, since the scenario provides few additional resources to finance the costs of increased utilisation of facilities.

56 Assumes that 5% of households >8 hrs, 65%<2 hrs in mountain areas. Increasing number of remote communities increases transport costs mainly for mountain/hill areas.

The results from the second scenario indicate that, in the terai, the per capita costs of financing institutional delivery for all women would be around Rs 175

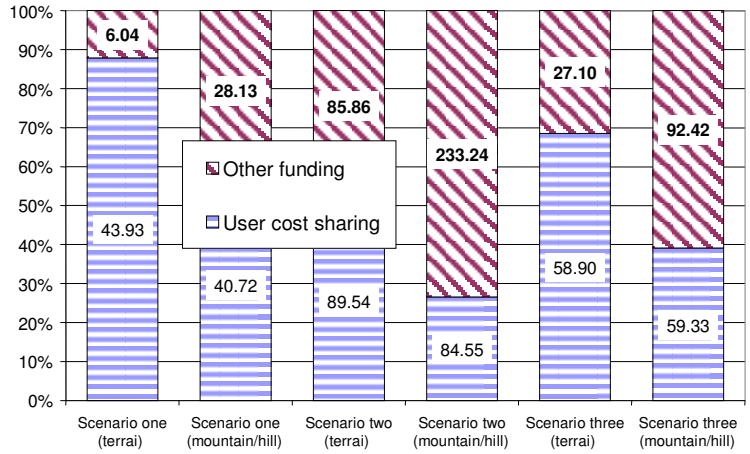
Figure 6.2: Cost Sharing for Each Scenario Based on 100% WTP



All these results, and their relative affordability, must be placed in the context of total public (HMGN and External Development Partner (EDP)) spending on health care of Rs 397 in 2001/2002 (HEFU) 2003). In this context, the second scenario of full institutional delivery not only appears impractical, but financially unsustainable. Indeed, estimates of cost of all options relative to budget suggest that some cost sharing is inevitable.

If we use the estimates of WTP as a base for the size of cost sharing, and also include household opportunity costs, which we assume are also absorbed by the user, this provides us with an indication of the additional budget required to finance each option. Figure 6.2 provides estimates of per capita cost for each option and the share between user and other sources based on the application of the WTP figures. The figures indicate that, for Scenario One services, terai areas could be fully financed by users while some small subsidy would be required, for transport, in mountain areas. This level of cost sharing falls substantially for other options. Under Scenario Three, in mountain/hill areas, costs would be shared 55:45 between users and other sources.

Figure 6.3: Cost Sharing for Each Option with Exemption for those Below the Poverty Line



A second possibility is to assume that all those falling below a poverty line cannot pay for services (Figure 6.3). The interim-Poverty Reduction Strategy Papers (PRSP) suggests that around 56% of those living in mountain and 41% living in terai fall below a subsistence poverty line (National Planning Commission (NPC) 2001). Assuming that those falling below this line are exempted from formal facility costs and their transport costs are also paid, the Scenario Three (emergency referral) cost sharing between users and other sources falls to around 40:60.

6.3. Policy Recommendations

This study has demonstrated that household costs of obtaining maternal health care are substantial, deter potential users and make it difficult to plan properly. Constraints imposed by limited availability of public funds, a largely impoverished rural population and an extremely awkward topography make it difficult to offer straightforward recommendations. In this section, we offer some possible recommendations for further discussion. Any proposal should be tested first with local communities to see whether it a) addresses the fundamental issue, b) solves it in a way acceptable to the community, and c) can be developed in a way that is sustainable. There have been too many novel strategies to address access to maternal care tried elsewhere in the world, that work in theory, but die because they are unacceptable to, or impose hidden costs on, communities (Maine 1997).

i) Develop a Financial Strategy for Covering the Costs of Maternal Care

The scenarios presented in the previous section provide an idea of the magnitude of spending that occurs now and would be required in order to finance a different pattern of behaviour. Several implicit service delivery assumptions underline these. Scenario Two (full institutional delivery) assumes that the objective should be to institutionalise all deliveries. Apart from the practicalities of accommodating these deliveries (in terms of beds and staff), it is not clear that this is necessarily the best strategy over, for example, a policy of providing skilled attendance in villages. Indeed, the household survey makes it clear that households could strongly resist an increase in institutional delivery, at least in the case of an apparently normal labour, since many have a preference for a home environment when giving birth.

Scenario Three (emergency referral) takes both the financial feasibility and social acceptability into account, by examining the cost of a strategy of skilled attendance at home with referral for those with complications (assumed to be around 15%). The implication is that most women prefer to deliver at home and it is, therefore, preferable to ensure that the attendant at delivery is skilled, has the requisite basic equipment and also that an effective referral system is place. At the same time, the distance, particularly in mountain and hill areas, means that it is not sufficient to wait until women are in labour to decide to refer. A more conservative strategy is required where women who are more likely to have complicated delivery are referred prior to the birth. For the scenarios, this proportion is assumed to be 15% for women living within two hours of a CEOC facility, while for those more distant it assumed that conservative referral prior to delivery would increase this proportion to 40%.

Scenario Three is not without problems. From a funding point of view, it requires significant resources, even if shared between households and the public budget, to finance a large increase in maternal health care expenditure. Assuming the emergency delivery scenario and substantial user co-funding with exemptions for the poor, implies Rs 27 per capita in terai areas and more than Rs 92 in hills and mountains.

The second issue is that, as with Scenario One, there is insufficient capacity to absorb many more women into the system of institutional care. Some use of maternity waiting homes or excess capacity in hospitals might help to accommodate the women, but skilled attendance at birth may still be lacking. With an institutional delivery rate of 15%, and assuming that most have some degree of complication, implies a requirement of around 9,860 inpatient days per year or, at 100% occupancy, 27 fully occupied beds in the average district used to develop the scenarios in this Chapter. This is, for example, one more bed than is allocated to maternity care at Lumbini Zonal hospital. More fundamentally, an increase in institutional delivery implies a larger number of trained staff and more supplies. Since the user cost recovery rate appears to be high, most of the finance required to increase institutional delivery levels are included in estimates for total resources required to cover household costs described above.

However, assuring that these resources are converted into functional facilities represents a major planning challenge.

A third issue concerns the problem with the risk approach itself. There is substantial evidence that a risk approach leads to a significant number of false positives and negatives. In other words, many women are referred that do not need to be, while many who are not referred end up requiring obstetric intervention (Carroli, Rooney et al. 2001). Yet, without an affordable strategy to increase coverage to more women who could potentially be high risk, access to CEOC facilities for many women with life-threatening deliveries is effectively cut off. A key issue is the feasibility of getting women to a CEOC facility in the case of obstetric emergency if they are not already at a facility for delivery. This is a particular concern in the mountain areas where it is not just a matter of cost, but time, with it taking, on average, over eight hours to reach a CEOC facility.

ii) Facility Exemption and User-Charging Strategy

The study found that current exemption policy for maternal and other services is ad hoc and under-funded. Levels of cost recovery are increasing in most facilities (HEFU 2003). According to the cost analysis in one zonal hospital, cost recovery rates for many maternal services are approaching 100%. In addition, the facility and household survey found that charges for services, particularly obstructed delivery and treatment for other complications, are extremely variable.

One way to increase the availability of resources for exemptions would be for CEOC facilities to be required to put aside a proportion of revenue from user charges to finance exemptions. Counter-part funding could be provided from other (public, donor) sources, in return for which facilities would be required to maintain records on the people receiving the exemption and treatment received.

The uncertainty about the cost of services for delivery complications makes it difficult for households or communities to plan finances or select the most appropriate facility. Encouraging hospitals to publish fixed price tariffs for key services, such as normal delivery, c-section and even treatment for most complications, would help to reduce the financial uncertainty of obtaining maternal health care. Fixed price tariffs might be required of any facility receiving external (government or donor) exemption funds.

An additional part of the CEOC facility exemption system could also be to help manage a system of transport vouchers for more remote areas (see below).

iii) Funded Mechanism for Reimbursing the Costs of Travel

The importance of distance, as both a time and financial cost to obtaining obstetric care, confirms the emphasis of many projects, including NSMP, on the provision of funding within the community or at proximate facilities to subsidise these travel costs. It should be stressed that the variable of concern here is travel time to CEOC facilities, not any facility. Several studies have suggested that travel time to any facility has a statistically significant, but modest, impact on use of rural facilities (Acharya and Cleland 2000; Hotchkiss 2001). This is borne out by the WTP survey, which finds a relatively low valuation placed on a BEOC facility compared to a home delivery.

The relatively high WTP for home delivery (compared to a BEOC facility) and strongly expressed preference, suggests a good opportunity to improve the quality of home deliveries through investment in local trained outreach services and increased availability of SDKs. Women are willing to pay for these services, provided that the workers are female and are

quick to arrive at their home. These workers are also important in channelling women to CEOC facilities in the case of complications. The WTP survey suggests that women are willing to pay significantly more for delivery in the event of complication. In addition to training and supplies, workers assisting with home delivery might also be offered some financial incentive to identify and accompany women with suspected complications to a CEOC facility for delivery.

Providing refunds at the referral facility may be insufficient to encourage more women to travel to CEOC facilities, both because they are unlikely to have, or believe in, information that they will definitely receive this refund and they may also still need to meet the costs of transport in advance of the journey. One way to ensure that women, and those transporting them, have a guarantee of payment, but avoiding the transfer of cash to local communities, would be through the development of a voucher system. A limited supply of vouchers could be made available to a local community or PHC facility. These could be validated by the senior clinician or community leader and provide for reimbursement in cash up to a certain limit by the referral facility once the woman has reached the facility. Reimbursement of the voucher could be made to women out of the exemption funds developed by CEOC facilities. Adopting such a scheme would certainly be experimental. There is some evidence from a few low and middle income countries, including Mexico and Tanzania, that well targeted vouchers can boost utilisation of key services, including maternal health (Ensor 2003). Yet there are also many examples where the impact is not so clear and some examples of negative effects.

