

# Use of maternal and child health services in a community with large refugee population in Nairobi, Kenya: a cross-sectional survey

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## Research article

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# Abstract

## Background

The population of urban refugees in the Eastleigh area of Nairobi, Kenya, is estimated at 100,000 to 150,000. Limited information on access to health care is available for this population. The health care a mother receives during pregnancy, at the time of delivery, and soon after delivery is important for the survival and well-being of both the mother and her child. The disadvantages in accessing health care and vulnerabilities of immigrant and refugee women are well documented in the literature. The purpose of our study was to assess the use of maternal and child health (MCH) services among the residents of Eastleigh and sources of services sought.

## Methods

In July and August 2010, we surveyed households in Eastleigh. Households were chosen using a multistage cluster sampling design. A standard questionnaire on household demographics was administered to the household caretakers. If the household included a woman who delivered a baby or had a pregnancy that lasted at least 7 months within the past year, she responded to the MCH questionnaire separately.

## Results

We gathered data from 673 households with 3,005 household members. There were 981 (32.6%) women of reproductive age (15–49 years), of whom 116 (11.8%) reported having a pregnancy or delivering in the past year. Of these 116 mothers, 104 (89.7%) made at least one antenatal care (ANC) visit, and 60 (63.2%) made at least four visits. Of 104 women who made at least one ANC visit, 23 (25.4%) first visited in the first trimester; 69 (64.2%) in the second trimester; and 13 (10.4%) in the third trimester. Compared with women who attended secondary school or higher, those with religious education only were twice as likely to get ANC in the early stages of pregnancy while those with no education were 3.33 times as likely. Fewer women (24%) sought delivery services at government health facilities than the 75% who delivered at private health facilities. Only three women delivered at home.

## Conclusion

Use of MCH services was high among Eastleigh residents. Women actively sought care at numerous facilities, predominantly private ones. However, the quality of care in these private facilities requires further assessment.

## 1 Background

According to estimates by the World Health Organization (WHO), 580,000 maternal deaths are recorded worldwide every year (1), 99% of which occur in developing countries. The incidence in sub-Saharan Africa is estimated at 640 maternal deaths for every 100,000 live births (2), most due to preventable causes; while the neonatal mortality rate is estimated at 38.8 per 1,000 live births (3). Access to and use of quality health care services are important determinants of maternal mortality (4). The health care a mother receives during pregnancy, at the time of delivery, and soon after delivery is important for the survival and well-being of both the mother and her child. The major objective of antenatal care (ANC) is to identify and address conditions associated with adverse outcomes (5). During an antenatal care visit, women are screened for complications and given advice on a range of issues, including place of delivery and referral hospitals. Information on antenatal care is of great value in identifying subgroups of women who do not use such services and in planning improvements to these services. Antenatal care is more beneficial in preventing adverse pregnancy outcomes when it is sought early in pregnancy and is continued through delivery (6). WHO recommends that a woman without complications should have at least four antenatal care visits, the first of which should take place during the first trimester (7). The quality of antenatal care is essential in detecting pregnancy related complications that can otherwise lead to maternal and child morbidity and mortality (8). Therefore, pregnant women should routinely receive information on the signs of complications and be tested for them during antenatal care visits.

Increasing the proportion of babies that are delivered in health facilities can be important in reducing health risks to both mother and baby. Proper medical attention and hygienic conditions during delivery can reduce the risks of complications and infection that can cause morbidity and mortality to either the mother or the baby (9).

Many maternal deaths occur during childbirth and the period immediately following the birth, with half of the deaths occurring within the first 24 hours (10). Postnatal care is key to treating complications arising from delivery and providing the mother with important information on how to care for herself and her child. It is recommended that all women receive a check on their health within 2 days after delivery (11).

## **1.1 Urban refugees in Nairobi**

According to recent statistics from the United Nations High Commissioner for Refugees, almost half of the world's 10.5 million refugees now live in cities and towns, compared to one-third who reside in camps (12). In Kenya, the total refugee population stood at 387,372 at the end of January 2010, of whom 272,712 (70.4%) lived in Dadaab (refugee camp in northeastern Kenya), 69,414 (17.9%) lived in Kakuma (refugee camp in northwestern Kenya), and the remaining 45,246 (11.7%) lived in Kenya's capital city of Nairobi. Unofficial estimates put the number of refugees in Nairobi at much higher figure(13) (14).

