Provision and Use of Maternal Health Services among Urban Poor Women in Kenya: What Do We Know and What Can We Do?

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ABSTRACT *In sub-Saharan Africa, the unprecedented population growth that started in the second half of the twentieth century has evolved into unparalleled urbanization and an increasing proportion of urban dwellers living in slums and shanty towns, making it imperative to pay greater attention to the health problems of the urban poor. In particular, urgent efforts need to focus on maternal health. Despite the lack of reliable trend data on maternal mortality, some investigators now believe that progress in maternal health has been very slow in sub-Saharan Africa. This study uses a unique combination of health facility- and individual-level data collected in the slums of Nairobi, Kenya to: (1) describe the provision of obstetric care in the Nairobi informal settlements; (2) describe the patterns of antenatal and delivery care, notably in terms of timing, frequency, and quality of care; and (3) draw policy implications aimed at improving maternal health among the rapidly growing urban poor populations. It shows that the study area is deprived of public health services, a finding which supports the view that low-income urban residents in developing countries face significant obstacles in accessing health care. This study also shows that despite the high prevalence of antenatal care (ANC), the proportion of women who made the recommended number of visits or who initiated the visit in the first trimester of pregnancy remains low compared to Nairobi as a whole and, more importantly, compared to rural populations. Bivariate analyses show that household wealth, education, parity, and place of residence were closely associated with frequency and timing of ANC and with place of delivery. Finally, there is a strong linkage between use of antenatal care and place of delivery. The findings of this study call for urgent attention by Kenya's Ministry of Health and local authorities to the void of quality health services in poor urban communities and the need to provide focused and sustained health education geared towards promoting use of obstetric services.*

KEYWORDS *Antenatal care, Delivery care, Kenya, Maternal health, Urban poor.*

INTRODUCTION

In sub-Saharan Africa, the unprecedented population growth that started in the second half of the twentieth century has evolved into unparalleled urbanization. The region's urban population was 15% in 1950, 32% in 1990, and the United Nations projects that by 2020, a majority of sub-Saharan Africa's population will live in urban areas.^{1,2} While in the first half of the twentieth century urbanization was

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predominantly confined to countries that enjoyed the highest levels of per capita income, in the more recent past and for the near future, the most visible changes in urbanization have occurred and will continue to occur in middle- and low-income countries.³

The essential feature of current patterns of urbanization in Africa is that in many countries, the pace of urbanization has outstripped economic growth, making it difficult for national and urban authorities to provide affordable housing, quality social services, or sufficient employment to the growing urban populations.⁴ Between 1980 and 2000, the region's urban population grew by about 4.7% per year,¹ while per capita gross domestic product dropped by 0.8% per annum.⁵ These trends have resulted in unprecedented growth of slums and unplanned settlements on the periphery of most African cities.⁶ These informal settlements are hubs of deprivation, risky health behaviors, and environmental pollution, and people living therein are often systematically excluded from opportunities, capacity, and empowerment that would enable them to gain better control of their lives and health.⁷⁻⁹ Young people in informal settlements face unique challenges as they transition to adolescence and adulthood in such a hostile environment characterized by high levels of unemployment, crime and substance abuse, poor schooling facilities, as well as poor sexual and reproductive health outcomes.¹⁰ A recent report observed that urbanization and cities in Africa are not serving as engines of growth and structural transformation but are part of the cause and major symptom of the economic and social crisis that has enveloped the continent.¹¹

The explosive growth of urban informal settlements in most countries of the developing world challenges the commonly held assumption that the health and economic conditions of urban populations are superior to those of rural dwellers. Emerging evidence demonstrates that health disparities between the poor and the non-poor are widening in urban areas of the developing world¹² and that in some countries, like Kenya, the urban poor exhibit poorer health outcomes than even those in rural areas.¹⁰ This finding lends support to the concept of the urban health penalty which posits that cities concentrate poor people in defined geographic areas and expose residents of these areas to unhealthy environments that result in a disproportionate burden of poor health.¹³ More generally, the advantage that urban areas previously had over rural areas on various health, social, and economic indicators has narrowed over time, as economic and environmental conditions have sharply deteriorated in rapidly growing cities.^{14,15} To improve national health and other socioeconomic indicators while reducing inequities between population subgroups, close attention should be paid to the urban poor.