Financing a system for reimbursing travel will be expensive. A second problem is in identifying women that should benefit from such a scheme. One way of restricting the financial burden of this benefit and reducing the complexity of the exemption system would be to only provide vouchers in communities that are beyond a certain time-distance from the CEOC facility. All women that appear to have a complication could be given a voucher for transport, on the basis that most households in remote communities are likely to be relatively poor, so the number of misplaced exemptions should be low.

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Annex 1: Village Development Committees Selected for the Household Survey

Distance Ranking:

Terai:
Near = less than an hour
Medium = between 1 and 2 hours
Far = more than 2 hours

Hills and mountain (walking or local transport):
Near = less than 2 hours
Medium = 2-8 hours
More = more than 8 hours

Selected VDCs:

District: Jhapa

Name of VDC	Distance from hospital	Presence of researchers	Recommended by Social Development Facilitator (SDF) and researcher
Kechana	Far	No	Yes
Pathabhari	Far	No	Yes
Juropani	Medium	No	Yes
Khajurgachi	Medium	No	Yes
Dharampu	Close	No	Yes
Shiwangang	Close	No	Yes

District: Bhodjpur

Name of VDC	Distance from hospital	Presence of researchers	Recommended by SDF and researcher
Shymshila	Medium	No	Yes
Amtek	Medium	No	Yes
Tiwaribhanjang	Medium	Yes	Yes
Taksar	Close	No	Yes
Bokhim	Close	Yes	Yes
Annapurna	Far	Yes	Yes
Chhinamakhu	Far	No	Yes
Nagi	Far	No	Yes

District: Baglung

Name of VDC	Distance from hospital	Presence of researchers	Recommended by SDF and researcher
Resh	Medium	No	
Tityang	Close	Yes	
Harichour	Far	No	

District: Gulmi

Name of VDC	Distance from hospital	Presence of researchers	Recommended by SDF and researcher
Dubi Chour	Close	No	Yes
Turang	Medium	No	Yes
Dohali	Far	No	Yes

District: Dolpa

Name of VDC	Distance from hospital	Presence of Researchers	Recommended by SDF and researcher
Dunai	Close	Yes	Yes
Juphal	Medium	Yes	Yes
Tripurakot	Far	Yes	Yes

District: Jumla

Name of VDC	Distance from hospital	Presence of researchers	Recommended by SDF and researcher
Lambra	Medium	No	Yes
Patmara	Close	No	Yes
Garjangkot	Far	Yes	Yes

District: Surkhet

Name of VDC	Distance from hospital	Presence of researchers	Recommended by SDF and researcher
Lekhgaun	Close	No	Yes
Satakhani	Medium	No	Yes
Maintada	Far	No	Yes

District: Kailali

Name of VDC	Distance from hospital	Presence of researchers	Recommended by SDF and researcher
Geta	Close	Yes	Yes
Kota Tulsipur	Medium	Yes	Yes
Tikapur	Far	No	Yes

Annex 2: Main Issues Arising from Pilot: Chitwan, 9th and 10th September 2003

Time

- Average time for community survey was 1 hour (ranging from 45 mins to 2 hours). Average time for WTP survey was 30 mins (ranging from 20-40 mins). We agreed that they should mention expected duration of interview at the beginning when seeking consent from households. They should also try and minimise time, without rushing, as, in some cases, mothers and/or other household members were getting frustrated at the length of interview or losing interest and this affected the quality of answers given. One tip given was to complete calculations for costs and time questions at the end of the interview and not during.

1). Willingness-to-Pay Survey

Interview manner

- For the WTP questionnaire, some researchers had skipped the descriptions of each delivery option, as they felt it was obvious. In the subsequent responses, many cases clearly hadn't been able to distinguish between EOC hospital and health centre (which typically are referred to by Nepalis in rural areas interchangeably to mean one and the same thing: health facility). Many of the questionnaires indicated a preference for health centre over hospital, which sounds unlikely. The importance of explaining and discussing the various options for delivery and clarifying the differences (possible advantages, disadvantages and process) of each was emphasised. Basu Dev Neupane made a matrix that was copied and distributed to all researchers explaining the differences that need to be made clear to respondents during the interview (see matrix below).
- The text section on WTP, what it means etc, needs to be expressed in researchers' own words rather than reading word for word, as, otherwise, it can be very long and monotonous for respondent to sit through and sustain concentration.
- Many of the responses of WTP were huge (Rs 50,000), or they said things like 'health is more important than wealth' or 'I will pay whatever amount is necessary to save the mother and child'. So, it is crucial for field researchers to emphasise that the respondents consider their budget constraint, available income and what would need to be given up if they were actually to make that payment (food, etc.).

Willingness-to-Pay is Not the Same as Cost

- Nearly all the questionnaires indicated that respondents had been confusing WTP with how much each of the services would actually cost. Therefore, they would be willing to pay very large amounts for the hospital, even if it were the least highly ranked of the options. This was partly due to the field researches themselves making the same confusion. Basu Dev Neupane clarified the issue several times after piloting to ensure everyone was clear that WTP is about valuing the strength of respondents' preferences for a particular option of care. Therefore, if home delivery is preferred, theoretically the respondent should be willing to pay more for it than other options, even though it might cost less. The example of food was given whereby a vegetarian given the choice of dhal bhat and a chicken pizza would be willing to pay more to ensure he received the dhal bhat for dinner even though the pizza would cost much more.

Respondent

- There was some confusion about who the respondent should be for the WTP questionnaire, with some researchers having interviewed unmarried women, mother in laws and husbands. We clarified that the target group are MWRA (potential mothers). We decided against husbands or mothers in law due to possible confusion for researchers and difficulty of interpreting their answers. We decided we would keep this completely anonymous and not ask for respondents' name or address, due to sensitivity of revealing this information in Maoist affected areas.

Ranking of Preferences

- In most of the questionnaires, only the preferred option had been identified in the Table. We emphasised that all options need to be ranked in order of preference and that some time should be spent with the respondent ensuring that ranking really corresponds with what they would prefer for themselves (and not what they think the interviewer expects to hear).

Describing reasons for preferences

- From the completed questionnaires during the pilot, the main reasons given for why they are willing to pay were: 'because it is the cost', 'because this is hospital regulation', 'because health is more valuable than wealth', 'because they had to travel to get to our house', 'because they gave us assistance', 'because this is the village tradition to pay' and ' because it is our responsibility as a family'. These indicate that cost, rather than strength of preference, are behind their valuation. A couple of respondents said that they prefer home delivery as it means the delivery was not complicated, which is confusing the outcome of care with the process which we are trying to value.

- However, some interesting responses came up:
  For example, some of the reasons given for preferring a hospital delivery were: 'because it is safer', 'because staff are more experienced', 'because they can save the mother and child', 'because it is close' and 'because of the quality of treatment'. Two husbands interviewed said they would be willing to pay due to the high productive value of his wife in the home (he needs her to stay in good health so she can work more). They were also willing to pay high amounts for a hospital delivery (Rs 15 and Rs 20,000 respectively).

  Some of the reasons given for preferring home delivery were: 'sometimes get bad treatment at the hospital', 'lack of money', 'difficulty of travelling to hospital' and 'can afford to buy more food if give birth at home because it is cheaper'.

Alone

- One of the researchers pointed out that WTP for delivery alone should be included as an option for those who prefer it. Question 5 was changed accordingly.

2). Community Cost Survey

Here, there were less problems with the nature of questions, although there was some confusion about which parts of the questionnaire related to home delivery and which to facility-based delivery. This was clarified during the discussion.

Further points that were clarified with researchers were:

1) Who is Present During Interview
Only those who were involved in delivery or payment for delivery should be listed.

2) Willingness-to-Pay
3.10: researchers need to identify maximum WTP (not what was actually paid) and only in the case that respondents indicate a WTP greater than Rs 10,000 does question 3.11 need to be asked. Those amounts the respondents are not willing to pay need to indicated with 'nos'; those where they are unsure should be left blank. Similarly, with 3.12, it is the maximum time the respondent is willing to travel, not the actual distance to hospital. Again 3.13 need only be asked in the case they are willing to travel more than 48 hours.

3) *Care Prior to Delivery*
Added in a question 4.3: Did a health worker come to your home and refer you to the hospital for delivery? If yes, how much did you have to pay to him/her?

4) Costs in Hospital
If breakdown of costs is not known, respondents should tick relevant categories. In many cases, the husband and/or mother in law were not present during the interview and the total cost of care was not known to the mother herself. We emphasised the importance of completing this information and identifying who was responsible for paying for care and returning to the household to talk with them if necessary.

5) Financing the Cost of Care
In 7.3 we added the option of use/sale/mortgage of 'other assets' in addition to land, grains and livestock. There was some confusion about the purpose of Question 7.9, so we explained that we are interested in their opinions on how to improve access to hospital for those who need it, for those who have an opinion.

6) Dealing with Incomplete Questionnaires
We explained that researchers should aim to complete all relevant sections of the questionnaire and leave blank only those sections where there is clear justification for lack of response. Otherwise, the questionnaire will be judged as incomplete and field researchers should return to the household to complete.

7) Researchers Comments/Observations
A section was added at the end of both questionnaires to allow for observations and comments from field researchers if necessary.

