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# **Willingness and ability to pay for cataract surgery: a study in Tanzania**

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We have made every effort to report information accurately and objectively; any errors found in this document are unintentional.

This study was approved by the Ethics Committee of the KCMC/ Tumaini University.

We hope that the information assimilated here may be useful to all those who are working hard towards reaching VISION 2020 goals in Tanzania.

## Executive Summary

If we hope to reverse the trend of increasing cataract blindness in sub-Saharan Africa we must provide more cataract surgery in a sustainable fashion. One important element of a sustainable service is some degree of cost recovery; therefore it is important to understand the capacity and willingness to pay for cataract surgery among cataract patients and their families.

We sought to learn about both capacity and willingness to pay (WTP) for cataract surgery by a thorough study of existing information including peer reviewed literature, government reports, and gray literature. Then we conducted two different field studies (using both quantitative and qualitative methods) on capacity and willingness to pay among cataract patients in Tanzania in Kilimanjaro, Dodoma, and Iringa Regions.

Willingness to pay is influenced by several factors. Patients must feel a personal need for surgery (which may not agree with the health providers advice) or they will not accept it regardless of the price. Most elderly patients will have to ask children or relatives to help pay for surgery so multiple people are involved in the decision. Patients' and family's knowledge of the system and the service (e.g., where and when to go, what is actually costs) and belief that they are getting good value and fair treatment for their money are important in determining whether they are willing to pay for surgery.

Findings from both studies suggest that WTP for cataract surgery is higher in Kilimanjaro and Dodoma than in Iringa, despite similar regional economic indicators and economic status among patients interviewed. We suggest the higher WTP could be due to (1) the fact that patients *expect* to pay more in the first two Regions; (2) the fact that the charging practices are more uniform in Kilimanjaro and Dodoma and patients seem to be more knowledgeable about what they will pay and receive for their money; and (3) eye services at the hospital have been in place longer in Kilimanjaro and Dodoma than in Iringa.

On the basis of our findings we believe that 75-90% of cataract patients who want surgery can and will pay around 15,000 Tsh. We can increase WTP in several ways. We can increase the quality of service, recognizing that "high quality" extends beyond good surgical technique with an IOL: it includes clear pricing policies (applied fairly to everyone), considerate treatment from health workers (including having questions answered) and a convenient system without lengthy delays or multiple referrals. We can encourage providers to standardize prices and discourage intermittent free surgery campaigns, in order to decrease confusion about prices in the community. We can do a better job of educating health workers and counseling patients and their families about all aspects of cataract surgery, including real costs.

Some patients who do not want eye surgery for other reasons will use "cost" as a convenient excuse to offer health care workers. On the other hand there will be a group of (10-25%) who really cannot pay anything for surgery; there is an urgent need to study and validate methods that can be used to identify this group simply and reliably.

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## **1. Rationale for this study**

Cataract remains the leading cause of blindness in developing countries and so the VISION 2020 initiative has made it a priority. We measure cataract surgical service delivery by the “cataract surgical rate” or CSR. CSR is the number of cataract surgeries done per million population per year; it varies from 5000-6000 in most developed countries to less than 300 in most countries of SubSaharan Africa. Unless the CSR can be increased significantly in poor countries, the world is facing a steady increase in the numbers of needlessly blind every year.

Since a relatively simple and inexpensive cure (extracapsular cataract extraction with intraocular lens, or ECCE/IOL) exists for cataract, one might ask why it is still such an important cause of blindness. The answer is that, as with many health problems in poor countries, we have the technical solution but we stumble on how to implement it, how to deliver the service to those who need it. Logistics and costs pose barriers.

Who is going to pay for the cataract surgery? We must address this question if we are going to reverse the trend towards more and more cataract blind. The reality is that, in poor countries, governments cannot afford to provide good quality free health care for all who need it and it is equally unlikely that donors will. This is one reason that, in the past decade, in the health sectors of most African countries, attention has been focused on the possibility of cost recovery (full or partial) through user fees. Cataract services are a particularly promising area for cost recovery, since cataract affects rich and poor alike and there is a potentially inexpensive, highly successful treatment available. But is it realistic to think that cataract services might pay for themselves through user fees and still serve poor members of the population?

Encouragingly, we have some fine examples of cataract programmes that have achieved this goal. Aravind Eye Hospitals in India, or Lumbini in Nepal have both demonstrated a high level of cost recovery through patient fees while still serving the poor. They do this by using resources very efficiently to lower costs and by using a carefully planned system of multi-tiered pricing in which the rich pay above the cost of surgery and thereby subsidize the poor, who pay at cost or below. The quality of the surgery is equally good for rich and poor but the rich are encouraged to pay more for added luxuries like private rooms or better food. Patients themselves choose the level of service they want. For such schemes to work, getting the price right is critical. Knowing how much people are able and willing to pay for cataract surgery is essential.

Would such schemes work in Africa, where socio-economic structures, income distribution, culture, demographics and geographical conditions are different? We don't yet know the answer to this question. From a business perspective, there should be two general considerations in setting prices for cataract surgery: (1) what does it actually cost to provide the surgery? and (2) what are people able and willing to pay? One of the frequently quoted principles of pricing in Asia is that people will pay approximately one month's household income for a high quality cataract operation. There is no published

information about capacity or willingness to pay for cataract surgery in sub-Saharan Africa. There is little or no data to guide programmes in setting prices for cataract surgery. Our report seeks to address this issue. If we are going to achieve the goals of the VISION 2020 initiative and reverse the trend towards increasing cataract blindness it is essential that we know more about the capacity and willingness to pay for cataract surgery among people in sub-Saharan Africa.

## **II. Goals and Objectives**

This report and study were undertaken with the broad aim of learning about the capacity and willingness to pay for cataract surgery in Tanzania. We wanted evidence to help guide policy for pricing: is one month's household income a reasonable guideline for pricing cataract surgery in Tanzania? We also aimed to gain insight into the options available for elderly rural people to pay for cataract surgery.

Specifically, our objectives were:

1. To review the literature on willingness to pay for cataract surgery or other health services in Tanzania
2. To describe current practices of charging for cataract surgery in Tanzania
3. To describe income and income distribution in Tanzania in order to gain insight into the ability of Tanzanians to pay for cataract surgery
4. To conduct field research to determine the reported willingness to pay for cataract surgery and to learn more about the decision-making process related to paying for cataract surgery
5. Based on our findings in 1-4, to make recommendations for pricing of cataract surgery in Tanzania

We will describe the methods we used to achieve our objectives in Part IV. First however, we must present some background information in 3 separate areas, to put the rest of the report in context.



### **III. Background and general considerations**

#### **III. 1. What does it cost to provide cataract surgery?**

Since the price set for cataract surgery ought to reflect the cost of providing surgery, we must consider this, albeit briefly. The actual cost of providing surgery varies enormously in different settings depending on many factors. The principles of lowering unit cost include efficient use of manpower, bulk purchasing, minimum wastage of consumables, and high volume. Many hospitals cannot actually calculate what it costs them to provide surgery because they do not have adequate accounting and stores systems in place. Furthermore, in calculating the costs there are many different assumptions one can make. Some hospitals receive donated consumables and equipment on a regular or irregular basis; the value of these should be entered into the costs but may not be, either by oversight or lack of a system to value the items and record usage. The largest fixed cost of cataract surgery is often the salaries of staff. It is not uncommon in non government hospitals in Africa to have expatriate staff with salaries paid completely outside the country, or local staff receiving “top ups” from NGOs; these costs may not be included in the hospital accounts. Furthermore, it is common for local workers to receive a low “basic salary,” and then to receive as much or more in various monthly “allowances” and in “per diems” which are granted for field work or attending seminars. These “extras” ought to, but may not be included in calculating staff costs.

A difficulty in calculating cost of cataract surgery is that most eye services provide more than cataract surgery alone. Referral and training hospitals may use a significant proportion of staff time on complicated cases and teaching. One must estimate the percentage of total resources (staff time, materials, space) devoted to cataract services and this is not always clear cut. An important feature of many high volume cataract services is community outreach: most successful programmes seem to have to go into the community, find cataract patients, then encourage and help them to use the services. This can be an expensive endeavor – should the cost be included in the overall cost of cataract surgery? At Aravind Eye Hospital, the costs of the highly successful patient recruitment “camps” are covered by local community donors and are not part of the cataract cost recovery equation. Clearly, the “cost of cataract surgery” depends on definitions. Nonetheless, with care, it is possible for a hospital to calculate its own cost of providing cataract surgery and this is a useful monitoring indicator over time. It is somewhat risky, however, to compare costs among different hospitals unless strict definitions are used.

