Interplay between women's perceived quality of, and access to care and household wealth on the utilization of maternity services among the urban poor

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Short Abstract

The purpose of this paper is to investigate how women's perceived quality of, and access to care affect utilization of maternal health services among the urban poor, and the extent to which their effect vary by household wealth. We used ordered logit model and data from a study conducted in the informal settlements of Nairobi, Kenya. The outcome variable is place of delivery defined as a three-category ordered variable. Preliminary results show that the influence of women's perceived quality of, and access to care is strong, women with a high perception of access being more likely to deliver in appropriate health facilities. Interactions between household wealth index and perceived quality of care indicate that better perception is associated with better use of delivery services among all wealth groups. By contrast, interactions between perceived access and wealth index reveal that high perception was associated with poorer use amongst the poorest households.

1. Background

Maternal mortality has been proposed for use as an indicator of accessible and functional health services[1]. Reducing maternal mortality in developing countries is therefore an international priority. Millennium Development Goal (MDG) 5 sets out by the year 2015 to; reduce by three quarters the maternal mortality ratio. This target was selected because maternal ill health is the largest contributor to the disease burden affecting women in developing countries; because the lifetime risk of maternal death is much greater in the poorest countries than in the richest (1 in 12 for women in east Africa compared with 1 in 4000 for women in northern Europe)[2]

Although the determinants of poor maternal outcomes among women include poverty; cultural factors that restrict women's autonomy, promote early marriage or support harmful traditional practices; nutritional deficiencies; reproductive factors such as young age at first birth; distance to health services, and inadequate health care behavior or use of services[3], other factors such as access to and quality of care are also of influence to these women. It is then follows that, availability, accessibility, use, and quality of essential obstetric care for life threatening conditions, including complications after abortion, need to be improved[4,5,6.]

Rapid urban growth throughout the developing world is seriously outstripping the capacity of most cities to provide adequate services for their citizens[7]. While developed nations have a higher percentage of urban residents than less developed countries, urbanization is occurring rapidly in many less developed countries, and it is expected that most urban growth will occur in less developed countries during the next decades[8]. The rapid urbanization over *the* past half century seems to have been accompanied by excessively high levels of concentration of *the* urban population in very large cities[9] and the result is urban slums. These urban slums pose special health problems due to poverty, overcrowding, unhygienic surroundings and lack of an organized health Infrastructure[10].

Paucity of data on health status is a problem of major concern in many developing countries[11], while studies have tried to look at access to and quality of care in the rural and urban set-ups, few have concentrated into looking at how access to and quality of care influence utilization of maternal health services among women living in urban slums. Although 40 percent of residents of less developed countries live in urban areas, urbanization is still occurring rapidly in many less developed countries. It is expected that 60 percent of the world population will be urban by 2030, and that most urban growth will occur in less developed countries[12]

While the census and national family health surveys deal with data at the national and regional levels, they compile and publish information at lengthy time intervals, and provide little by way of disaggregated information to help guide health policy and action at the local level, especially for deprived sections of society such as urban slums. The poor health status of slum and squatter dwellers usually gets obscured by the statistics comparing the relatively well-off urban population vis-a-vis the rural population.

Although some research on people's perceptions on quality of care has increased considerably in the past decade[13], most studies have been interested in the actual clients who use the services. This study is unique in that, it will look at the perceptions of clients with regard to their nearest health facility, which may not necessarily be the facility they used for delivery services. A documentation of the perceptions of these 'non-users' is necessary for policy makers and may shed light on the factors that influence peoples' choice of health care services[14].

While many stakeholders have viewed the client's perspective as a meaningful indicator of health services quality, others have dismissed the views of clients as too subjective. However, how a client feels is important, even though the provider's assessment of reality may be different[15]. Improvements in preventive and care-seeking behaviours to reduce maternal mortality in rural Africa depend on the knowledge and attitudes of women and communities[16]. When women are assured of quality during delivery, then most maternal deaths can be prevented. For example, it is known that having a skilled attendant at every delivery can lead to remarked reduction in maternal mortality and morbidity[17]. A study in Namibia found that, low quality of health services provided with limited access to health facilities is correlated with increases maternal morbidity and mortality[18].