Poor Maternal Health Progress in Developing Countries

Despite the various international efforts that have been initiated to improve maternal health, more than half a million women worldwide die each year as a result of complications arising from pregnancy and childbirth.^{16,17} Almost all these deaths occur in the developing countries, with sub-Saharan Africa accounting for almost 47% of the toll. Further, for every woman who dies, approximately 20 more women suffer some type of injury from pregnancy or childbirth that can have profound effects on their lives and that of their families.¹⁸ Despite the lack of reliable trend data on maternal mortality, recent evidence suggests that progress in maternal health has been very slow in sub-Saharan Africa.¹⁹ It is perplexing that Kenya, a country with one of the highest female literacy rates in Africa and better economic performance than many countries, has been recording one of the highest maternal

mortality levels. Recent estimates indicate that the country's maternal mortality ratio was 1,000 per 100,000 live births in 2000.²¹ Most of these deaths and disabilities could be averted if women had access to appropriate maternal health care, including antenatal and delivery care.^{17,20}

One key strategy adopted by the international community to reduce maternal mortality is to increase the proportion of births assisted by health professionals (doctors, nurse-midwives, and nurses with midwifery skills).²¹ Focusing on the period around childbirth is appropriate, as most maternal deaths cluster around labor and the postpartum period.¹⁷ In recognition of the central role of professional care at birth, skilled birth attendance was chosen as a process indicator for monitoring progress towards the maternal health Millennium Development Goal (MDG) that seeks to reduce maternal mortality by three quarters by 2015. It is appalling to note that in sub-Saharan Africa, the proportion of assisted deliveries remains very low and progressed only marginally from 42% in 1990 to 46% in 2004.²²

The benefits of antenatal care (ANC) are most significant in developing countries where morbidity and mortality levels among reproductive-age women are high. The antenatal period presents opportunities to reach women with a number of interventions that have been proven to be vital to their health and that of their infants.²³ For example, tetanus injection during pregnancy can be life-saving for both mother and infant; the prevention and treatment of malaria among pregnant women, management of anemia during pregnancy, and treatment of sexually transmitted infections can significantly improve fetal outcomes and maternal health. Other interventions that can be linked to ANC include providing information on good nutrition, family planning, breastfeeding, and the health benefits of delivery with the assistance of a skilled health care provider.²⁴ More recently, the potential of the antenatal period as an entry point for HIV prevention and care, in particular for the prevention of HIV transmission from mother to child, has led to renewed interest in access to and use of ANC services.²⁰ The World Health Organization (WHO) recommends that for the majority of normal pregnancies, ANC should consist of four visits during the course of the pregnancy, the first of which should occur within the first trimester.²⁵

Less attention has been paid to the reproductive health problems of urban poor populations than to those of rural residents. This is probably due to the fact that most income-earning opportunities, the major hospitals, and a disproportionate high share of health budgets are concentrated in cities and towns.⁸ Despite the vast amount of research on maternal health in Africa,^{26–29} very few have focused on the urban poor. Data available from nationally representative Demographic and Health Surveys (DHS) and other population-based surveys remain largely inadequate to answer questions relevant to the growing urban poor populations. In addition to being underserved, slums are not well represented in national surveys, as these areas are often considered illegal settlements by governments. As a result, average health indicators for large African cities like Nairobi mask huge disparities between the poor and the non-poor.