Most refugees in Nairobi live in Eastleigh. Eastleigh is a suburb on the eastern side of Nairobi inhabited largely by Somalis—both Kenyan nationals and migrants from Somalia (13)(15). The presence of this large Somali community has motivated new refugees from Somalia and from Kenya's refugee camps to settle in Eastleigh to seek better job opportunities and education (12)(13). Every day, five to six buses

arrive from Dadaab and Kakuma and several commuter buses operate between Eastleigh and Kenya towns bordering Somalia.

Little information is available regarding the health-seeking behavior of those living in Eastleigh and the services available to them. This survey was conducted to learn health-seeking behavior for maternal and child health services (MCH), identify barriers to MCH care, provide information to stakeholders working with urban refugees, and provide a foundation for future health surveillance activities.

## **2 Methods**

### **2.1 Setting**

We conducted a cross-sectional survey in July and August 2010 to assess use of MCH services in Section II of Eastleigh North division of Kamukunji district in Nairobi province. The area we surveyed is densely populated and has the highest concentration of health care facilities. This section of Eastleigh hosted largest number of urban refugees. The sole public facility is managed by the City Council of Nairobi in collaboration with the nonprofit German Society for Technical Cooperation (GTZ) and is situated at Fourth Street of Section II.

### **2.2 Definitions**

A household was defined as a group of people living under the same roof sharing the same cooking arrangements and under the responsibility of one head who was identified as the caretaker. A caretaker was defined as a household member who was responsible for the health of the household members. A household member was defined as someone who had slept within a compound, apartment, or room within the study area for at least 3 of the preceding 12 months, with the exception of infants, who were included if their mother met the definition for household member

### **2.3 Criteria for inclusion of subjects**

Household was considered eligible to be selected to participate if it was in Section II of Eastleigh north division and someone responded when approached for interviews. Any individual who met the definition for household member was also included in the study.

### **2.4 Criteria for exclusion of subjects**

Households in which the caretaker did not consent to participate were not surveyed. Similarly, households were not included if there was no response after the fourth attempt. Individuals living in hotels or other facilities that rent rooms by the night and visitors who stayed in the household less than 3 months were excluded from the survey and were not included in the sample size calculation.

### **2.5 Sampling**

We used the standard sample size calculation formula for random samples  $N_0 = \frac{Z^2pq}{d^2}$  in determining the sample size, which resulted in a total sample size of 785 households. We wanted to estimate maternal and child health-seeking behavior in women who delivered a baby or had a pregnancy that lasted at least 7 months within the past year and responded to a standard MCH questionnaire. We used a multistage random cluster sampling design. The first stage clusters were blocks among Section II of Eastleigh North, the second stage clusters were plots within the blocks, and the third stage clusters were households within the plots.

Households were selected in advance and the interviewers were provided with a list. Every household was given four opportunities to be included, however, if at the fourth visit the inhabitants were still not available, the household was replaced with another household that had been randomly selected in advance.

## 2.6 MCH use survey

Interview teams gathered data over a 3-week period from July 29, 2010, through August 14, 2010. The data collection phase followed a 3-week training of 21 community interviewers and one week of mapping and piloting. Interviewers were grouped into teams of six, each supervised by a team leader. Community mobilizers arranged appointments in advance for interviews with caretakers. Four attempts were made to interview the household. Informed consent to participate in the survey was obtained from all interviewees. Household caretakers answered questions on household demographics, and in certain circumstances such as when the mothers were not present, they answered questions for the women. A detailed household demographics form was administered to all consenting household caretakers, followed by a form identifying household members and screening for illnesses. The survey took between 15 and 60 minutes per household depending upon the number of people in the household and the number of mothers and deliveries.

A detailed questionnaire was verbally administered in both English and Somali to participating caretakers and mothers. If a caretaker or mother spoke another language, e.g., Oromo, Kiswahili, or Amharic, an interpreter was provided. The caretaker was asked if there was a woman in the household who had delivered a baby or had a pregnancy that lasted at least 7 months within the past year. If yes, that woman was administered the MCH questionnaire about use of antenatal, delivery, and postnatal services. Mothers were asked whether the child who was delivered within the 12 months preceding the survey was vaccinated and whether vaccination cards were available. The interviewer copied the vaccination dates directly onto the questionnaire. When there was no vaccination card for the child, vaccination information was not recorded.

## 2.7 Ethical Review

The study protocol was reviewed and approved by the Scientific Steering Committee and the Ethical Review Committee of KEMRI (Kenya Medical Research Institute). It was also reviewed by the US Centers

for Disease Control and Prevention and determined to be non-research, meaning CDC Institutional Review Board review was not required.

