User Charges and Utilization of Health Services in Kenya

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ABSTRACT

This paper uses data from Kenya to examine the role of user charges and quality of health services in determining the choice of healthcare providers. We find that an increase in the price of public health services diverts demand from public to private facilities. The associated reduction in demand for modern healthcare, captured by increased use of self-treatment, is minimal. In contrast, a decline in the quality of public health services leads to a sharp reduction in their use and to increased reliance on self-treatment. These demand patterns suggest that a programme that improves the quality of services and enhances drug availability through cost-sharing may be more effective in meeting the healthcare needs of the population than one that fully subsidizes health services at low standards of service. However, since improving health services entails higher costs of provision and use, targeted subsidies are required to ensure that the poor are not denied access to basic care. Difficulties in enforcing statutory fee exemptions at public health facilities in Kenya have created interest in social health insurance as a dominant mechanism for financing healthcare. Demand effects of social insurance are briefly discussed.

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1 Introduction

Since 1987 when the World Bank recommended that cost recovery be incorporated into financing of publicly-provided health services in developing countries, the number of African countries implementing some form of user fee system in health care provision has grown considerably. African governments have come to see user fees as an important alternative to tax-based financing of government health services. In a study encompassing 36 countries from Africa, the Middle East, Asia, Latin America and the Caribbean, Russell and Gilson (1995) found that 14 of the 15 African countries in their study had some form of user fees. A broader study by Nolan and Turbat (1995) pointed out that 28 out of 37 African countries studied had a fee system in public health facilities.

Despite widespread adoption, fees at the point of delivery as a means of financing government health services in developing countries remain a controversial issue. Concern is widespread that these fees or costly membership in insurance schemes could deny the poorest people access to modern health services. While detailed arguments on the pros and cons associated with charging user fees are provided in Jimenez (1986), the basic argument in favour of user fees rests on the idea that fees facilitate cost-recovery and reduce the financing burden of governments. Furthermore, by reducing potentially unnecessary utilization of free services, user fees promote allocative efficiency. The strongest argument against user fees is based on the equity effects associated with the imposition of such fees. It is argued that the elasticity of demand for healthcare is higher for the poor than for the rich and user charges will reduce access to medical care for low-income groups in the population.

Kenya introduced user charges for healthcare for the first time in the post-independence era in December 1989. Less than a year later, in August 1990, the system of cost-sharing was suspended on the grounds

that it denied the poor access to basic care. Following public discussion on the merits and demerits of user charges, a new cost-sharing system was introduced in April 1992. While the new system was similar to the older one in differentiating user fees by facility, there were some important differences. The new user charges were introduced in a phased manner and payment was required after treatment had been received (see Collins *et al*, 1996a, 1996b for details). Furthermore, the new reform decentralized management of 75% of the fee revenue retained in the facilities. Groups of population exempted from the fees were expanded to include civil servants, the military and the unemployed (see Gesami 2000 for details).

Several studies provided ex-ante guidance on the effects of user fees in Kenya and in other developing countries. For instance, Ellis (1987) studied the effects of user fees in Kenyan healthcare facilities and concluded that user fees had the potential to generate revenues but would exclude a substantial portion of the population from healthcare. However, other studies did not yield such clear-cut conclusions. Some authors (see e.g., Akin *et al*, 1985) argued that demand for healthcare was price inelastic and utilization rates would not be affected by changes in user fees.

Many studies conducted following the introduction of user fees examined price effects on utilization rates and revenue generation. In the first- and second-generation studies, there was no unanimity among researchers on the effects of fees. According to some studies, demand for healthcare was price elastic (Kanji 1989; Yoder 1989; Waddington and Enyimayew 1990; Lavy and Quigley 1993; Booth et al. 1995; Haddad and Fournier 1995), indicating that introduction of fees would reduce health service utilization. Others stressed the equity issue and argued that since price elasticities of demand are highest among low-income groups (Gertler and van der Gaag 1990; Sauerborn et al. 1994), user

fees are regressive. Other ex-post studies (see e.g., Reddy and Vandemoortele, 1996; Mwabu and Wang'ombe, 1997) showed that despite the low price elasticity of demand, cost sharing led to a substantial reduction in the demand for healthcare because fees were being raised from very low levels. Despite the low price elasticity detectable from their data, Moses *et al* (1992) reported a large fall in demand for treatment of sexually transmitted diseases (STDs) in Nairobi.

The studies mentioned above analysed the effects of user fees after the introduction of the first round of fees. Assessments of the effects of the system of user fees implemented in 1992 have just begun. Nganda (2002) recently examined changes in user charges at government health facilities since 1992 and the associated changes in service utilization. His preliminary findings show that despite large upward adjustments in user fees in all government facilities, overall service utilization in public health facilities declined by only 10%, notwithstanding the fact that both curative and preventive services are subject to fees. Further, despite the fees, there has been increased utilization of some categories of preventive care services, notably antenatal and child health services. Fees are also being charged in government dispensaries, contrary to government guidelines on service pricing. Nganda (2002) also found that the Ministry of Health was not able to enforce its guidelines on fee waivers and exemptions. A new facility-based exemption scheme has evolved that benefits only a limited category of patients. There has also been involuntary decentralization of service pricing and fee exemption, but this has not been ratified by the government.

Nganda's (2002) work is based on a limited survey of health facilities and cannot be used to analyse treatment choices of households — the main focus of this study. In particular, this study is concerned with examining the role of user charges and of the quality of healthcare services in determining household choice of healthcare providers. We

use data from household surveys conducted during the period in which the second round of fees was in effect, specifically the welfare monitoring surveys undertaken in 1992, 1994 and 1997 by Kenya's Central Bureau of Statistics of the Ministry of Planning and National Development. The main results of the paper are based on the 1994 dataset because of its better quality.