The purpose of this study was to improve our understanding of maternal health in rapidly growing urban resource-poor settings of Nairobi, Kenya and to formulate recommendations to improve the health of mothers in marginalized urban areas. The specific objectives are: (1) to describe the provision of obstetric care in the Nairobi informal settlements; (2) to describe the patterns of antenatal and delivery care, notably in terms of timing, frequency and quality of care; and (3) to draw

policy implications aimed at improving maternal health among the rapidly growing urban poor populations.

METHODS

Data Source

The data are from a maternal health project carried out in 2006 by the African Population and Health Research Center (APHRC) in two slum settlements of Nairobi, Kenya. In these two areas, APHRC conducts a demographic surveillance system (DSS) covering about 60,000 inhabitants. These two areas are among a growing number of informal settlements in Nairobi that house more than 60% of the city's population on less than 10% of the land. Like other Nairobi slum settlements, these two communities are underserved with regard to health infrastructure and services; they have high unemployment, poverty, crime, poor sanitation, and generally poorer health indicators when compared to Nairobi as a whole. The two communities, however, exhibit structural differences: Viwandani is bordered by an industrial area and attracts migrants with relatively higher education levels, while the population in Korogocho is more stable and show more co-residence of spouses.

The specific data used in this study were collected through household interviews and a health facility survey. From the DSS database, all women who had a pregnancy outcome in 2004–2005 were selected and interviewed. The questionnaire, which was administered to a total of 1,927 women, covered topics including antenatal, delivery, and postnatal care; reproductive history; perceived access to and quality of care; obstetric complications; and antenatal, delivery, and postnatal expenditures. All health facilities (both within and outside the slum settlements) where women in the two communities go to deliver were assessed with regard to the number, training, and competency of obstetric staff; services offered; physical infrastructure; and availability, adequacy, and functional status of supplies and other essentials for safe delivery. A total of 25 facilities were surveyed.

Study Variables and Methods of Analysis

The first area investigated in this paper is the adequacy and quality of emergency obstetric care facilities serving the study population. They are described using distribution frequencies of data from the health facility assessment with focus on the type of care provided (basic or comprehensive emergency care), availability and adequacy of equipment and supplies, and physical infrastructure. The second issue of interest is antenatal care, analyzed both in terms of frequency (coded 1, 2–3, or 4 visits or more) and timing (initiation in the first, second, or third trimester of pregnancy). The association of timing and frequency of antenatal care with education, household wealth, parity, and slum location of residence is assessed using chi-square test. Principal component analysis was used to generate household wealth tertiles from household possessions, namely, presence of electricity, material of the dwelling floor, source of drinking water, type of toilet facility, and type of cooking fuel. The third issue analyzed is delivery care. Unlike in other studies, place of delivery is defined to account for the quality of care provided. From the health facility survey, health facilities were classified as either “appropriate” or “inappropriate”. As previously, the chi-square test is used to assess the association between education, wealth, parity and location of residence, and place of delivery. Age and ethnicity were also included in the study. However, due to space constraints, the results are not shown.

RESULTS

Provision of Obstetric Care

In general, health centers, maternity homes, and clinics ought to provide basic emergency obstetric care (BEOC). Based on the quality and appropriateness of services recorded in the health facility survey, facilities appeared to form two distinct categories: The first group comprised 17 small and often ramshackle, private-owned and often unlicensed clinics and maternity homes located within the two slum communities. These facilities were deemed unable to offer many of the signal functions of BEOC, as defined by the following six procedures: administration of parenteral antibiotics, administration of parenteral oxytocic drugs, administration of parenteral anticonvulsants (for preeclampsia), manual removal of retained products of conception, manual removal of retained placenta, and assisted vaginal delivery (vacuum extraction). Health facilities from this group were labeled as “inappropriate”. The second category comprised eight facilities that provide at least basic essential obstetric care. These facilities are run or owned by government, religious and missionary groups or Faith-based organizations, and large non-governmental organizations (NGOs) and are located in the outskirts of the slums or other places in the city often far from the slums. Health facilities in this category which included two private clinics, two health centers, and four hospitals were labeled as “appropriate”.