In Asia, cataract surgery with IOL can be provided at a cost of around \$US 20-25 and this is often quoted as a target. For a number of reasons it is likely that cataract surgery costs more than this in most African settings. Low population density, combined with poor transportation infrastructure makes it costly to bring services and large numbers of patients together. In addition, working habits (hours of work, general work culture) and productivity may vary between some Asian and African countries. This is important since staff costs are usually the highest fixed costs in providing cataract surgery. It is interesting to note that nurses at Aravind work 54 hours per week (9 hours x 6 days), get

17 days holiday (including National holidays) per year, and 8 days sick leave; after one year of service an additional 15 days holiday leave per year is granted. (Personal communication, Preethi Pradham) Maternity leave is granted for 84 days for each of the first two children, but most Aravind nurses are unmarried girls who don't require this leave. By comparison, most nurses in Tanzania are expected to work 40 hours/week, get a one-month holiday plus 16 national holidays per year, generous sick leave (up to 6 months every three years at KCMC in Tanzania) and 3 months maternity leave every 3 years. Expectations of productivity during working hours may also vary.

At KCMC hospital, at current volumes (2000/year) we estimate that it costs US\$50-60 to provide a cataract surgery. This does not include costs of the community programmes that bring in about 50% of the cataract patients and it does not include expatriate salaries. (We used a Tanzania equivalent salary scale for doctors.) The efficiently run Kwale District Eye Centre in Kenya estimates their costs at \$US46 per cataract, using a different method and including some community programme costs (personal communication, Helen Roberts, KDEC). In Lilongwe, Malawi, not including the community outreach programme, they estimate that it costs about US\$68 per cataract (personal communication, Raheem Rathamullah, IEF). These figures must be interpreted cautiously but they are somewhat similar.

It has been suggested that a significant degree of cost recovery is possible if a hospital can reduce its own unit cost for cataract surgery to a level commensurate with the average monthly income of the lower 60% of the population. (Quality Cataract Series: "Financial Sustainability" p 17: Published by Aravind Eye Hospitals & Postgraduate Institute of Ophthalmology, LAICO, and Seva Foundation. Feb 2001). Jumping ahead to Table 4 (in V.3 below) we can calculate the average monthly income of the lower 60% of rural Tanzanian households to be Tsh 30,799 (US\$30). We think it is unlikely that any existing programmes in Sub-Saharan Africa can demonstrate costs this low.

### III.2 Capacity and willingness to pay for cataract surgery: separate but related and complex concepts

The medical and social science literature use the term "willingness to pay" (WTP) in studies intended to help elucidate how much health care systems can or should charge. In common English usage, we differentiate "capacity" to pay from "willingness" to pay. These two are related but each is influenced by a host of independent factors. People without enough money may say they are willing to pay, but simply do not have the money (no ability). Conversely, people with lots of money are usually not willing to pay for something they do not value, or that they think is low quality. However, even if we limit our consideration to high quality cataract surgery, the perceived "value" of the surgery will vary from person to person. To add complexity, it also varies across time for a given person depending on competing priorities such as more acute health problems in himself or his family, school fees due, or seasonal variations in food availability. Thus, a determination of the "capacity" or "willingness" of an individual or group of individuals to pay for a service is not simple and it cannot be viewed as a fixed quantity.

It stands to reason that offering low quality surgery with poor outcomes in a population will probably result in low willingness to pay for cataract surgery. Provision of an IOL at surgery is often used as a weak proxy for good outcome or high quality surgery. In judging quality from a patient's perspective, however, convenience of service as well as kind and dignified treatment from the health staff are often just as important as visual outcome. (There are few surgical outcome data in Tanzania. In 2002 about 95% of cataract surgery was done with an IOL.) There are no published data on patient satisfaction with eye services; however, we found in focus groups within Kilimanjaro that patients resent long waits for service, indifferent treatment by hospital staff, and shortages of drugs at hospitals. These factors will surely affect the population's willingness to pay for cataract surgery.

### III.3. Health service infrastructure and history of payments for health service in Tanzania

The final bit of useful background before proceeding is in regard to the health care system in Tanzania. This is well defined, progressing from health posts to dispensaries to health centres, then on to district, regional and finally consultant hospitals. A few health centres have someone with basic eye care training, but the lowest level that consistently has a trained eye worker is the district hospital (usually an eye nurse, although, uniquely, in Iringa Region most District Hospitals have an AMO-O cataract surgeon). At the Regional level, of the 21 regions in Tanzania, about 14 have someone stationed permanently (usually an AMO-O cataract surgeon) who can provide cataract surgery. Some small hospitals (mission and government both) receive intermittent outreach surgical visits from larger hospitals. The numbers of cataract surgeries performed in Tanzanian hospitals and the productivity of surgeons varies widely.

Until 1993, all health services in Tanzania were free. In 1993 user fees were introduced, first at district, regional and referral hospital level while health centres and dispensaries remained free. In 1998 fees were introduced at the health centres and dispensaries. Officially, the poorest and most vulnerable groups are eligible for waivers but it is not clear how this policy works in practice. (Mubyenzi 2000) Gradually, community health funds are being introduced. Families who pay into these funds receive free service (and medicine, subject to availability) at the health centre and dispensary level. As of 2004, these community health funds are being implemented in various districts in rural Tanzania at a price of about 10,000Tsh per year per family. The funds do not cover cataract surgery since it is not provided at the health centre and dispensary level anywhere in Tanzania except in parts of Iringa. (In Iringa Health Centres where cataract surgery is offered, it is "free" and postoperative medicines are supposed to be given to those who subscribe to the community health funds. However, cataract patients we interviewed at the Health Centres report that they are charged a "bed fee" and must also pay for food.)

Recently, a national health insurance scheme for civil servants has been introduced in Tanzania. This pays a set amount directly to providers (about 100,000 Tsh) for a cataract

operation; the surgery has to be done at a regional or tertiary hospital, however, to qualify for payment.

## IV. Methods

Returning now to the objectives of this report described in section II, this is the methodology we employed.

*1. To review the literature on willingness to pay for cataract surgery or other health services in Tanzania*

Using the several databases (PubMed, Francis, and Sociological Abstracts) we searched the academic literature for peer reviewed studies or reports of willingness to pay for health services in sub-Saharan Africa and Tanzania in particular. We also searched for studies of willingness to pay for eye services in poor countries worldwide. We used the internet (Google) to search for “grey literature” reports that are not peer reviewed but are published by government or non-government organizations.

*2. To describe current practices of charging for cataract surgery in Tanzania*

We collected data on current practices in Tanzania by sending a questionnaire to hospitals that perform cataract surgery in Tanzania. This included all hospitals that provide a standing cataract surgery service in Tanzania as well as those served a few times per year by KCMC surgical outreach.

*3. To describe income and income distribution in Tanzania in order to gain insight into the ability of Tanzanians to pay for cataract surgery*

We started our search on income and income distribution in Tanzania through the website of the Tanzanian government. This led us to the comprehensive 2001 Household Budget Survey from which we summarized much relevant information. In addition we searched World Bank, CIA World Factbook, and other government Internet sites.

*4. To conduct field research to determine the reported willingness to pay for cataract surgery and to learn more about the decision-making process related to paying for cataract surgery*

Theoretical field research on willingness to pay for health services is fraught with difficulties. Standard short interviews may provide data on a satisfactory number of patients, sampled according to acceptable epidemiological principles; however, in seeking information on sensitive and complex issues such as how much one might be willing to pay for health, the validity of the data can be questionable. Subtle difference in wording, combined with cultural differences may lead to biased and misleading results. Consider the differences in the following questions:

- how much are you able to pay for cataract surgery?
- how much are you willing to pay for cataract surgery?
- how much would you like to pay for cataract surgery?
- how much is your sight worth to you?
- how much would you be prepared to pay to regain your sight?

There are differences in the precise meaning of these questions and we would not be surprised to find that a patient might give different answers depending on which of these he was asked. Translating the question into another language only complicates the matter further. Some lively debates on the differences in these questions ensued among the native KiSwahili speakers who translated and back-translated our interview forms.

In-depth interviews, on the other hand, can allow the researcher to gain a better understanding of the subtleties exemplified in the questions above. They cannot be used in large samples and do not result in “statistically significant “ findings. However, when designed and analyzed by people trained in qualitative data analysis, they provide valuable information.

Thus we chose to use both short and in-depth interview techniques and then compare our findings from each.

From July 2004-November 2004, short interviews (appendix I) were conducted within two groups.

- All patients with cataract who came to any one of the regularly scheduled and advertised “Direct Referral Sites” in rural Kilimanjaro Region and said they were too poor to pay the 15,000 Tsh price. These patients had all been told by a doctor that they would benefit from surgery, counseled and offered a “package deal” including transport (from the clinic) to and from hospital, admission fees, surgery and medicines, and follow up care.
- All AMO-Os in Iringa Regions were requested to fill out short interview forms on cataract patients they encountered who were “too poor to pay” for surgery.

