

Removing user fees and providing knowledge can improve utilization of FANC services, findings from a cross-sectional study in rural Kenya

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Abstract

Background

Focused antenatal care was recommended by the World Health Organization to mitigate negative pregnancy and birth outcomes. It requires that a woman seeks medical care at least four times in the course of her pregnancy if there are no complications. However, in the low income settings, women are not able to attend ANC early and for all the schedules because of the costs involved including medical fees. In 2017, Kenya included antenatal care in the package of free maternal services provided by the government. We aimed to examine the uptake of free antenatal care (FANC) services by women in a rural community.

Methods

A cross-sectional design employing mixed methods was conducted among 400 pregnant women who attended antenatal services in eight health facilities in Siaya sub-county following the introduction of FANC in these facilities. The women were interviewed on services received the timing of these antenatal visits, the number of visits in the course of the pregnancy and the challenges to attending antenatal services. Participants' characteristics were described using means and proportions. Uptake of FANC defined by the number of women who sought FANC, the timing of the visits and how frequently they attended was described using percentages/frequencies. Log-binomial regression model was used to identify socio-demographic factors associated with uptake of FANC among the women. In this analysis, attendance to ANC four times or more was the outcome variable.

Results

Our findings showed an increase in the uptake of FANC compared to published rates of uptake. Overall, 76.4% (n=400) of the women reported attending ANC four times or more. Over half (61.7%), of the women had their first ANC visit in the second and third trimester. Women who were not married were 1.5 times (PR=1.50; CI=1.16-1.93) more likely to complete 4+ FANC visits when compared to women who were married. Women who attended ANC for the first time in their second and third trimester were 41% (PR=0.59; CI=0.49-0.72) and 90% (PR=0.10; CI=0.03-0.37) respectively, less likely to complete the 4+ FANC visits, when compared to those who started ANC in the first trimester.

Conclusion

The findings indicate that when women do not have to pay for antenatal services, their attendance and compliance to the scheduled visits improves. Therefore, strategies aimed at optimizing maternal pregnancy outcomes should also invest in providing free maternal services. Other implications of the study are discussed.

Background

Sub-Saharan Africa (SSA) accounts for the largest global maternal deaths at 66%[1]. Maternal deaths result from obstetric haemorrhage, non-obstetric complications, hypertensive disorders of pregnancy and pregnancy-related infections[2].

The World Health Organization (WHO) has developed strategies to fight preventable maternal deaths that include addressing the access and quality of sexual, reproductive, maternal and new-born health care services[3]. In its guidelines for maternal health, the WHO recommends the promotion, prevention and protection of maternal and perinatal health through antenatal care, particularly, focused antenatal care (FANC)[4]. This provision enables health systems to constantly monitor a pregnant woman in a deliberate effort to address health challenges associated with pregnancy. Antenatal care (ANC) provides an opportunity to incorporate interventions that may strengthen maternal, neonatal and child health through delivery of essential interventions in the course of antenatal visits. Research has shown that ANC has the potential to promote skilled birth attendance, postnatal attendance and have a positive effect on neonatal mortality and neonatal health outcomes [5], [6].

ANC coverage has increased by 43.3% globally between 1990–2013[7] but marked disparity exists between the global north and south. Estimated coverage of ANC and early ANC care visits both stood at 81% in developed countries compared to 48% ANC coverage and 24% early ANC care visits in SSA. Moreover, majority of women in developed countries have their first ANC visit in their first trimester of pregnancy whilst most of their SSA counterparts start antenatal care in the second and third trimesters[7].

There is potential to improve the coverage and utilization of ANC services in the SSA region by giving special focus to rural, poor and uneducated women so as to reduce physical barriers, creating demand for services through public information system improving the quality of services in order to meet the potential demand, according to research from Ethiopia, Nigeria and Seirra Leone[8]–[11].