## **3 Results**

Data were entered from each questionnaire into a Microsoft Access 2007 database. Data then were re-entered. The two data sets were compared and cleaned. All analyses were conducted using SAS version 9.4 (SAS Institute Inc., Cary North Carolina, USA). The analysis took into account clustering in the survey design, and estimates were weighted to account for sampling probability. We used descriptive statistics and cross-tabulations to describe the maternal health care use. Logistic regression was used to fit models in bivariate and multivariable analysis to understand the factors associated with attending ANC in the early stages of pregnancy.

### **3.1 General demographics**

Between July 29, 2010, and August 14, 2010, data were gathered from 673 households totalling 3,005 individuals. Median household size was 4.5 (range 1 to 19). After all households were replaced, there were 13 households that refused to be interviewed; 24 of the randomized households were ineligible because the caretaker did not consent to participate; and there was no response in 75 households after the fourth revisit. Household primary caretakers were predominantly women—507 (75.3%). The median age for caretakers was 29 years, with a range of 16–85 years. The language predominantly spoken was Somali (72.5%), with a minority speaking Kiswahili (14.2%). Most of the female caretakers were born in Somalia—310 (61.4%) of 507—while 163 (32.1%) of 507 were born in Kenya (Table 1). Caretaker surveys in 673 households identified 1,553 female household members, 981 (63.3%) of whom were in the reproductive age group (15–49 years). There were 121 mothers who participated and completed the questionnaires in the MCH services use survey, but only 116 had delivered or had a pregnancy that lasted at least 7 months within the past year. The median age of the mothers who completed the questionnaire was 25 years, with a range of 15–49 years. There were 16 (12.9% of 116) mothers who had no education and 37 (31.9% of 116) mothers who had only religious education. Only 19.8% of 116 mothers had secondary or higher education. 91% of 116 mothers lived in Eastleigh more than one year (Table 2).

### **3.2 ANC services use**

Of the 116 mothers who had delivered or had a pregnancy that lasted at least 7 months, 102 (87.9%) got ANC. In total, 42 (36.8%) mothers made three or fewer visits, while 63.2% made at least four visits. The number of mothers making their first ANC visit within the first trimester was 23 (25.4%) of 116; 69 (64.2%) of 116 made their first visit in the second trimester; and 13 (10.4%) of 116 mothers made their first visit in the third trimester. Median start month for ANC was 5 months (range 1–8 months). Almost all the mothers attending ANC reported having had their weight taken (101; 97.2% of 116) and their blood pressure measured (100; 94.3% of 116) at least once. Height was taken for 71 (66.7% of 116) mothers. More than 90% of women who received ANC reported having blood and urine samples collected. Eighty-nine (83.1%) mothers received iron supplementation; 61 (60.6%) received malaria prophylaxis tablets

(Table 3). Table 4(a) shows that the place of birth of the mother, caretaker's education, and mother's age were significant factors explaining the timing of ANC visits in the bivariate analysis. When these factors were fitted in the multivariate analysis, non-Kenyans were threefold more likely to attend ANC in the early stages of pregnancy than Kenyans (OR 3.04 CI(1.94–4.75)). There was a significant correlation between the level of education and the timing of ANC visits. Mothers with more education were unlikely to attend ANC at early stages of pregnancy. Those with no education were 3.33 times more likely, while those with religious education were twofold more likely, to get ANC in the early stages of pregnancy than those with secondary school or higher education, which was statistically significant at p values of 0.0007 and 0.0023 respectively. Being young increased the likelihood of getting ANC in the early stages of pregnancy; those aged 15 to 24 years were 2.29 times more likely to attend ANC than those aged 30 years and above (Table 4(b)).

### **3.3 Delivery and postnatal services use**

Seven (8.7% of 116) babies were born at 8 months or less of gestation, 105 (88.5% of 116) were born within the ninth month, and four babies were born at 10 or more months. There were one stillbirth and one neonatal death. Three mothers delivered at home, 22 (24.6% of 116) mothers delivered at a government-run facility, and 87 (73.2% of 116) mothers delivered at private facilities (Table 5). In households where the caretaker was born in Kenya, women were more likely to deliver in a government hospital compared to women living in households where the caretaker was born outside Kenya (35.8% vs 20.2%) (Table 6). A trained medical professional (a doctor, nurse, or midwife) was present during the delivery of most of the mothers. Cesarean delivery was performed on 19 mothers (16.6%). Postnatal care was received by 92 (85.3% of 116) mothers within the first 24 hours.