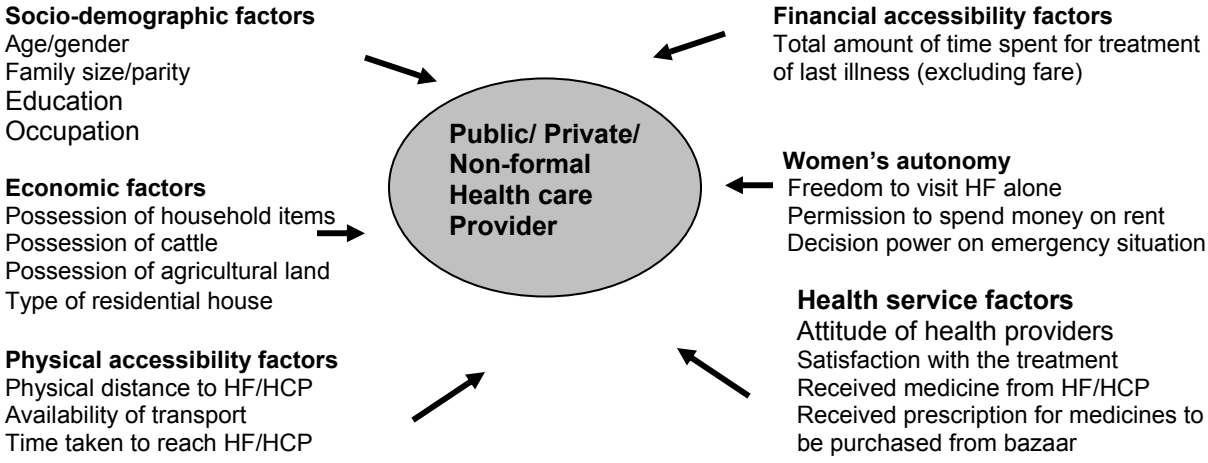
Mother's age may sometimes serve as a proxy for the women's accumulated knowledge of health care services, which may have a positive influence on the use of health services. On the other hand, because of development of modern medicine and improvement in educational opportunities for women in recent years, younger women might have an enhanced knowledge of modern health care services and place more value upon modern medicine[19].

Access to healthcare services is an important determinant of health[20]. However, access to healthcare services is conditioned by coverage[21] and various factors including socioeconomic circumstances[22,23] care-seeking behaviours and the behaviours of healthcare providers. Access to care for delivery is complicated by the unscheduled nature of labor, by women's other responsibilities, and by fears for women's safety during night travel[24].Poor access to primary

health care is associated with adverse pregnancy outcomes, infant mortality, decreased vaccination coverage,, and decreased contraceptive use and may affect adherence to treatment regimens for chronic diseases[25]

Poor access to primary health care is associated with adverse pregnancy outcomes[26], infant mortality[27,28], decreased vaccination coverage[29,30], and decreased contraceptive use[31,32,33]. The successful attainment of at least three of United Nation's Millennium Development Goals[34], (reduce child mortality, improve maternal health, and combat HIV/AIDS, malaria, and other diseases) is contingent on improved access to primary health care.

To understand perceived quality of, and access to care, the conceptual framework by Kroeger 1983 was used to explain the factors that influence use and non use of health services, this framework was because it encompasses most aspects underlying the typical health seeking behaviour of a community, especially in developing countries. The conceptual framework explains the factors and determinants of health seeking behaviour as; socio-demographic, economic, physical accessibility, financial accessibility, women's autonomy and health service factors. These are as illustrated in the figure below;



2. Data and Methods

2.1. Data

The data used in this paper are from a maternal health study carried out in 2006 in two slums of Nairobi, Kenya, namely Korogocho and Viwandani. The two communities exhibit structural differences: Viwandani is home to many industrial workers; it attracts migrants with relatively higher education levels, and exhibits higher levels of economic activity; whereas the population in Korogocho is more stable. All women (a total of 1,927) who had pregnancy outcomes in

2004-2005 were selected and interviewed. Further, all health facilities (a total of 25) where women residing in the two study areas go to seek obstetric care were visited.