In depth interviews (appendix J) were conducted on

- Hai District (Kilimanjaro Region) patients identified in a 2002 population based survey with cataract. These patients had been informed that surgery would help and we selected some who had surgery and paid, some who received surgery through a poor fund and some who had not had surgery.
- Cataract patients in Dodoma and Iringa Regions. These patients were identified by AMO-O cataract surgeons who were asked to find both operated and unoperated cataract patients, some who had paid for surgery and some too poor to pay.

Detailed methodology for the field studies is presented along with the results in VI. Findings part 2.

## V. Findings Part 1: Review of existing data

### V.1 Willingness to pay for eye care in Sub-Saharan Africa and to pay for general health services in Tanzania: published literature and reports

Since the introduction of user fees in many African countries in the 1980s and 1990s, concerns have been expressed that the poor and needy will not get health care. Some argue that user fees result in decreased use of public facilities – however, it is not clear whether there is a corresponding increased use in private facilities along with this or whether people simply don't receive the care they need. Many people argue that cost sharing, in addition to improving financial sustainability, will improve quality and make providers more responsive to patients' demands. The debate is ongoing and it is beyond the scope of this report to describe the evidence or philosophical underpinnings for each side.

There is some peer-reviewed literature on the subject of willingness to pay (WTP) for health services in Africa (Appendix A) but little to help us set prices for cataract surgery. There are studies of WTP for health insurance schemes but these may not be relevant to WTP for curative services since it seems likely that people are more willing to pay for cure than for prevention (or insurance). There are only 2 WTP studies in Africa related to eye services, both for trachoma, which we would expect patients to perceive very differently from cataract, since it involves paying for prevention or for surgery which is not sight restoring. Appendix B contains brief reviews of a number of studies and we have summarized important findings below.

First it is important to note that a reported (theoretical) “willingness to pay” may not translate into actual payment and it is not clear how useful such hypothetical studies may be. Several studies discuss this problem. (Guyatt 2002, Dong 2003, Onwujekwe 2001) One study of WTP in Tanzania (Walraven 1996) found that 62% of inpatients and 67% of outpatients had actually paid (and were, therefore, presumably “able” to pay) more than they reported on interview that they were “willing” to pay. On the other hand, another study (Guyatt 2002) reported the opposite – that people said they were “willing to pay” much more for bednets than they were realistically “able” to pay.

Nonetheless, a few points emerge from the literature on general WTP for health services in sub-Saharan Africa that are relevant to WTP for cataract surgery.

- Significantly, there is a clear increase in WTP associated with perceived higher quality service (Abel-Smith 1992, Van der Geest 2000, Bonu 2003).
- The majority of patients say they are willing to pay something, but the amounts they say they are willing to pay are often well below the real cost of services (Guyatt 2002).
- The indirect costs of accessing care (such as transport and loss of wages) are just as important to the patient as the direct costs and so should be considered when setting prices (Muluken 2004, Abel-Smith 1992).

- Patients want to get something for their money; they feel it is reasonable to pay for drugs and surgery, but not necessarily for mere consultation (Vander Geest 2000).
- Willingness to pay comparatively large sums for “traditional medicine” may be explained by the fact that there is great social pressure and hence family contribution to pay for this. (Muela 2000).

The “gray literature” contains the following useful information specific to Tanzania:

- A master’s degree dissertation study (Appendix C) examined WTP for cataract surgery in Hai District, Kilimanjaro Region. 33% of cataract patients said they were not willing to pay anything for surgery and of those who were willing to pay, only half were willing to pay more than 5,000 Tsh (US\$5). An important finding was that *willingness to pay and to pay more were both associated with knowledge of where to go for treatment.*
- Another master’s degree dissertation study (Appendix D) followed up on patients in the community with cataract who were encouraged to have surgery (offered for the equivalent of US\$15.00 including transport, accommodation and post operative meds. After one year, 18% had taken advantage of the service. Almost half of the non acceptors reported cost as a barrier; others reported not having enough time for surgery or feeling no need to have it. Interestingly, there was no association between those who claimed cost as a barrier and objective measures of economic status (possession of radio, watch, bicycle, or cattle), suggesting that *some patients may use “cost “ as an excuse when there are other reasons they don’t want surgery.*
- A study in Korogwe, Tanzania (Mubyazi 2000) showed that 70-80% of community leaders and focus group participants and 100% of health workers (private and government) supported the policy of cost sharing. Leaders and officials were aware that waivers could be granted for “the poor” but patients were less likely to know about this. *The authors stress the need for formulation of an acceptable definition of “poor” for waivers.*
- A study in Iringa Region, Tanzania (Leonard 2002) concluded that patients there have a relatively sophisticated ability to ascertain “quality” in health care. The amount of effort they make to seek high quality and avoid low quality depends on their perception of the seriousness of the disease.
- Unpublished data from the 2004 Direct Referral Sites (outreach service covering all Kilimanjaro Region with well staffed clinics at fixed sites every 3 months) demonstrates that 75-85% of patients advised to have cataract surgery agree to pay all or most of the fee (Tsh15,000 inclusive of transport and all hospital fees) after they have been counseled by someone dedicated to the task (as opposed to a busy doctor or nurse). Of the remaining, some do not want surgery for reasons not related to cost. At the KCMC Hospital Eye clinic, among patients who self present for cataract surgery around 90% pay the 15,000 Tsh fee. These are not population-based data; the price for surgery is advertised and we don’t know how many who need surgery never come because they don’t have 15,000 Tsh.

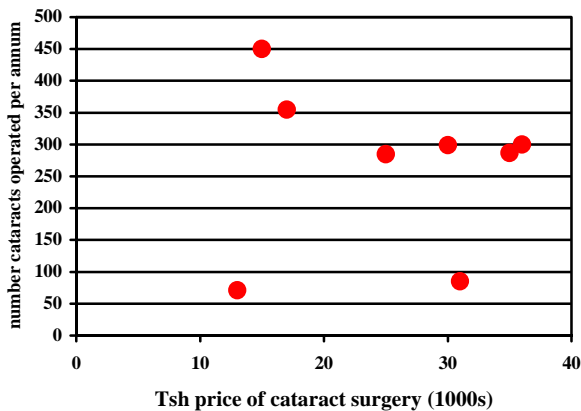


## V.2 Current prices and payment for cataract surgery in Tanzania

Patients are charged different prices for cataract surgery around Tanzania. All hospitals report that they have patients who cannot pay the price and they deal with these in a variety of ways; some have “poor funds” or extend charity from the hospital and some deny service. Some programmes offer reduced price surgery (without an IOL) for patients too poor to pay for an IOL. Many eye health workers, used to relying on donors, have never considered what the real cost of providing cataract surgery is. In discussions, there is confusion about the difference in price and cost. There is a tendency not to think of money from the patients’ perspective. It is common to hear health workers say that “surgery is free,” then to learn on further questioning that patients must pay for initial consultation (“opening a file”), an IOL, a bed, medicines, or some other essential item. These added “small charges” are a source of complaint from patients, who feel they are not honestly informed of the charges in the beginning, and they may lead to accusations of (or real) corruption.

The results of our survey of prices are shown in Appendix E. Fees for cataract surgery range from about \$3 to \$50. Intermittent “free” campaigns occur. Some outreach programmes leave it up to patients to decide how much they can afford and accept whatever they get. None of the respondents was able to supply exact data on how many patients used a “poor fund” or were not able to pay.

Interestingly, in Tanzanian hospitals serving rural patients with a permanent cataract surgery service, we found no correlation between price charged and number of patients being operated for cataract. This is standardized for the number of surgeons/hospital.



A common practice since the introduction of fees for cataract surgery has been for service groups to go into communities, collect patients, and offer free surgery at a nearby hospital. When these free patients meet paying patients on the ward or at the market, dissatisfaction results when they realize they have paid differently for the same service. The free surgery is offered

unpredictably and sites are seldom revisited, resulting in a situation where cataract patients may wait years in the hope that free services will come again. (See the Nepal study described in Appendix A, Shrestha 2004) In Kilimanjaro Region, we have worked with the service organizations to stop the practice of intermittent free services; it still occurs in a number of areas of Tanzania though and makes it difficult for programmes that are trying to achieve some degree of cost recovery.

During World Sight Week in October 2003, CBM tried to raise awareness and promote cataract surgery by offering free surgery at a number of sites. It is interesting to see the response to this, shown in Table 1.