There were 56 (93%) children who received Bacillus Calmette–Guérin (BCG) according to the cards provided by the mothers; and among those eligible, 16 (64%) had measles vaccination. Mothers living in households where the caretaker had no education were most likely not to have a vaccination card for their child.

## **4 Discussion**

We discovered that use of MCH services was high (89.7%) among Eastleigh residents. Women actively sought care at numerous facilities, predominantly in the private sector. ANC coverage for non-Kenyans was slightly higher than the coverage for the Kenya nationals (7). Interestingly, while Kenya-born mothers preferred the government facilities, mothers living in households whose caretaker was born in Somalia chose private facilities. Several hypotheses have been put forward to explain why migrant communities tend to avoid government-run facilities, including immigration status, stigma, and language barriers. In one study women reported a lack of trust in the available services due to health care worker attitude and service quality at these government facilities (16). It is important to highlight that this area is predominantly served by private health care providers. There was only one government hospital in the study site, and study participants, when asked about the facility where they sought care, gave the names of more than 30 private facilities in that small area. There is evidence that private facilities thrive in areas

with few government regulations and are motivated by price competition. Generally the laws and agencies regulating Kenya's private health care sector are viewed to be inadequate (17). These facilities charge considerably higher fees than the government facilities. Previous studies in Kenya have also shown that many people working at such facilities lack training and may therefore incorrectly prescribe and dispense drugs (18). Such errors could mistreat life-threatening illnesses and contribute to the development of drug resistance.

A large Kenyan-Somali community lives in the former North Eastern Province of Kenya, bordering Somalia. Considering that more of the people we surveyed were Somalis, one might expect to see health-seeking behaviors that are similar to the Kenyan-Somali community of North Eastern Province. Use of maternal and child health services was higher in our survey participants compared to both the Kenyan ethnic Somali community and also the other non-Somali Kenyan nationals. There were higher rates of antenatal care use, hospital delivery, and postnatal care. Similarly, the rate of caesarean section was higher in the participants in our survey than the national rate of 6% (7).

Our study had two interesting findings that were not consistent with expectations; the finding that migrant mothers had better health seeking behaviour compared to the Kenyan born mothers and the finding that lower/religious education was associated with receiving ANC earlier in pregnancy. As much as we might not have exact explanation for these two findings, we think that the household wealth which we could not assess directly might be the main contributing factor to these both situations. Anecdotally, we were told that the migrant mothers receive remittances and are generally accepted to be in a better position economically than the local mothers. The Kenyan mothers are hustling to make ends meet hence they skip or delay health seeking while Somalia born mothers who might have not had an opportunity to attend the formal education provided in Kenya but had a religious education and also had the financial capability to pay for the widely used private facilities in this area compared with local mothers who have some level of formal education but are struggling economically to attend the private ANC clinics. We have described in other parts of the paper that the mostly utilized health facilities are the private facilities and that the majority of our respondents were foreign born mothers. Further studies will need to be carried out to conclusively ascertain the actual reason for these two specific findings.

This study has some limitations. Eastleigh was in the media on several occasions during the survey period because of allegations of money laundering and piracy, and there were several arrests. This environment fostered suspicion in the community toward anyone asking about money, nationality, immigration status, or other personal questions. Therefore, our study did not ask about income or refugee status. While we assume that many of the participants were urban refugees based on demographic data, we could not verify their status.

Data collected were based on the mothers' recall of events, including gestation dates and services received during the pregnancy, which might bias the results. However, we limited the questions on the most recent pregnancy to not longer than 12 months prior to the interview.

The findings from this study indicate a high ANC utilization rate; however, fewer mothers (25.4%) are starting their ANC within the first trimester as recommended by WHO. Also, this study has shown that migrant women, mothers born outside Kenya, have better health-seeking behaviors compared to their Kenya-born counterparts; however, they mostly seek these services at private, for-profit facilities with varying quality of care.

The contents of this manuscript are solely the responsibility of the authors and do not necessarily represent the official position of the US Centers for Disease Control and Prevention.