2.2. Dependent variable

The outcome variable is the place of delivery. From the health facility survey, health facilities were classified as either appropriate or inappropriate. The former group comprised health facilities run/owned by government, large NGOs, religious and missionary groups that provide at least the basic essential obstetric care. The remaining facilities were substandard health clinics that do not provide the minimum requirements for obstetric care. Based on this grouping, the dependent variable is defined as follows;

$$Y = \begin{cases} 0 & if\ respondent\ did\ not\ deliver\ at\ a\ health\ facility \\ 1 & if\ respondent\ delivered\ at\ an\ inappropriate\ health\ facility \\ 2 & if\ respondent\ delivered\ at\ an\ appropriate\ health\ facility \end{cases}$$

2.3. Key Predictors

Women's perceived access to care

Accessibility is concerned with people's ability to access health care, whatever the quality of care provided. This goes beyond financial access and includes other factors like distance to the health facility and services provided. Information, education, occupation, family structure, age and gender affect it as well. Equitable access to maternal health may be considered as the ability of pregnant women to access maternal health services in the absence of potentially remediable systematic differences in one or more aspects of maternal health across socially, economically, demographically and geographically defined population groups or subgroups[35]. For this study, perceived access to care was constructed from the seven variables shown in Table 1, using principal component analysis (PCA).

Women's perceived quality of care

Quality of care means that the needs of the clients in the context of their personal life should be the major determinant of the behaviour of the providers and the goal of the programs[36]. Quality of care also means that the needs of the clients should be the major determinant of the behavior of the providers and the goal of the programs. Quality of care can be considered a right of the clients, defining clients not only as those who approach the health care system for services but also as everyone in the community who is in need of services[37]. Perceived quality of care was defined from the variables items described in Table 1.

2.4. Control variables

Key socioeconomic covariates: Women's education, and household wealth; and 3) Control variables: parity, age at birth, pregnancy wantedness, number of antenatal visits, advised at antenatal care to deliver with a skilled health care provider, and slum residence (Korogocho, Viwandani).

2.5. Methods of analysis

To quantify the effects of the identified covariates on the choice of place of delivery, ordered logistic regressions were fitted using partial proportional odds models[38]. The analysis is carried out in three phases. First, we use bivariate models to explore the crude effect of each predictor variable, without any control. Second, multivariate model allow us to identify factors associated with place of delivery and quantify their effects when controlling for other variables. Third, interaction models are examined to test the extent to which the effects of the women's autonomy on the choice of place of delivery vary by household wealth and slum residence.

3. Results

3.1. Sample description

The household survey interviewed a sample of 1,927 women *(see Table 2).* About 66% of the women had primary education, while 25% had secondary or higher education. Approximately 31% of the women reported to having had a mistimed or unwanted pregnancy, while the rest, 69% had a wanted pregnancy. About 52% of women made the recommended four and above antenatal care (ANC) visits, while the rest either made no visit or just one (12%) and 2 to 3 visits (36%). About 77% of the women were advised to deliver with the assistance of a health professional. A majority of the women, 46% were either having their second or third child, while 29% were having their fourth child and above, for the remaining, 25%, it was their first child. The ages of the women were grouped into four categories, which were as follows; 20 years were 8.8%; 20-24 years, 35%; 25-29 years, 28% lastly those aged 30 years and above were also 28%. When looking at the women by their place of residence, 57% were from Korogocho and 43% from Viwandani.

3.2. Multivariate model

From Table 4, it is evident that both women with high perception of access to, and quality of care health care, were more likely to deliver in a health facility than their counterparts with low perception. Women with at least secondary education were more likely to deliver in a health facility compared to those with primary education ($p<0.01$), on the contrary, women with no

education were more likely to deliver in appropriate health facilities compared to their counterparts with primary education ($p<0.05$)

There existed a weak association between delivery of a wanted pregnancy in a health facility. The number of antenatal care visits a woman has, is significantly associated with delivery in a health facility. Women who had made the recommended four visits and above were more likely to deliver in a health facility compared to their counterparts who had made one or no visit at all. The women who were advised during ANC to deliver at a health facility were more likely to deliver in health facilities. Age was again significantly associated with delivery at a health facility with older women, aged 25 years and above being more likely to deliver in a health facility than younger women. With regard place of residence, there existed significant differences with regard to slum residence where women being more likely to deliver at any health facility or at an appropriate health facility.