Table 1- Number of cataracts operated before and after a free campaign (some hospitals omitted as they did not supply information)

<b>Hospital</b>	<b>July cats</b>	<b>Aug cats</b>	<b>Sept cats</b>	<b>Oct cats (free cases)</b>	<b>Nov cats</b>	<b>Dec cats</b>
Ilembula	14	10	17	141 (120)	13	6
Kigoma	6	2	9	84 (65)	4	5
Kola ndoto	81	82	115	196 (112)	135	51
Ndanda	38	7	29	182 (162)	25	21
Ndolage	16	1	13	146 (146)	166	2

There were clearly large increases during the free period, although we don't know how much of this can be attributed to the price drop. There was also increased promotion; health workers were given money to go out into communities and find patients, and there were radio messages broadcast on cataract and other eye health topics. Following the free period, numbers of operations appear to have dropped back to normal levels, although we do not have long-term data on this.

V.3. Ability to pay: How much money do Tanzanians have and are they worse off than people in other poor countries?

Tanzania is a poor country by most measures of poverty. As of 2001, the per capita annual GNI was \$US 280; 19 % of the population fell below the food poverty line (defined as expenditure necessary to eat 2,200 calories per day for an adult), and 36% of Tanzanians fell below the basic needs poverty line (expenditure for 2,200 calories per day plus other “essentials”). Agriculture is the primary income-generating activity: 70% of households are headed by someone who works in agriculture or fishing and 62% of households report agriculture as their main source of income. However, about 40% of rural household income comes from sources outside their own farm production. Monthly household incomes are shown in Table 2 and the sources of income are detailed in Appendix F.

The data in the tables in this section come largely from the Tanzania National Household Budget Survey 2000/2001 (HBS), described in Appendix G. When looking at the Tsh amounts it is important to consider that both income and consumption expenditure were calculated using the monetary value of all in-kind income. This means the total equivalent cash value of crops raised to feed the household is included, as well as any income from barter. In rural areas, cash accounts for 40- 60% of the income listed.

Table 2- Monthly household income\*

	Dar es Salaam	Other urban	Rural	Mainland Tanzania
<b>TOTAL</b>	<b>123,027</b>	<b>106,978</b>	<b>57,134</b>	<b>67,896</b>

1000 Tsh = \$US 1.2 = £ 0.75 in 2001

\* from HBS Table B9.1; includes value of in-kind income

Because actual income fluctuates over the short term and is often reported inaccurately, “consumption expenditure” supposedly provides a more reliable measure of household income in developing countries. (Household Budget Survey, Chapter 6, p68)

Consumption expenditure provides a monetary measure of all food consumption (purchased and home produced), health and educational expenses, and purchase of durables and non-durables. It includes gifts and contributions from other households and payments in kind for work done. Average monthly consumption expenditure per capita and per household is shown in Table 3.

Table 3 Average consumption expenditure (over 28 days, Tsh)\*

Measure	Dar es Salaam	Other urban areas	Rural areas	Mainland Tanzania
<b>Mean expenditure per household</b>	<b>117,893</b>	<b>78,079</b>	<b>52,649</b>	<b>59,935</b>

<b>Median expenditure per household**</b>	<b>87,814</b>	<b>62,785</b>	<b>42,301</b>	<b>44,633</b>
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\* From HBS Table 6.1; \*\* calculated by using number of people/household

Thus the HBS provides two measures of monthly household finances: income and consumption expenditure. These were collected in different ways but are in reasonable agreement with each other.

The monthly values for households above are average values. To understand income distribution and inequality of income we can consider the percentage share of total consumption expenditure by quintiles, shown in Table 4

Table 4 - Percentage share of total consumption expenditure by quintile \*

Quintile	Dar es Salaam	Other urban	Other rural	Mainland Tanzania
Q1-poorest	6.7	6.7	7.1	6.9
Q2	10.4	11.2	11.9	11.4
Q3	14.5	15.5	16.1	15.6
Q4	20.0	22.1	22.7	22.0
Q5-richest	48.4	44.5	42.2	44.2
Ratio of Q5:Q1	7.2	6.6	5.9	6.4

\* From HBS Table 7.5

Table 4 shows that there is a trend for consumption to become slightly more unequal as one moves from rural to more urban areas. However, the overall distributions are fairly similar: 44.2% of the total consumption expenditure for the country occurs among the richest 20% of the population, while the poorest 20% are responsible for only 6.9 % of the total consumption.

The Tsh amount for consumption expenditure in each quintile was not published by the HBS, but we can calculate it from the information in Tables 3 and 4 above. The method used is given in Appendix H and the results are in Table 5.

Table 5 - Estimated monthly household consumption expenditure by quintile

	Dar es Salaam	Other urban	Other rural	Mainland Tanzania
Q1-poorest	39,490	26,156	18,690	20,677
Q2	61,300	43,724	31,326	34,162
Q3	85,470	60,511	42,382	46,749
Q4	117,893	86,277	59,756	65,928
Q5- richest	285,301	173,725	111,089	132,456

Across Tanzania the richest 20% consume about 6-7 times as much wealth as the poorest 20%. Again, note that the numbers in Table 4 do not represent cash, since, especially in rural areas, a large part of consumption expenditure is food produced at home.

The US State Department (CIA Handbook) supplies other information, reporting that 30% of the total consumption in Tanzania actually occurs in the upper 10% of the population while 2.8% occurs in the lowest 10%. This may not be equally true in Dar, other urban and rural areas, but if we apply these percentages to Table 1 and make the calculations according to the method in Appendix H we get the following estimates of consumption expenditure for the richest and poorest 10%

Table 6 – Monthly income of richest and poorest 10% of households

	Dar es Salaam	Other urban	Other rural	Mainland Tanzania
poorest 10%	33,010	21,862	15,268	16,780
richest 10%	353,679	234,237	157,947	179,805

This has implications for how many people might be able to pay for special “high priced” services and how many might need free services.

It is useful to see how families use their “income.” The percentage of income that goes for different categories of expenditure is shown in Table H2 of Appendix H. As expected, as income decreases, a larger proportion of it is used for food. Overall, in Tanzania, 65% of expenditure is for food. The proportion of expenditure for medical expenses is 2-3% and is relatively constant across urban and rural areas. There is no data on how the Community Health Funds might affect the amount of spending on health by households.

Finally, when looking at average incomes it is well to realize that rural households are affected significantly when crops fail since they depend on their crops for family consumption as well as income, consuming on average as much or more than they sell. Maize prices may rise by 100-200% when crops fail.

#### *Poverty in Tanzania compared to other countries*

Various indicators are used by international agencies to measure poverty. It is hazardous to compare countries this way, because of variations in the way data is collected. Nonetheless, we have alluded to willingness to pay in some Asian countries and we’d like to know if we can generalize our findings in Tanzania to other East African countries. Therefore, we show comparisons of poverty among some countries in Table 7. The 3 columns on the left (GNI per capita, % population below poverty line, and Gini index) are fairly similar among the countries listed. However, this could be misleading. Purchasing power parity (PPP) adjusts a dollar according to how much it can buy in a given country; it may be used to adjust GNI or GDP per capita, indicating that people in different countries with similar GNI or GDP per capita do not have the same actual purchasing power. For example, consumer goods cost more in much of Africa than in many Asian countries. Among the GNI per capita adjusted for PPP reported by the World Bank, 21 of the lowest 25 countries are in Africa. So, even though the GNI per

capita is lower in Nepal than it is in Tanzania, it will buy considerably more in Nepal than it does in Tanzania.

This means that, in terms of what it costs to live, Tanzanians are more poor than Nepalese. The Economist (World in Figures, 2004 Edition) lists Tanzania as the 2<sup>nd</sup> poorest country in the world according to GDP/capita adjusted for PPP. (Sierra Leone is 1<sup>st</sup>, Malawi is 3<sup>rd</sup>, Kenya is 17<sup>th</sup>, Uganda is better off than the lowest 20 listed)

Table 7- Comparison of indicators in several countries

Country	GNI per capita*	Pop below poverty line**	Gini index***	GNI per capita adjusted for PPP*	GDP per capita adjusted for PPP**
India	480	25%	37.8	2,570	2,600
Nepal	230	42%	36.7	1,350	1,400
Bangladesh	360	35.6%	33.6	1,720	1,800
Tanzania	280	36%	38.2	550	600
Kenya	390	50%	44.9	1,020	1,000
Uganda	240	35%	37.4	1,440	1,400
Malawi	170	55%	-	600	600

\* World Bank 2002

\*\* US State Dept Website CIA- the World Factbook)

\*\*\* This is a measure of inequality of distribution of family income. Higher number means more inequality. From the US State Dept CIA World Factbook

## **VI. Findings Part 2: Field studies**

### VI. 1. Short interview study to determine willingness to pay for cataract surgery

#### *Introduction and Background*

To try to learn how much cataract patients (and their families) are willing to pay for surgery we designed a short interview form to ask them directly. We administered this in 2 Regions, Kilimanjaro Region and Iringa Region (Njombe and Mufindi Districts). These two Regions are widely separated geographically and the populations are served by different eye services.