Utilization of antenatal services in SSA has been linked to various factors affecting the demand and supply sides. Studies in Ethiopia [12] and Nigeria[13] have reported financial constraints in paying for transport costs to the health facility, and paying for services at the facility as key barriers to utilisation of ANC services. Particular to Kenya, direct and indirect costs to accessing healthcare have been reported as the main barriers to the access and utilization of ANC[14]. Pell et al.[14] found different charges across health facilities required from pregnant women in order to access ANC care. Charges were levied for the ANC card and laboratory tests. Transport costs to health facilities is a barrier especially to women of low income status[15]. Equally important are other individual factors such as age, the level of education, marital status, household income, higher parity, having a history of obstetric complications, religion, ethnicity and cultural beliefs that limit women from attendance to antenatal services[16]–[18].

In Kenya, achievements have been noted towards ensuring better access to maternal services by women. First, a presidential directive on June 1, 2013 saw the abolishment of delivery costs in public health facilities with the aim of promoting utilization of maternal services in the health facilities and reducing maternal mortalities[19]. Later in October 2016, the government launched the *Linda Mama Program* which expanded the free maternal services for women to include antenatal and postnatal care. Evidence

generated immediately following the introduction of free maternal services for the period ending in 2014 showed improvements in skilled birth attendance from 44% in the previous period to 62% and in one time antenatal visits from 92–96%. When assessed for their attendance to focused antenatal care after the introduction of free maternal services, this was minimal with 58% of women being found to be adherent up from 47%, contrywide [20].

The improvements to one-time attendance of ANC [21], [22] show the potential to achieve the recommended 4 + FANC visits if the barriers and limitations in the access and utilization of the services are addressed. Evidence available after the introduction of free maternal services in Kenya shows that the implementation of the policy leaned more towards free skilled deliveries more than all other maternal services[23]. There was inadequate preparedness on the part of health facilities to manage the growing demands for services resulting in challenges with optimal service provision on the part of health facilities[24].

In order to have a positive impact on the maternal and neonatal mortality as defined by the Sustainable Development Goal 3, it is imperative to establish the levels of uptake of FANC and factors prohibiting use of these antenatal services following the removal of the user fees. Additionally, little is known about the constraints/challenges by health facilities in delivering free antenatal services.

This study assessed the uptake of antenatal care services and the factors affecting the use and provision of these services since the provision of the FMP, in a rural setting.

Methods

Study design and setting

This was a mixed methods cross sectional study that was nested in a larger study that examined the feasibility and effectiveness of a health facility-based combined with home-based early childhood development (ECD) intervention in Bondo sub-County, Siaya County, Kenya (ref for the protocol). Pregnant women participating in the main study were recruited in this sub-study that focused on the uptake of free ANC services in the government health facilities.

Bondo is a rural community located in the Western part of Kenya, and is noted to have high high infant and maternal mortality rates at 60/1000 live births and 488/100000 respectively against national rates of 52 /1000 and 363/100000 respectively[25]–[27]. Bondo sub-County is in Siaya County on the Western part Kenya. Women of reproductive age is represent about 23% of the population and the fertility rate is at 4.2, slightly higher than the national rate of 3.9[25]. Bondo sub-County is served by 31 public health facilities and 189 health workers. The sub-County has 29 functional community health units, which serve as the basic health care unit through Community Health Volunteers (CHVs) at community level[28].

Bondo therefore represents a typical rural setting in Kenya.

Sampling and sampling procedure

The study was conducted among women who delivered in a public health facility within six months, as at the time of the interview. The women were selected from maternity wards and postnatal clinics.

The sample size was determined using Fishers method[29]

$$\frac{Z^2 P(1 - P)}{d^2}$$

Where:

z represents 1.96 value of confidence level at 95%

p the know prevalence (attendance) of 4+ ANC of 58%[20]

d is the absolute precision (margin of error) at 5% and

Standard normal deviation set at 95% confidence level.