3.3. Interactive model

The interaction between women's perceived access to and quality of care and household wealth are as shown in Figure 1, with focus on delivery at an appropriate health facility. Graph 1.1 of Figure 1 shows that in middle and least poor households, women who have a high perception of access to care were more likely to deliver in a health facility, compared with their counterparts with low or middle perception of access to care, although the middle households that had a high perception were still more likely to deliver in a health facility than their counterparts in the least poor households that had a high perception. When looking at women with a middle perception of access to care, those in the least poor households were more likely to deliver in a health facility than those in the middle households. A similar pattern is observed in Graph 1.3 with regard to perceived quality of care and place of delivery. Graph 1.2 of Figure 1, shows that women in the middle and least poor households with a high perception of access to care were less likely to deliver at an appropriate health facility. The same trend is exhibited in Graph 1.4.

4. Discussion

The influence of women's perceived quality of, and access to care is strong in the expected direction for women with a high perception, who are more likely to deliver in an appropriate health facility compared to their counterparts with middle or low perception. Interactions between household wealth index and perceived quality of care indicate that higher autonomy is associated with better use of delivery services among the poorest, middle and least poor wealth index. On the contrary, interactions between perceived access and wealth index indicate that high autonomy was associated with poorer use poorest households.

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Table I. Variables used to define perceived access to and perceived quality of care

A. Perceived access to care

In your opinion:

1. The distance from your home to the nearest HF is: *Long; Somehow long; Short*
2. The travel time from your home to the nearest HF is: *Long; Somehow long; Short*
3. To get transport from your home to the nearest HF is*: Difficult; Somehow Difficult; Not at all*
4. The cost of transportation from your home to the nearest HF is: *Affordable; Somehow Affordable; Not at all*
5. The fees pregnant women are charged at the nearest HF are: *Affordable; Somehow Affordable; Not at all*
6. The opening hours at the nearest HF are: *Suitable; Somehow Suitable; Not at all*
7. The doctors and midwives at the nearest HF are: *Available; Somehow Available; Not at all*

B. Perceived quality of care

In your opinion:

1. The people who work in the nearest HF are: *Honest; Somehow Honest; Not very honest*
2. The doctors and midwives are *Capable; Somehow capable; Not capable* of finding out the problem with a pregnancy
3. Patients can obtain drugs: *Easily; With relative ease; With difficulty*
4. The effectiveness of the medicine supplied by hospitals/clinics are: *Good; Fair; Not good*
5. The equipments are: *Adequate; More or less Adequate; Inadequate* for detecting diseases related to pregnancy
6. The waiting rooms, examination rooms, and delivery rooms are: *Adequate; More or less Adequate; Inadequate*
7. The pregnant women cared for: *Recover well; Recover relatively well; Do not recover well*
8. The doctors and midwives examine their patients: *Well; Somewhat well; Not very well*
9. The doctors and midwives are: *Open; Somewhat open; Not very open* with the pregnant women
10. The doctors and midwives are: *Compassionate; Somewhat compassionate; Not very compassionate* towards pregnant women
11. The doctors and midwives are: *Respectful; Somewhat respectful; Not at all respectful* towards pregnant women
12. The doctors and midwives are: *More respectful; Equally respectful; Less respectful* towards pregnant women if another person accompanies the pregnant women at the visit
13. The time that the doctors and midwives devote to their patients is: *Adequate; More or less Adequate; Inadequate*
14. The patients are given: *Adequate privacy; Somewhat adequate privacy; Inadequate privacy* during examination by the nurse/doctor
15. The number of doctors and midwives is: *Adequate; More or less Adequate; Inadequate*
16. The doctors and midwives are: *Well suited; Relatively well suited; Not well suited* to deliver pregnant women

