

User fee exemptions are not enough: out-of-pocket payments for 'free' delivery services in rural Tanzania

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Summary

OBJECTIVE To identify the main drivers of costs of facility delivery and the financial consequences for households among rural women in Tanzania, a country with a policy of delivery fee exemptions.

METHODS We selected a representative sample of households in a rural district in western Tanzania. Women who given birth within 5 years were asked about payments for doctor's/nurse's fees, drugs, non-medical supplies, medical tests, maternity waiting home, transport and other expenses. Wealth was assessed using a household asset index. We estimated the proportion of women who cut down on spending or borrowed money/sold household items to pay for delivery in each wealth group.

RESULTS In all, 73.3% of women with facility delivery reported having made out-of-pocket payments for delivery-related costs. The average cost was 6272 Tanzanian shillings (TZS), [95% Confidence Interval (CI): 4916, 7628] or 5.0 United States dollars. Transport costs (53.6%) and provider fees (26.6%) were the largest cost components in government facilities. Deliveries in mission facilities were twice as expensive as those in government facilities. Nearly half (48.3%) of women reported cutting down on spending or borrowing money/selling household assets to pay for delivery, with the poor reporting this most frequently.

CONCLUSION Out-of-pocket payments for facility delivery were substantial and were driven by high transport costs, unofficial provider payments, and preference for mission facilities, which levy user charges. Novel approaches to financing maternal health services, such as subsidies for transport and care from private providers, are required to reduce the cost barriers to attended delivery.

keywords maternal health services, health financing, out-of-pocket payments, delivery costs

Introduction

There were an estimated 536 000 maternal deaths worldwide in 2005, nearly all in developing countries. These deaths persist despite longstanding knowledge of interventions that, if implemented universally, could reduce that number dramatically (Campbell & Graham 2006b; WHO, UNICEF, UNFPA 2007). These interventions include care by skilled birth attendants and emergency obstetric care for women with complications (Campbell & Graham 2006a). However, deliveries by a skilled attendant and facility delivery rates are still very low in many developing countries. Sub-Saharan Africa, which has the highest maternal mortality ratios globally, has average facility delivery rates of only 47%, according to recent surveys (MEASURE DHS 2008).

Health care financing is a central determinant of access to skilled delivery care. At the national level, general tax financing together with policies of universal coverage have been linked to high service coverage and low maternal mortality in Sri Lanka, Malaysia, and Kerala, India (Borghi *et al.* 2006b). In a cross-national study of developing countries, a higher proportion of government financing of health was found to be associated with greater utilization of skilled birth attendants, controlling for confounders (Kruk *et al.* 2007). In contrast, out-of-pocket payments for delivery are a barrier to use of health facilities (Ensor & Ronoh 2005; Borghi *et al.* 2006a; Parkhurst *et al.* 2006). Much of the research focus has been on user fees, which have been shown to reduce use of health services by the poor in particular (Nanda 2002; Pokhrel *et al.* 2005). The disincentive impact of user fees is worst in rural, agricultural areas

where families' access to cash is seasonal (Soucat *et al.* 1997).

In addition to user fees, several studies have found that women in many parts of the world face substantial out-of-pocket costs for drugs, supplies (gloves, syringes, plastic sheets), informal payments (e.g. tips), and transport of the mother and any birth companions (Nahar & Costello 1998; Khan 2005). For example, travel costs were over half of all delivery costs of normal deliveries in Nepal (Borghi *et al.* 2006a). Out-of-pocket financing of the costs of facility delivery has been shown to have substantial financial repercussions on households. These include having to borrow money or sell valuable household items, which makes families more vulnerable to impoverishment (Russell 1996; McIntyre *et al.* 2006).