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 “outreach clinics” where patients are identified, round trip transport between site and the Regional hospital (KCMC), ward stay with food, ECCE/IOL, and post operative medicine. KCMC hospital is large and has been offering surgery for over 20 years, however the “package deal” at 15,000 Tsh serving the rural population has been available for only 3 years.

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 that responded (Njombe and Mufindi), the health workers report that cataract surgery (ECCE/IOL) is free, but patients must pay variable amounts (3,500- 8,500) for a “bed fee” and eye drops. Patients are recruited at “outreach clinics” and provided with transport to the District Hospital for surgery.

#### *Methods*

An interview form (Appendix I) was designed in English, then translated to KiSwahili and back-translated to English. This was done several times to reach agreement on the best words. In Kilimanjaro, just before the final question asking how much the patient would pay to regain his sight, he or she was informed that, “it actually costs the hospital more than 15, 000 Tsh to provide cataract surgery.” This statement was omitted from the interview in Iringa, due to a printing error.

#### *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 said they could not pay 15,000 Tsh.

In Iringa, staff were requested to interview all patients who were “too poor to pay” for cataract surgery. In the two Districts that responded, surgery is “free” for all (i.e., all

patients are assumed to be too poor to pay). Therefore interviews were conducted on all cataract patients recruited for surgery at two “outreach clinics.”

### *Definitions used for Analysis*

Interview questions on household ownership of 4 items (radio, bicycle, watch, and cattle) were used as a proxy for wealth in the family. There is no standard way to define wealth so we used various definitions. In addition to using the absolute number of items owned (0-4) we used the following 3 dichotomous definitions:

- Wealthy 1 = yes if the patient had 1 or more of the items (and otherwise no)
- Wealthy 2 = yes if the patients had 2 or more of the items (and other wise no)

Similarly, to analyze willingness to pay, in addition to the exact Tsh amount reported by the patient, we defined two other measures:

- WTP1 could be “low” (0-1500 Tsh), “medium” (2,000-7,000 Tsh) or “high” ( $\geq 8,000$  Tsh)
- WTP2 could be “nothing” or “something.”

Data were entered on SPSS and we used chi-square to measure associations between variables. ANOVA was used to compare means between continuous variables.

### *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, 2 Districts (Mufindi and Njombe) returned interview forms on a total of 49 patients. All 31 patients recruited from one free surgery camp in Njombe were interviewed and 18 patients “too poor to pay” in Mufindi were interviewed. (No further information on the population in Mufindi was available.)

The combined sample comprised 56 males (51%) and 52 females (information on sex missing on one patient). 91 patients (83%) described themselves as widowed or single. The amounts patients reported they were willing to pay are shown in Figure 1 and the economic status (reported ownership of items) of the sample is shown in Figure 2.



Figure 1

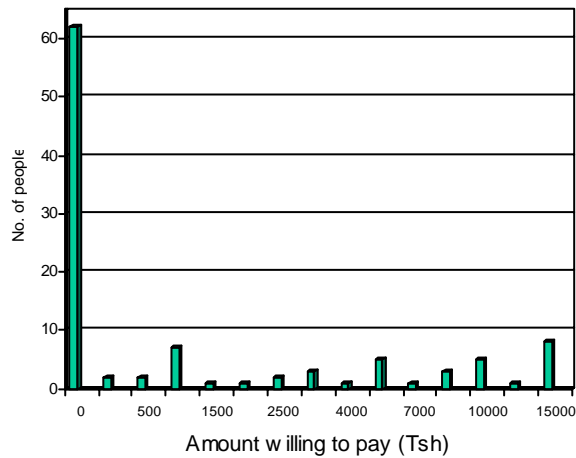
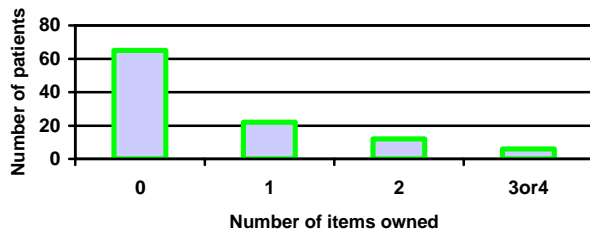


Figure 2



Using several definitions of wealth (see above) and all of our definitions of willingness to pay, we found that *those with greater wealth were significantly more willing to pay for cataract surgery*. Specifically:

Patients who owned 1 or more items were 5.1 x more likely (95% CI=2.2-11.84,  $p<0.005$ ) to be willing to pay something for surgery than patients who owned no items. Patients who owned 2 or more items were 11.8 x more likely (95% CI=3.17-44.3,  $p<0.005$ ) to be willing to pay something for surgery than patients who owned fewer than 2 items)

Comparing sex to wealth, males were 5.9 x more likely (95% CI=2.43-14.4,  $p<0.005$ ) than women to own at least one item. However, there was no statistical difference in the reported willingness to pay between males (average 2,134 Tsh) and females (average 2,853).

Next we turned our attention to possible differences between the two Regions. There were no differences between Kilimanjaro and Iringa patients with respect to the ratio of

males to females or the marital status. In both Regions, wealth was associated with willingness to pay

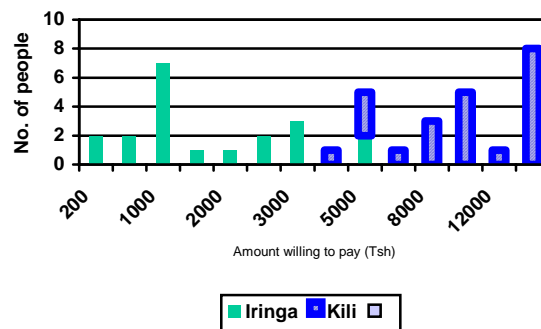
There were significant differences in measures of willingness to pay between patients in Iringa and those in Kilimanjaro.

Mean amount patients willing to pay (Tsh)	
Kilimanjaro	Iringa
3,866	732

p-value for one-way ANOVA <0.005

Furthermore although almost equal percentages in each Region said they would pay nothing (60% in Iringa and 64% in Kilimanjaro,  $p=.34$ ), of those who would pay something, patients in Kilimanjaro reported they were willing to pay significantly more than patients in Iringa. Figure 3 shows this graphically.

Figure 3



We looked at differences in the wealth of patients between the two Regions. There was no significant difference in the mean number of items owned between the 2 Regions.

Mean number of items owned	
Kilimanjaro	Iringa
0.68	0.49

p-value for one way ANOVA = 0.279

However, the distribution of wealth is different, as shown in Figure 4. The number of Kilimanjaro patients decreased as wealth increased. The Iringa sample, however had a small “hump” with a group of people who are “wealthy” (own 3-4 items).

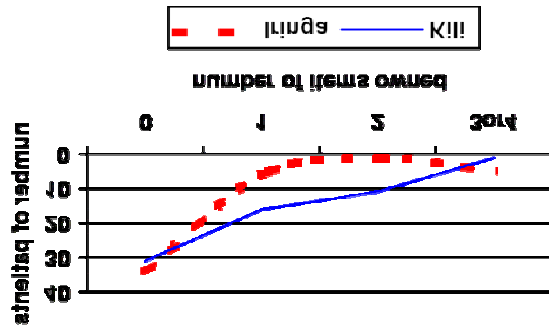


FIGURE 4

### *Interpretation and discussion*

There are limitations to this data, which was collected in a first attempt to study this issue in Tanzania. The data were not collected specifically to compare WTP for cataract surgery in Kilimanjaro patients to Iringa patients; however, we found significant differences in the Regions and tried to interpret these in light of the different conditions existing in the Regions.

The amounts patients report they are willing to pay are considerably below the cost of delivering the service. It is interesting that the amount the Iringa patients are willing to pay is significantly less than the amount the Kilimanjaro patients are willing to pay. 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 expressed WTP between Iringa and Kilimanjaro patients in our sample could have several explanations. The first would be that the patients in Iringa are poorer than the patients in Kilimanjaro and therefore willing to pay less for cataract surgery. However, our data showed no difference in the mean number of items owned by households. Furthermore, we can refer to data we collected in Part 1 to answer the question, are people in Kilimanjaro or Iringa more poor? By most indicators there are no differences in poverty between Kilimanjaro and Iringa (see Appendix L). So it does not seem that greater poverty in Iringa compared to Kilimanjaro explains the difference in WTP found.

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* to get surgery for free. Expectations could very well influence willingness to pay; a free service may not be perceived as having the same value as one with a price tag. An additional factor that might have influenced 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.