Matrix of Alternative Options for Delivery: Advantages, Disadvantages and Process of Care

Options	Advantages	Disadvantages	Process
Alone	• Cheap • No cause for embarrassment	• Fear • Confusion • Pain/prolonged labour • Lack of safety in case of problems	• Alone • Isolated
Home with untrained assistance	• Cheap and flexibility of payment • Can come and stay for a month after delivery and help with housework • Comes quickly • Familiar to household	• Potential danger due to lack of training • Pain/prolonged labour • Poor hygiene/risk of infections	• Traditional treatment/ service delivery • Use of home made or local herbs/ treatments
Home with trained assistance	• Less expensive than facility • Good care of normal delivery • Can refer to hospital in case of problems • No need to travel outside of home	• Can't deal with complicated deliveries • May be unknown to the household • May be overly ambitious and create problems	• Trained attendant • Uses modern medicine and equipment
PHC or other BOC facility	• Good care of normal delivery • Can deal with limited complications	• Need transport to reach facility • Staff attitude may not be good • Have to pay • Unfamiliar environment • Can't deal with serious complications	
EOC hospital	• Safest option/ can deal with complications	• May be far away • Have to pay more money	

Annex 3: The Asset Approach to Measuring Socio-Economic Status

Deriving Assets and Factor Scores, Using DHS Methodology:

Asset variable	Unweighted		Asset factor scores	Household score	
	Mean	Std. dev		With asset	Without asset
Has electricity	0.437	0.496	0.20489	0.665717	-0.062973
Has radio	0.772	0.420	0.11365	0.128958	-0.100021
Has TV	0.180	0.385	0.20295	0.110322	-0.372836
Has bicycle	0.184	0.388	0.08291	0.176575	-0.038876
Has telephone	0.023	0.151	0.13947	0.293443	-0.066197
If household works own land	0.849	0.358	-0.08100	-0.034122	0.192015
No. sleeping per room	3.026	1.440	-0.07834		
Piped water in residence	0.198	0.399	0.17809	0.358399	-0.088372
Well in residence	0.021	0.142	0.02571	0.177134	-0.003727
Public faucet (piped)	0.547	0.498	-0.01561	-0.014204	0.017131
Well with handpump in yard	0.147	0.354	0.02466	0.059367	-0.010229
Public well with handpump	0.011	0.104	-0.04488	-0.425477	0.004728
Traditional public well	0.018	0.133	-0.00354	-0.026235	0.000477
Use river, canal	0.011	0.104	-0.09277	-0.879489	0.009772
Other source of drinking water	0.048	0.214	-0.01187	-0.052782	0.002666
Use flush toilet	0.034	0.182	0.12254	0.649825	-0.023076
Use pan latrine	0.280	0.449	0.17575	0.281749	-0.109479
Use bush/field as latrine	0.250	0.433	-0.19549	-0.299095	0.127598
Use pit latrine	0.299	0.458	0.04674	0.071511	-0.030508
Use VIP latrine	0.051	0.220	0.02598	0.045009	-0.014976
Other type of latrine	0.086	0.281	0.01122	0.048489	-0.002593

household asset score =
value of asset variable – unweighted mean of asset variable x asset factor score
unweighted std. dev. of asset variable

household score for number of members living per sleeping room is calculated as follows: {#people per room – unweighted mean)/unweighted std. dev.} * asset factor score.
Cut off points for wealth quintiles

Wealth quintile	**Asset index value**	
	Lowest	**Highest**
Poorest	Lowest	-0.6998
Second	-0.6595	-0.3301
Third	-0.3287	0.095
Fourth	0.1036	0.7135
Richest	0.7162	Highest

Comparison of Methods: Asset Index Versus Monthly Household Cash Income (in Rs)

Wealth quintile derived from asset approach	**Mean estimated monthly cash income**	**CI**
1	1,989	1,607 – 2,371
2	2,501	2,074 – 2,929
3	3,583	3,018 – 4,148
4	4,409	3,799 – 5,020
5	6,093	5,063 – 7,123

Annex 4: Willingness-to-Pay Data Analysis: Impact of Excluding Protest Bids and Non-Responses

Characteristics of Excluded Sample Versus Remaining Sample

Variables	Excluded sample	Remaining sample
SES = 1	22%	21%
SES = 5	20%	20%
Average age	29.5	29.6
No education (%)	40%	40%
NSMP	5 from mountain; 34 from hill; 14 from terai; 16 from NSMP; 28 from non-NSMP	185 from mountain; 362 from hill; 180 terai; 367 NSMP; 360 non-NSMP

Annex 5: Households Questionnaire

Introduction

We would like to ask you a few questions about the costs you and your family have incurred during this pregnancy. Please try and answer every question. If you are not sure or cannot remember the exact details, please give the best answer you can. The information that you provide will be completely confidential. You may interrupt the interview at any time, and you may also say you don't want to be interviewed and we will not proceed with the questions.

1 Identification

District Name and Code		
VDC Name		
Ward No.		
Cluster No./Name of the cluster (gaun)		
Interviewer Name		
Interview Date		
Interview Time	Start:	Finish
Name of Household Head (HH)		
Sex of Household Head		
Name of Mother		
Relationship of Mother to Household Head (tick as appropriate – single choice)	Head of the household	
	Spouse	
	Daughter	
	Daughter-in-law	
	Father or Mother	
	Grandchild	
	Grandparents	
	Other relative (specify)	
	Other non-relative (specify)	

Who is present (during interview)? Tick as appropriate, multiple choice, underlining the main respondent.

Mother	
Household head (if not mother)	
Mother-in-law	

2 Details of last Pregnancy and Labour

What was the date of your last delivery?	***(DD)***	***(MM)***	***(YYYY)***

During the seven days before labour (for each condition tick yes or no as appropriate)

Type of condition	**Yes**	**No**
Did you have vaginal bleeding?		
Did the blood soak your clothes, the mattress or the floor?		
Did you have stomach pain?		
Did you have any convulsions?		
Did you have a headache for more than half a day?		

During the labour (for each condition tick yes or no as appropriate)

Type of condition	**Yes**	**No**
Did you have vaginal bleeding?		
Did the blood soak your clothes, the mattress or the floor?		
Did your stomach hurt during the bleeding?		
Did you have any fits?		
In the three days before the labour, did you have a high fever?		
In the three days before the labour, did you have a vaginal discharge?		
After the baby was born, did you have vaginal bleeding?		
Did it soak your clothes, the mattress or the floor?		
How long after the baby was born did the placenta come out?		
W/n 1 hr		
B/n 1-12 hrs		
B/n 12-24 hrs		
> 24 hrs		
Did the placenta come out whole or in pieces?		
Whole		
In pieces		
Don't know		

How long did your labour last?	***Days***	***Hrs***	***Mins***

Which part of the baby came out first? (tick as appropriate, single choice)

Head	
Breech	
Hand/Foot	
Cord	
Don't know	

How was the baby delivered? (tick as appropriate, single choice)

On its own	
Manually	
Forceps	
Vacuum	
Operatively	
Don't know	

3 Location of Delivery

3.1 Where did your delivery take place? (tick as appropriate, single choice)

Government health post	
Government primary health centre	
Government district hospital	
Government regional hospital	
Private hospital or clinic	
Private maternity home	
Mission hospital	
Mission health centre	
Home	
Don't know	

3.2 What was the name and location of this place?

Name	
District Sub-district Village/commune	

3.3 Who made this decision of where to deliver? (tick as appropriate, multiple choice)

Mother herself	
Husband	
Mother-in-law	
Mother (of mother)	
Other (specify)	

3.4 Who assisted with your delivery? (tick main assistant, single choice)

Medical doctor (go to 3.6)	
Nurse/ANM (go to 3.6)	
Health assistant / AHW (go to 3.6)	
MCHW (go to 3.6)	
VHW (go to 3.6)	
Trained TBA	
Untrained TBA	
FCHV	
Friend or family member	
No-one	
Other (please specify)	

3.5 Does the attendant live with you in your home? (tick as appropriate and then go to 3.7)	***Yes***	***No***

3.6 Why did you choose to deliver in the facility? (do not prompt but tick as appropriate – single choice - try to get the woman to express the main reason and other reasons for this choice).

3.6.1 Main reason	
Friend/relative works there	
Friend/relative lives near the facility	
Complications during current pregnancy/safety	
Told to during ANC check-up	
Complications during previous pregnancy	
Close to home	
Cost	
Other (specify)	

3.6.2 Other reason	
Friend/relative works there	
Friend/relative lives near the facility	
Complications during current pregnancy/safety	
Told to during ANC check-up	
Complications during previous pregnancy	
Close to home	
Cost	
Other (specify)	

Proceed to Question 3.10

3.7	***Did you ever consider going to the hospital for delivery care? (tick as appropriate)***	***Yes***	***No***

3.8 Why did you deliver at home? (do not prompt but tick as appropriate – single choice)

Probe: try to get the woman to express the main reason and other reasons for this choice.