Based on this, the required sample size was determined to be 400 women. Fifty women were recruited from eight health facilities on a first come basis until the numbers were sufficient. The eight facilities that were selected for this study were primary health care facilities of level 2, 3, and 4 that reported more than 300 live births per year in Bondo sub-County.

Data collection

Data collection was done between September 2018 and February 2019. Interviewer-administered questionnaires were used to collect information on their experiences during their ANC attendance and services they received, timing and reasons for the timing of their first antenatal visit, as well as the challenges experienced with accessing and utilization of the ANC services. This information was collected from the women retrospectively from women who had just delivered a child and had confirmed use of antenatal services during pregnancy.

Measurements

The questionnaire was designed to collect information on attendance of antenatal care as the dependent (outcome) variable. Independent variables which were age, marital status, level of education, employment status, gestational age, services received during ANC and challenges involved in attendance to ANC. For the dependent variable, indicators of good FANC attendance were at least 4 visits and having the first visit during the first trimester.

Data analysis

Data was cleaned and analysis was done using STATA Version 15. Data were described using means, and percentages and frequencies for continuous and categorical variables respectively. We examined for

factors associated with ANC attendance and gestation at first visit (primary outcomes) first using bivariate regressions, followed by multivariable regression analysis including maternal age, education level, marital status, employment status, travel time to health facility, and whether a caregiver encountered challenges during ANC visits. For all the analyses, a 95% confidence interval and p-value significance level of 0.005 were used.

Results

Participant characteristics

The respondents age ranged between 16 to 43 years. Majority of the respondents were aged between 20–30 years (61.5%) while only 6% were above the age of 35 years. Majority of the women (85.4%) were married. Majority of the respondents, 65.8% had primary school education and only 12% had completed secondary level of education. Over half of the respondents (60.2%) were unemployed and almost half of the respondents, 43% lived on a household income of less than KES 10000 per month as indicated in Table 1.

Table 1
Participants' characteristics (N = 400)

Variable	Category	Frequency n (%)
Age-group	< 20 years	51 (12.8)
	20–25 years	152 (38.0)
	26–30 years	94 (23.5)
	31–35 years	78 (19.5)
	> 35 years	25 (6.3)
Highest education level attained	No formal education	6 (1.5)
	Primary education	257 (64.3)
	Secondary education	116 (29)
	Above Secondary	17 (4.3)
	Not comfortable answering	4 (1.0)
Marital status	Currently married/living together	340 (85.0)
	Single (never married)	60 (15.1)
Main occupation	Unemployed	266 (66.5)
	Employed/self-employed/informally employed	134 (33.5)
Religion	Christian	395 (98.8)
	Non- Christian	5 (1.2)
Household monthly income	Less than Ksh.10,000	167 (41.8)
	More than Ksh.10,000	105 (26.4)
	Don't know/Not comfortable answering	128 (32.0)
Number of ANC visits during last pregnancy	Less than four times	95 (23.8)
	Four times and above	305 (76.2)
Where ANC services were offered	Health facility	397 (99.2)
	Traditional birth attendant	3 (0.8)
Gestational age at first ANC visit	Trimester I	154 (38.5)
	Trimester II	228 (57.0)

Variable	Category	Frequency n (%)
	Trimester III	18 (4.5)
	Mean	SD
Age (years)	26.4	5.7

Anc Attendance And Timing

More than two thirds of the respondents (76.2%) had attended four or more antenatal care visits. Most women (61.5%) had their first ANC visit during or after the second trimester as shown in Table 2.