The rest of the paper is organized as follows: Section 2 gives a review of analytical and policy issues, focusing on experiences of low-income countries with respect to effects of user fees on revenue, health service access and quality and utilization patterns. The broad review in this section sets the stage for the Kenyan case study. Section 3 presents the conceptual framework. The data used and sample statistics are discussed in Section 4. Section 5 reports regression results and Section 6 concludes.

2 Cost Recovery: Analytical and Policy Issues

2.1 Analytical perspectives

The principle that public authorities should assume responsibility for providing social services has gradually been abandoned in the face of economic pressures. Confronted with slow economic growth, external debt and rapid population growth, many of the world's poorest countries have been faced with a widening gap between public demand for services and the resources available for their provision. Moreover, as in some industrialized countries, state provision of health services has come to be seen as inefficient, prohibitively expensive or both. The approach of treating healthcare as a citizen's right and the attendant attempts to provide free services to everyone have not worked (World Bank, 1987).

Cost recovery was initially promoted by the World Bank as a mechanism for achieving the twin goals of generating financial resources for the health sector and introducing efficiency-enhancing practices in the provision of healthcare. Moreover, it was argued that by increasing the resources available to health facilities, cost recovery would improve the quality and range of services provided, with beneficial outcomes for public health. Therefore, new or increased user fees in public health facilities, when accompanied by improvement in services, would increase usage. This increase was expected to be positive for both the poor and the non-poor. Furthermore, a system of user fees would promote allocative efficiency by discouraging frivolous use of scarce healthcare services. In short, cost recovery in the health sector was presented in the early literature as a win-win solution for the acute budgetary problems in healthcare in low-income countries.

Today, over 30 governments in Africa have in place some form of cost-recovery programme. However, serious problems have emerged in the implementation of user charges for healthcare. For example, vulnerable

social groups have been excluded from vital services and exemption systems have typically proved ineffective. Revenue collection has fallen far short of target levels in many countries. Meanwhile, many of the efficiency and equity gains predicted by earlier research have failed to materialize. Amidst failures of research predictions, the World Bank has distanced itself from the promotion of user fees. In a policy statement at the end of 2000, the Bank declared that it supported the provision of free basic healthcare. However, it added that, if well designed and implemented, fees could be useful in mobilizing additional resources for the health sector (Colgan, 2002).

2.2 Country experience in Africa

Experience indicates that user fees charged for health care generate on average about 5% of the total national recurrent health expenditure gross of administrative costs (Gilson *et al*, 1995; Kutzin, 1995; Nolan and Turbat, 1995). The literature also shows that revenue levels vary over time, sometimes increasing following improved implementation practices, and sometimes falling due to diverse phenomena such as inflation, war or economic recession. While some countries have been more successful than others in cost recovery, the sustainability of such accomplishments has been in doubt. Ghana, for example, initially managed to recover more than 10% of the total recurrent government health expenditure, but this fell to about 5% after a few years.

If revenue generated from user fees covered considerable proportions of the total non-salary recurrent expenditure, it would enable significant quality improvements at the facility level. This has been shown to lead to improvement in perceived quality in some community financing schemes, for example in the case of the Bamako Initiative (Kutzin, 1995). Nonetheless, available information suggests that revenue generated from user fees in public facilities is inadequate to fill the large and

growing resource gap in public health provision in many African countries. Revenue generation is constrained by the need to keep fees low, to match household incomes. In addition, administrative costs of implementing a fee system, including the costs of the exemptions necessary to safeguard equity and public health objectives, further reduce cost-recovery benefits.

In Niger, Diop *et al* (1995) conclude that for health service access to be achieved and sustained in rural areas, cost recovery should be accompanied by not only improvement in quality but also cost containment measures. Such measures include policies that promote acquisition of essential generic drugs in competitive markets and measures for strengthening management capabilities at health facilities.

In Zambia, patients without cash income were required to make payments in form of cereal or livestock. Further, the government allowed minimal fee exemptions. Despite these flexible payment mechanisms, Booth *et al* (1995) reported that in Zambia, utilization rates of both hospitals and clinics declined precipitously. The number of outpatients dropped in all types of health facilities, especially outpatient consultation for six major diseases. Evidence suggests that in Zambia a sizeable number of people who previously visited medical facilities for treatment stopped doing so and in some cases people were dying because they could not afford to pay user charges (Booth *et al*, 1995). In one of the children's hospitals in Zambia, the monthly average number of outpatients declined by more than 50% over 1989–1994. In another hospital, deliveries of babies fell by nearly half between 1991 and 1994, with reported increases in maternal deaths in home delivery.

Evidence of diversion of healthcare demand from government health facilities to other clinics following introduction of user fees in public clinics is found in only a few countries (Mwabu *et al*, 1993; Sahn *et al*, 2002). In Swaziland, 30–40% of patients who previously used public

hospitals and clinics switched to private providers after introduction of fees in public clinics. Mwabu *et al* (1995) report a 52% decrease in outpatient visits at government health centres after introduction of fees in Kenya in 1989, but do not show whether some of these visits were diverted to non-government facilities. Similarly, Mbugua *et al* (1995) show that attendance rose at dispensaries in a poor area in Kenya that continued to provide free services, while it sharply fell in all other facilities after introduction of user fees. Similar findings were reported for Zimbabwe following the introduction of fees in government health facilities in the early 1990s (Watkins, 2001).