## **Abbreviations**

ANC, antenatal care; BCG, Bacillus Calmette–Guérin; CDC, US Centers for Disease Control and Prevention; GTZ, German Society for Technical Cooperation; KEMRI, Kenya Medical Research Institute; MCH, maternal and child health; OR, Odds Ratio; SAS, Statistical Analysis Software; WHO, World Health Organization;

## **Declarations**

### **Ethics approval and consent to participate**

Ethical approval for the survey was obtained from the Kenya Medical Research Institute (KEMRI) Ethical Review Committee (SSC Protocol Number 1805). Institutional review was waived by US Centers for Disease Control and Prevention (CDC) because the study was considered to be a non-research public health activity. Informed written consent was obtained from all participants and from the guardians of minors.

### **Competing interests**

The authors declare that they have no competing interest

### **Authors' contributions**

AHM, RBE,WD, HB, RN and JA contributed to the conception and design of the study, acquisition, analysis and interpretation of data, and have been involved in drafting the manuscript and revising it critically for important intellectual content . RN contributed in project implementation, data collections, entry, cleaning and analysis, and drafting of the manuscript. JA and RBE contributed in study implementation, drafting of manuscript and revising it critically for important intellectual content. All authors read and approved the final manuscript.

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## Tables

Table 1. General household characteristics by gender of caretaker

Background characteristics		Female	Male	Total
		507(75.3%)	166(24.7%)	673(100%)
Age	Mean			32.65
	Median(Range)			29(16-85)
Age groups	<20	17(4.6)	15(8.2)	32(5.5)
	20-35	327(62.2)	90(50.9)	417(59.2)
	35-50	99(21.1)	40(27.2)	139(22.7)
	50+	62(11.8)*	21(13.7)	83(12.3)
Language	Kiswahili	57(14.2)	23(17.0)	80(15.0)
	English	3(0.4)	3(1.2)	6(0.6)
	Somali	387(72.5)	118(69.8)	505(71.7)
	Oromo	27(5.8)	13(6.6)	40(6.0)
	Others	32(7.1) <sup>§</sup>	9(5.4)	41(6.7)
Place of birth	Kenya	163(32.1)	67(40.1)	230(39.1)
	Somalia	310(61.4)	78(47.0)	388(52.3)
	Ethiopia	30(5.9)	20(12.0)	50(8.0)
	Eritrea	1(0.2)	1(0.9)	2(0.3)
	Djibouti	1(0.2)	0(0.0)	1(0.2)
	Saudi Arabia	1(0.2)	0(0.0)	1(0.1)
Education level	No education	130(25.9)	13(7.4)	143(20.8)
	Only religious education	115(22.1)	17(11.4)	132(19.2)
	Less than primary school	49(10.8)	12(6.0)	61(9.6)
	Primary school or equivalent	111(22.4)	32(16.9)	143(20.8)
	Secondary school or equivalent	60(12.3)	54(33.7)	114(18.1)
	Postsecondary education	40(6.4)	32(21.1)	72(10.5)
	Bachelor's degree and above	1(0.1)	6(3.5)	7(1.0)

\* Two female caretakers did not know their ages.

<sup>§</sup> Language for one caretaker is missing.

Table 2. General information on mothers participating in the Eastleigh MCH services utilization survey

Variable	Category	N (%)
Total		116 (100)
Age of respondents	15-19	2 (1.5)
	20-24	49 (36.4)
	25-29	39 (38.9)
	30-34	21 (17.7)
	35-39	4 (4.3)
	40-44	0 (0.0)
	45-49	1 (1.2)
Level of education of household caretaker	No school or religious education	16 (12.9)
	Only religious education	37 (31.9)
	Primary school or less	39 (35.4)
	Secondary school or higher	24 (19.8)
Place of birth of household caretaker	Kenya	31 (27.2)
	Somalia	79 (68.3)
	Ethiopia	5 (3.8)
	Other	1 (0.7)
Length of stay in Eastleigh	Less than 1 year	8 (9.0)
	Between 1 and 3 years	48 (38.3)
	More than 3 years	60 (52.7)

Table 3. Antenatal care services utilization (Eastleigh MCH services utilization survey July-August 2010)

Variable		N (%)
Total		116 (100)
Number of visits	≤3	42 (36.8)
	≥4	60 (63.2)
Timing of first visit	1 <sup>st</sup> trimester	23 (25.4)
	2 <sup>nd</sup> trimester	69 (64.2)
	3 <sup>rd</sup> trimester	13 (10.4)
Services provided	Weight measured	101 (97.2)
	Height measured	71 (66.7)
	Blood pressure measured	100 (94.3)
	Urine sample collected	95 (92.8)
	Blood sample collected	94 (89.2)
	Iron supplement given	89 (83.1)
	Malaria prophylaxis given	61 (60.6)