A third explanation could be that cataract surgery has been provided in Kilimanjaro Region (although not at the current price or through the 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; trust 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 summary, although economic conditions are similar in the two Regions, poor patients in Kilimanjaro expressed a higher willingness to pay than those in Iringa. One interpretation of this is that expectations are important determinants of willingness to pay. Offering “free surgery” to all in this setting may well create a situation where people are willing to pay less, undermining long term cost recovery efforts.

## VI.2 In-depth interview study

### *Background*

We used the grounded theory research design (Strauss and Corbin, 1998: 22). Grounded theory is particularly well suited to explore complex and multidimensional phenomena. In this study, the theoretical framework will help us better understand the process Tanzanian cataract patients go through to come to the point of accepting cataract surgery. Assuming that a patient is aware that he has a cataract and has been advised by a health worker to have surgery, we wanted to know more about what goes into the decision to accept surgery or not and how is this influenced by the price of surgery.

We were guided by the following research questions:

1. What are the factors influencing willingness to pay for cataract surgery in Tanzania?
2. How is willingness to pay for cataract surgery influenced by the household composition and economic situation?
3. What are the strategies and channels through which cataract patients find the money necessary for surgery?
4. Is willingness to pay for cataract surgery different for new patients compared to returning patients (second eye)?
5. Is willingness to pay for cataract surgery different for patients with unilateral cataract compared to patients with bilateral cataract?

These research questions led us to explore further three main areas that are associated with willingness to pay for cataract surgery:

1. The link between the perceived need for vision and willingness to pay for surgery
2. The crucial role played by relatives in paying for the surgery of cataract patients
3. The link between the perceived efficacy of the surgery and the willingness to pay for it

### *Methods*

We interviewed 47 patients in total: 18 in Kilimanjaro region, 13 in Dodoma region and 16 in Iringa region. The interview guide is given as Appendix J and the forms we used to calculate household income are in Appendix K. Interviewers were trained and supervised and interviews lasted around one hour each. In each of the three regions, we purposefully selected cataract patients with contrasting characteristics (theoretical sampling). We were particularly interested by making qualitative comparisons between 1) men and women 2) patients who paid for the surgery; 3) patients who were operated free of charge and 4) cataract patients who had not had surgery. We interviewed 25 women and 23 men. In total, 22 respondents paid for their surgery, 13 were operated for free and 12 respondents had not had surgery.

Table 8- Description of 47 respondents receiving in-depth interviews

amount paid for surgery	Annual cash incomes of respondents' households in Tsh (quintile*)		
	Kilimanjaro(n=18)	Dodoma (n=13)	Iringa (n=16)
free	20,000 (Q1) 100,000 (Q1) 180,000 (Q1) 425,000 (Q4)	62,000 (Q1) 75,000 (Q1) 120,000 (Q1)	7,500 (Q1) 12,000 (Q1) 36,000 (Q1) 168,000 (Q2) 1,470,000 (Q5) unknown
<9,999 Tsh	-	-	80,000 (Q1) 100,000 (Q1) 390,000 (Q4)
10,000- 19,999	112,000 (Q1) 200,000 (Q2) 250,000 (x 2) (Q3) 300 000 (Q4) 310 000 (Q4) 372 000 (Q4) 840,000 (Q5) 1,410,000 (Q5)	-	65 000 (Q1) 840,000 (Q5)
20,000- 29,999	-	-	800,000 (Q5)
≥30 000	700,000 (Q5)	25,000 (Q1) 90,000 (x2) (Q1) 838,000 (Q5) 958,000 (Q5) 1,410,000 (Q5)	
Have not had surgery	6,000 (Q1) 190,000 (Q2) 191,000 (Q2) 150,000 (Q2)	16,000 (Q1) 64,000 (Q1) 120,000 (Q1) 150,000 (Q2)	4,000 (Q1) 29,000 (Q1) 134 000 (Q1) 255,000 (Q3)

\* This shows which quintile the household would fall into according to the numbers in Table 5, assuming that 50% of consumption expenditure is in kind, and splitting the differences between average expenditures for each quintile. Q1 is poorest and Q5 is richest.

### Findings

The semi-structured interviews reveal that personal income is just one of several factors influencing if and how cataract patients will have access to surgery. The other major factors are 1) the level of perceived need for sight and cataract surgery; 2) the dynamic and level of social support at the family level and 3) the organization of health and eye care services at the regional level.

### Perceived need for sight and cataract surgery

The primary factor influencing willingness to pay for cataract surgery is the perceived need for sight. All the respondents that we interviewed expressed a need for better sight by visiting an eye care provider at least once. However, the level of perceived need for sight must be seen as a continuum. It is higher for individuals with bilateral cataract, especially for those who are still physically capable of performing agricultural activities. Whether they are “rich” or “poor” by local standards, those patients hoping to resume farming activities were less likely to place a ceiling on what they would be willing to pay. They adopt a more vague and abstract position, saying that “one must do what it takes” to come up with whatever amount of money is required. We found contrasting stories between the old and very old patients (over 75) regarding their willingness to mobilize resources and pay for cataract surgery:

*“Yes, I stayed at home with cataract (for 11 years) because the eyes didn’t have much pain and I could “see” someone and we could talk well ...”* (Dodoma-8: Man: 81 years old).

*“The eyes are someone’s heart... So wealth is nothing to the eyes. Eyes are not something to play with ... I resumed farming the moment I got cured”* (Hai-14: Man-62 years old).

Having one “good eye” was perceived to be sufficient by many of our respondents. Patients with unilateral cataract or one “good eye” in Africa may be less likely than those in industrialized countries to express a strong need for sight and cataract surgery.

*“I felt well and I could at least go to the farm”* (Iringa-).

*“I want it to remain the way it is (unoperated eye). What if it is operated, gets blind and the other one, which is already operated, gets blind also?”* (Hai-13)

The perceived need for sight also depends on one’s expectations about quality of life over the age of 50 and 60. The dimensions of quality of life mentioned and explored by the respondents were related to work (as mentioned above), physical mobility, social interactions and financial autonomy. These dimensions all influence to various degrees the level of personal security and self-esteem of elderly patients. In turn, this can affect if and how cataract patients will express a need for better sight and cataract surgery to family and community members. As we will see in the following section (focusing on social support), men are more likely than women to adopt a “sick role” and to take an active role in mobilizing resources. Women are more likely than men to be afraid of being seen as a “burden” by their children by requesting money for cataract surgery. Among blind patients, they also seem more prone than men to experience a feeling of “shame” about being helped by their relatives on a day-to-day basis for their basic needs:

*“I feel very embarrassed. I wish I could do work on my own and be independent on my own”.* (Dodoma-4).

One of the consequences of this complex relationship between sight, self-esteem and socially determined roles and expectations is that some women may try carry on with their routines through “adversity” instead of emphasizing to their relatives the need for surgery. One of our respondents proudly explained that:

*“When I lit a fire for cooking I do recognize it by its heat ... I hear the sound when water starts boiling. Then I put flour and the food gets ready. I put the food on the plate and family members serve themselves”* (Dodoma-6: Woman: over 75 years old).

The interview process in Kilimanjaro, Dodoma and Iringa regions also clearly showed that expressing a need for (better) sight does not necessarily mean being willing to go for cataract surgery, whether the service is free or not. The willingness to pay for cataract surgery is partly linked to its perceived efficacy. Several respondents declared having little or no knowledge about cataract and cataract surgery. Surgery may not be seen as the only “cure” for cataract by some respondents. They will try traditional medicine first, tablets, or insist on trying out eye drops or glasses before seriously considering paying any amount of money for cataract surgery.

*“I do not think that I have cataract. People who have cataract say that their eyes do burn a lot. I do not find my position to be so ... I can get cured through traditional medicine”* (Dodoma-7).

*“Yes, I think that tablets can treat cataract”* (Iringa-6)

Many respondents expressed a fear of surgeries in general. The eyes are seen as particularly vulnerable so it is not surprising that the fear of becoming completely blind delays the decision of many individuals to come for surgery:

*“It (surgery) may have negative impacts... there is one relative of mine who went for cataract surgery. First for one eye and then for the second eye... But a few months afterwards he became blind completely”* (Hai-7).

Once blind, patients are less likely to be in a position themselves to pay for the operation. However, their perceived need for cataract surgery (and willingness to pay for it) dramatically increases at that point:

*“I tried eye medicine and it didn't work ... I was not afraid (of surgery) because I needed to see”* (Iringa-7).