Table 2
Frequency of and gestational age at first ANC visit during last pregnancy (n = 400)

Variable	Category	n (%)
Number of times caregiver received ANC during last pregnancy	Less than four times	95 (23.8)
	Four times and above	305 (76.2)
Place caregiver sought ANC services	Health facility	397 (99.2)
	Traditional birth attendant	3 (0.8)
Gestational age at first ANC visit	Trimester I	154 (38.5)
	Trimester II	228 (57.0)
	Trimester III	18 (4.5)

Factors Associated With Anc Attendance

The lack of information regarding benefits of ANC and where to get the service was reported by 54.1% of the participants as the main reason for delaying ANC attendance in the first trimester. Other important factors included the lack of time to seek health services and long distance to the health facility. Figure 1 summarises determinants for ANC attendance in the first trimester.

Indicators for quality of service delivery at the health facility were biggest barriers to access and utilization of ANC services. Excessive waiting time (47.4%), long distance to the health facility (26.3%) and lack of prescribed tests and drugs (15.8) were the main facility dependent challenges associated with the ANC services. Other factors are shown in Fig. 2.

Factors Associated With Utilization Of Fanc

Age, education level and employment status did not have an effect on the attendance to 4 + FANC services. Marital status, gestational age when first ANC was attended and presence of challenges during attendance were seen to have an effect.

In the case of marital status, women who were not currently married were found to be 50% times more likely (1.16-1.9395% CI) to have 4 + FANC attendance compared to women who were married, adjusting all other variables in the model.

Gestational timing of first ANC was significantly associated with frequency of attendance as in Table 2. Women who attended ANC in their second trimester were 41% (0.49–0.72 CI) times less likely to achieve intended 4 + FANC while those beginning in the third trimester 90% (0.03-0.37CI) times less likely to complete FANC visits when compared to those who started ANC in the first trimester of their pregnancy. As presented in Table 3, there was a significant association between attendance in the first trimester of pregnancy and frequency of attendance. Those who had more than four visits to FANC were 7.78 (3.16–19.15 CI) times likely to begin attendance within the first trimester.

Experience with challenges while attending ANC also had a predictive effect on attendance of FANC. Those who did not encounter challenges were 46% (0.41–0.71) more likely to have 4 + FANC attendance compared to those who did faced challenges when attending ANC.

Table 3: Factors associated with FANC utilization

Outcome= (Attendance of at least 4 times (1) vs less than 4 times (0))

		Bivariate Analysis		Multivariate Analysis	
Predictors	Attended \geq 4 ANC visits (N = 305) n(%)	Crude Prevalence Ratio (PR) 95% CI	P-value	Adjusted Prevalence Ratio (PR) 95% CI	P-value
Age of caregiver (years)		1.00 (0.99–1.01)	0.686	1.01 (1.00–1.03)	0.190
Education level of caregiver					
No formal Education	3	1.00		1.00	
Primary	192 (62.9)	1.47 (0.61–3.55)	0.391	1.03 (0.42–2.53)	0.954
Secondary	97 (31.8)	1.67 (0.67–4.20)	0.273	1.05 (0.42–2.62)	0.914
Above Secondary	13 (4.3)	1.53 (0.56–4.15)	0.404	0.39 (0.03–4.57)	0.452
Marital status					
Currently married/cohabiting	257 (84.3)	1.00		1.00	
Not currently married	48 (15.7)	1.06 (0.88–1.28)	0.557	1.50 (1.16–1.93)	0.002
Employment status					
Self-employed/informal	93 (30.5)	1.00		1.00	
Employed-salaried/formal	11 (3.6)	1.20 (1.00–1.45)	0.053	4.69 (0.48–46.19)	0.186
Unemployed	201 (65.9)	0.99 (0.90–1.10)	0.863	1.13 (0.97–1.31)	0.106
Gestational age at first ANC visit					
Trimester I	148 (48.5)	1.00		1.00	
Trimester II	155 (50.8)	0.71 (0.62–0.80)	< 0.001	0.59 (0.49–0.72)	< 0.001
Trimester III	2 (0.7)	0.12 (0.03–0.39)	0.001	0.10 (0.03–0.37)	0.001
Travel time to health facility					

		Bivariate Analysis		Multivariate Analysis	
<=30 min	162 (53.1)	1.00		1.00	
> 30 min	143 (46.9)	1.07 (0.94–1.22)	0.320	1.05 (0.96–1.15)	0.277
Encountered challenges during ANC visits					
Yes	16 (5.2)	1.00		1.00	
No	289 (94.8)	0.90 (0.74–1.10)	0.310	0.54 (0.41–0.71)	< 0.001

Discussion

This study set out to establish the factors affecting attendance to FANC and the factors affecting optimal use of the service in a rural setting.