A longitudinal survey of Kenya's experience with user fees and reimbursement from the National Hospital Insurance Fund (NHIF) indicates that between 1991 and 1992, fee revenue generated by provincial hospitals tripled and that generated by district and sub-district hospitals doubled. This resulted from increases in charges and the strengthening of billing systems that in particular tapped resources from people covered by health insurance. In the first six months of 1993, 62% of the total revenue generated at provincial hospitals and 48% of that generated at district hospitals came from NHIF claims and cash fees. As a result of such experience, analysts such as Adams and Harnett (1995) and Barnum and Kutzin (1993) suggest that fee implementation should be restricted to hospitals and exemption mechanisms should be improved. In a new development, the government recently announced the intention to transform NHIF into a national social health insurance scheme (Ministry of Health, 2002). The scheme is expected to replace cost sharing as the dominant mechanism for financing health provision in the country.

3 Conceptual Framework

Analysis of healthcare demand is typically concerned with price responsiveness of the probability of seeking treatment from a given provider, and/or with price elasticities of treatment intensity as proxied by the number of visits (see e.g., Gertler and van der Gaag, 1990; Lavy and Quigley, 1993; Appleton, 1998). Inadequacy of data limits the focus of this paper to probability of a patient choosing a particular healthcare provider, conditional on illness. We use a standard discrete choice framework that has been employed in several papers estimating the use of healthcare (see Gertler *et al*, 1987; Mwabu *et al*, 1993; Bolduc *et al*, 1996). The framework is a short-run static model with a utility function defined over health status and consumption of all other goods.

Consider an individual confronted with an illness. This individual has to choose among the available healthcare providers, including self-medication. Healthcare providers offer different levels of service at varying costs. An individual has to make a discrete choice among these providers. Conditional on an individual's health status, the type of illness, and availability of information and income, an individual chooses the alternative that yields the highest net utility.

This description of the manner in which an individual may make a discrete choice concerning healthcare provision may be formalized by considering utility conditional on receiving care from a healthcare provider (HCP)*j*. Utility conditional on choosing provider *j* is given by:

$$U_{ij}=U(H_{ij},C_{ij},T_{ij}) \qquad (1)$$

where H_{ij} is the expected health status of the individual conditional on receiving treatment from provider *j*, C_{ij} is the consumption of all other goods except those associated with healthcare, and T_{ij} represents the non-monetary costs of access to provider *j*.

The expected improvement in health status is unobservable but is assumed to depend on the characteristics of an individual (health status, habits, etc.) and the quality of health care received by the individual. This allows us to write a health production function defined over

X_i, the attributes of an individual, and Z_j, the attributes of the provider j. Hence,

$$H_{ij}=H(X_i,Z_j) \quad (2)$$

Turning to the second argument in the utility function, the possible level of consumption depends on the income of the individual and the costs associated with buying health care. If the user fees associated with a visit to provider j is P_j and Y is an individual's income, then

$$C_{ij} = Y_i - P_j \quad (3)$$

Substituting equation 3 into equation 1 yields,

$$U_{ij}=U(H_{ij} ,Y_i-P_j , T_{ij}) \quad (4)$$

This means that utility is a function of the expected health status of an individual, the level of non-health consumption expressed in monetary terms, and the non-monetary costs associated with using provider j. To guide empirical work, it is suitable to substitute equations 3 and 2 into equation 1. This yields a general indirect utility function of the form

$$U_{ij}=U(X_i , Z_j , Y_i , P_j , T_{ij}) \quad (5)$$

Thus, the benefits from visiting a particular health care provider depend on an individual's personal characteristics, X; the attributes of the provider, Z; the individual's income, Y; user fees, P, faced at provider j; and non-monetary costs, T, associated with visiting provider j.

To empirically determine the probability of choosing a provider, we need to choose a particular form for the conditional utility function and to introduce a stochastic disturbance. There are several possible choices for the form of the utility function: what is required is a form

that is consistent with well-ordered preferences. As shown in Gertler *et al* (1987), a suitable form for the utility function is the semi-translog, where health and non-price access costs enter in log form and consumption enters in both log and log-squared forms. Other suitable forms for the utility function include parameterizations that are log-linear in health status and consumption, and a utility function that is linear in health status but log-linear in consumption (see Mwabu *et al*, 1993 for more details).

Consider an indirect utility function, which may be written as

$$U_{ij} = V_{ij} + \varepsilon_{ij} \qquad (6)$$

where V_{ij} is the systematic part of the utility function and depends on individual characteristics and provider attributes as in equation 5. The idiosyncratic part is represented by ε_{ij}.

For the functional form of the utility function, keeping in mind the data we have to carry out empirical investigation, we adopt a linear utility specification. The empirical utility function may be written as

$$U_{ij} = \alpha'_j W_i + \beta'_j K_{ij} + \varepsilon_{ij} \qquad (7)$$

where $W_i = [X_i, Y_i]$ and $K_{ij} = [Z_{ij}, P_{ij}, T_{ij}]$

As in the specification used by Gertler *et al* (1987) and Mwabu (1993) variables that enter as inputs in the health production function (equation 2) enter the utility function (equation 7) in a linear fashion. Unlike Gertler *et al* (1987) and Mwabu *et al* (1993), where consumption/income enters the utility function as a quadratic or in log form, we do not directly control for consumption. Although we have information on per capita household consumption, we choose not to include it in our specification, as it is potentially endogenous. Instead, we use variables such as education, house quality and access to piped water to capture income and wealth effects (represented by Y_i). Finally, our information on the price and quality of healthcare at different providers is not obtained

directly from the providers but from individuals who visited these facilities. Based on this information we create variables that capture district-level price, quality, and availability of different types of facilities. Therefore, variations in these data stem from differences in attributes of the same type of health facility across districts as well as differences in attributes of different types of health facilities within a district.[1]

An individual's choice of healthcare provider may now be expressed as

$$HCP_i = j \text{ iff } U_{ij} > \max\{U_{ik}\},\ j = 1...J,\ k \neq j \qquad (8)$$

where HCP_i is a healthcare provider indicator.