Tanzania is a low income country with a maternal mortality ratio of 950 per 100 000 live births; over 100 times higher than industrialized countries. (WHO, UNICEF, UNFPA 2007) Tanzania's total health spending in 2004 was 12 United States dollars (USD) per capita; of this 5.2 USD was government spending. Private spending on health comprised primarily out-of-pocket spending by households: of the 6.8 USD in private spending 5.6 USD was out-of-pocket spending, while 0.3 USD came from private insurance spending, and approximately 0.8 USD from other private spending (e.g. employers, non-governmental organizations) (WHO 2007). The government is the major provider of health services with private (mainly faith-based) organizations providing one-third of all health services (National Bureau of Statistics of Tanzania 2007). In an effort to reduce maternal mortality, like several other governments in developing countries, Tanzania's government has declared maternal and child health services, including facility delivery, to be exempt from user fees in government facilities (Wilkinson *et al.* 2001; United Republic of Tanzania Ministry of Health 2003; Witter *et al.* 2007). Furthermore, the government and the churches have created an extensive network of primary health facilities, including nearly 5000 dispensaries, which are in principle equipped to care for women with uncomplicated deliveries (National Bureau of Statistics of Tanzania 2007). However, in 2004, only 33.6% of women living in rural areas reported delivering their last child in a health facility (National Bureau of Statistics of Tanzania & ORC Macro 2004).

The aim of this study was to identify the main drivers of cost for facility delivery and the financial consequences on households in a population-based sample of women in rural Tanzania. Based on this evidence we suggest several policy recommendations for financing reforms to increase skilled delivery rates.

Methods

Study area and sampling

The study was conducted in Tanzania's Kasulu District, an isolated primarily rural area located in Kigoma Region, near the country's western border with the Democratic Republic of Congo. The district has a total population of 630 000 and includes one main town, Kasulu (population 33 000). Most people in the district are subsistence farmers. The vast majority of the population belongs to the Muha tribe and speaks both Kiha, the local language, and Swahili, the national language.

The district has 55 functioning government facilities (48 dispensaries, six health centres and one district hospital) and 13 mission facilities (nine dispensaries, two health centres, and two hospitals) along with two refugee camp health centres that also cater to the adjacent district population (for the purposes of this analysis, the refugee health centres were included as 'mission' facilities). The district policy is that normal deliveries be conducted at dispensaries or health centres, with complicated cases referred to the hospital. There is also a private maternity waiting home in Kasulu town that is used by some women from distant villages, particularly those with complicated pregnancies.

This study employed a three-stage representative cluster sample of rural households from Kasulu District, omitting Kasulu town. Power calculations indicated a target sample of 1000 women was required to differentiate the likelihood of key outcomes of interest in the study. Of 89 villages in Kasulu District, 50 were chosen in the first stage, with probability proportional to size, based on the 2002 Tanzania census. The sampled villages had anywhere from 2–5 subvillages (approximately 100 households) one of which was randomly selected from each village. The leader of that subvillage provided a list of households within the subvillage from which 35 households were selected through random systematic sampling. Inclusion criteria limited participants to women over the age of 18 with a delivery within the 5 years prior to recruitment. The National Institute for Medical Research in Tanzania as well as the Institutional Review Board at the University of Michigan provided ethics clearance for the study. Written consent was obtained from all respondents.

Instrument and survey fielding

Questionnaires and consent documents were developed in English then translated into Swahili and back translated. Questionnaires included information related to household composition, characteristics and assets (indicators of socioeconomic status/wealth), childbirth history,

knowledge and perception of the local health care system, and barriers to health care utilization.

The questionnaire was administered between June and mid-July, 2007. Interviews were done by two teams of trained interviewers fluent in Kiswahili and English. Each team also had at least one interviewer fluent in Kiha. Each interview was carried out face-to-face and lasted approximately 30 min. Quality was monitored by a supervisor who observed two or more interviews per day.

Measures and data analysis

In addition to demographic and facility use questions, each woman with a facility delivery was asked what she paid for various components of her delivery including doctor's/nurse's fees, drugs, non-medical supplies, medical tests, transport, maternity waiting home and other expenses. Maternity waiting homes in Tanzania are private, but are available to women delivering in public and private facilities, thus their costs were included in the cost of delivery for both private and public patients. A sensitivity analysis using only women that gave birth in the previous 6 months was done to assess the level of recall bias for cost data. Women were also asked for the total cost of delivery, whether they had to cut down on household spending or borrow money/sell household items to afford the delivery costs, and their perceptions of the quality of care at different types of facilities. All costs were inflation adjusted to their 2007 value, using Tanzanian gross domestic product (GDP) deflator values published by the (International Monetary Fund (2007)). A principal components analysis based on an index of 10 household assets (radio, bicycle, number of bed-nets, etc.) was conducted to determine a continuous indicator of wealth. Based on this households were allocated into wealth quintiles (quintile one was poorest, quintile five richest) (Filmer & Pritchett 2001; Schellenberg *et al.* 2003; Vyas & Kumaranayake 2006). All statistical analysis was done using SAS-Callable SUDAAN adjusting for the cluster design of the survey (Research Triangle Institute 2005).