3.8.1 Main reason	
Cost	
Night time	
Rainy season	
Accepts payment in kind/flexible payment	
Distance / lack of transport	
No complications	
Prefers home environment	
Attendant was known to woman, friend or family member	
Poor reputation of health facility	
Not approved by family	
Shyness	
Other (specify)	

3.8.2 Other reason	
Cost	
Night time	
Rainy season	
Accepts payment in kind/flexible payment	
Distance / lack of transport	
No complications	
Prefers home environment	
Attendant was known to woman, friend or family member	
Poor reputation of health facility	
Not approved by family	
Shyness	
Other (specify)	

3.9 What do you think a delivery in the hospital would have cost? (Please complete Table below)

To get there (one way travel)	***Rupees***
To receive care during normal delivery	
To receive care if complications occur during delivery	

3.10 Would you have used the facility if the total cost of a delivery in hospital would had been (amounts in Rupees):

Read out each category to the respondent and each time ask them if they would use the facility or not and then tick as appropriate. If the respondent is unsure leave blank and continue with next range of values

	Yes	**No**		**Yes**	**No**
Free			6001-7000		
1-1000			7001-8000		
1001 – 2000			8001-9000		
2001-3000			9001-10,000		
3001-4000			More than 10,000		
4001-5000			I would not have used the facility even if the care was free		
5001-6000					

3.11 How much is the maximum you would have been willing to pay for a delivery in the hospital? (write amount in Rupees)	

3.12 How much time would you have been willing to travel to the hospital, if the service received there was free?

Read out each category to the respondent and each time ask them if they would use the facility or not and then tick as appropriate, if unsure leave blank and continue with next range of times

	Yes	**No**		**Yes**	**No**		**Yes**	**No**
0 minutes			3-4 hrs			10-11 hrs		
0-15 mins			4-5 hrs			11-12 hrs		
16-30 mins			5-6 hrs			12-18 hrs		
31-45 mins			6-7 hrs			18-24 hrs		
46-60 mins			7-8 hrs			24-48 hrs		
1-2 hrs			8-9 hrs			More than 48 hrs		
2-3 hrs			9-10 hrs			I would not travel to the hospital even if I didn't have to travel there		

3.13 How much is the maximum time you would have been willing to travel for delivery in the hospital? (please write the amount in Rupees)	

For those respondents who gave birth at home, please proceed to Question 6

4 Care prior to arrival at this facility

4.1 Were you at another facility before arriving here? *(tick as appropriate)* **If No** go to Question 5.	***Yes***	***No***
4.2 Which facility were you at before arriving here (type and name of facility)?		

4.3 How did you get to this place / what transport did you use? (tick as appropriate – multiple choice)

On foot	
Rickshaw	
Bicycle	
Three wheeler	
Bus	
Motorbike	
Taxi	
Car	
Stretcher	
Chair (dhoko) or bed (khatiya)	
Bullock cart	
Other (specify)	

4.4 How long did it take to get there?	***Days***	***Hrs***	***Mins***
4.5 How long did you spend there?	***Days***	***Hrs***	***Mins***

4.6 How much did you spend? (please complete the Table below)

Item	**Cost in Rupees**
Travelling there	
At this place	

4.7 *Did you see a dhaami jhankri or lama jhankri before going to the health facility?* *(tick as appropriate)* *If No, go to 5.*	**Yes**	**No**

4.8 How much did you pay (or value in Rupees of gifts offered in kind)? *(write amount in Rupees, if zero, write '0')*	

5 Financial and Time Costs associated with a Facility-based Delivery

For those who were referred from a lower level of care, transport time and cost should be estimated from the last facility (described in Section 4) and not from home.

5.1 How did you get to the facility / what transport did you use? (tick as appropriate, multiple choice)

On foot	
Rickshaw	
Bicycle	
Three wheeler	
Bus	
Motorbike	
Taxi	
Car	
Stretcher	
Chair (dhoko) or bed (khatiya)	
Bullock cart	
Other (specify)	

5.2 How long did this take (one way)?	***Days***	***Hrs***	***Mins***

5.3 How much did this cost there and back? (write the amount in Rupees)	

5.4 Did anyone accompany you there? (please tick as appropriate, multiple choice)

Your husband	
Your children	
Your mother	
Your mother-in-law	
Your neighbour/friend	
Other (specify)	

5.5 How long did they stay with you?	***Days***	***Hrs***	***Mins***

5.6 Did they lose any income by coming with you? (tick as appropriate)	***Yes***	***No***
If No, go to 5.8		

5.7 Approximately how much money did they lose? (write the amount in Rupees)	

5.8 How much time did you spend in the facility from time of arrival till discharge?	***Days***	***Hrs***	***Mins***

5.9 How much did you have to pay as a deposit upon arrival at the facility? (write the amount in Rupees – if zero write '0')	

5.10 Did you have to pay for anything to a person or the facility for the delivery? (tick as appropriate)	***Yes***	***No***
If Yes, complete table below *If No, go to 5.11*		

Probe: if cannot remember details ask only for total cost to woman of delivery and tick categories that are applicable

Item	**Cost (Rupees)**
Registration fee	
Fee to person undertaking	
Fee to any other staff	
Gift to any member of staff (state value in rupees)	
Fee for use of operating theatre	
Cost of drugs/supplies purchased outside hospital (specify name if known)	
Cost of drugs/supplies purchased inside hospital (specify name if known)	
Cost of lab tests / x-rays	
Accommodation (self) – specify type	
Accommodation (companion/s) – specify type	
Food from facility	
Washing clothes	
Other fee to facility	
Total cost of delivery	

5.11 Was there any expenditure during the time away from home in addition to that already mentioned? *(tick as appropriate – if 'No' skip to 6)*	***Yes***	***No***

Please complete the Table below:

Item	***Cost (Rupees)***
Relative bringing food (value of food)	
Purchase of materials to wash baby immediately after delivery	
Other (specify)	
Other (specify)	
Other (specify)	

6 Financial and Time Costs associated with a Home Delivery

6.1	***How much longer after they were initially called did the attendant/s arrive at your home?***	***Hrs***	***Mins***

6.2	***How long did she/they stay in your home from the time of their arrival to the time of departure?***	***Hrs***	***Mins***

6.3	***Did you have to pay for anything for the delivery? (tick as appropriate. If 'No' go to 7, if 'Yes, complete the Table below)***	***Yes***	***No***

Complete the Table below *(if cannot remember details ask only for total cost to woman of delivery and tick categories that are applicable)*

Item	**Cost (Rupees)**
Fee to attendant	
Fee to anyone else: Other health staff (specify position) _____ TBA or Dhai Relative Other	
Gift to attendant (specify value)	
Cost of allopathic medicine, drugs and/or supplies purchased from attendant (specify name if known)	
Cost of allopathic medicine, drugs and/or supplies purchased from medicine shop (specify name if known)	
Food provided to attendant (specify value in Rupees)	
Safe delivery kit	
Purchase of materials to wash baby immediately after delivery	
Other costs (specify)	
Other costs (specify)	
Total cost of delivery	

7 Financing the Cost of Care

7.1	***Did you find it difficult to raise money to pay for care?***	***Yes***	***No***

7.2 ***Why was it difficult? (explain)***

7.3 ***Did you use any of the following methods to pay for the care during delivery?*** *(write in the amount next to the relevant source/s of money – multiple choice)*

Source of money	**Amount of money raised (Rupees)**
Routine wage or salary income	
Use, sell or pledge assets: Land	
Crops	
Livestock	
Savings	
Forego essential food consumption	
Forego investment in other essential areas (e.g. education, preventive health, business or farming inputs)	
Gifts, charity or begging	
Delay payment	
Community financing scheme or loan fund	
Borrowed money (go to 7.5)	
Costs covered by hospital exemption scheme	
Costs covered by NGO scheme (give name) _____	

Unless the respondent answered 'Borrowed money' please go to 7.6.

7.4 For those who borrowed money – please complete the Table below, filling in all columns that correspond

Source of money	**Amount of money raised** *(state amount in Rupees)*	**Does the money need to be paid back?** *(write: Yes/No)*	**When should the money be repaid?** *(write date)*	**With what interest rate?** *(complete if applicable)*	**Did the loan carry any additional payments (e.g. cash, labour, in-kind)?** *(Yes/No) specify which*	**How much** *(either in days (labour) or value in Rupees (money /in-kind)*
Friends/relatives						
Moneylender						
Bank/building society						
NGO						
Landlord						
Savings and credit coop society (SACOS)						
Shopkeeper credit						
Community financing scheme/ loan fund						
Other (specify)						

7.5 How will you repay this money? (tick as appropriate – multiple choice)

Source of money	
Savings	
Use, sell or pledge assets: Land	
Crops	
Livestock	
Forego essential food consumption	
Forego investment in other essential areas (e.g. education, preventive health, business or farming inputs)	
Gifts, charity	
Other (specify)	

7.6 How much time did it take you to raise the money you needed?	***Weeks***	***Days***	***Hrs***

7.7 Did this delay your decision to go to the facility? *(tick as appropriate)* *If No, go to 7.10*	***Yes***	***No***

7.8 By how much time did it delay your decision?	***Weeks***	***Days***	***Hrs***

7.9 What do you think could be done to ensure that women who are pregnant and need to get to the hospital for delivery could more easily get there and receive care? (explain)

8 Perceptions of Quality of Care

8.1 In your opinion, are the staff at the hospital respectful? *(tick as appropriate)*	***Yes***	***No***

For those women who gave birth at the health facility, for others skip to 8.3.

8.2 Would you have liked the staff to spend more time with you during your stay in hospital? *(tick as appropriate)*	***Yes***	***No***

8.3 In your opinion, are the health staff in the hospital well trained to treat pregnant women? *(tick as appropriate)*	***Yes***	***No***

8.4 In your opinion do they have the necessary drugs available to treat pregnant women?	***Yes***	***No***

8.5 In your opinion, what was the condition of the waiting and examination rooms? *(tick as appropriate)*	***Good***	***Medium***	***Poor***

9 Household Characteristics

9.1 Marital Status of Mother (tick as appropriate –single choice)

Married	
Divorced	
Separated	
Widow	
Other (specify)	

9.2 Age of Mother	

Religion

9.3 What is the religion of the head of household? *(tick as appropriate – single choice)*

Hindu	
Buddhist	
Muslim	
Christian	
Other	

9.4 What is the ethnic group/caste of the head of household? *(tick as appropriate – single choice)*

Brahmin	
Chhetri	
Danuwaar	
Gharti	
Gurung	
Kaami	
Kirati	
Magar	
Majhi	
Masalman	
Newar	
Pariyar	
Praja	
Rajbansi	
Sanyasi	
Sarki	
Satar	
Tamang	
Thakuri	
Tharu	
Other (specify)	

9.5 Size of household

9.5.1 How many people live in your household? *(Note to interviewer: defined as people living under this 'roof' for at least 15 days out of the past year, and share your food; and contribute to, or share in, a common resource pool and children and economically inactive)*	