The parameters of equation 7 and the probability that individual i chooses healthcare provider j may be obtained by estimating a multinomial discrete choice model. The selection rule (equation 8), combined with the assumption that the stochastic error term follows a Weibull distribution, defines a multinomial logit model where

$$P_{ij} = Pr(HCP_i = j) = exp(\alpha'_j W_i + \beta'_j K_{ij}) / \sum_{k=1}^{j} exp(\alpha'_k W_i + \beta'_k K_{ij}) \qquad (9)$$

Estimates of the required parameters may be obtained by maximum-likelihood estimation of equation 9 (for a nested multinomial logit specification of equation 9 see Sahn *et al* 2002). The results of the multinomial logit model may be used to compute elasticity of healthcare utilization with respect to policy-relevant variables.

[1] Since W_i consists of variables that vary across individuals, estimates of α differ across alternatives. Variables comprising K_{ij} vary across districts and across different providers. This translates into substantial cross-individual variation and allows estimates of β to differ across different providers. This unrestricted discrete choice model is similar to the specification used by Dow (1996) and may be contrasted with the restricted specification used by Gertler *et al* (1987) and Mwabu *et al* (1993). Dow (1996, 1999) presents arguments that support the use of an unrestricted model.

Two additional points need to be made here. First, choosing a particular healthcare provider depends on individual characteristics and attributes of the provider. Accordingly, it is better to view equation 9 as a reduced form relationship rather than a structural form demand function. Second, equation 9 represents a conditional relationship and will be estimated over individuals who report that they are sick or were sick during the two weeks preceding the survey.[2]

[2] As shown by Dow (1996) unconditional or population (price) elasticities may be obtained by augmenting the conditional elasticities with elasticities obtained from a probit estimate of the probability of falling sick. The unconditional price elasticity is the sum of the conditional price elasticity and the price elasticity of falling sick. To get an idea of the population elasticities, we estimated binary probit models of the probability of falling sick (see table A2) and estimated price and quality elasticities (see Appleton, 1998). The elasticity of falling sick with respect to user fees in government facilities was about 0.009, and with respect to the non-availability of drugs, 0.037. These elasticities are quite small and suggest that conditional and unconditional elasticities are not substantially different, at least in the current context.

4 Data and Utilization Patterns

Three large welfare monitoring surveys were conducted in Kenya in the 1990s: in 1992, 1994 and 1997. This paper uses information from all three datasets, but owing to the severe limitation of information on healthcare utilization patterns in the 1992 and 1997 datasets, the bulk of the empirical work in this paper is based on the 1994 survey. The 1994 survey contains information on about 10,000 households and over 50,000 individuals from almost all districts of Kenya. The 1997 survey has a similar size dataset, but the dataset for 1992 is much smaller.

These multipurpose surveys contain information covering a variety of dimensions, including consumption, child health, fertility and other individual and family characteristics. In addition, the 1994 survey contains information on the incidence and type of illness suffered by individuals during the two weeks preceding the survey. The survey also elicited information on the type of healthcare sought conditional on being ill, the costs incurred and the reasons for choosing or not choosing a particular type of healthcare provider. These individual and household data were merged with district-level information on availability of healthcare facilities. The merged data set containing information on costs of healthcare and some elements of the quality of healthcare and availability (indirect costs) is used to explore the influence of price and quality variables in the choice of healthcare provider. In terms of sample composition, our work concentrates on adults and excludes people below age 15.[3]

[3] We restricted ourselves to adults to facilitate comparison with the existing literature. For the most part, papers that have investigated the impact of user fees on utilization have concentrated on adults (see for example Mwabu *et al* (1993) and Gertler *et al* (1987)).

Table 1 presents statistics on the incidence and type of sickness for all the years that have data. According to the 1992 and 1997 surveys, the incidence of illness in the two weeks preceding the survey was about 15–17%. In 1994 the incidence was considerably higher at about 22%. Malaria/fever was the predominant cause of illness, increasing between 1992 and 1994/1997. In terms of choice of healthcare provider there were sharp differences between the 1994 and 1997 surveys. According to the 1994 survey, 81% of those who were ill chose to treat themselves, about 6.6% visited private medial facilities, 11% went to government clinics or hospitals and the rest went to a mission facility.[4] The numbers for 1997 show that, conditional on being ill, 32% of the respondents treated themselves, 27% visited private health facilities and 35% visited public facilities.

Table 1: Incidence of illness and choice of healthcare provider

Sickness and provider chosen	1992	1994	1997
Sick in the past two weeks (%)	16.56	22.23	15.2
N	24,960	29,323	30,347
Type of illness			
Malaria/fever (%)	44.9	53.77	53.57
Vomit/diarrhoea (%)	7.06	8.33	7.06
Cough/cold (%)	16.76	16.44	n.a
Choice of provider			
Self-care (%)	48.5	80.85	32.4
Private (%)	-	6.55	27.1
Government (%)	-	10.8	34.9
Mission (%)	-	1.78	5.72
Any health facility (%)	47.36	-	-
N	4,134	6,519	4,616

[4] The 1994 survey estimates based on the use of health facilities in the last three months show that 34.97% of those ill go to private health facilities, 42.83% to government clinics/ hospitals and 17.97% to mission facilities.

Note: The 1997 dataset did not contain a category defined as 'cough/cold'. Self-care includes visits to traditional and faith healers as well as self- or pharmacist-prescribed drugs. The 1992 dataset does not provide information on the type of provider.