Our findings show that there was increased uptake of antenatal services after the introduction of free maternal services in the country when compared to attendance indicators documented before this study. Our results further show that most women came for their first ANC visit during the second trimester of the pregnancy primarily due to lack of information as reported by the women. Through this study we realize that women are still under-informed or lack knowledge on their medical care requirements during pregnancy. We also found that when women faced challenges in attending care such as too much waiting time at the facility and the lack of prescribed tests and drugs, this dissuaded their attendance. Our multivariate analysis shows that single women are more likely to adhere to four antenatal visits. These women were found to engage with antenatal care at an early gestational age.

Our findings resonate with previous studies that provide evidence to the fact that user fees is a main barrier for women in the access of maternal services, removing the cost to services enables the uptake and adherence to antenatal services as required. Our study is consistent with findings in Ethiopia[30], [31] and in rural Ghana[32] that observe health facility inadequacies with staffing, medicines, supplies and appropriate equipment discourages the utilization of antenatal care. Evidence from Zambia[33] shows that married women experience challenges in attending maternal services because of the demands of domestic work and childcare needs of their other children.

Strengths And Limitation

To the best of our knowledge, this is among the first studies that has delved into studying the utilization of FANC in a cost-free environment in Kenya. This study provides evidence as to the barriers that still need to be addressed so that women can benefit focused antenatal care as required. Our major limitation was the cross-sectional study design that limits our capacity to make definite attribution. This study was

also done in a rural sub-county and therefore may be difficult to generalize for a different context. We also note that much of our data was self-reported retrospectively and could be limited by recall bias.

Conclusion

This study shows that the directive by government to remove user fees enabled more women to access antenatal care. In order to achieve timely and optimal utilization of services as prescribed by WHO, community members must be educated on the importance of seeking care early from the first trimester of pregnancy. Health facilities should be equipped with sufficient health workers and the required medicines and equipment in order to provide efficient and effective service that do not discourage the users of the services from engaging as required.

Declarations

Ethical considerations

In line with Helsinki declarations, this study was reviewed and approved by the Kenya Medical Research Institution Scientific Ethics Review Unit (KEMRI-SERU) and was permitted to carry out the study. Approval reference KEMRI/SERU/CPHR/005/3698. Informed, voluntary written consent was obtained from each participants prior to collecting the data. For participants who could not read or write, consent was obtained using a thumb print in presence of a witness. The research team collecting this data was trained on protection of human research participants and we ensured compliance with ethical standards of research by counterchecking that the participants understood what the data was for and how it was going to be used and stored. Participant identity was anonymized to protect their confidentiality.

Consent for publication

The authors wish to declare their full approval of this material for publication by the journal.

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

There are no competing interests to this manuscript.

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Author contribution:

EW, designed the study, undertook data collection, analysis, drafted the manuscript, reviewed and approved the manuscript for submission. EE and AM guided the study design and data collection and analysis and reviewed the manuscript as academic supervisors to EW. FMW and NKL analyzed and gave guidance to the manuscript.

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Author's Information

EW is a student undertaking a Masters of Public Health at JKUAT/ITROMID. She is also a research officer at APHRC. She collected this data and analysed this work in fulfilment of the study program.