9.5.2 How many children do you have in total?	

9.6 Education

9.6.1 **Up to which class did you attend in school (address to mother)?** *(tick as appropriate – single choice)*	***Didn't attend***	
	Number	
	Attended non formal education	

9.6.2 **Up to which class did you attend in school (address to household head)?** *(tick as appropriate – single choice)*	***Didn't attend school***	
	Number	
	Attended non formal education	

9.7 Socio-Economic Status

9.7.1 In your dwelling is there *(tick as appropriate – multiple choice)*

Item	*Yes*	*No*
Electricity		
A radio		
A television		
A bicycle		
A telephone		
A motorcycle		
A car or truck		

9.7.2 Do you do any cultivation in your household? *(tick as appropriate)*	***Yes***	***No***

9.7.3 Amongst the area you cultivate, how much is owned by the household? *(Complete the following Table and if none, write "0")*

	Khet	***Bari***	***Pakho***
Kattha			
Bigha			
Ropani			

9.7.4 What is the principal household source of drinking water?

Sources	**Tick as appropriate** *(single choice)*
Piped drinking water in residence	
Well in residence	
Public faucet (piped)	
Well with handpump in yard/plot	
Public well with handpump	
Traditional public well	
River, canal or surface water for drinking	
Other source of drinking water (specify)	

9.7.5 What is the principal type of toilet facility used by members of your household?

Facility	**Tick as appropriate** *(single choice)*
Flush toilet	
Uses a pan as a latrine	
Bush, field as latrine	
Pit latrine	
Ventilation Improved Pit latrine	
Other type of latrine (specify)	

.

9.7.6 What type of fuel does your household mainly use for cooking?

Fuel type	**Tick as appropriate** *(single choice)*
Electricity	
LPG / Natural Gas	
Biogas	
Kerosene	
Coal / lignite	
Charcoal	
Firewood / Straw	
Dung	
Other (specify	

9.7.7 In your dwelling, how many members are there per sleeping room?	

9.7.8 What is the main occupation of the household head?

Employment Status	**Tick as appropriate** *(single choice)*
Employed agricultural	
Employed non-agricultural	
Self employed agricultural	
Self employed non-agricultural	
Looking for work	
Not working and not looking for work/unable to work	

9.7.9 How much money (cash – not including the value of in-kind products) comes to the household from all sources in a typical month? *(write amount in Rupees)*	

9.7.10 How long does it take you to walk from your house to the closest health facility?	Time taken (one way) DAY/HR/MIN		
SHP/HP			
PHC			
Private Hospital			
District Hospital			
Hospital with EOC if not above			

Thank you so much for your help today in answering these questions. I can assure you that all your responses will be treated in absolute confidence. Your answers will help in improving maternity services in this country

Survey Form 1a* Form to be filled in Hospitals of Community Survey Districts to validate survey and crosscheck nature of complications (if any).

Name of mother: _____

Age of mother: _____

Date of delivery:_____(DD/MM/YYYY)

Date of admission:_____(DD/MM/YYYY)

Date of discharge:_____(DD/MM/YYYY)

Type of delivery*: (tick as appropriate)*

Normal with episiotomy	
Normal without episiotomy	
Forceps	
Vacuum	
C-section	

Nature of Complications: *(tick as appropriate)*

Antepartum haemorrhage	
Postpartum haemorrhage	
Sepsis	
Obstructed labour	
Anaemia	
Other (specify)	
None listed	

Total bill paid (Rupees) *(if possible breakdown by component of bill):*

Item	**Cost (Rupees)**
Registration fee	
Fee for surgery	
Cost of drugs/supplies	
Cost of lab tests / x-rays	
Accommodation	
Food	
Washing clothes	
Total patient bill	

Annex 6: Willingness-to-Pay Questionnaire

1. Attitudes Towards Pregnancy and Childbirth

1.1 What do you think or feel is/are the main causes of maternal ill health during delivery?
1. Witchcraft or malevolent spirit, or the evil eye
2. Cold
3. Behaviour during pregnancy –specify
4. Underlying physical condition
5. Karma

1.2 How can this be prevented?
1. Antenatal care – or go to health post/centre/hospital for treatment
2. Call the lama jhankri / dhaami jhankri.
3. Call TBA
4. Other (specify?)

1.3 In your own view, does the health of the pregnant mother worry your household?
1. Yes, a little
2. Yes, a lot
3. No

1.4 Explain why? or why not?

1.5 Have yourself/wife/daughter had some problems during any previous pregnancy?
1. Yes
2. No

2. Willingness-to-Pay

Forty percent of all pregnant women will experience complications resulting in illness and 15 percent will need hospital care in order to save their or their babies' lives. Complications often occur suddenly and are difficult to predict. In Kailali/Jumla districts there are currently five options for how a woman might give birth.

Alone
The first is delivery in an isolated location such as a shed/field or dark room at home without the assistance of anyone. If there are any complications or you/she feels any pain or discomfort, there would be no one to provide assistance or ensure you/she gets treated appropriately.

Home with Untrained Attendant
Another option is to give birth at home with the assistance of a friend or relative or 'dai'. This person has no formal training and delivers infants according to local customs and beliefs. She would usually come quickly to your home and use allopathic medicines. She could deal with a normal delivery but would not be able to treat any complications.

Home with Trained Attendant
You could alternatively deliver at home with the assistance of a trained professional, either a *dai* who has received formal training or an MCHW. They can manage normal childbirth and provide safe and effective basic care. It will take more time for them to reach your home, but they will usually have some western medicines, supplies and basic equipment and conduct the delivery in your home. They will tell you to go to the hospital if there are complications they can't deal with.

Health Centre or BOC Hospital
You must arrange and pay for the travel to the health centre from your home in order to receive care. A midwife would usually attend to you and conduct the delivery. She has many years of training in dealing with pregnant women and more equipment and drugs to deal with a normal delivery and minor complications. She will tell you to go to a zonal or regional hospital if there are serious complications she can't deal with. You would usually spend 6 to 12 hours there.

EOC Hospital
You must arrange and pay for the travel to the hospital from your home in order to receive care. A doctor or midwife would attend to you and conduct the delivery. They have maximum training in dealing with pregnant women. They can conduct a normal delivery and they also have necessary equipment and drugs treat you in the case of any complications. For a normal delivery you would spend 6 to 12 hours at the hospital and receive meals. In the cases of complications you may stay for 3 to 6 days.

These are the different choices for a pregnant woman. Now we would like to ask you some questions.

1. Which type of care would you prefer? *(please rank according to preference from 1 (preferred option) to 5 (least preferred) if equal preference mark as same number*

Alone	
Home with Untrained Attendant	
Home with Trained Attendant	
S/HP/Health Centre/BOC Hospital	
EOC Hospital	

2. Why do you prefer this option (explain)?

One way to measure the value to you of each option is to ask you what you would be willing to give up to receive it *(for your wife/daughter to receive it).* You will not be asked to give this amount. It is simply a way of measuring how strong you feel about having each type of care. So, imagine you have to pay, what would be the maximum you would be willing to give up for each option. Just think about how much it is really worth to you. Please think carefully about how much you can really afford and where the additional money would come from and try to be as realistic as possible. There are no right or wrong answers. The amount you say could be big or small. We are really interested in your view. Now answer the following questions:

3. Hospital Delivery

3.1. Would you be willing to contribute/pay anything for for/for your wife/daughter to have a delivery in hospital (remember the amount you say includes all aspects of the service including transport to and from the hospital and food)?

1. Yes
2. No

3.2 How much is the maximum you would be willing-to-pay for a delivery in the hospital? *(please write amount in Rupees)*

3.3 Why would you be willing to pay this amount?

3.4 Why wouldn't you be willing to pay anything?

4. S/HP/Health Centre Delivery

4.1 Would you be willing to contribute/pay anything for a delivery in health centre?
1. Yes
2. No

4.2 How much is the maximum you would be willing-to-pay for hospital services? *(please write amount in Rupees)*

4.3 Why would you be willing to pay this amount?

4.4 Why wouldn't you be willing to pay anything?

5. Would you be willing to pay anything for a delivery at home?

5.1 Would you be willing to pay anything in order to have your delivery at home?
1. Yes
2. No

5.2 How much is the maximum you would be willing-to-pay for your delivery to take place at home? *(please write amount in Rupees)*

5.3 Why would you be willing to pay this amount?

5.4 Why wouldn't you be willing to pay anything?

6. How much would you be willing to pay for a trained attendant (as defined above) to be present at home compared to giving birth alone?

6.1 Why would you be willing to pay this amount?

7. How much would you be willing to pay for an untrained attendant to be present compared to giving birth alone?

7.1 Why would you be willing to pay this amount?

8. How much would you be willing to pay for a home delivery alone?

3. Household Characteristics

1. What is the marital status of mother (tick as appropriate –single choice)

Married	
Divorced	
Separated	
Widow	
Other (specify)	

2. What is the age of the MWRA?

3. What is the religion of the head of household? *(tick as appropriate – single choice)*

Hindu	
Buddhist	
Muslim	
Christian	
Other	

4. What is the ethnic group/caste of the head of household? *(tick as appropriate – single choice)*

Brahmin	
Chhetri	
Danuwaar	
Gharti	
Gurung	
Kaami	
Kirati	
Magar	
Majhi	
Masalman	
Newar	
Pariyar	
Praja	
Rajbansi	
Sanyasi	
Sarki	
Satar	
Tamang	
Thakuri	
Tharu	
Other (specify)	

5. How many people live in your household?_____

6. How many children do you have in total?_____

If more than 1, ask, if not skip to 8.