Table 4(a). Bivariate analysis of timing of ANC visits

Variable	Category	Total	Trimester1 (Percentage)	Trimester2 (Percentage)	Trimester3 (Percentage)	Unadjusted odds ratio (95% confidence interval)	p_value
Place of birth of self	Kenya	30	2 (8)	21 (73.7)	7 (18.4)		
	Not Kenya	77	21 (32.5)	50 (60.7)	6 (6.8)	4.13(2.68 – 6.35)	<0.0001
Caretaker's education	No school or religious education	14	5 (50)	7 (31.5)	2 (18.6)	3.42(1.83 – 6.41)	0.0001
	Religious education	32	8 (25.8)	22 (70.8)	2 (3.5)	2.00(1.24 – 3.22)	0.0048
	Only primary school or less	36	8 (25.4)	23 (62.2)	5 (12.4)	1.50(0.93 – 2.42)	0.0944
	Secondary school or higher	26	3 (13.2)	19 (76.1)	4 (10.7)		
Respondent age	15-24	45	13 (33.6)	29 (62.5)	3 (3.9)	2.83(1.78 – 4.49)	<0.0001
	25-29	35	7 (26.2)	21 (57)	7 (16.8)	1.42(0.89 – 2.26)	0.1459
	30+	26	3 (11)	20 (78.7)	3 (10.3)		
Length of residence in Eastleigh	Less than or equal to 3 years	47	12 (30.6)	28 (57.1)	7 (12.3)	1.21(0.85 – 1.73)	0.2785
	More than 3 years	61	12 (22.4)	43 (69)	6 (8.6)		

Table 4(b). Multivariate analysis of timing of ANC visits

Variable	Category	Adjusted odds ratio (95% confidence interval)	p_value
Place of birth of self	Kenya		
	Not Kenya	3.04(1.94 – 4.75)	<.0001
Caretaker's education	No school or religious education	3.33(1.67 – 6.65)	0.0007
	Religious education	2.22(1.33 – 3.71)	0.0023
	Only primary school or less	1.53(0.92 – 2.53)	0.1020
	Secondary school or higher		
Respondent age category	15-24	2.29(1.40 – 3.75)	0.0009
	25-29	1.23(0.75 – 2.01)	0.4096
	30+		

Table 5. Delivery and postnatal services utilization (Eastleigh MCH services utilization survey July–August 2010)

Variable		N (%)
Total		116 (100)
Deliveries	at government facilities	22 (24.6)
	at private facilities	87 (73.2)
	at home	3 (2.2)
	Preterm deliveries	7 (8.7)
	Term deliveries	105 (88.5)
	Post-term deliveries	4 (2.8)
Person assisting during delivery		
• Doctor		15 (38.8)
• Doctor and nurse/midwife		20 (35.3)
• Doctor and relative/friend		1 (1.4)
• Nurse/midwife and relative/friend		3 (6.0)
• Doctor, nurse/midwife, and relative/friend		2 (7.3)
• No response		3 (11.2)
Baby delivered through cesarean section		19 (16.6)
First postnatal check within 24 hours		92 (85.3)

Table 6. Bivariate analysis of place of delivery

Variable	Category	Total	Government facilities (Percentage)	Private facilities (Percentage)	Unadjusted odds ratio (95% confidence interval)	p_value
Place of birth of self	Kenya	31	10 (35.8)	21 (64.2)	2.20(0.68 – 7.05)	0.1856
	Not Kenya	80	12 (20.2)	68 (79.8)		
Caretaker's education	No school or religious education	17	4 (24.7)	13 (75.3)	1.86(0.35 – 9.89)	0.4654
	Religious education	33	6 (30.8)	27 (69.2)	2.52(0.59 – 10.80)	0.2124
	Only primary school or less	36	6 (15)	30 (85)		
	Secondary school or higher	26	6 (29.7)	20 (70.3)	2.39(0.56 – 10.33)	0.2417
Respondent age	15-24	46	7 (15.6)	39 (84.4)		
	25-29	38	8 (27.3)	30 (72.7)	2.03(0.54 – 7.62)	0.2936
	30+	26	7 (35.6)	19 (64.4)	2.98(0.74 – 12.04)	0.1255
Length of residence in Eastleigh	Less than or equal to 3 years	50	11 (25.9)	39 (74.1)	1.14(0.37 – 3.49)	0.8203
	More than 3 years	62	11 (23.5)	51 (76.5)		