For others, the fear of pain or the fear of complications during or after surgery is so strong that blindness and death appear preferable. They are simply not willing to come for cataract surgery, even free of charge:

*“I would rather stay blind; I better die than going for the operation” (Hai-1).*

In summary, the level of perceived need for sight precedes the phenomenon of willingness to pay for cataract surgery. The age of the patient, his/her expectations of productivity and quality of life and the perceived visual acuity needed to meet them are among the factors that are shaping his/ her health seeking behaviors. Patients who perceive that they could greatly benefit from cataract surgery tend to remain vague about how much they would be willing to pay for cataract surgery- “even up to 100,000 Tsh” was a common answer. However, only the people with a higher than average income can actually describe how they would manage to pay for surgery; the richest respondent interviewed claimed that “I’m ready to sell my property to treat my own body” (15). He owns 70 acres of land and he acknowledged that he can afford to sell a few acres without compromising his future or his legacy to his children. For those who have limited or no assets in kind that can be sold, it often comes down to how much family members are willing and able to contribute.

#### **Income, social support and willingness to pay**

Only 12% of cataract patients had personal funds to pay for surgery and the associated expenses (food, transport); the rest had to depend on family members. Few of our respondents had a personal income in cash greater than 50,000 Tsh per year. Therefore, the concept of “willingness of pay” concerns several persons apart from the patient himself. It also means that patients must be willing to adopt a “sick role” and, in many cases, be proactive in mobilizing the necessary social and financial support for cataract surgery. From that perspective, the question of how much an elderly patient is willing to pay for cataract surgery appears inextricably linked to social processes.

As an illustration, most respondents feel that it would be “reasonable” to ask patients to pay between 30,000 and 50,000 Tsh for a cataract surgery. However, that does not mean they are all able to pay that amount. As one of the poorest respondent claims:

*“I want to see ... so I would agree to pay 50 000 Tsh but if I ask around my family I could probably only find 10 000 and if I have to pay myself I could only contribute 1000” (Hai-10).*

The social processes involved in the mobilization of the resources necessary to go for cataract surgery may take different forms depending on the characteristics of the patient (e.g., gender, age, personality), the family dynamic and the socio-cultural background. As we mentioned before, women are less likely than men to ask for help (financial and caretaking) and more likely than men to feel a pressure to maintain their daily routine

activities despite their visual impairments. Other factors are linked to the characteristics of the family network. Elderly cataract patients usually expect greater financial support from their adult son(s). This is explained by the fact that women often have little or no personal income or assets (like land) and asking a son-in-law for a financial contribution appears to be a socially sensitive issue:

*“These clothes we are wearing have come from Tabora from our daughters. They are helping us stealthily as their husband do not like them helping us ... We can’t ask them to pay for surgery” (Dodoma-4).*

*“My daughter is a peasant; although she is married her husband doesn’t give her any support; she struggles on her own” (Iringa-11).*

Even in the best case scenario, e.g. having at least two working sons, the amount of money one can legitimately request from family members for medical treatments is limited by various factors. It is a continuum bounded, for example, by the income of each family member in kind and in cash, the number of children going to school, the number of people in the family with health problems and the nature of their illness. Since having cataract is not painful, other medical conditions are often given a higher priority:

*“One of my children who got some money came home and wanted to send me to Mvumi. Unfortunately, he became seriously sick ... We sent him to Mvumi hospital for treatment. Therefore, the sum which was to be spent for my treatment was accordingly utilized for my son’s treatment” (Dodoma-6)*

It is also difficult for families to cope with multiple episodes of medical care in a short span of time. When they know their children already paid for medical expenses in the recent past, many elderly patients become reluctant to ask for help themselves:

*“I feel shy to ask them for any further assistance now because they helped me to treat their mother when she was sick” (Hai-9).*

The ability and willingness to pay of family members for the cataract surgery of their mother/father/relative is also affected by the fact that their income is seasonal and can vary enormously from one year to another. Younger adults have competing needs (house, clothes, school fees, etc.) and those relying exclusively on agriculture must make decisions to meet the most “expensive” or “urgent” ones in the 4-6 weeks following the sale of their crops.

*“Every child I asked says he has not got any money. They tell me wait, to let them plant ground nuts and*

*other crops. When they harvest the crop and sell it they will get money. Maybe next year they will send me for operation” (Dodoma-6).*

*“When my (son) finishes building his house he will start farming and when he gets money from the sale of his crops then only can I go for treatment” (Iringa-3).*

For many elderly cataract patients, going for surgery appears to be a matter of getting the proper alignment of several factors. Indeed, a less than average rainy season or multiple medical care needs in the family can delay the decision-making process by months or years even for the patients with a high perceived need for sight and surgery. In addition, many patients are ready to place other family members’ needs ahead of their own. We ask our respondents if, after receiving an unforeseen amount of money, they would go for cataract surgery or help a son/daughter requesting financial help to pay the school fees of his/her children. Out of the 40 respondents who answered that question, 62.5% said they would go for treatment first. Surprisingly, women were more likely than men to use the available money for surgery first (70% of women compared to 55% among men). However, only men rationalized their decision by saying it would be a sound financial decision for the future:

*“Because going to school is an important thing, I would give him the money to pay for his school fees, because I believe that if I will have more time to live, he would become rich in the future and help me” (Dodoma-8).*

*“I would pay the school fees because he/she would help me in the future” (Iringa-6).*

In general, the willingness to pay for cataract surgery expressed by our respondents appears to be tied with the highest perceived amount of financial support elderly patients can expect and ask from their children and relatives in case of medical health care needs. The consensus among respondents is that asking between 10,000 and 30,000 Tsh would not be considered “abusive” according to community norms and standards. However, the actual financial support given to elderly patients does vary according to the household income of those involved in the decision-making processes. From the in-depth interviews carried out in the three regions, it appears that cataract patients living in a household with an income over 200,000 to 250,000 Tsh in cash per year don’t seem to consider cost (between 15,000 and 38,000) as a major barrier. For households with an yearly income in cash between 100,000 and 200,000 Tsh, paying for cataract surgery requires more planning and sacrifices and patients need to be proactive in requesting and mobilizing the financial resources. Below 100,000 Tsh per year, it is a clear challenge for household members to contribute any money for the cataract surgery of an elderly relative. The level of income does not tell the whole story either. Community members use the presence of animals (chicken, goat and cows) and the size of the family land as markers of the financial status of an individual/household. Since most people don’t have any savings in

cash, land lots and animals are the only safety nets in case of emergencies. However, cataract does not qualify as an “emergency” in rural settings. When land lots and animals are sold with the purpose of paying for cataract surgery, it is more likely the action of patients themselves (elderly men are more likely than elderly women to still own those kinds of assets). Typically, the respondents who described themselves as being “poor” and “too poor to pay” for cataract surgery were part of a household getting less than 100,000 Tsh in cash per year, had no cows, few or no goats and chickens, and owned less than 2 acres of land.

A general lesson that can be drawn from the interviews is that the higher the price of cataract surgery, the larger the number of people involved in the decision-making process at the family level and the more likely there will be obstacles and delays preventing cataract patients to come for surgery. In the next section, we turn our attention to the organization of eye care services in Kilimanjaro, Dodoma and Iringa regions and how it can influence the way cataract patients have access to surgery.

#### **Eye care organization at the regional level**

In Kilimanjaro region, the consensus among our respondents, even among the poorest, is that 15,000 Tsh is a price that most people can pay for cataract surgery. However, there is always a link with the expected results:

*“ It is not too much money as long as someone gets cured” (Hai-18, Woman, too poor to pay).*

*“ It is not expensive, but the problem was that we didn’t have any money ... it is a very little amount of money” (Hai-15, Woman, too poor to pay).*

In comparison, the poorest respondents interviewed in Dodoma region find the price of 37,000 Tsh to be too expensive. However, the price of 15,000 or 20,000 Tsh is perceived as being reasonable and affordable for the majority of patients:

*“ I think that people can only contribute 20,000 or 15,000 for the services ... ” (Dodoma-5, man, too poor to pay).*

*“Yes, it is much money ... I think that many people could afford 20,000 shillings” (Dodoma-12)*

In Iringa region, several respondents expressed the opinion that most people can’t pay 20,000 Tsh. The perception is that a price of 5000-15,000 Tsh is more reasonable.

The perceived ability to pay for cataract surgery is thus quite similar across the three regions, albeit somewhat lower in Iringa region. However, we do notice differences in the

willingness to pay for cataract surgery between Kilimanjaro, Dodoma and Iringa region as shown in Table 9.

Table 9: Willingness to pay among respondents by region

<b>WTP</b>	<b>Kilimanjaro</b>	<b>Dodoma</b>	<b>Iringa</b>
0-15,000	4	2	9
15,001-30,000	8	3	3
30,001- 45,000	1	3	2
45,001-60,000	1	3	1
>60,000	4	3	1

The general trend is that patients reported a higher willingness to pay for cataract surgery in Kilimanjaro and Dodoma regions compared to patients in Iringa region.

One reason might be that eye care programs are more consistent and homogeneous in Kilimanjaro and Dodoma regions compared to what we witnessed in Iringa region. In the latter, many patients mentioned that they don't know where to go for treatment with the consequence that some patients spent several months waiting at home.