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Figures



Figure 1

Reasons for not attending ANC during the first three months of pregnancy

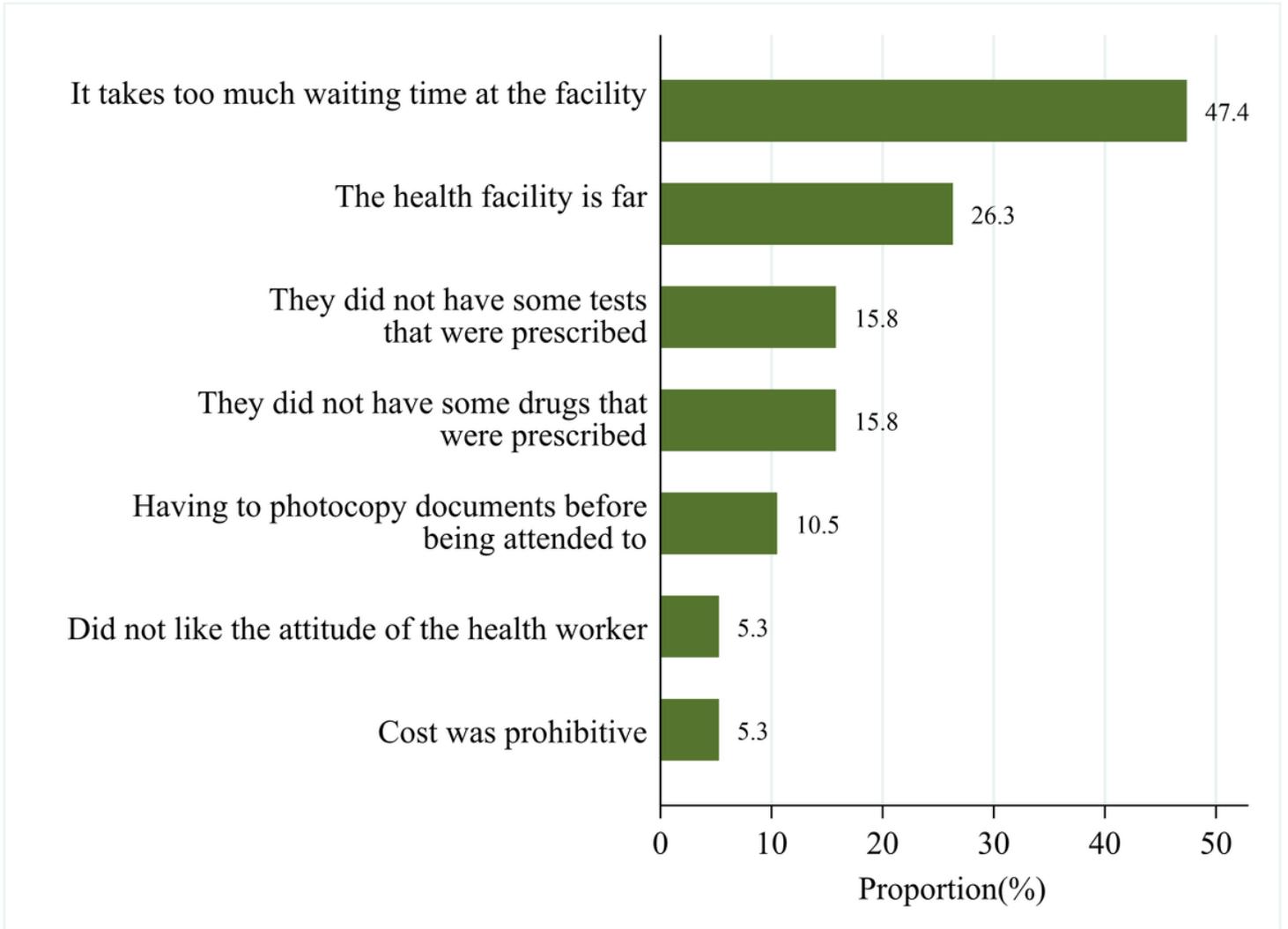


Figure 2

Challenges encountered when attending the ANC services at the facility