The availability of supplies and functionality of key equipment needed for emergency obstetric care were also assessed. Whereas key supplies and equipment for safe delivery were recorded in the hospitals and most of the other larger facilities, some of the essential equipment such as anesthetic equipment and arm gloves for protection of the health care worker against HIV/AIDS were lacking in most of the health facilities located in the slums. In terms of physical infrastructure, it was notable that seven of the facilities located in the study area had no piped water in the ward or in the compound, while six of them did not offer privacy during delivery.

Use of Maternal Health Services: Frequency and Timing of Antenatal Care

Table 1 shows the description of the sample of 1,927 women who were interviewed in the household survey. About two thirds of women had primary education, and only one quarter reached or went beyond secondary education. The proportion of respondents in each age group declined as age increased, a pattern which has been reported in the 2003 Kenya DHS. For a quarter of women, it was their first pregnancy; about 46% had two or three children, while the remaining 29% had four or more children. Finally, 57% of women were from Korogocho and 43% from Viwandani.

Figure 1 compares the frequency and timing of antenatal care among Nairobi slum residents to other population subgroups namely, Nairobi as a whole, urban Kenya, and rural Kenya based on data from the 2003 Kenya DHS. The data show that despite the relatively high proportion of antenatal care from a health professional among slum women (about 97%, not shown), 48% made less than the recommended four visits. This figure compares with nearly 25% in Nairobi as a whole and 28% in urban Kenya. Noticeably, this proportion of slum resident women with less than four visits was slightly higher than that observed in rural Kenya (45%). This suggests that with regard to the frequency of antenatal care, urban poor women are at least as disadvantaged as their rural counterparts.

TABLE 1 Sample characteristics

	Number	Percentage
Education		
None	166	8.6
Primary	1,272	66.0
Secondary+	489	25.4
Age at birth of the last child		
<20	170	8.8
20–24	677	35.1
25–29	530	27.5
30–34	329	17.1
35+	221	11.5
Parity		
1	481	25.0
2–3	883	45.8
4+	563	29.2
Ethnicity		
Kamba	365	18.9
Kikuyu	499	25.9
Luhya	285	14.8
Luo	431	22.4
Others	347	18.0
Residence		
Korogocho	1,098	57.0
Viwandani	829	43.0
Total	1,927	

Another key feature of antenatal care is the timing of the first visit. Figure 1 also shows that among slum women who attended antenatal care, only about 7% initiated the process in the first trimester of pregnancy as recommended by the WHO, compared to 18% in Nairobi as a whole, about 15% in urban Kenya, and 11% in rural Kenya. Similar disadvantage of the urban poor was also captured in the proportion of women who had their first visit late in the third trimester of pregnancy. The proportion was similar among the slum residents and rural women (about 23%).

FIGURE 1. Patterns of antenatal care among slum dwellers in Nairobi, Kenya, compared to other population subgroups.

Table 2 analyses differentials in the frequency and timing of antenatal care by household wealth, respondent's education and parity, and slum residence (Korogocho versus Viwandani). With regard to the frequency of visits, educational and wealth differentials were statistically significant ($p < 0.001$). Interestingly, the proportion of women who made the recommended number of visits steadily increased with increasing education and wealth. The expected opposite trend was observed among women who only made two to three visits, and to a lesser extent, among those who either did not attend ANC or made only one visit during the course of the pregnancy. The pattern with parity was also in line with expectation and statistically significant ($p = 0.013$), with higher parity women being less likely to make the recommended number of antenatal care visits. It was also apparent that women from Viwandani (the wealthier area) were more likely to make the recommended number of visits compared to their Korogocho counterparts ($p < 0.001$).

Strong differentials in the timing of the first antenatal care visit were recorded with regard to wealth ($p = 0.004$), education ($p < 0.001$), parity ($p = 0.001$), and place of residence ($p = 0.001$) and in the expected direction. Lower household wealth or educational level, higher parity, and Korogocho residence were all associated with late initiation of antenatal care visits.