*“It is the people who came to our place and promised us that they would come last year but they didn't come, and I was forced to go to town” (Iringa-5).*

*“The doctors told me to wait for the eye experts who would bring medicine” (Iringa- 15).*

Furthermore, several cataract patients in Iringa region didn't know the price of a cataract surgery. In fact, some patients hope to be operated free of charge at the hospital while some others wait at home thinking the eye care services will eventually reach them directly in their village. The vagueness of the program characteristics can be illustrated by the fact that the richest respondent interviewed for this project (making 1, 470 000 in cash per year) was operated free of charge in Iringa region. He even had money with him when he was admitted to hospital but he was never asked to contribute financially.

In Kilimanjaro and Dodoma regions, patients have a greater level of knowledge about the eye care programs at KCMC and Mvumi respectively. The “desirability” of the surgery and the hospital experience as a whole is enhanced by counselling in Kilimanjaro region, where patients are told that the real cost of cataract surgery is much higher than 15,000 Tsh, while in Dodoma region the presence and reputation of Mvumi hospital is well established.

#### *Discussion*

The current literature about the concept of willingness to pay for health care is largely inspired by economical principles and theories (Bonu, Rani & Bishai, 2003; Johannesson,

1996). For the qualitative component of this study, we chose to develop our own conceptual framework based on the empirical evidence collected. We understand willingness to pay to have 3 interrelated dimensions.

The first dimension is the perceived need for sight and surgery. The perceived need for sight appears to decrease with age in rural communities because it is at least partly tied to the possibility of pursuing agricultural activities. This is not to suggest that the very old patients don't value their sight at all. Some of the blind respondents mentioned the presence of a feeling of "shame" associated with the fact that they depend on their relatives for their most basic needs. However, being "blind" is often defined in the communities at the level of hand motion and light perception and not necessarily according to the definitions used by WHO or health workers. (Schemann & al., 2002). The perceived need for surgery relates to its perceived efficacy and benefits. It is not believed among all patients that the surgery will or is the only option to restore vision. This has been documented elsewhere in Africa since the early 80s (Kimani & Klauss, 1983). The perceived efficacy of the surgery can be influenced by the interaction the patient will have with family and community members as well as with eye care workers.

The second dimension is associated with the family and social support cataract patients need and receive to access surgery. It is very clear from the interviews that the phenomenon of "willingness to pay for cataract surgery" concerns several people and not just the patient. In relation to the concept of "utility," used thoroughly in the health economics literature (Nord, 2005; Richardson, 2005), our study shows that

1. Male and female cataract patients are not seeking and receiving the same level of social support.
2. The non-urgent health care needs of elderly patients are often not considered as important as the non-urgent needs of younger family members.
3. Other medical conditions, with painful symptoms, are given a higher priority than cataract.

The first two points are related to gender and age as markers of social status in Africa. For childhood cataract, we have found that parents are more willing to invest resources to restore the sight of boys than they are for the sight of girls (authors' unpublished data). Our findings indicate that this holds true for elderly patients as well. Those who have more resources at the household and family level, usually adult men, are more willing to support their father than their mother for cataract surgery. Elderly men play a more important role in society than elderly women according to community norms and values. However, as noted by Devish, Makoni and Stroeken (2002), the traditional authority of the elders in African societies is slowly eroding. Elderly patients themselves are now afraid of being perceived as a burden and are increasingly inclined to prioritize the needs (related to health or not) of younger family members ahead of theirs. The last point is related to the perceived "severity" of cataract. Although cataract can greatly influence quality of life, it is not perceived as a medical emergency by most people. In short, social processes at the family level are a key determinant of both "ability" and "willingness to pay" for cataract surgery.

Finally, the third dimension associated with the willingness to pay for cataract surgery is the organization of eye care services. The reputation of an eye care program and the way it “connects” with patients (clarity, perceived efficacy, perceived availability and perceived fairness) can also greatly influence the willingness to pay for cataract surgery among patients and their relatives.

## **VII. Priorities for Further Research**

In an area as complex as willingness to pay for services that improve quality of life there are clearly many variables. From the perspective of programmes that strive to decrease cataract blindness in a sustainable fashion while still providing service for the poorest who cannot pay, there are several issues that deserve further research.

The first is to find a practical but reliable way to identify those who cannot pay for cataract surgery. Our studies demonstrate that there are people taking advantage of free surgery when they could easily be paying for it; some could pay more than the low charges levied now. On the other hand, we know there are patients who are not receiving surgery because they are too poor to pay. Current mechanisms used to identify these people often rely on a doctor or nurse looking at the patient's clothes and determining how poor he or she appears to be. We don't know how accurate this is but do believe that it introduces an undesirable dynamic into the patient- health worker relationship. We are currently experimenting with methods that take the responsibility of determining economic status off the health care system and place it on the community. Finding simple and reliable methods to identify those "too poor to pay" should be a priority.

A second issue, important to increasing cost recovery, is to determine exactly what "extras" patients in Tanzania (and subSaharan Africa) are likely to be willing to pay for. Although not discussed in this report, a small number of patients in Tanzania have learned about phacoemulsification cataract surgery, demand it, and pay 100-300,000 Tsh for it. Profit from this is used to subsidize other cataract surgery for which patients pay below the cost. It will be a long time before phaco surgery can be offered outside the largest centers; in the meantime we should systematically try to learn more about the potential for enhanced cost recovery by offering simple "luxuries" that rural people would choose to pay extra for, such as nicer accommodation or food. Doing this requires a certain entrepreneurial spirit and good monitoring.

Finally, there is still a need to learn more about the gender inequities that prevent women from enjoying services to the same extent that men do. We need to educate communities so that women and their families come to appreciate and expect the benefits of good vision for women as well as men. We need to find ways to help women who want cataract surgery but do not receive needed support from their families to get it.



## VIII. Conclusions and Recommendations

Capacity and willingness to pay for an elective procedure such as cataract surgery involves many complex and interrelated issues. While we want to avoid oversimplifying the issues, we also wanted to come up with practical guidelines. Our evidence indicates that 15,000 Tsh is not too much in Kilimanjaro and it is probably not too much in most other rural areas. There are also people who can and will pay more than this and it would be well worth investigating what additional “luxuries” urban (and rural) cataract patients are willing to pay for and offering a “patient’s choice” tiered service.

We expect that around 75-85% of cataract patients in Tanzania can afford to pay something for cataract surgery. In areas where patients are used to “free” services, it is likely that uptake will drop when charges are put into effect, but this will be temporary (estimated at 1-2 years) if the service is high quality. In fact, once a reliable high quality service is established, it is possible that the price could be raised above 15,000 Tsh without decreasing uptake by patients, presuming that there are mechanisms in place to provide for those who really cannot afford to pay.

It is unlikely that most rural people would pay as much as 40-50,000 or the equivalent of one months’ household income for cataract surgery at this time. This guideline, accepted in some of Asia, may not be applicable in Tanzania (or other sub-Saharan African countries) for two reasons: (1) Purchasing power parity is lower in Africa than in Asia and money doesn’t stretch as far; furthermore a significant amount of household income is still in-kind in Tanzania. (2) There is evidence that Asians get cataract at a younger age than Africans; the economic benefits of sight restoration may be higher in Asia and families thus more willing to pay for cataract surgery there. These factors would be likely to change as general socio economic conditions change.

In order to maximize the potential for cost recovery while still serving the poorest in Tanzania we recommend the following:

1. Establish clear pricing policies, ideally these would be uniform throughout each Region. Avoid the confusion caused by multiple small charges; offer a “package deal” so that patients know exactly what they will have to pay before they accept surgery.
2. Train health workers so they have better understanding of charges and cost recovery and can explain clearly to patients and other health workers what the real charges to the patient (and costs to the hospital) for cataract surgery are.
3. Discourage intermittent free surgery campaigns. These add to confusion about prices in the community, cause some patients to wait years for the next free opportunity, and undermine attempts at cost recovery.

4. Improve quality of service; e.g., use specialized counselors, institute consistent pricing and advertise it clearly, make services more convenient and friendly for patients.
5. Expect 15-25% of elderly cataract patients to require free (or almost free) service.
6. Expect that some cataract patients will use “cost” as a convenient excuse when in fact they do not perceive any real need to have surgery. (It would be useful to learn how many cataract patients fall into this category.)
7. Experiment with “tiered” services (special accommodations or procedures) to learn what extras patients are willing to pay for.
8. We need better basic monitoring of eye services so that we know how much people are paying for surgery, how many access the available “poor funds,” and how many are turned away because of lack of money.
9. There is an urgent need to study and validate methods that can be used to simply and reliably identify the poorest who want cataract surgery but really cannot pay.

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