Results

Of the 1322 eligible respondents recruited for the study, 1205 (91.1%) women completed questionnaires (112 were not at home on repeated visits and five refused participation). One woman failed to report the location of her most recent birth and was excluded from this analysis. Table 1 provides summary statistics for the 1204 women included in this analysis: 23.9% were under the age of 25, and 27.5% had never attended school at the time of survey administration. The sample of women surveyed were

Table 1 Sociodemographic and health care utilization characteristics of a population-based sample of rural women from Kasulu District, Western Tanzania, 2007 (N = 1204*)

Characteristics	<i>n</i>	(%)
Demographics		
Age		
<25	288	(23.9)
25–34	567	(47.1)
≥35	343	(28.5)
No schooling	331	(27.5)
Occupation farmer or fisher	1186	(98.5)
Currently married	1153	(95.8)
Ethnicity muha	1184	(98.3)
Religion		
Christian	1097	(91.1)
Muslim	89	(7.4)
Number of living children		
0–1	155	(12.9)
2–4	539	(44.8)
5 or more	501	(41.6)
Household assets		
Electricity	7	(0.6)
More than two meals a day	134	(11.1)
At least one mosquito net	824	(68.4)
Location of delivery		
Home†	731	(60.7)
Health facility‡	441	(36.6)
On the way to a health facility	32	(2.7)

*Totals may not add up to 1204 due to missing value.

†Of the 731 women, 717 gave birth in their own home, 11 in another's home, and three in a field.

‡Of the 441 women, 100 gave birth in a government dispensary, 61 gave birth in a government health centre, 72 gave birth in a government hospital, 86 gave birth in a mission dispensary, 71 in a mission health centre, 48 in a mission hospital, three in unknown facilities.

nearly all of Muha ethnicity (98.3%), Christian religion (91.1%), and worked as either farmers or fishers (98.5%). Three in ten (31.6%) women lived in households without a mosquito net, and only seven women (0.6%) lived in a household with electricity. Only 11.1% of women's families ate more than two meals a day. Among the 1204 women included in the analysis, 441 (36.6%) delivered their most recent child in a health facility. From this group, for the cost analysis, one woman was removed due to item non-response and three women with payments over 70 000 Tanzanian shillings (TZS) (56.22 USD) and without medical complications were also removed as outliers. In addition, two women were removed from the analysis due to missing year of delivery, which did not permit proper adjustment of their costs. The resulting sample included 435 women.