7. Did you have any complications or illness during a previous pregnancy? *(tick as appropriate)*

Yes	
No	

8. Up to which class did you attend in school (address to mother)? *(tick as appropriate – single choice)*	Didn't attend	
	Number_____	
	Attended non formal education	

9. Up to which class did you attend in school (address to household head)? *(tick as appropriate – single choice)*	Didn't attend school	
	Number_____	
	Attended non formal education	

10. In your dwelling is there *(tick as appropriate – multiple choice)*

Item	*Yes*	*No*
Electricity		
A radio		
A television		
A bicycle		
A telephone		
A motorcycle		
A car or truck		

11. Do you do any cultivation in your household? *(tick as appropriate)*	Yes	No

12. Among the area you cultivate, how much is owned by the household? *(Complete the following Table and if none, write "0")*

	Khet	***Bari***	***Pakho***
Kattha			
Bigha			
Ropani			

13. What is the principal household source of drinking water?

Sources	*Tick as appropriate (single choice)*
Piped drinking water in residence	
Well in residence	
Public faucet (piped)	
Well with handpump in yard/plot	
Public well with handpump	
Traditional public well	
River, canal or surface water for drinking	
Other source of drinking water (specify)	

14. What is the principal type of toilet facility used by members of your household?

Facility	*Tick as appropriate (single choice)*
Flush toilet	
Uses a pan as a latrine	
Bush, field as latrine	
Pit latrine	
VIP latrine	
Other type of latrine (specify)	

15. What type of fuel does your household mainly use for cooking?

Fuel type	*Tick as appropriate (single choice)*
Electricity	
LPG / Natural Gas	
Biogas	
Kerosene	
Coal / lignite	
Charcoal	
Firewood / Straw	
Dung	
Other (specify	

16. In your dwelling, how many members are there per sleeping room?	

17. What is the main occupation of the household head?

Employment Status	*Tick as appropriate (single choice)*
Employed agricultural	
Employed non-agricultural	
Self employed agricultural	
Self employed non-agricultural	
Looking for work	
Not working and not looking for work/unable to work	

18. How much money (cash – not including the value of in-kind products) comes to the household from all sources in a typical month? *(write amount in Rupees)*	

19. How long does it take you to walk from your house to the closest health facility?	Time taken (one way)		
	DAY	HR	MIN
SHP/HP			
PHC			
Private Hospital			
District Hospital			
Hospital with EOC if not above			

Annex 7: Facility Survey Questionnaire

This survey will be carried out in all hospitals within the survey (NSMP and non NSMP) districts. This survey mostly consists of open-ended questions. We would suggest you ask the questions as they are written explaining where required. Prompts can be used to help explain the question and range of answers but should not be used to push a particular answer or point of view.

We are conducting a study of the costs of obstetric care for the Nepal Safe Motherhood Project. As part of this study we are attempting to obtain information on the financing policies in government health facilities. We are aware you face many difficulties in providing services particularly with problems in getting sufficient resources for your work .We are most grateful to you for agreeing to answer our questions and would like to assure you that any responses you give will be treated confidentially. At the same time we would like to acknowledge the contribution of those that help with the study if so desired.

Would you prefer we keep the details you have given us anonymous?	YES……1 NO……..2
Would you like your contribution to this study acknowledged?	YES……1 NO……..2

1. Basic data on facility

1.1. Descriptive facility data

i) Name of district	
ii) Name of hospital	
iii) Type of hospital (district, zonal, regional NGO run)	
iv) Number of beds	
v) Number of discharges in past year (2002/2003)	
vi) Number of bed days in past year (2002/2003)	
vii) Approximate size of population served by hospital	
viii) Number of outpatient visits in last year.	
ix) Numbers of: Doctors Nurses Midwives Other staff	 _____ _____ _____

1.2. What types of maternity provision do you have at this hospital?

Service	***Description of services typically provided***	***Provided by whom?*** *e.g. Obstetrician; Nurse; Midwife; Other (specify)*	***How many cases last year?*** .
Antenatal Care			
Care in normal labour and delivery			No. Normal Deliveries
Care in obstetric emergencies ***(instrumental delivery? Caesarean section?)***			No. emergency C-sections No. elective C-sections No. Vacuum deliveries No. forceps deliveries
Complications post-delivery			Numbers admitted
Neonatal care ***(special care for sick babies? Low birth weight babies?)***			No admitted special care
Post natal care ***(return visit to facility, domiciliary visit?)***			
Family Planning ***(methods?)***			
Infertility/ conception services			
Abortion service (methods?)			
Other Services (non maternity)			Outpatients Inpatients

2. Cost-recovery policies of the hospital

2.1 Who sets user fees in the hospital?
(Prompt: Are they set nationally or locally? If locally who decides?)

2.2 How user fees determined?
(Prompt: describe process, whether they are related to the costs of service, ability of patients to pay etc)

2.3 Is there any difference between the general user fee policy and the procedures used to fix fees for maternity services?

2.4 How frequently are user fees adjusted?
(Prompt: for example monthly, annually, when prices increase, on advice from Ministry of Health)

2.5 In the last three years (00/01, 01/02, 2002/2003) how much revenue did you collect from user charges in this facility?

	2000/2001	2001/2002	2002/2003
Revenue			

2.6 How did you spend this revenue in 2002/2003?

	Expenditure (Rupees)
Staff related	
Operating costs	
Drugs and other medical supplies	
Exemptions for needy	
Capital: equipment, buildings etc	
Other	
Total	

2.7 How much do you charge for the following and what percentage does this represent of actual cost?
(Interviewer: please fill in as much detail as possible. If additional categories of charge are given please enter under 'other')

	Admission/ entrance charge	Consultation	Treatment	Patient stay (including bed, food)	Staff	Drugs/ supplies	Lab tests	X-ray	Blood transfusion	Other	Total
Antenatal visit											
Normal delivery											
Caesarean section											
Instrumental delivery											
Forceps											
Vacuum											
Complications of pregnancy [1]											
Antepartum haemorrhage											
Postpartum haemorrhage											
Sepsis/infection											
Obstructed labour											
Eclampsia											
Retained products (placenta)											
Anaemia											
Pre-eclampsia											
Other (specify)……											
Post-natal visit											
Abortion complications											

Notes:

1. Only include costs that are charged in addition to those for normal/instrumental delivery

2.8 At what point do patients have to pay for services? (Prompt: before, during after treatment; if a mixture try to find out what proportion is paid at which point of the care process).

2.9 Who are eligible to access subsidised or free services and why?

Category (e.g. pregnant, poor)	Reason for exemption	Level of exemption (e.g. full exemption, 50%)

2.9b If poor are included as a category ask: what is the method used to define who is poor?

2.10 How many people, in each category did you exempt last year (2002-2003) and what was the value of these exemptions?

Category (from last question 6)	Number	Approximate value of exemptions to each group

2.10b If interviewee cannot give information on number or level of exemptions ask 'why is this information not available?'

2.11 Do you follow national guidelines on exemptions or do you develop you own policies?

2.12 Who develops your policies for exemptions?
(Prompt: individual, committee, if committee what is the composition?)

2.13 How do you finance exemptions?

2.14 Thinking about patient requiring obstetric services, please can you estimate what proportion of women would pay the:

	% of charge as described in Q2.7
Full charges for services	
Partial charge	
No charge	
	100%

3. Financing schemes benefiting patients using this facility

Do you have any financing schemes at this hospital to help patients with the costs of Essential Obstetric Care (EOC) or the cost of other services?	YES……..1 NO……2

If YES: Please fill in '**Form 4 – concessionary financing schemes**' and staple to this form.

If NO ask 'why do you have no schemes'

Skip to section 4

4: Conclusion

4.1 What in your opinion should the government be doing to help those that cannot afford the costs of care?

4.2 Is there anything else you would like to say?

FINISH: Thank you very much for your help in answering these questions. Your answers will be most useful in improving the policy for safe motherhood in this country. Can we once again assure you that all your answers will be treated confidentially?

Annex 8: Concessionary Financing Schemes Questionnaire

We are conducting a study of the costs of obstetric care for the Nepal Safe Motherhood Project. As part of this study we are attempting to obtain information on concessionary schemes currently being operated to help vulnerable individuals and households with the costs of both obstetric and other ill health. We are most grateful to you for agreeing to answer our questions and would like to assure you that any responses you give will be treated confidentially. At the same time we would like to acknowledge the contribution of those that help with the study if so desired.

Would you prefer we keep the details you have given us anonymous?	Yes……..…1 No……..2
Would you like your contribution to this study acknowledged?	Yes……..…1 No……..2

We would like to ask you a series of questions about the functioning of this scheme.

1. Basic data[57]

1.1 Contact data

Name of scheme	
Contact person	
Address of headquarters Telephone: Fax: Email:	
Serves which districts	

Note to interviewer: some schemes are operated by health facilities, some are operated by other organisations.

1.2 Is this scheme operated by a health facility?	Yes……1 No……..2 (skip to section 2)

[57] *Section can be skipped if already filled in as part of a facility questionnaire - form 3.*

1.3 In the case of a within-facility scheme please provide the following additional details:

Name of district	
Name of hospital	
Type of hospital (district, zonal, regional NGO run)	
Number of beds	
Number of discharges in past year (2002/2003)	
Number of bed days in past year (2002/2003)	
Approximate size of population served by hospital	

2. Background to the scheme

2.1 History of scheme: When did the scheme begin and why? Who started the scheme?

2.2 Who is eligible to access the scheme? (e.g. poor, pregnant women)

	All	Only those that are poor or are from poor households
Poor		
Pregnant women		
Children		
Disabled		
Elderly		
War veterans		
Health workers		
Other (specify) ……..		
Other (specify) ……..		
Other (specify) ……..		