TABLE 2 Frequency and timing of antenatal care and delivery care in Nairobi's informal settlements, Kenya

	Number of antenatal visits				Timing on first antenatal visit			
	0–1/DK ^a	2–3	4+	Total	First trimester	Second trimester	Third trimester/None/DK ^b	Total
Household wealth ^c	$p < 0.001$				$p = 0.004$			
Poorest	13.2	44.8	42.0	100.0	5.4	64.1	30.5	100.0
Middle	14.0	34.0	52.0	100.0	7.3	66.2	26.5	100.0
Least poor	8.7	29.3	62.0	100.0	9.2	68.5	22.3	100.0
Education	$p < 0.001$				$p < 0.001$			
None	14.5	42.8	42.8	100.0	4.2	60.8	34.9	100.0
Primary	12.5	38.5	49.0	100.0	6.5	66.1	27.4	100.0
Secondary+	9.8	27.2	63.0	100.0	10.4	68.5	21.1	100.0
Parity	$p = 0.013$				$p = 0.002$			
1	10.6	31.8	57.6	100.0	10.4	67.2	22.5	100.0
2–3	11.6	36.1	52.3	100.0	6.9	67.3	25.8	100.0
4+	13.9	39.4	46.7	100.0	5.3	63.9	30.7	100.0
Place of residence	$p < 0.001$				$p = 0.001$			
Korogocho	10.8	41.7	47.5	100.0	5.4	68.4	26.2	100.0
Viwandani	13.6	28.5	57.9	100.0	9.9	63.5	26.7	100.0
Overall	12.0	36.0	52.0	100.0	7.3	66.3	26.4	100.0
N	231	694	1,002	1,927	141	1,277	509	1,927

^a2.9% of respondents did not attend antenatal care, 4.3% made one visit, and 4.8% did not know/remember the number of visits.

^b2.9% of respondents did not attend antenatal care, and 1.7% did not know/remember the timing of the first visit.

^cCoded as tertiles (lowest 33.3%, middle 33.3%, and highest 33.3%).

Patterns of Obstetric Care Services Utilization

The outcome variable used in this section is the place of delivery. Figure 2 compares the percentage of health facility deliveries in the study population (Nairobi slums) with that of Nairobi as a whole and urban Kenya based on the 2003 Kenya DHS. While it may be estimated that nearly 70% of slum dwellers delivered at health facilities, a figure which is comparable to that of Nairobi as a whole (about 78%), only about 48% delivered in facilities with at least the minimum standards (those referred to as “appropriate”). These results indicate that it may be misleading if the two categories of facilities examined in this study are not treated separately.

Table 3 presents differentials in place of delivery by wealth, education, parity, and place of residence. As can be seen, all differentials are strongly significant ($p<0.001$) and in the expected direction. The proportion of non-health facility deliveries steadily declined with education and wealth and increased with parity. There was no difference by place of residence in the proportion of respondents who did not deliver at health facility (about 30% in both locations). The divide between appropriate and non-appropriate health facilities, however, showed notable location disparities: women residing in Viwandani tended to deliver in “inappropriate” facilities (36% against 10% in Korogocho), while Korogocho women tended to deliver in “appropriate” facilities (about 60% compared with 33% in Viwandani). As Viwandani is wealthier on average than Korogocho, this result reflects in part the impact of physical access to appropriate facilities. Korogocho is closer to most of the “appropriate” facilities. Surprisingly, the proportion of delivery in “appropriate” facilities was highest among non-educated women (57%). This result, which is contrary to expectation, may be due to the small proportion of non-educated women in the sample (less than 9%), most of whom live in Korogocho, a locality shown earlier to be closer to “appropriate” health facilities.

How Does Antenatal Care Relate to Place of Delivery?

