

WORLD VIEW

Willingness to pay for cataract surgery in two regions of Tanzania

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Background: Knowing what rural populations are willing to pay for cataract surgery is essential if improvements in cost recovery in eye care service provision programmes are to take place. The authors sought to learn about willingness to pay for cataract surgery in two separate regions of Tanzania.

Methods: Patients desiring cataract surgery were interviewed in Kilimanjaro Region and Iringa Region of Tanzania to learn how much they and their families were willing to pay for surgery and how "wealthy" (using ownership of several household objects as a proxy for wealth) the household was.

Results: 60 cataract patients in Kilimanjaro and 49 in Iringa were interviewed. "Wealth" was significantly associated with willingness to pay in each region. The average expressed willingness to pay was 2457 Tsh (SD 4534) or approximately \$US 2.30, which is far below the actual cost of providing the service.

Conclusion: There were significant differences in the expressed willingness to pay between Iringa and Kilimanjaro patients, which may reflect differences in the services provided in the regions. Willingness to pay may increase as the population gains familiarity and trust in the service. It may also be increased by ensuring that pricing is uniform and clearly advertised throughout regions and by educating health workers and counselling patients about the real costs of providing high quality surgery. Offering "free" services to all may result in lower expressed willingness to pay.

The number of cataract blind in sub-Saharan Africa is estimated at 3.6 million and is rising each year.¹ If we hope to reverse this trend we must provide more cataract surgery in a sustainable fashion. Some argue that requiring patients to pay part of the cost of services will improve financial sustainability in health care while also improving quality and making providers more responsive to patients' demands.² On the other hand, "cost," including both indirect costs and the fees charged to patients, is frequently reported as a barrier that prevents patients from accessing cataract surgery.^{3–4} The challenge is to find ways to provide services for the poorest while maximising revenue from others who desire the service and can pay for it. Thus, an important question is, "what are people willing to pay for cataract surgery?" There has been no study of this in Africa, where the issue of cost recovery is critical, as most governments there do not have the resources to provide free health care for all and insurance schemes are limited. Clearly, there are many variables involved in the issue of willingness to pay for cataract surgery; willingness to pay will depend on the perceived quality and efficacy of the service, and on competing financial priorities at the time, among other factors. In many rural African settings, the elderly do not have their own money, but depend on family for support and thus the relevant question is usually not what the cataract patient is willing to pay, but what his family is willing to pay.⁵

In spite of this complexity, the question of payment is important to any programme trying to set rational prices for cataract surgery so that a reasonable balance can be struck between cost recovery and provision of service to the poorest and most needy. Theoretical field research on willingness to pay for health services is fraught with difficulties.^{6–9} Standardised questionnaires may provide data on a satisfactory number of patients, sampled according to acceptable epidemiological principles; however, in seeking information on sensitive and complex issues, the validity of such data may be questionable. Subtle difference in wording, combined with cultural differences, can result in biased and misleading

results. Furthermore, reported willingness to pay may not correlate with actual willingness to pay or with ability to pay.

In-depth interviews with individuals, on the other hand, can allow the researcher to gain a better understanding of the subtleties involved in "willingness to pay." Although they do not result in "statistically significant" findings, when designed and analysed by people trained in qualitative data analysis, they provide valuable information.

Thus, we chose to address the question of willingness to pay for cataract surgery using both quantitative and qualitative techniques. This is a report of the quantitative findings.

METHODS

For convenience, we chose to work in two regions of Tanzania (Kilimanjaro and Iringa) where established eye care programmes offering routine extracapsular cataract surgery with intraocular lens are in place. The two regions are separated by about 1000 km and the programmes are different in several respects. Both, however, enjoy donor support that ensures adequate supplies of consumables and the routine use of intraocular lenses.

Rural patients in every district of Kilimanjaro Region have had access to a system for the past 2–3 years in which cataract surgery is priced at 15 000 Tsh. This is a package that includes examination at regularly scheduled rural direct referral sites ("outreach clinics") where patients are identified, and offered round trip transport between site and the regional hospital (KCMC), ward stay with food, ECCE/IOL, and postoperative medicine for one inclusive fee. KCMC hospital is large and has offered surgery for over 20 years; however, the "package deal" at 15 000 Tsh serving the entire rural population in Kilimanjaro has been available for only

Abbreviations: ECCE, extracapsular cataract extraction; IOL, intraocular lens; KCMC, Kilimanjaro Christian Medical Centre; Tsh, Tanzanian shillings; WTP, willingness to pay

3 years. The cataract surgical rate in 2004 was 1165 per million population in Kilimanjaro Region.