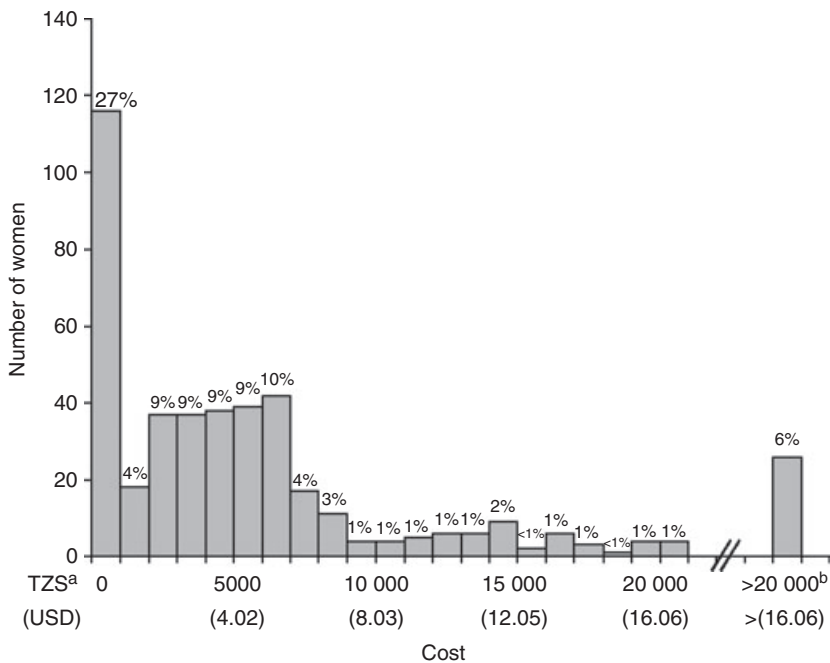


Figure 1 Distribution of total costs of facility delivery, for a population-based sample of rural women from Kasulu District, Western Tanzania, 2007 ($n = 435$). Total cost includes cost of provider, drugs, diagnostic tests, transportation, maternity waiting home, supplies, and unknown. For all facility deliveries with reported costs: $n = 435$, mean = 6272 Tanzanian shillings (TZS) [5.04 United States dollars (USD)], median = 3193 TZS (2.56 USD); for facility deliveries with payment: $n = 319$, mean = 8553 TZS (6.87 USD), median = 4790 TZS (3.85 USD). ^a1245 TZS = 1 USD. ^bMaximum payment = 70 000 TZS (56.2 USD).

Figure 1 is a histogram of the cost of delivery for women included in the analysis. Nearly three-quarters (73.3%) of women that delivered in a health facility paid something for the services they received. The average cost of care among all facility deliveries was 6272 TZS (95% CI: 4916–7628), and among those where payment was made, 8553 TZS (95% CI: 6859–10 246). The results of a sensitivity analysis showed that recall bias was limited for these total costs.

Figure 2 shows a comparison of the average cost of delivery among women who paid at different types of health facilities (95% confidence intervals are included in Appendix 1). The average costs for each facility were: government dispensary, 2258 TZS; mission dispensary, 6816 TZS; government health centre, 604 TZS; mission health centre, 5751 TZS; government hospital, 8849 TZS; mission hospital, 18 859 TZS. The average cost of delivery for all government facilities was 3840 TZS (95% CI: 2601–5078) where 62.5% of women paid something for service (73.0% at government dispensaries, 26.2% at government health centres, and 78.9% at government hospitals). The average cost of delivery for all mission facilities was 9148 TZS (95% CI: 6675–11 620) where 86.5% of women paid something for service (95.2% at mission dispensaries, 67.6% at mission health centres, and 100% at mission hospitals). Strikingly, in this district with 55 government facilities *vs.* only 15 mission facilities, 46.5% of women who delivered in a facility chose a mission facility.

Figure 3 shows a comparison of the components of delivery costs between government and mission facilities for the 262 respondents who provided component information. For deliveries at government facilities for which women reported cost components, the average cost of delivery was 6268 TZS (95% CI: 4459–8077). On average, these women paid 3362 TZS (53.6%) (95% CI: 1780–4944) for transportation to and from the delivery facility, 1668 TZS (26.6%) (95% CI: 931–2405) for provider fees, 569 TZS (9.1%) (95% CI: 70–1069) for drugs and diagnostic services, 532 TZS (8.5%) (95% CI: –38–1102) for staying in a maternity waiting home, and 137 TZS (2.2%) (95% CI: 64–209) for supplies used during delivery. For deliveries at mission facilities, the average cost of delivery was 10 642 TZS (95% CI: 7380–13 904). On average, these women paid 1638 TZS (15.4%) (95% CI: 280–2995) for transportation to and from the delivery facility, 6077 TZS (57.1%) (95% CI: 4710–7444) for provider fees, 2320 TZS (21.8%) (95% CI: 676–3965) for drugs and diagnostic services, 605 TZS (5.7%) (95% CI: 133–1077) for staying in a maternity waiting home, and two TZS (<0.1%) (95% CI: –2–5) for supplies used during delivery. More detailed component cost information is available in Appendix 2. Of special note is the fact that 84.6% of women that delivered in a government dispensary reported paying provider costs (compared to 35.7% at government health centres and 30.0% at government hospitals). The results of a sensitivity analysis showed no meaningful recall bias for component costs.

Figure 2 Average total cost for facility delivery by facility ownership and level, for a population-based sample of rural women from Kasulu District, Western Tanzania, 2007 ($n = 432$). The frequencies of reporting any costs by facility type were: 73.0% at government dispensaries, 26.2% at government health centres, 78.9% at government hospitals, 95.2% at mission dispensaries, 67.6% at mission health centres and 100.0% at mission hospitals: 67.3% of all costs were incurred at mission facilities.