2.2a Is this scheme primarily aimed at one disease or treatment need (e.g. maternity, eye, renal)

2.2b Is the scheme restricted to people living within certain areas or people groups? If so which?
(Prompt: interviewer should find out if the scheme is restricted to certain ethnic groups, districts, VDCs etc)

2.4 Please explain in more detail why the scheme is restricted to certain groups?
(Prompt: the interviewer should look at the answers to questions 2.3, 2.3a, 2.3b and probe why certain groups are excluded from the scheme)

2.5 Who manages this scheme (e.g. board of hospital, local NGO, INGO)
(Probe: try to obtain details of management structure, board or committee representation, whether the head of the board is paid by the scheme, list the members and position of any committee)

2.6 Who currently finances this scheme?
(Probe: please obtain information on funding source such as INGO, HMGN, donor, non-poor patients, community etc)

2.7 Who has financed the scheme in the past (since inception)?
(Probe: obtain information on funding source such as INGO, HMGN, donor, community, amounts and date received)

Funding source	Amount	Date

2.8a What costs will this scheme cover?

Item		
Admission	Yes	No
Consultation	Yes	No
Medical treatment	Yes	No
Staff costs	Yes	No
Medical supplies	Yes	No
Travel costs	Yes	No
Transfusion	Yes	No
Other	Yes	No

2.8b Other restrictions on costs – please specify? (e.g. limited to particular illnesses, interventions)

2.9 Who administers the scheme?

Type of staff	Number	Whether paid by the scheme	Responsibilities

2.10 Are any other organisations or individuals involved in financing, administering or making decisions on those that benefit from the scheme?	Yes……1 No……..2

Financing of scheme – list organisations and individuals and role (e.g. medical staff, private companies, politicians, VDCs/DDCs)

Management & administration of scheme – list organisations and individuals and role (e.g. medical staff, private companies, politicians, VDCs/DDCs)
Regulation of scheme – list organisations and individuals and role (e.g. medical staff, private companies, politicians, VDCs/DDCs)
Decisions on who benefits – list organisations and individuals and role (e.g. medical staff, private companies, politicians, VDCs/DDCs)

2.11 Is the scheme affiliated in any way to a political party	Yes……1 No……..2

2.11b If so which party and what is the nature of the affiliation? How does this affiliation affect the functioning of the scheme?

3. Functioning of the scheme

3.1 Are there any written procedures regulating the functioning of these schemes?	Yes…….1 No……..2

Prompt: if YES then obtain a copy of the regulations OR attempt to note the main aspects of these regulations

3.2 How do you advertise this scheme or make details known to patients?

3.3 What process must a patient go through in order to be exempt?

Prompt: please include the following:

- Who must they talk to?
- Must they go in person or can a friend/relative apply on their behalf?
- When do they need to apply for the scheme (before, during, after treatment)?
- Must they present documentation? If so what documentation?

3.4 Who decides whether a patient should be exempt – partly or wholly?
(Prompt: find out whether this is left to clinicians or administrative staff, whether a committee is involved, whether the patient can appeal to any other party/person if no exemption is offered)

3.5 What criteria are used to decide on whether a patient should be exempt?
(Prompt: such as evidence provided by patient, inspection of patient's physical appearance etc)

3.6 Are all eligible patients (using criteria described in 3.4) exempt? If not explain why not.
(prompt: reasons could include financial limitation of scheme, non-residence in the area etc)

3.7 Are there any limits placed on financial assistance for each patient?
(Probe: is there an upper limit on assistance, if so can patients make application for funding above the limit?)

3.8 Does the amount reimbursed vary with the income level of applicants?	Yes……1 No……..2

If yes: describe how reimbursement varies

3.9 Are payments made before, during or after treatment?
(Probe: if there is flexibility, find out which is preferred by the scheme)

3.10 Are payments made directly to patients or to facilities?

3.11 What safeguards are in place to ensure that the scheme benefits those in need rather than those with influence?
(Probe: describe these safeguards and who monitors their application)

4. Financial operation of the scheme

There are two principle ways exemption schemes can be financed. i) Income is received into the scheme and this is then used to pay for exempt patients in a facility. Most associated with schemes that are established ii) Cross-subsidy of poor from richer patients. Most of these are associated with in-facility schemes.

4.1 Which type of financing system best describes your scheme?
(prompt: if neither then describe what happens)

4.2 Can you provide the following details on the financing of the scheme over the last two years? (if possible collect a detailed income and expenditure statement for the scheme over these two years

For type (i) please provide a balance sheet such as the one below:

	2001/2002	2002/2003
Balance brought forward from previous year		
Income for the scheme		
Type:		
- rich patients		
- INGOs		
- Donors		
- HMGN		
Expenditure of scheme[58]		
Costs of Ante and Post natal care		
Costs of Essential Obstetric Care		
Costs of other maternity provision		
Costs of other services		
Administration of the scheme including staff, publicity		
Balance carried forward to next year		

[58] Obtain as much detail on expenditure as possible. Adapt the categories to fit with the way in which data are collected for this scheme.

In the case of type (ii) then please provide an idea of the revenue received from different categories of patients and how this relates to expenditures. Please also provide information on income for the hospital from all sources including:

- Donors
- HMGN
- INGOs
- patient fees
- Other

If there is any deficit how is it financed?

4.3 Would you say these were typical years?

If not typical how were they different from previous years?

4.4 Do you undertake an annual planning process (business plan) to ensure that the number of exemptions can be afforded? If so please describe this process.

4.5 How does the cash flow of the scheme (i.e. income received each month compared to expenses incurred vary throughout the year)

4.6 Does the cash flow of the scheme hamper its operation (probe: for example if income is not received does the scheme have to stop making payments or is there sufficient reserve)

4.7 What other problems are faced in operating this scheme?

4.8 Are the accounts of the scheme audited by an external accountant?
(Probe: if they are, what is the process; if they are not ask WHY?)

4.9 Do you submit the financial accounts/records to a Government department?
(Probe: find out to which department, how regularly, what form must they be in, does the department attempt to verify the record in any way)

5. Other observations

5.1 Would you say the demand for the scheme has increased or decreased in the last three years? Please explain the reason for your answer

5.2 What further plans do you have to develop the scheme?
(Probe: plans for additional categories to be exempted, expenditure plans, new types of fee etc)

5.3 How do you think government, donors or NGOs should be encouraging schemes like yours?

5.4 What more should the government do to provide for the financial needs of sick, vulnerable groups covered by your scheme?

5.5 Do you have other observations you would like to make?

FINISH: Thank you very much for your help in answering these questions. Your answers will be most useful in improving the policy for safe motherhood in this country. Can we once again assure you that all your answers will be treated confidentially?

TO THE INTERVIEWER: PLEASE WRITE DOWN ANY FURTHER OBSERVATIONS YOU HAVE ON THE INTERVIEW. IN PARTICULAR COMMENT ON ANY WAY IN WHICH YOU THINK INFORMATION WAS HIDDEN OR QUESTIONS AVOIDED.

PLEASE ALSO MENTION ANY OTHER INFORMATION ON THE SCHEME THAT YOU HAVE OBTAINED FROM PEOPLE OTHER THAN THOSE YOU HAVE FORMALLY INTERVIEWED E.G. PATIENTS, STAFF, LOCAL POLITICANS

(Please continue on separate sheets of paper if necessary – YOUR PERSPECTIVE IS MOST IMPORTANT)

Annex 9: Methodological Quality of Included Studies

Studies meeting the inclusion criteria were then ranked according to quality. Quality was defined in terms of the generalisability of the findings to other settings, which should be borne in mind when evaluating the lessons learned from the studies included in the review. The criteria used for the classification of studies are defined fully below:

Class A Studies:

- Describe the revenue collection mechanism.
- In the case of user fees, quantify both the fee level and the cost recovery rate.
- Describe the target population in terms of geographic location (urban/rural) and socio-economic status.
- Report on primary data, citing the source of data used.
- Provide a measure of outcome in order to evaluate the financing scheme (before and after implementation or in comparison with a control area), by informing on at least one of the following:
- Utilisation of maternal health services.
- Technical and/or human quality of maternal health services.
- Equity in the provision of services (accessibility to different strata of the population).
- Provider efficiency.
- Sustainability of the scheme.

Class B Studies:

- Link a specific financing scheme to a measure of outcome (utilisation, quality or equity) as a situational analysis rather than a before-after study (hence, the outcomes presented are not necessarily statistically associated with the method of financing).
  OR
- Measure willingness to pay for maternal health care and/or hidden costs of free maternity care.
  OR
- Measure the impact of price on demand for maternal health care.
- Report on primary data, citing the source of data used.
- Describe the target population in terms of geographic location (urban/rural) and/or socio-economic status.

Annex 10: Cost of Obstetric Services at Lumbini Zonal Hospital

Introduction

In order to obtain information on the facility-borne costs of a range of obstetric services, a costing exercise was undertaken at Lumbini Zonal hospital. The hospital, which provides services within one of the districts included in the sample, serves a wider population as a regional referral hospital.

Approach

An adapted version of the WHO Mother and Baby Package (MBP)[59] was used to apportion costs to delivery related procedures. It excluded other maternal and child health procedures that are included in the full version.

The costing exercise focused on the costs of normal and obstructed delivery and complications including sepsis, haemorrhage, eclampsia and severe anaemia. An adapted version of the facilities data collection form was filled in for each of these conditions, which obtains information on staff time, drugs and commodities used, average number of patients with each condition and basic information on the facility. Information on spending during the last two financial years broken down by line item, a complete staff list and payroll was also obtained from the hospital. Information on local drug and medical supplies were obtained from local markets. These were verified using the Management Sciences for Health 'International Drug Price Indicator Guide' which is available online[60].

The spreadsheet provided with the MBP helps to allocate obstetric staff costs to each delivery. Variable costs (drugs and supplies) were allocated to each procedure directly. Other overhead, administration and general staff costs were allocated to each obstetric case on the basis of bed-days in hospital.