The sharp difference in utilization of healthcare services between the 1994 and 1997 surveys is of concern. Although there was a higher incidence of illness in 1994, it is difficult to imagine that this could be the sole cause of the differences. Another possible reason for the differences could be the fact that the geographical coverage of the 1994 survey was more complete, encompassing the entire country, while the 1992 and 1997 surveys excluded the North Eastern Province and Turkana, Marsabit and Samburu districts. While these districts are thinly populated, they are among the poorest areas in Kenya. To establish the effect of this incomplete coverage, we excluded these districts and re-estimated the pattern of healthcare utilization based on the 1994 survey. The differences were minor.[5]

Since the 1994 survey was nationally representative and geographically complete, the remainder of the paper is based on data drawn from it. Table 2 presents mean characteristics of the different health facilities. These means are district-level averages and are based on information provided by individuals in the sample who had visited a particular health facility. These statistics are presented by type of provider. There are sharp differences in user fees across providers. The average cost of an outpatient visit to a private health facility is about four times that of a public health facility.

[5] It is possible that the questions on healthcare utilization in the 1994 and 1997 surveys were understood and answered differently by respondents. In 1994, respondents were asked, "What is the most recent action taken?" when sick. In the 1997 survey respondents were asked, "What kind of health provider did you seek treatment from?" While the question in 1994 is clear and deals with the most immediate action taken to treat an illness, the response to the 1997 question may not deal with the most immediate action taken. Attempts to gather information from the Central Bureau of Statistics on the instructions provided to the survey team and to the respondents have not been successful.

Table 2: Characteristics of healthcare providers, 1994 (std. dev. appears in parentheses)

Provider choice & characteristics	Private	Government	Mission
Choice of provider conditional on being sick (%)	8.2	10.9	1.9
User fee per outpatient visit (Ksh)	213 (110)	52 (55)	161 (128)
Drug unavailability (%)	0.64	51.2	2.3
Poor service (%)	0.5	7.6	1.1
Concentration of health facilities (number of health facilities per 10,000)	0.37	0.92	0.15
N	419	689	114

Note: User fees are calculated as expenditure at a particular health facility divided by the number of visits made to that facility in the previous three months. Drug unavailability and service quality data are drawn from respondents' reasons for not visiting a particular type of health facility. For example, 51.2% of those who did not visit a government health facility cited lack of drugs as their reason.

As a proxy for the non-monetary cost of accessing different types of health facilities, we compute a concentration ratio, defined as the number of healthcare facilities in a district per 10,000 people. This indicator takes a value of 0.37 for private facilities and 0.92 for public facilities. Although public health facilities are cheaper, they are also perceived to be of much lower quality. We have created two variables to capture quality differences across facilities. The first of these captures unavailability of drugs and the second is a measure of the overall quality of services from the viewpoint of users.

The 1994 survey asked respondents to list their reasons for not visiting a particular type of facility. Fifty-one percent of those who did not visit a public health facility mentioned lack of drugs as the reason. The

corresponding number for private facilities was 0.64%. In terms of quality of health services, 7.6% of those who did not visit a public health facility mentioned poor services as their reason, while for private facilities this was 0.5%. These figures highlight the stark differences in quality of service across health facilities. While private facilities are four times as costly as public facilities, it appears that this is more than compensated for by the quality of services they offer.

In terms of individual characteristics, the average age of those reporting illnesses was 36.5 years, and the average educational attainment almost 5 years. Other descriptive statistics are presented in Table A1. To provide an idea of the characteristics associated with being sick, Table A2 presents probit estimates of the probability of being ill (reporting sickness). Estimates based on 1994 data show that older individuals and females are more likely to report sickness. In terms of wealth-and income-related characteristics, being ill is not systematically related to the education level of an individual but is linked to housing characteristics and household amenities. Individuals living in houses with poor construction material and poor waste disposal facilities are more likely to fall sick.

Before turning to the regression results, a few remarks on the data are required. First, comparability across the three datasets is hampered by differences in geographical coverage and differences in the questionnaires. Second, despite being the most complete of the three surveys, even the 1994 survey had extremely limited information on the quality (inputs) of healthcare facilities. This limitation in information does not allow us to assess the effects of different input measures in influencing utilization. While it is essential to obtain more complete data and to collect data in a manner that allows temporal comparisons, rather than rue the quality of the data, our approach has been to

recognize the shortcomings and to try to use the existing data in the best possible manner.[6]

[6] Data problems are being reported to the Central Bureau of Statistics, and KIPPRA staff members are engaged with the CBS in designing questionnaires and contributing to future data collection exercises.

5 Regression Results

Table 3 presents maximum likelihood estimates of equation 9.[7] The independent variables include individual and household characteristics and two variables that are of particular interest to us. These variables are user charges and our measure of drug unavailability in public health facilities. While we have cost and quality measures for the other types of facilities, the small number of individuals choosing mission or private facilities and the limited variation across districts make it difficult to use all these variables. Also, the main aim of our work is to examine the

Table 3: Multinomial logit estimates for choice of health care providers, 1994 (std. error appears in parentheses)