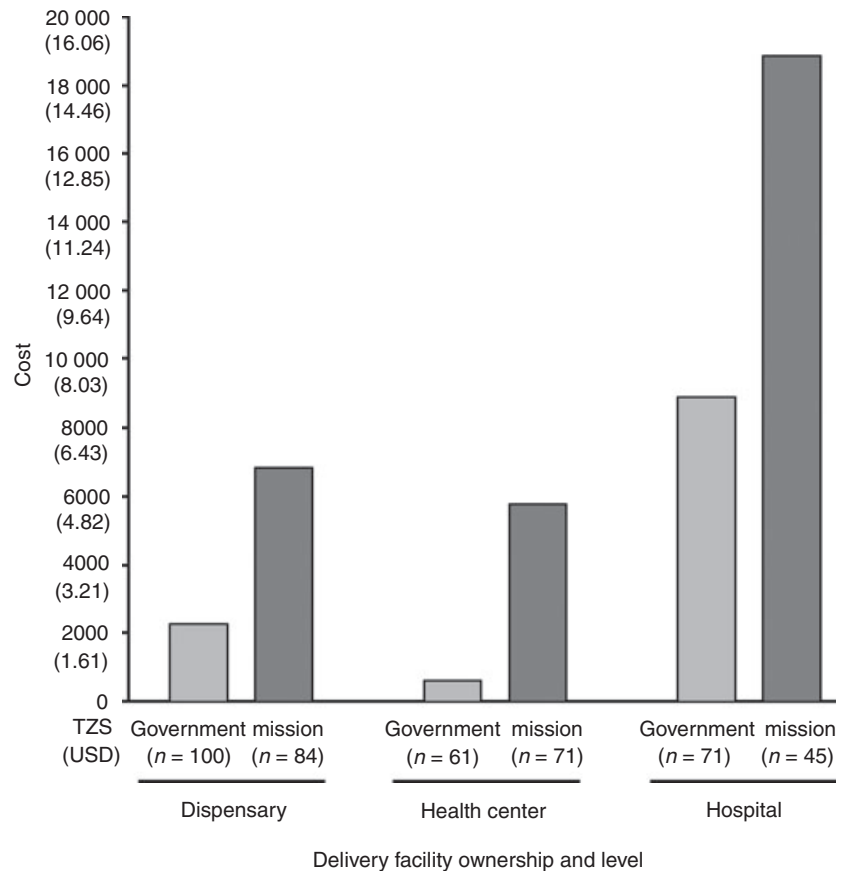


Figure 4 shows how the surveyed households coped financially to afford the costs of delivery across wealth groups. The percentage of women who cut down on spending to cope with the financial burden of paying for delivery, starting with the most poor and moving towards to least poor, was 50.0%, 44.7%, 39.2%, 36.7%, and 32.1%, respectively. On average, 40.6% of women cut down on spending. The percentage of women who either borrowed money or sold personal belongings to cope with the financial burden of paying for delivery, starting with the most poor and moving towards to least poor, was 42.7%, 40.4%, 44.3%, 34.4%, and 22.6%. On average, 36.8% of women either borrowed money or sold personal belongings. These data are descriptive; no statistical analysis was attempted as each quintile had a relatively small number of women. Overall, 48.3% resorted to either borrowing/selling or cutting down on spending. The women perceived dispensaries to provide relatively poor quality of care compared with health centres and hospitals: 44.8% reported less than very good care quality at their nearest dispensary compared with 28.3% at the health centre and 21.6% at the hospital (see Appendix 3).

Discussion

Despite the Tanzanian government's commitment to universal provision of free maternal health services, we found that nearly three-quarters of women who delivered in a facility in a rural district of Tanzania reported paying for delivery. The average cost of facility delivery was 6272 TZS or 5.0 USD, even when taking into account women who reported paying nothing. The proportion of mothers in our survey reporting any payment was much higher than was found in the nationally-representative 1993 Living Standards Measurement Survey, in which only 40.3% of women surveyed reported paying anything for delivery (Prata *et al.* 2004). However, the amount paid was roughly consistent with a smaller non-representative sample in another district of Tanzania that found expenditures of 5.9 USD at health centres (Kowalewski *et al.* 2002). The delivery costs reported here are equivalent to 1.7% of Tanzania's per capita GDP and 41.7% of the country's per capita total health expenditure (WHO 2007). This amount may be prohibitive in a rural population that relies on subsistence farming for its livelihood: almost half of the