Table 2. Characteristics of women from the slums of Nairobi, Kenya who delivered in 2004-2005

Variables	%	N
Education		
None	8.6	166
Primary	66.0	1,272
Secondary or higher	25.4	489
Wanted index pregnancy then		
No	30.6	590
Yes	69.4	1,337
Antenatal care visits		
0-1	12.0	231
2-3	36.0	694
4+	52.0	1,002
Advised during ANC to deliver at a health facility		
No	23.2	448
Yes	76.8	1,479
Parity		
1	25.0	481
2-3	45.8	883
4+	29.2	563
Age at birth		
<20	8.8	170
20-24	35.1	677
25-29	27.5	530
30+	28.5	550
Slum residence		
Korogocho	57.0	1,098
Viwandani	43.0	829
N		1,927

Note: Women's autonomy and Household wealth are not shown since they are defined as tertiles.

Table 3. Odds ratio of ordered logistic regression models on the effects of women's perceived quality of, and access to, care on health facility delivery in the slums of Nairobi, Kenya

	All types of HF vs Not HF	Appropriate HF vs (Inappropriate or not HF)	All types of HF vs Not HF	Appropriate HF vs (Inappropriate or not HF)	All types of HF vs Not HF	Appropriate HF vs (Inappropriate or not HF)
Perceived access to care (Ref: Low)						
Medium	1.74 **	1.07			1.45 **	0.98
High	2.33 **	0.86			1.79 **	0.77 †
Perceived quality of care (Ref: Low)						
Medium			1.54 **	0.98	1.10 †	--
High			2.44 **	1.05	1.66 **	1.20

†p<.10; *p<.05; **p<.01

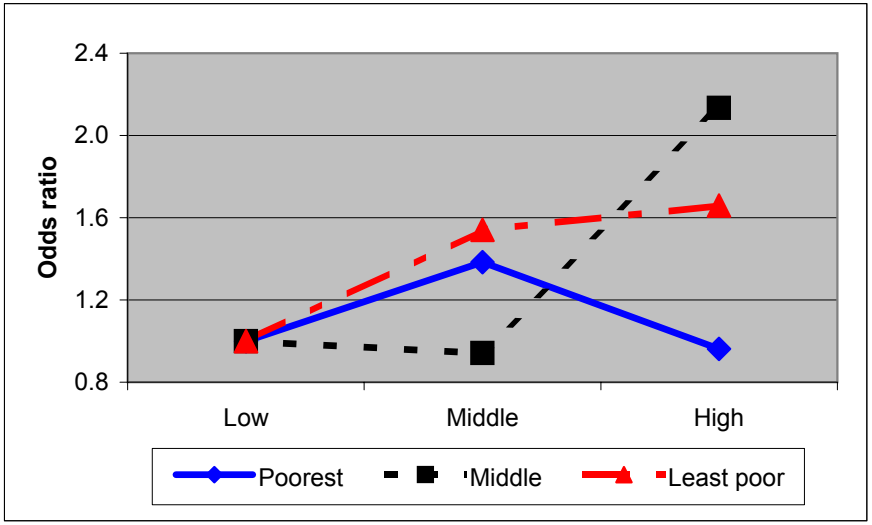
Table 4. Odds ratio of ordered logistic regression models on the effects of women's perceived quality of, and access to, care on health facility delivery in the slums of Nairobi, Kenya

	All types of HF vs Not HF	Appropriate HF vs (Inappropriate or not HF)	All types of HF vs Not HF	Appropriate HF vs (Inappropriate or not HF)
Perceived access to care (Ref: Low)				
Medium	1.34 *	1.00	1.31 †	1.00
High	1.71 **	0.79	1.64 **	0.84
Perceived quality of care (Ref: Low)				
Medium	1.07	1.07	0.88	--
High	1.64 **	1.20	1.43 *	1.08
Household wealth (Ref: Poorest)				
Middle	1.19 †	--	1.36 **	--
Least poor	2.13 **	1.41 **	2.20 **	1.61 **
Education (Ref: Primary)				
None	1.15	1.48 *	1.34 †	--
Secondary or higher	1.69 **	1.18	1.52 **	--
Wanted index pregnancy then				
Yes			1.19 †	--
Antenatal care visits				
2-3			1.60 **	1.22
4+			2.00 **	1.45 *
Advised during ANC to deliver at a health facility				
Yes			1.35 **	--
Parity				
2-3			0.50 **	--
4+			0.28 **	0.35 **
Age at birth				
<20			1.07	--
25-29			1.36 *	--
30+			1.38 *	--
Slum residence				
Viwandani			0.60 **	0.24 **