Figure 3 shows the link between use of antenatal care and place of delivery. Women reporting four or more antenatal visits were more likely to deliver in an “appropriate” health facility (52%) than their counterparts who made only two to three visits (48%) or one visit or none (35%). Likewise, women who reported four

FIGURE 2. Patterns of health facility delivery among slum dwellers in Nairobi, Kenya, compared to other population subgroups. Source: Figures for Nairobi and urban Kenya are from the 2003 KDHS.

TABLE 3 Patterns of delivery care in Nairobi's informal settlements, Kenya

		At health facility/clinic			
	At health facility	Total	Inappropriate facility	Appropriate facility	Total
Household wealth ^a	$p<0.001$				
Poorest	38.4	61.6	16.2	45.4	100.0
Middle	30.7	69.3	21.8	47.5	100.0
Least poor	20.9	79.1	26.6	52.5	100.0
Education	$p<0.001$				
None	35.5	64.5	7.2	57.2	100.0
Primary	33.0	67.0	20.7	46.3	100.0
Secondary+	20.3	79.8	28.6	51.1	100.0
Parity	$p<0.001$				
1	18.1	81.9	25.0	57.0	100.0
2–3	29.7	70.3	24.7	45.6	100.0
4+	40.7	59.3	13.7	45.7	100.0
Place of residence	$p<0.001$				
Korogocho	29.8	70.2	10.3	59.9	100.0
Viwandani	30.3	69.7	36.4	33.3	100.0
Education by residence					
Korogocho	$p<0.001$				
None	29.2	70.8	5.8	65.0	100.0
Primary	32.1	67.9	11.3	56.6	100.0
Secondary+	19.4	80.6	9.4	71.2	100.0
Viwandani	$p<0.001$				
None	65.5	34.5	13.8	20.7	100.0
Primary	34.5	65.5	36.2	29.3	100.0
Secondary+	20.7	79.3	38.9	40.4	100.0
Overall	30.0	70.0	21.5	48.5	100.0
N	578	1,349	415	934	1,927

^aCoded as tertiles (lowest 33.3%, middle 33.3%, and highest 33.3%).

FIGURE 3. Link between antenatal and delivery care among slum dwellers in Nairobi, Kenya.

or more ANC visits were less likely to give birth out of health facilities (25%) compared with their counterparts who made only two to three visits (32%) or less than one visit (44%). Overall, the association between antenatal care and place of delivery emerged to be statistically significant ($p < 0.001$).

DISCUSSION AND CONCLUSION

The rapid population growth in urban areas of most African countries, the resulting increased proportion of urban dwellers living in abject poverty in overcrowded slums and shanty towns, and the growing evidence indicating that large segments of urban Africa are more disadvantaged than rural areas in various aspects of health and well-being make it imperative to pay greater attention to the health problems of the urban poor. Efforts to progress towards the health MDGs and other national or international health targets may not be achieved without a focus on the urban poor. This study has used a unique combination of health facility- and individual-level data to describe the provision and use of maternal health services in two informal settlements of Nairobi, Kenya.

Our results show that the study area is deprived of public health services, a finding that supports the view that low-income urban residents in developing countries face significant obstacles in accessing health care.^{26,30,31} In agreement with the well-established evidence that distance and costs are among the major barriers to health seeking,^{28,32} most slum residents of Nairobi, Kenya are not able to afford the transport cost to seek proper care in places other than their close neighborhoods, unless they encounter serious complications during pregnancy or labor. The mere availability of health services to these populations may not translate into increased utilization partly because slum residents face pressure to raise money for bare survival. As opportunely reported in a study covering urban sub-Saharan Africa, lack of stable and regular sources of income and the high cost of living in cities result in residents – and women in particular – engaging in ad hoc jobs and trading during business hours when most health facilities are in operation.²⁶ This economic vulnerability of urban poor women, coupled with lack or poor transportation facilities owing to the overcrowded environments, are also key contributing factors to non-institutional deliveries, especially those deliveries that take place en route to health facilities.