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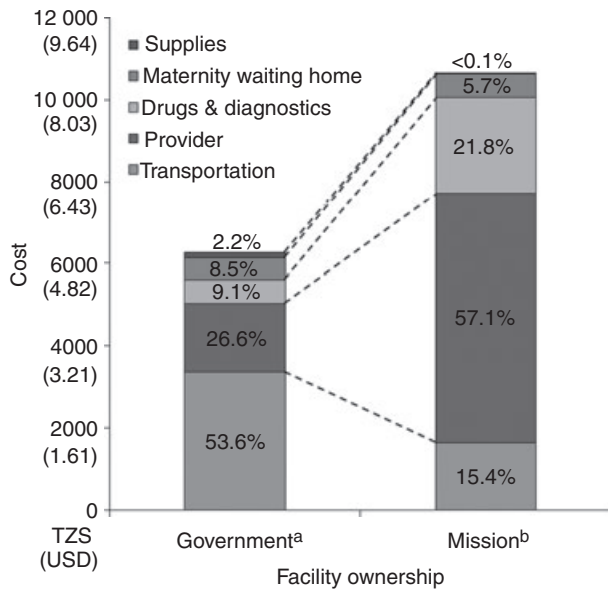


Figure 3 Components of total delivery cost, for a population-based sample of rural women from Kasulu District, Western Tanzania, 2007 (*n* = 262). Components include: Provider (doctor’s/nurse’s fees, both official and unofficial); Drugs and Diagnostics (medicines and any medical tests, including radiologic procedures such as X-rays); Maternity Waiting Home (private facility where some women stay in the last phases of pregnancy); Supplies (e.g., gauze, plastic sheeting, IV tubing, blankets), Transport (e.g., fare, fuel costs). ^a*n* = 129; mean = 6,268 TZS (5.03 USD). ^b*n* = 133; mean = 10 642 TZS (8.55 USD).

women reported that their households had to cut down on other spending, borrow money, or sell household assets to afford delivery costs. The cost of delivery in government facilities was driven by two factors: transport costs and unofficial fees charged by health providers. Moreover, we

found that frequent use of mission facilities raised the average cost of delivery in the district.

Just over half the costs of delivery in a government facility was for transport to the facility; by comparison 37.9% of the costs were for direct medical costs (provider, drugs, diagnostics and supplies). Over 30% of women who delivered in a government facility travelled to the district hospital in Kasulu, the only government facility to offer comprehensive emergency obstetric care. For this subset of women transportation was 71.0% of the total costs. As noted earlier, high transport costs for maternal and child health services have been found in other studies of rural populations in the developing world (Afsana 2004; Borghi *et al.* 2006a). Here, the preference for hospital delivery in a district with an extensive network of government primary care facilities may indicate a lack of confidence in the ability of the lower level dispensaries and health centres to attend to labour complications due to a lack of medicines and equipment or poor provider practice – indeed in our sample, women indicated that hospitals provided better quality of care than dispensaries. Others have documented deficiencies in the quality of care at dispensaries in Tanzania (Leonard & Masatu 2007).

The second major contributor to delivery costs in government facilities was provider payments. In the context of the national policy of user fee exemption for maternal care, these payments represent unofficial or under-the-table payments to providers. It is particularly concerning that 85% of women delivering at the lowest government primary care level – the dispensary – reported paying the provider as the dispensary is meant to expand access to maternity care, particularly to rural populations and services are meant to be free. Thus some if not all of these payments represent informal or under-the-table payments. Informal charges at the dispensary may also be contributing to the low observed facility delivery rates in

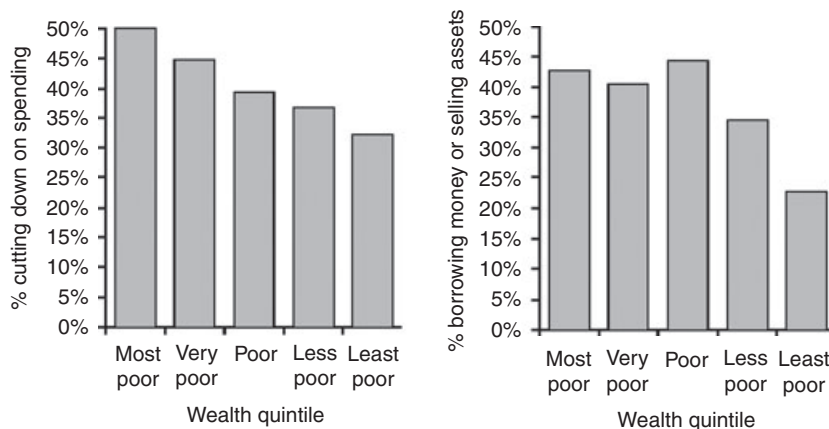


Figure 4 Financing coping mechanisms to afford facility delivery, by wealth, for a population-based sample of rural women from Kasulu District, Western Tanzania, 2007 (*n* = 429).