Variable	Private	Government	Mission	Self-care
Constant	-2.78	-1.88	-0.712	
	(0.372)	(0.406)	(1.11)	
Age	0.013	0.003	0.002	
	(0.003)	(0.003)	(0.006)	
	0.0007	**0.00016**	**0.000017**	**-0.0009**
Male	-0.011	-0.117	0.041	
	(0.107)	(0.086)	(0.199)	
	0.00007	**-0.0106**	**0.00066**	**0.0098**
Years of schooling	0.047	0.017	0.013	
	(0.014)	(0.012)	(0.028)	
	0.002	**0.0012**	**0.00009**	**-0.0038**
Roof of house (grass)	-0.324	0.085	-0.489	
	(0.132)	(0.096)	(0.217)	
	-0.018	**0.0104**	**-0.0058**	**0.0136**
Piped water	0.354	0.016	-0.029	
	(0.138)	(0.115)	(0.286)	
	0.0196	**-0.0006**	**-0.0006**	**-0.0183**
Toilet (pit latrine)	-0.216	0.175	-0.752	
	(0.122)	(0.100)	(0.225)	
	-0.0125	**0.0183**	**-0.0093**	**0.0035**
User fee in government health facilities	0.002	-0.0015	0.0007	
	(0.0013	(0.0010)	(0.003)	
	0.00012	**-0.00015**	**0.000**	**0.000**
Unavailability of drugs in government health facilities	0.151	-1.24	-2.31	
	(0.351)	(0.254)	(0.625)	
	0.0175	**-0.111**	**-0.0269**	**0.121**
N	*419*	*689*	*114*	*5164*

[7]We used Hausman's specification test to examine the validity of entertaining the independence of irrelevant alternatives assumption. On the basis of the test statistics we were unable to reject the null hypothesis that the differences in coefficients are not systematically different.

effect of price, quality and availability of public facilities in influencing individual choices. Therefore, we specified equation 9 using measures that were defined for public facilities.[8]

Note: Other regressors include province dummies and an indicator for living in an urban area. Log likelihood -4065.82. The numbers in bold face show the marginal effect of the independent variables on choice of healthcare provider.

The estimates in Table 3 show that in terms of individual characteristics, older respondents are less likely to rely on self-treatment and are more inclined to use private clinics. Given that the risks associated with lack of drugs and poor quality of services in public hospitals may have relatively more serious consequences for older individuals, their preference for private hospitals is not unexpected. There does not appear to be any strong link between gender and the type of care that individuals choose. The more educated individuals are more likely to seek some form of modern medical care than to treat themselves. In terms of the particular health facility chosen, as individuals acquire more education they reduce self-treatment and turn predominantly to private facilities. House construction material (grass roof), the availability of piped water and the method of sewage disposal may be considered as proxies for wealth. These three variables consistently show that poorer individuals are more likely to treat themselves or to seek medical care from government facilities.

[8] Information on price and quality of healthcare services for different providers was obtained from individuals who visited these facilities. Based on this information we created variables that capture district-level price and quality of different types of health facilities. Therefore, the variation in the price and quality variables stems from differences in prices/quality of the same type of health facility across districts and differences in prices/quality of different types of health facilities within a district. The variation across districts translates into substantial cross-individual variation, and in our empirical specifications, we rely on variations in the price and quality of public health facilities across districts to estimate the parameters of interest.

The last two variables in the model are user fees and our measure of drug unavailability in public health facilities. As may be expected, an increase in user fees reduces the use of public facilities. However, rather than leading to a reduction in the overall use of health facilities, this change leads to demand diversion from public to private and mission facilities, a finding consistent with that reported in Mwabu *et al* (1993) for rural Kenya and by Sahn *et al* (2002) for rural Tanzania. The increase in self-treatment that may be attributed to an increase in user fees in public health facilities appears to be negligible. The effect of drug unavailability on use of health facilities is very clear. An increase in the unavailability of drugs sharply reduces the use of public facilities and leads to an increase in self-treatment. To obtain a better idea of the magnitudes of these effects, Table 4 presents elasticity estimates.[9]

Table 4 contains own and cross-price elasticities with respect to changes in user fees and drug unavailability in public facilities. The own-price elasticity estimates imply that a 10% increase in user fees in government facilities will lead to a reduction in use of these facilities by about 0.8% (p-value 0.10). The cross-price elasticities show that the increase in user fees in public health facilities may be matched by an increase in the use of private and mission facilities. For instance, a 10% increase in user fees in government facilities is associated with a 1% increase in the use of private facilities (p-value 0.08). The pattern of results suggests that an increase in user fees in public clinics leads to a diversion of demand from government to other facilities but does not result in a significant reduction in the use of modern healthcare facilities. Unavailability of drugs has a more pronounced effect than does price change. The effects are larger and statistically significant at conventional levels for

[9] We would have liked to present elasticity estimates for different income or consumption quintiles. However, given the overwhelming use of self-treatment, splitting the sample size and estimating quintile-specific models does not yield stable results.

government and self-treatment alternatives. The estimates suggest that a 10% increase in our measure of availability of drugs in public facilities would increase the use of such facilities by about 5.6%. On the other hand, additional drug shortages in public facilities will lead to a reduction in the use of these facilities that will be matched by an increase in the use of self-treatment.

Table 4: Elasticity of health care utilization, 1994 (std. error appears in parentheses)

With respect to	Private	Government	Mission	Self-care
Years of schooling	0.206	0.059	0.038	-0.023
	(0.066)	(0.053)	(0.138)	(0.008)
User fee in government facilities	0.109	-0.076	0.039	0.0009
	(0.063)	(0.046)	(0.147)	(0.007)
Unavailability of drugs in govt. facilities	0.152	-0.559	-1.107	0.075
	(0.168)	(0.117)	(0.317)	(0.018)
Concentration of govt. facilities[a]	0.655	0.439	-0.216	-0.006

Note: The elasticity estimates have been calculated at the means of the variables.

[a] Except for the concentration variable, the elasticity estimates are based on the results reported in Table 3. The concentration variable is a proxy for the non-monetary costs of utilizing healthcare facilities. These elasticity estimates were obtained from a specification that did not include user fees. Given the limited variation in the data, it was not possible to estimate a specification that included the concentration ratio and the user fees variable.