In Iringa Region, static eye services (including cataract surgery) have been offered at the district level for the past 4–5 years. Charges are set in each district. In the two districts we included (Njombe and Mufindi), patients are recruited at village “outreach clinics” and provided with transport to the district hospital for surgery. The surgery is reported by health workers to be free, but patients must pay variable amounts (3500–8500 Tsh) for a “bed fee” and eye drops. Cataract surgical rates in Njombe and Mufindi in 2004 were 772 and 799 per million population respectively (authors’ data).

Interviews

A short interview form (requiring 5–10 minutes to administer) was designed in English, then translated to KiSwahili and back translated to English. This was repeated several times to reach agreement on the clearest translation. We collected information from the patients and accompanying family members on sex, tribe, marital status, whether the family home possessed any of four items (used as proxy for economic status), and asked how much the patient and his family would be willing to pay to “see again.” In Kilimanjaro, patients are told as part of the counselling process that it actually costs the hospital more than 15 000 Tsh to provide cataract surgery and this was repeated in the interview. In Iringa the actual cost of providing surgery was not discussed.

Patients

In Kilimanjaro, where the price is advertised as 15 000 Tsh, we assume that patients who pay this amount are “willing to pay” this amount. Therefore, we interviewed only those patients who came to the outreach clinic, agreed that they wanted cataract surgery, but said they could not pay 15 000 Tsh.

In Iringa, where surgery is advertised to be free, we interviewed all patients who accepted cataract surgery from three “outreach clinics” in two districts.

Definitions used for analysis

As a proxy for wealth, in addition to using the absolute number of items owned (0–4), we used the following two dichotomous definitions: “wealthy 1” = yes if the patient had one or more of the items (and otherwise no), and “wealthy 2” = yes if the patients had two or more of the items (and otherwise no).

Similarly, to analyse willingness to pay (WTP), in addition to the exact amount in Tsh reported by the patient, we defined another measure: WTP1 could be “low” (0–1500 Tsh), “medium” (2000–7000 Tsh), or “high” (\geq 7000 Tsh).

Data were entered on SPSS and we used χ^2 to measure associations between variables. ANOVA was used to compare means between continuous variables.

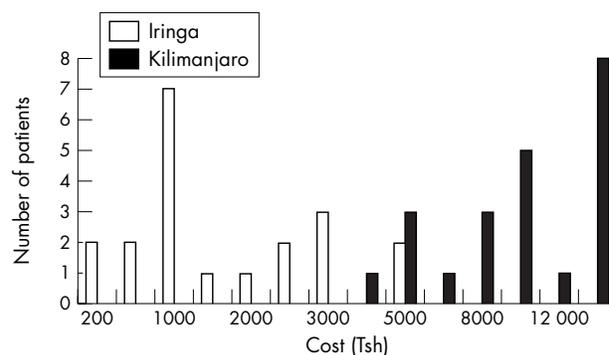


Figure 1 Reported amount patients were willing to pay.

RESULTS

In Kilimanjaro, from July through December, during 12 “outreach clinics,” there were 62 patients with operable cataract who said they were too poor to pay 15 000 Tsh; 60 of these were interviewed, one refused interview, and one left before the interview was conducted. In Iringa, all 49 patients agreeing to have cataract surgery during three outreach clinics in November were interviewed.

The combined sample comprised 56 males (51%) and 52 females (information on sex was missing on one patient). Ninety one patients (86%) described themselves as widowed or single. The amounts patients reported they were willing to pay ranged from 0 to 15 000 Tsh (mean 2457; SD 4534). The mean number of items owned by patients was 0.6 (SD 0.92).

Examining the association between wealth and willingness to pay, regardless of which definitions we used, we found that those with greater wealth reported a higher willingness to pay for cataract surgery. Patients who owned one or more items were 5.1 \times more likely (95% CI 2.2 to 11.84, $p < 0.005$) to be willing to pay something for surgery than patients who owned no items. Patients who owned two or more items were 11.8 \times more likely (95% CI 3.17 to 44.3, $p < 0.005$) to be willing to pay something for surgery than patients who owned fewer than two items.

Comparing sex to wealth, males were 5.9 \times more likely (95% CI = 2.43 to 14.4, $p < 0.005$) than women to own at least one item. However, there was no difference in the reported willingness to pay between males (average 2134 Tsh) and females (average 2853 Tsh).

Examining for differences between the two regions we found no differences between Kilimanjaro and Iringa patients with respect to sex or marital status. There were no differences in mean wealth between patients in Iringa and those in Kilimanjaro and in both regions wealth was associated with willingness to pay. There were, however, significant differences in reported willingness to pay between the two regions (table 1).