this population, with fewer than 40% of women delivering in a facility. This may also have equity implications as women who deliver at their local dispensary may be poorer and less able to choose other facilities for delivery. Facility fees, including informal fees, reduce the number of deliveries in medical facilities in several developing countries, particularly among the poor (Stekelenburg *et al.* 2004; Hotchkiss *et al.* 2005; Witter *et al.* 2007). Interestingly, provider payments were reported much less frequently at the government hospital perhaps due to greater financial transparency, better supervision, greater provider professionalism, and higher salaries at that level compared to the dispensary (Lewis 2007).

Lastly, and perhaps somewhat unexpectedly in this rural district with a pre-dominantly poor, farming population and wide availability of cheaper (if not free) government facilities, frequent use of mission facilities was a major contributor to average delivery cost in the district. Nearly half of the women with facility deliveries chose to deliver in mission facilities and compared with their peers using government facilities those women reported a higher frequency of out-of-pocket payments (86.5% *vs.* 62.5%) and much higher average costs: 9148 TZS (7.3 USD) *vs.* 3840 TZS (3.1 USD). Approximately 80% of the costs in mission facilities were for direct medical costs: provider fees, drugs, diagnostic tests and supplies. Women who delivered in a mission facility paid nearly four times more on these direct medical costs than women who delivered in a government facility. The high use of mission facilities contradicts earlier qualitative research suggesting that the poor prefer government facilities (Mamdani & Bangser 2004). Similar to women's preference for the government hospital, the use of mission facilities is likely driven by quality considerations: mission facilities in Tanzania have a reputation for better service and have been shown to be better equipped and to provide more competent care than government facilities (Mamdani & Bangser 2004; Leonard & Masatu 2007; National Bureau of Statistics of Tanzania 2007). The fact that at least some women in this population were willing to pay more than twice as much to deliver in mission facilities rather than government facilities underlines the importance of quality of care to women in rural areas. There is a growing body of work that supports the importance of quality in selecting health services in poor populations (Gilson *et al.* 1994; Audo *et al.* 2005; Levesque *et al.* 2006).

We found that the payments for delivery were frequently a source of financial hardship in this population. Approximately 41% of women who delivered in a facility reported having to cut down on other spending to pay for delivery costs and 37% of women reported having to borrow money or sell household assets.

Cutting down on spending and borrowing or selling were much more common among the poorest quintile of women than among the least poor quintile: 50% in the poorest group reported cutting down on spending and 43% having to borrow or sell assets *vs.* 32% and 22%, respectively, for the least poor. This pattern of inequity in household financing is broadly consistent with findings from a 1993 national survey in which 28% of women reported selling assets to pay for delivery care – with rates of 50% among the poor and 18% among the least poor (Prata *et al.* 2004). Borrowing or selling are not only immediate stressors for families coping with an impending or recent birth but these modes of financing also expose families to the risk of asset depletion and impoverishment (Kawabata *et al.* 2002; Liu *et al.* 2003; Bogale *et al.* 2005). As a result, health economists have noted that the willingness to pay (*i.e.*, having made a payment) is not equivalent to the ability to pay (Russell *et al.* 1995; McIntyre *et al.* 2006).

Our findings have to be interpreted in the context of several limitations. First, the recall of women for costs may recede with time, particularly for deliveries several years previously. Although women with deliveries in the past 5 years were eligible to participate, 84% of the women in this analysis delivered their last child within the previous 2 years, thus reducing recall error. In addition, a sensitivity analysis using costs from deliveries within 6 months of the survey showed that recall bias was minimal. The number of women with data on components of facility costs was relatively small, leading to large confidence intervals around the estimates. Lastly, the survey results cannot be extrapolated to other, particularly, urban populations in Tanzania or elsewhere.