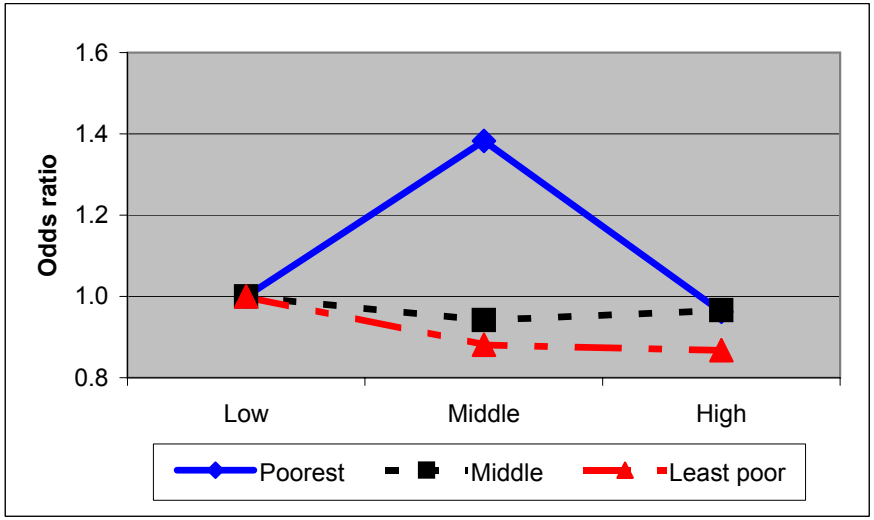
†p<.10; *p<.05; **p<.01

Figure 1. Interactions between women's perceived access to and quality of care and household wealth as determinants of health facility delivery

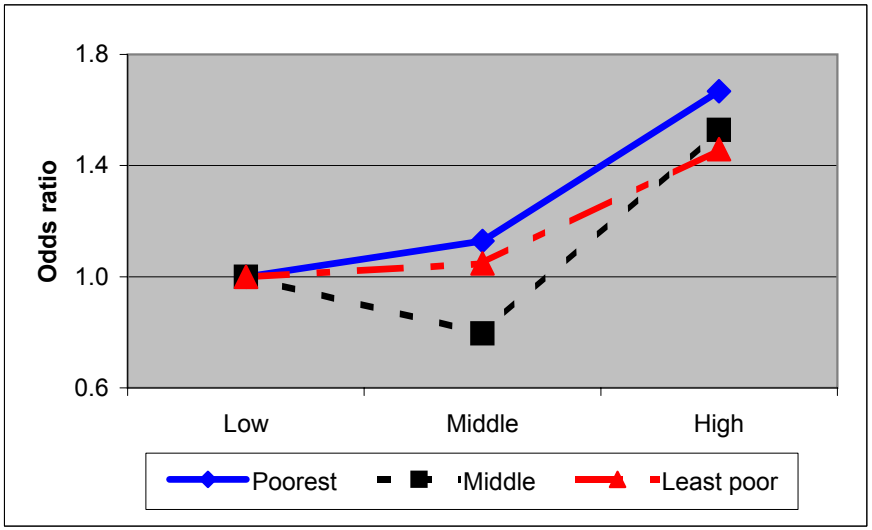
Graph 1.1. Perceived access-All types of facilities



Graph 1.2. Perceived access-Appropriate facilities



Graph 1.3. Perceived quality-All types of facilities



Graph 1.2. Perceived quality-Appropriate facilities