The presence of large heterogeneity in the socioeconomic conditions of populations and the provision of health and social services in urban areas explains, to a large extent, the wide – and often widening – disparities in health between proximate neighborhoods that are emerging in most developing countries.³³ Recent evidence suggests that within-urban differences in health are much larger than intra-rural disparities and that the spatial patterning of intra-urban variations in health and survival are closely associated with the spatial patterning of socioeconomic conditions within the cities.^{14,34,35} Our findings on the provision of health services in the Nairobi slum communities concurs with those reported in other studies in substantiating the concern that the well-established concept of urban health advantage has shifted to urban penalty for rapidly growing segments of urban populations in the developing world.^{13,15} The disparity in the types of health facilities available for the urban poor – which is less likely to be found in rural or urban non-poor areas – suggests that the meaning of access to health facilities by the least wealthy groups of urban dwellers should be examined more carefully.³⁶

This study has shown that despite the high prevalence of ANC, the proportion of slum women who made the recommended number of visits or who initiated the

visit in the first trimester of pregnancy – as recommended – remains low compared to Nairobi as a whole and, importantly, compared to rural populations. While the comparison of slum residents with Nairobi as a whole exemplifies the intra-urban disparities discussed earlier,^{12,34,35} the fact that rural women had better outcomes than their urban poor counterparts illustrates the existence of an urban health penalty along with that of an urban health advantage in Kenya.^{13,15}

The bivariate analysis reported in this study shows that household wealth and respondents' education were associated with the frequency and timing of ANC. Although this result needs to be confirmed with more elaborate multivariate analysis, it does lend support to the vast amount of research that have shown strong linkages between education and wealth and various health outcomes.^{8,27,28,32} In particular, the finding that the least educated or poorest women exhibited substantially poorer maternal health outcomes in these overall poor and resource-deprived settings is an illustration of the power of education and wealth as predictors of health in developing countries.

The association with parity is also in line with other studies: Women of high parity are less likely to initiate ANC on time or to make the recommended number of visits, presumably assuming that they are experienced at the exercise. Residential differences in the frequency and timing of ANC were evident, with Viwandani women being significantly more likely to make four or more ANC visits or to initiate the visits in the first trimester compared to Korogocho residents. This is not surprising given that Viwandani provides better work opportunities – owing to its closeness to an industrial area – and as a result, has wealthier residents. This, however, did not translate to better use of appropriate health facilities for delivery in Viwandani. Korogocho is served by two “appropriate” health facilities run by NGOs and by a public referral maternity hospital that is located not too far away. These three facilities accounted for 56% of the deliveries among women in Korogocho community.

Noticeably, non-educated women tended to use “appropriate” health facilities more frequently than their counterparts with primary or secondary education. This can be explained by three possible factors. First, the proportion of women with no formal education is low (less than 9%). Second, about 85% of women with no formal education are in Korogocho which has better access to appropriate health facilities. Comparatively, only 35% of women with secondary or higher education live in Korogocho. Consequently, this distribution increases the average use of appropriate health facilities among women with no education relative to those with secondary education, although in both Korogocho and Viwandani, women with secondary or higher education are significantly likely to use appropriate health facilities for delivery than those with no formal education, as shown in Table 3 (education by residence). In Viwandani for example, where access to appropriate facilities is limited, women with secondary or higher education were twice as likely as those with no formal education to use appropriate health facilities. Third, this result may also be explained by the fact that seeking delivery care at a proper facility is driven to some extent by the occurrence of serious complications in the later stage of pregnancy, non-educated women being more likely to have pregnancy complications. Separate analysis (not shown) restricted to women who delivered at a health facility indicated that more than 75% of women who delivered at appropriate facilities had at least one complication during delivery compared with about 66% among those who delivered at inappropriate facilities ($p < 0.01$).