Results

Based on the cost allocation it was found that around 11% of the costs of the hospital could be apportioned to deliveries and complications. Maternal care in total would consume a larger fraction of the resources since we did not examine the costs of ante or post natal care, other complications occurring during pregnancy or peri-natal care.

The figures reported here represent expenditure by government on facilities, plus the costs incurred by patients on variable items, such as drugs and supplies. They do not include unofficial payments to staff.

[59] Downloadable from http://www.who.int/reproductive-health/economics/download.en.html.
[60] http://erc.msh.org/

Table A8.1 shows the cost per case for each of the main categories of delivery and complications.

Table A8.1: Facility Costs of Delivery Care and Complications (Rs)

	Severe anaemia	Eclampsia	Haemorrhage	Normal delivery Care	Obstructed labour	Sepsis
Direct staff cost	319.05	417.47	369.01	130.30	508.70	176.55
Indirect staff cost	293.45	586.90	586.90	83.84	503.06	293.45
Drugs and supplies	440.70	2,110.46	1,569.38	136.00	604.54	552.80
Overhead	967.30	1,934.61	1,934.61	276.37	1,658.23	967.30
Cost per case	2,021	5,049	4,460	627	3,275	1,990
Cost per case (US$)	27.68	69.17	61.09	8.58	44.86	27.26
Direct staff cost	15.8%	8.3%	8.3%	17.4%	11.2%	8.9%
Indirect staff cost	14.5%	11.6%	13.2%	11.2%	11.1%	14.7%
Drugs and supplies	21.8%	41.8%	35.2%	34.5%	41.1%	27.8%
Overhead	47.9%	38.3%	43.4%	36.9%	36.6%	48.6%
Cost per case	100%	100%	100%	100%	100%	100%

Cost-Recovery

Examining what facilities and households say patients are asked to pay, suggests a high rate of cost-recovery. The facility reported charges in Chapter 3 (Table 3.2) cover more than 50% of the cost of a normal delivery and more than 65% of the cost of c-section and haemorrhage. Based on the expenditure estimates from the household survey, the cost-recovery rates are even higher at 93% and 102% for normal delivery and c-section respectively. While it is often the case that household reported costs can over-estimate actual costs, it should be remembered that these costs are based on actual hospital bills. These recovery rates are high, but are based on the cost structure of only one hospital. Further verification, based on a larger sample of hospitals, would be useful. This might be possible once the current survey on facility costs being carried out by the Nepal Health Economics Association is complete.

Annex 11: Limitations: Lessons for Future Studies

This study suffers from a number of potential limitations which are described and discussed below:

We were keen to assess the difference in costs to households of a home delivery with trained compared to untrained attendants. Households who had delivered with different types of attendants were identified by FCHVs and MCHWs. However, one might question the extent to which these staff successfully distinguished between trained and untrained TBAs (given the close similarity to costs incurred). But, even if the cost of untrained TBAs is inflated as a result of potential misclassification, the cost of delivery with a relative or friend clearly acts as a lower bound estimate of what an untrained TBA might cost.

The study initially aimed to explore the costs within public hospitals only. However, due to the small number of institutional deliveries, in many districts, a number of private and lower level facilities were included. The results presented focus mainly on the costs within government hospitals, as initially planned, but we also present a comparison of costs incurred in private versus public hospitals for normal delivery for illustrative purposes. Whilst the sample size is small (n=16) we can observe interesting differences that can be studied further in future studies.

We included in the analysis all c-sections from all VDCs in the past year and for which hospital bills were available. Unfortunately, there were not many (n=12). However, the formal payments made within facilities corresponded closely to the user charges collected during the facility survey. So, even if the extent of additional costs incurred is more uncertain, the estimated total cost of a c-section is still very indicative of what households are likely to pay in government hospitals. The very small number of assisted deliveries (n=6) meant that we did not include them in our analysis, although we can hypothesise the cost of these cases to lie somewhere between that of a normal delivery and a c-section. Finally, we were unable to differentiate between vaginal deliveries with and without episiotomy for the calculation of informal costs, so we grouped them together as vaginal delivery.

By obtaining hospital bills, we were able to provide a guaranteed accurate estimate of the formal costs incurred within hospitals. However, in order to estimate informal costs (not officially charged to patients) and transport costs, we had to rely on household recall. There was no big difference in recalled formal costs compared with the hospital bill, so we can conclude that the other recalled figures are most likely representative of the actual amount paid. Whilst tracking these informal expenditures while patients are still within the facility would avoid potential recall bias, a much longer time frame would be required to obtain sufficient numbers, as so few women deliver in facilities. This method would also suffer from other biases, such as the influence of staff present in the facility. Time travelled to the facility was verified by interviewers and so is unlikely to be subject to uncertainty or recall bias.

Unfortunately, we were not able to breakdown drug and supply costs to ascertain exactly what was prescribed and charged to the patient.

We know that many households reportedly paid staff in the facility, but it is not clear if this was a voluntary or imposed payment.

Interestingly, there was some divergence between household reported type of delivery and hospital records, so we relied completely on hospital records and did not present household reported complications during pregnancy, due to uncertainty that they were able to successfully recognise and distinguish between types of delivery and complications.
We had some difficulty estimating referral costs, as there was some confusion among respondents who said they had been referred from the same place where they delivered. Some cases said they were referred, but gave no information about the referral process (from

where, how long they spent there, etc.) All these cases were excluded from the analysis (n=164), which means that our estimate of referral cost is most likely to be an underestimate of the true referral cost.

Some observations were made with regards to NSMP compared to non-NSMP districts, which could be related to NSMP activities. However, these could just be due to selection bias. To provide more information as to the reason for observed differences, ideally, we needed to include questions as to whether women from NSMP districts are part of mothers' groups and/or have been exposed to NSMP activities and messages. However, this would have lengthened an already lengthy questionnaire (average 1 hour and a half). The findings raise interesting hypotheses that could be researched in future qualitative surveys.

The low level of reported use of community schemes was surprising and it would be interesting to assess the extent of the schemes operating in the sample areas as well as the extent of funds available from these schemes. The review and evaluation of funds in NSMP districts conducted by Basu Dev Neupane et al. will provide useful insight in this respect.

Unfortunately, few households borrowing money were able to recall the terms of loans, in terms of interest and duration. In future studies, it may prove more effective to interview moneylenders and members of the community to explore further how loans are usually made and for what period.

We had some difficulty assessing the affordability of delivery care. Payment for delivery is a one off event, occurring a maximum of 6 or 7 times in a lifetime for most households. Consequently, it is not obvious how best to present expenditure, as a proportion of monthly, yearly or lifetime income. For simplicity, we considered monthly income.

We hypothesised that caste may have an impact of cost and WTP. However, most households fell into the Bahun-Chetri category or the low occupational castes, which are strongly associated with socio-economic status. Therefore, we dropped this variable from our analysis and focussed on socio-economic status.

In the WTP survey, quite a number of respondents gave an unrealistically high bid (defined as a WTP that was beyond their ATP) which indicates that households were influenced by the fact that emergency care can save lives, and that they would, in principle, be willing to pay a very high amount to avert their own death. This problem has been encountered in other WTP studies (for further discussion, see Foreit and Foreit, 2003). We considered these cases as 'non-responses' and deleted them from our sample, which had no effect on the sample characteristics.

Clearly, respondents were also very much influenced by the perceived price of services. So, whilst theoretically they should be willing to pay the highest amount for their preferred option, in practise they would pay more for CEOC facility delivery even if they preferred home delivery. The reason being that they would only go to CEOC for complications and the cost of treating complications in these facilities is high. Those respondents who gave a zero value for their preferred option, but were prepared to pay for other delivery care options were classified as protest bids and excluded (67 cases). Again, this didn't bias the sample in any way.

The association between WTP and socio-economic status supports the theoretical validity of the method. However, other variables that were hypothesised to affect WTP, such as age, education and attitudes and beliefs about maternal health and delivery, did not have the expected effect. This could be accurate or due to the choice of questions or the question format, which was not successful in capturing true beliefs and relevant attitudes.

Annex 12: Field Workers Involved in Collecting Data for the Study

Jhapa

Ms. Anusha Giri
Ms. Durga Khanal
Ms. Kalpana Sapkota
Ms. Tara Chudal
Ms. Indira Chudal
Ms. Sushila Koirala

Bhojpur

Ms. Anuradha
Ms. Sumana Pradhan
Ms. Krishna Kumari Shrestha
Mr. Ram Kumar Rai
Ms. Ambica Tiwari
Mr. Ratna Bahadur Rai

Baglung

Ms. Sita Sharma
Ms. Mana KC
Ms. Chandra Acharaya
Ms. Anu Khadga
Ms. Shanti Gwyali
Ms. Maya Shrees Magar

Gulmi

Mr. Resham Kunwar
Mr. Lok Nath Acharaya
Mr. Nirmala Pandey
Ms. Chameli Gautam
Ms. Basundhara Ghimere

Surkhet

Mr.. Pitamber Achrya
Ms. Rama Devi Bhandari
Mr. Shyam Lal Magrati
Ms. Laxmi Kumari Basnet
Mr. Kiran Raj Regmi
Ms. Gita Kumari Koirala

Kailali

Ms. Rameshowri Chaudhary
Ms. Teju Joshi
Ms. Mamata Dhungana
Mr. Hem Raj Bhatta
Mr. Devi Lal Choudhary
Mr. Ratna Raj Ojha

Jumla

Mr. Shri Bahadur Bhandari
Ms. Suchana Shah
Ms. Sarada Rokaya
Mr. Ganesh Adhikari
Mr. Nanda Budathapa
Ms. Maina Buda

Dolpa

Mr. Keshab Ukedha
Ms. Tara Kumari Buda
Ms. Ranjana Shrestha
Mr. Khaga Raj Khatri
Mr. Bhim Bahadur Thapa
Ms. Devaki Shahi