Long-term health system reforms and substantially higher health spending are both likely required to address under-the-table payments and quality issues in government dispensaries that are motivating women to select more distant government hospitals and mission facilities (McPake *et al.* 2000; Lerberghe *et al.* 2002). However, several innovative financing approaches to reduce the costs of transport and delivery in private facilities are being tried right now in other countries to reduce those cost barriers to attended delivery. For example, as part of its Reproductive and Child Health Program, the government of India has introduced vouchers that women can use to pay for any mode of transport (*e.g.*, private cabs, tractors) from the village to health facilities for delivery. The owners of the transport can then exchange the vouchers for cash (Bhatia *et al.* 2006). Reducing the costs and availability of emergency transport may also persuade more women to deliver in facilities: a key feature of the successful Sri Lankan effort

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to increase facility deliveries and reduce maternal mortality was the free provision of ambulance services that link primary care facilities and hospitals with advanced obstetric care (Koblinsky *et al.* 1999).

Contracting with private providers to provide agreed-on services has improved coverage and equity in several developing and post-conflict countries (Loevinsohn & Harding 2005). In one financing experiment, the state government of Gujarat in India has introduced a scheme, *Chiranjeevi Yojana* ('eternal life scheme'), to pay private obstetricians a capitated fee for assisting in the deliveries of women living below the poverty line. Women can then select any private provider enrolled in the scheme without having to make any payment at the point of care. This was meant both to increase facility delivery and to reduce the financing burden of delivery costs for poor households. While it is too early to assess the effects of the scheme on these output indicators, 61% of the private obstetricians in the district have thus far enrolled (Loevinsohn & Harding 2005). In addition, the provision of subsidies to private facilities may enable them to reduce charges, thus increasing access to the poorest segments of the population (Ngalande Banda & Simukonda 1994).

Lastly, the charging of informal fees at dispensaries needs to be addressed by policymakers. While a full discussion of all the factors leading to the charging of informal fees is outside the scope of this discussion, measures that have shown success in reducing such charges include improved supervision and community level accountability (publicizing the fee exemption policy on clinic walls, on radio and in newspapers, exit interviews with women, etc.). In the longer term, improvement in salaries and work conditions may reduce incentives for informal fee charging (Lewis 2007). Some of these factors appear to be at work in the government hospital in the study district where fewer patients reported provider fees.

Our findings suggest that in addition to user fee exemptions, developing countries need to consider a range of other health care financing strategies to achieve universal coverage of attended delivery and to reduce the financing burden on families already using the health system. Given the disproportionate financial impact of delivery costs on the poor, the suggested policy changes will likely be pro-poor and thus help to close the well-documented gap between rich and poor in rates of attended delivery in developing countries (Houweling *et al.* 2007).

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Appendix 1. Average total cost for facility delivery by facility ownership and level, for a population-based sample of rural women from Kasulu District, Western Tanzania, 2007 ($n = 432$)

Delivery facility ownership level	<i>n</i>	Mean (TZS)	95% CI (TZS)	
Dispensary				
Government	100	2258	1065	3450
Mission	84	6816	5669	7962
Health Centre				
Government	61	604	-84	1293
Mission	71	5751	2842	8661
Hospital				
Government	71	8849	5190	12 507
Mission	45	18 859	11 742	25 977

Appendix 2. Component costs for delivery services by delivery facility for a population-based sample of rural women from Kasulu District, Western Tanzania, 2007 ($n = 262$)

	Government			Mission		
	Dispensary	Health centre	Hospital	Dispensary	Health centre	Hospital
<i>n</i>	65	14	50	63	37	33
Component cost*						
Provider	2606†	304‡	830§	5376	3944	9808
Drugs & diagnostics	184	190	1200	1219	601	6387
Transportation	0	1597	8227	88	4297	1615
Maternity waiting home	93	190	1198	425	391	1191
Supplies	104	278	139	0	0	7

*In TZS (1,245 TZS = 1 USD).

†55 (84.6%) women reported making a provider payment for delivery at government dispensaries.

‡5 (35.7%) women reported making a provider payment for delivery at government health centres.

§15 (30.0%) women reported making a provider payment for delivery at the government hospital.

Appendix 3. Perceived quality of care at nearest health facilities for a population-based sample of rural women from Kasulu District, Western Tanzania, 2007 ($n = 435$)

	<i>n</i>	%
Less than very good quality of care		
Nearest dispensary	195	44.8
Nearest health centre	123	28.3
Nearest hospital	94	21.6
Nearest hospital or health centre better quality than nearest dispensary	188	43.2
Nearest dispensary better quality than nearest hospital and health centre	19	4.4