From this study, there is a strong linkage between use of antenatal care and place of delivery. Women reporting at least four ANC visits were more likely to

deliver in a health facility – and more so in appropriate facilities – than other women. This finding suggests that ANC has the potential to serve as a strategy for increasing use of skilled health care providers at delivery.²³

RECOMMENDATIONS

In Kenya, like in most African countries facing urban explosion and the associated urban poverty and health problems, failing to reach the rapidly growing population of the urban poor with health services may result in lack of progress towards the health MDGs.³⁷ Further, while targeting the best attainable level of health indicators at the national or sub-national (e.g., urban and rural areas) levels, health systems should also aim at reducing inequities between the poor and the non-poor. The findings of this study call for urgent attention by Kenya's Ministry of Health (MoH) and local authorities to the lack of quality health services in poor urban communities and the need to provide focused and sustained health education geared towards promoting use of obstetric services. Even though the Nairobi slums may be considered illegal settlements, they are home to about 60% of Nairobi residents.

Improving the Quality of Care Accessed by Poor Women

This study has shown that most health facilities in the slums are not registered, they are not supervised and not regulated, and they lack trained staff, equipment, and life-saving drugs. Yet, the second Kenya National Health Sector Strategic Plan (NHSSP-II) for the period 2005–2010 identified equitable access to care and improved quality of services as key policy objectives. The document also recognized that the public sector alone will not be able to provide the necessary services to all population groups; it valued partnerships with the private sector and communities as a vehicle to achieve the NHSSP goals.³⁸

In light of these commitments and principles, the Kenya MoH should design and implement a two-pronged strategy of partnership with the private sector and the communities aimed at bringing quality health services closer to the slum populations. While the “cost” barrier faced by the slum dwellers may be alleviated through initiatives such as the recent waiver of fees on delivery services at government dispensaries and health centers, the “distance” barrier remains a source of concern. First, the government should regulate private health facilities operating in urban slum settlements to ensure that the services they offer meet the acceptable minimum standards of obstetric care. The standards for the provision of maternal care set by the MoH describes the quality of services that midwives, nurses, clinical officers, and doctors should provide to women and their babies.^{39,40} Second, “good” facilities should be given technical support and supplied with drugs and equipment, among others. For instance, the continuous training opportunities offered to medical personnel working in the public sector should be extended to staff from the private facilities in the slums. The MoH could also extend its emergency backup referral services to private health facilities operating in slums to ensure quick transfers in emergency cases.

Given the government's commitment as spelt out in the NHSSP-II to involve communities in health care provision through the formation of community owned resource persons and village health committees,³⁸ the MoH needs to explore the implementation of the community midwifery model which has been successfully tested in Kenyan rural districts. This model focuses on empowering qualified midwives (retired or unemployed) living in communities to assist women during

pregnancy, childbirth, and the post-partum period in their homes, manage minor complications and facilitate prompt referral when necessary with backup referral mechanism to ensure speedy transfer to a hospital.⁴¹

Providing Focused and Sustained Health Education

The mere availability of quality health services to the slum populations may not translate into increased service utilization. Women – and particularly poor women – need to be aware of the health consequences of their decisions and to be equipped with skills and knowledge that can result in behavioral change.⁴² Health education activities directed to the less privileged populations with the goal of reducing inequalities in access and use of health services have been shown to be effective,^{42,43} yet the potential of health education as a tool for political action and behavior change has been lost in contemporary health promotion.⁴⁴

Our findings suggest a need for focused and sustained health education with the goal of providing women and communities with information on the importance of early initiation and appropriate frequency of ANC and delivery at appropriate health facilities. The program should also seek to correct common misconceptions (for example, the belief that higher parity is associated with lower risks) and address some of the sociocultural barriers that hinder women's utilization of health services. To increase the proportion of births that take place at a health facility, our results highlight the need to use antenatal care as a channel to provide advice on delivery and postnatal care, recognition of complications, and other pregnancy-related issues.

To ensure wider reach, health education programs should be channeled through a mix of avenues including the mass media (especially community radios, which are becoming common in slum settlements in Kenya), organizations working in the communities, community-level authorities such as chiefs, community outreach activities, posters and leaflets.

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