Table 1 Differences in willingness to pay (WTP) between the two regions

| | Kilimanjaro | Iringa |
|--|-------------|--------|
| Male:female | 1.1:1 | 1.0:1 |
| Single or widowed | 86% | 87% |
| Mean reported amount willing to pay (Tsh)* | 3866 | 732 |
| WTP1 † (number of patients) | | |
| Low (0–1500 Tsh) | 38 | 41 |
| Medium (2000–7000 Tsh) | 4 | 8 |
| High (>7000 Tsh) | 14 | 0 |
| Mean number of items owned (wealth) | 0.68 | 0.49 |

*p value for one way ANOVA < 0.005 .

† χ^2 for trend = 13.138, $p = 0.001$.

Although almost equal percentages in each region said they would pay nothing (60% in Iringa and 64% in Kilimanjaro, $p = 0.34$), of those who would pay something, patients in Kilimanjaro reported they were willing to pay significantly more than patients in Iringa. (fig 1).

The distribution of wealth was different between the regions. The number of Kilimanjaro patients decreased as wealth increased. The Iringa sample, however, had a small "hump" with a group of people who were "wealthy" (owned 3–4 items).

DISCUSSION

The sums patients reported they were willing to pay are considerably below the cost of delivering the service. Previous studies in Tanzania, concerned with willingness to pay for other health services, reported similar findings.^{9–11} The only other published study of willingness to pay for cataract surgery is from Nepal; half of those patients reported they were not willing to pay for cataract surgery.¹²

Some inherent limitations in the reliability of data in studies of theoretical willingness to pay were noted in the introduction. Besides these, there may be other limitations to our data. For example, there are differences in the selection of patients between Iringa and Kilimanjaro, necessitated by the differences in the services provided there. None the less, it is interesting that willingness to pay among Iringa patients is significantly less than among Kilimanjaro patients. This is especially striking in view of the fact that the sample in Kilimanjaro consisted only of those who said they were too poor to pay the usual fee for surgery, while the Iringa sample included all patients.

The difference in reported willingness to pay between Iringa and Kilimanjaro patients in our sample could have several explanations. The first would be that patients in the Iringa sample are poorer than those in Kilimanjaro and therefore willing to pay less for cataract surgery. However, our data, using a crude measure of wealth, did not show a difference. According to data in the Tanzania Household Budget Survey,¹³ using a variety of indicators (literacy, per capita consumption expenditure, monthly household income, percentage below poverty lines) there is little difference between Kilimanjaro Region and Iringa Region.

Another explanation would be that the Kilimanjaro patients are used to a system that *expects* them to pay for surgery while the Iringa patients *expect* free surgery. Such expectations could influence willingness to pay; a free service may not be perceived as having the same value as one that must be paid for. In Nigeria, it was demonstrated that willingness to pay for bed nets was negatively associated with having previously been given free nets.⁷

Another factor that might have led Kilimanjaro patients to express higher WTP is that they were informed that the real cost of cataract surgery is actually higher than the fee charged. In general, we have found that patients have very little idea of the real costs of service provision.

Another difference between the regions is that cataract surgery has been provided in Kilimanjaro (although not at the current price or through the current outreach service) for many years, while the district hospital services in the two Iringa districts are only 4–5 years old. Knowledge of and trust in a system could influence willingness to pay and could depend on how long the system has been in place.

Our finding that the cataract patients in Iringa include a number who are "wealthy" suggests that free services are being offered to and accepted by those with the capacity to pay. This is inevitable if cataract surgery is offered "free" to

all; in some settings, unless patients are offered and willing to pay a premium for some extra services, routine "free surgery" is likely to undermine long term cost recovery efforts.

It has been suggested that mean monthly household income is a reasonable guideline for how much to charge for cataract surgery. The mean income for rural households in mainland Tanzania is 57 134 Tsh (\$57)¹³ but it seems unlikely that most rural households would be willing to spend this much for a cataract surgery. The percentage of income used for medical expenses in these households is only 2–3%.¹¹

Owing to difficulties in assessing such a complex topic as willingness to pay, we would be cautious in interpreting our findings. We are encouraged by findings from our qualitative work, which support many of our interpretations. Programmes hoping to achieve a degree of cost recovery for cataract surgery through cost sharing may be able to do several things to increase willingness to pay. These include: (1) ensuring that pricing is uniform throughout a catchment area and very clear to both patients and health workers, (2) educating patients and health workers better about the real costs of providing high quality cataract surgery, (3) finding reliable but simple system to identify those who are really too poor to pay.

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