6 Discussion

6.1 Main findings and policy implications

This paper has examined the effects of user charges and quality of medical treatment on health service utilization patterns in Kenya, controlling for other covariates of interest, such as education, wealth, gender and the environment in which households live. Five main findings emerge from the analysis undertaken in the paper. First, most people in Kenya rely on non-government services for heathcare. For instance, in 1994 and 1997, the majority of people seeking outpatient care relied on non-government health facilities. In 1994, only 11% of the patients sought treatment from public health facilities; this increased to 35% in 1997. The others relied on other alternatives, including self-treatment. Self-treatment here comprises home remedies, traditional treatment and drugs purchased from pharmacies or shops. Investigations are needed to better understand these forms of healthcare so that policy can be designed to improve their use, or if necessary to divert demand to other providers. There is also need to investigate further the reasons for the uneven healthcare utilization patterns.

Second, malaria and fever are the most common causes of outpatient morbidity in Kenya. Since the majority of outpatients treat themselves, the bulk of malaria patients fall under this healthcare category. With the increasing prevalence of drug resistant malaria strains, there is a risk of self-treatment contributing to prevalence of malaria in the country. It is necessary therefore to train people who sell drugs in small retail outlets on appropriate ways of dispensing them, especially anti-malaria drugs. Moreover, as far as possible, people should be educated on the use of anti-malaria and other drugs.

Third, the more educated people are less likely to resort to self-care in the event of illness. Since illiteracy and low levels of schooling are associated with higher incidence of poverty (Greer and Thorbecke, 1986),

we may conclude that self-treatment is common among the poor. Moreover, in the event of illness the poor are more likely to receive ineffective treatment because the self-treatment alternative ranks lowest in service quality.

Fourth, government health facilities provide healthcare of poorer quality than do private and missionary facilities, but they are also much cheaper and more readily available. Even though private health facilities are nearly four times as expensive as government facilities, a relatively large number of people use them because their service is perceived to be of superior quality. The magnitudes and signs of the price and quality elasticities of demand computed in this paper suggest that the negative demand effect of user charges is offset by the positive effect of improved service quality. Thus, a policy that subsidizes user fees holding quality constant is less likely to succeed in increasing demand than one that offers improved medical care at a higher fee. However, the fee could deny the poor access to basic health care unless a workable exemption scheme exists.

Fifth, a price increase in government health facilities has the effect of diverting demand to non-government clinics, but it increases demand for self-treatment by a negligible amount (see *Sahn et al*, 2002 for similar results from Tanzania). This finding is consistent with recent evidence that shows that despite large price increases in public health facilities in Kenya since 1992, overall service utilization has decreased only marginally (Nganda, 2002).

User charges in Kenya remain a valued source of revenue for public health facilities even though the portion of the overall health budget they fund is modest. Furthermore, the findings of this study show that fees in public clinics tend to divert demand to other facilities while marginally reducing overall service utilization. However, there is evidence that the poor are over-represented in the use of low quality

services. The extent to which fees are responsible for this situation has not been fully considered. The general impression is that the fees may be hurting the poor, and there is need therefore to establish a compulsory social health insurance scheme to ensure that basic healthcare is available to all equally (Ministry of Health, 2002).

Although healthcare demand models (Gertler and van der Gaag, 1990) predict that the establishment of the social insurance scheme of the type envisaged by Kenyan policy makers would increase health service utilization, there are institutional rigidities inherent in the scheme that can thwart its expected effects on demand (Mwabu *et al*, 2002). First, health facilities might choose not to participate in the health insurance scheme owing to their inability to comply with its formal demands such as the requirement that they complete the necessary paperwork for the reimbursement of claims. Such facilities would deny patients the opportunity to benefit from a social insurance fund because they would not accept payment through the insurance scheme. Therefore, social insurance schemes should be as convenient as possible to use, but care should be taken not to expose them to moral hazard problems (Grossman, 1972).

Second, some health facilities such as health centres and subdistrict hospitals might not be eligible for reimbursement from an insurance scheme such as the Kenya National Hospital Insurance Fund. In such a case, households covered by insurance cannot access services from such facilities, which would particularly inconvenience those that live close to such facilities.

Third, user fees for health services might be so low that insurance holders choose to pay cash directly rather than use the insurance scheme because of the associated non-monetary costs in seeking reimbursement, such as the time spent preparing the paperwork or searching for eligibility cards. Although non-monetary costs in this case do not deter

utilization, they render social insurance an inefficient investment. Instead of reducing welfare by curtailing health service utilization, the non-monetary costs here reduce potential welfare by eliminating the incentive to use a resource already committed to medical care.

Finally, although insurance reduces the monetary costs of health services, it normally increases the time cost of accessing the services, a fact that is often not recognized. Since under insurance healthcare is free of charge at the time of use, waiting lists and queues become dominant mechanisms for rationing healthcare. Therefore, there is a possibility that the increase in health service utilization associated with insurance would be offset by a reduction in demand due to insurance-induced increase in the time cost of healthcare. Moreover, even if insurance were to leave the time cost of medical care unaffected, this cost could be sufficiently large to deter usage. This is particularly the case in rural areas, where people live considerable distances away from health facilities that provide insurance-funded services. A social health insurance scheme should be implemented with caution if it is to offer a Pareto improvement over a system of user fees in which basic healthcare for the poor is ensured through statutory fee exemptions or other forms of subsidy.

6.2 Present work in relation to previous studies

We started by clarifying the linkage among user fees, service quality and access to basic care by the poor. The findings of this study suggest that income from user fees should be used to improve service quality at government health facilities because such an investment would increase demand for modern healthcare and reduce reliance on self-treatment. Indeed, the original motivation for the introduction of fees in government health facilities in the 1980s was to use the resultant fee income to improve the quality of the services they offered. The underlying assumption was that any adverse demand effects of fees

would be offset by statutory fee exemptions. The strongest argument for user fees is that free public health facilities are likely to be indistinguishable from self-treatment alternatives in terms of the quality of care they offer. In situations of severe budgetary constraints such as those that have persisted in African countries for decades, fees collected from patients provide public clinics with revenue to improve service quality. However, user fees have the disadvantage that they have historically relegated the poor to low quality sources of care. Pro-poor fee-exemption schemes in public clinics in the past have proved very difficult to implement (Huber 1993).

The first-generation healthcare demand studies of the mid 1980s supported charging of user fees for healthcare in government health facilities (see e.g., Akin et al, 1985; World Bank, 1987). These studies *predicted* large efficiency and equity gains from market-based provision of medical care, in contrast to the state-dominated healthcare programmes of the era. The enthusiasm for fees waned in Africa when evidence from second-generation demand studies in the 1990s showed that the fees adversely affected health service utilization by the poor without raising sufficient revenue for the health sector (see e.g., Waddington and Enyimayew, 1990; Mwabu *et al*, 1995). This evidence was particularly troubling to policy makers in view of worsening poverty in many African countries in the 1990s (World Bank, 2000). But maybe the second-generation studies assessed effects of fees too soon after they were introduced.

Recent demand studies (Nganda, 2002; Sahn *et al*, 2002) examined effects of fees after health facilities and the communities they serve had had some experience with user fees schemes. These studies, like the present one, were undertaken when the facilities had mastered, through learning by doing, ways of using fees revenue to improve quality of heathcare. Therefore, even as fees reduced overall demand via substitution effects,

the income-like demand effects of better quality simultaneously increased service utilization. Furthermore, better demand specifications in the newer studies capture demand diversion effects of user fees that had been neglected by earlier studies. As a consequence of incomplete specification of demand equations, earlier studies tended to overstate the negative effect of fees.

The Kenyan example reported here shows that when quality and demand diversions associated with fees are taken into account, cost-sharing in public health facilities has a minimal reduction in the overall service utilization. However, the problem of the poor patronizing facilities of questionable quality owing to their inability to afford better healthcare remains. Widespread poverty in many African countries, Kenya included, continues to be a major barrier to implementation of an equitable system of fees at public health facilities. Using fee exemptions to target basic health services to large numbers of the poor is extremely difficult. This equity issue remains the single most important barrier to widespread acceptance and enforcement of fees in public health sector in Africa, and has created keen interest in social health insurance schemes in Kenya. This paper has highlighted the potential difficulties associated with such schemes.

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APPENDICES

Table A1: Descriptive statistics of selected variables (std. dev. appears in parentheses)

Variable	1994	1997
Age	36.5	38.1
	(16.7)	(17.8)
Male	0.41	0.38
	(0.49)	(0.48)
Urban	0.14	0.17
	(0.34)	(0.37)
Years of schooling	4.87	5.35
	(4.26)	(4.29)
House roof made of grass	0.41	0.32
	(0.49)	(0.46)
Availability of piped water	0.24	0.13
	(0.43)	(0.34)
Toilet (pit latrine)	0.69	0.54
	(0.46)	(0.49)
N	*6,386*	*4,536*

Table A2: Probit marginal effects — probability of reporting sick (std. error appears in parentheses)

Variable	1994a	1994b	1997
Age	0.003	0.003	0.00
	(0.0002)	(0.0002)	(0.003)
Male	-0.062	-0.062	-0.055
	(0.006)	(0.005)	(0.006)
Years of schooling	-0.0014	-0.001	0.0002
	(0.001)	(0.0007)	(0.001)
Grass house roof	0.022	0.024	-0.005
	(0.010)	(0.006)	(0.007)
Piped water	0.001	-0,002	-0.031
	(0.012)	(0.007)	(0.018)
Toilet (pit latrine)	0.021	0.023	-0.007
	(0.010)	(0.006)	(0.009)
User fees in government health facilities	-	0.0003	-
		(0.0004)	-
Unavailability of drugs in government health facilities	-	0.016	-
		(0.014)	-
N	*28,688*	*28,688*	*29,799*
Log Likelihood	*-14359*	*-14537*	*-12296*

Notes: Other regressors include province dummies and an indicator for living in an urban area.

Table A3: Multinomial logit estimates — choice of health care provider, 1997 (std. error appears in parentheses)

Variable	Private	Government	Mission	Self-care
Constant	-0.497	-0.515	-1.95	
	(0.300)	(0.329)	(0.713)	
	-	-	-	-
Age	-0.0009	-0.0006	-0.0006	
	(0.003)	(0.003)	(0.005)	
	0.0004	**-0.0013**	**0.00007**	**0.0008**
Male	-0.190	-0.174	-0.430	
	(0.084)	(0.078)	(0.149)	
	-0.0162	**-0.0153**	**-0.0113**	**0.0429**
Years of schooling	0.0577	0.0227	0.039	
	(0.012)	(0.011)	(0.021)	
	0.009	-0.001	0.0005	**-0.008**
Grass house roof	-0.264	-0.113	0.008	
	(0.097)	(0.088)	(0.160)	
	-0.042	**0.0003**	**0.0048**	**0.0367**
Piped water	0.306	0.237	-0.023	
	(0.130)	(0.129)	(0.254)	
	0.038	**0.024**	**-0.0076**	**-0.054**
Toilet (pit latrine)	0.221	0.375	0.154	
	(0.085)	(0.079)	(0.147)	
	0.005	0.062	-0.0019	-0.065
N	*1,235*	*1,570*	*259*	*1,472*

Notes: Other regressors include province dummies and an indicator for living in an urban area. Log likelihood -5448.73.

The numbers in boldface are the marginal effects of the independent variables on choice of healthcare provider.

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