

Research



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Received: 28 Oct 2020 - **Accepted:** 29 Nov 2020 - **Published:** 21 Dec 2020

Keywords: Health workers, patient characteristics, adherence, missed appointments, staff attitude, staff responsiveness

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Cite this article: Shadrack Ochieng Opon et al. Contribution of health workers and patient characteristics on adherence to antenatal clinic appointments in public hospitals: a case of Homabay and Kisumu County Referral Hospitals, Kenya. PAMJ - One Health. 2020;3(14). 10.11604/pamj-oh.2020.3.14.26720

Available online at: <https://www.one-health.panafrican-med-journal.com/content/article/3/14/full>

Contribution of health workers and patient characteristics on adherence to antenatal clinic appointments in public hospitals: a case of Homabay and Kisumu County Referral Hospitals, Kenya

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Abstract

Introduction: missed appointments account for about 56% of wasted health resources in the world. There is about 42% missed appointment rate in African medical setting. Antenatal clinics in Kenya experience about 44% missed appointment rate accounting for about 22% of wasted health resources. About 1.7 million children born between 2013 and 2017 did not receive all prescribed vaccines. About 42% and 35% of antenatal appointments in Homabay and Kisumu Counties were missed in 2019. The study assessed contribution of health workers and patient characteristics on adherence to antenatal clinic appointments in public hospitals. **Methods:** a cross-sectional research design was employed in Homabay and Kisumu County hospitals. The study included 2 hospital managers per hospital, 70 and 63 antenatal clients in Homabay and Kisumu County hospitals respectively. Patients were stratified and proportionately sampled, while hospital managers were purposively sampled. Sample size was determined using Yamane Formula. Key informant interview and self-administered structured questionnaire were used to collect data, and analysis done using SPSS tool. **Results:** findings showed, in Homabay and Kisumu County hospitals respectively, that: 50 (71.4%) and 20 (40%) missed appointments due to inadequate staff responsiveness towards their needs; 50 (71.4%) and 28 (56%) due to staff attitude. Single and separated antenatal clients miss more appointments compared to married and cohabiting clients. **Conclusion:** there is low adherence to appointments in antenatal clinics in Homabay and Kisumu County hospitals because of poor staff attitude, inadequate staff responsiveness; and lack of sufficient education on the importance of antenatal care among mothers.

Introduction

The world wastes nearly up to 40% of health care resources according to [1] and 56% of these wasted resources are attributed to missed appointments.

Missed appointments, in 2015, cost the United States and National Health Service up to \$150 billion and £912 million annually respectively [1]. Boksmati *et al.* [2] places missed appointments in African medical setting at about 42%. In Kenya, [3] cited that 22% of health resources are unused or wasted because of missed appointments. Haji *et al.* and Kimeu *et al.* [4,5] agree that Kenya has about 44% missed appointment rate in antenatal clinics caused by health facility practices and patient factors. Despite the free maternal health services in first-level government health facilities since June 2013, Kenya still has 58% antenatal coverage respectively [6]. According to UNICEF [6], under one-year old children receiving all vaccines declined from 78% to 54.8%, skilled birth attendance from 56.4% to 45.1%, and women accessing at least 4 antenatal visits from 37.8% to 28.3% in 2016 and 2017 respectively. A total of 502,860 children were not immunized in 2017 and 1.7 million children born between 2013 and 2017 did not receive all prescribed vaccines, this has been attributed to missed appointments [6]. Patients who miss appointments contribute to the country's high under-five mortality rates (45.6/1000), create inefficiencies in resource use in terms of lost time and wasted dedicated resources. By reducing missed appointment rates, the under-five mortality rate can be reduced, maternal and child health improved, and health care providers can improve efficiency in resource use. According to Kenya [7], antenatal coverage in Kisumu and Homabay counties are 68% and 61% respectively, with 149/1000 and 91/1000 under-five mortality respectively. The prevalence of HIV/AIDS in Homabay and Kisumu counties are 18.9% and 12.6% respectively with poverty levels up to 50.3% [7]. While these factors also cause high under-five mortality, uptake of antenatal services from earlier stage may help detect the infections and effective measures taken to prevent transmission to the unborn child. This means that there are still a large percentage of children not receiving antenatal care despite the efforts to avail the services at no cost, and this is due to the high missed appointment rates. In 2019, Homabay and

Kisumu Counties had 42% and 35% of their antenatal appointments missed respectively [8], resulting into the alarming under-five mortality rates in these counties. The financial expense of missed appointments keeps increasing the cost of the health services and decreasing the efficiency of resource use in these counties because the outpatient service must still pay the salaries of clinicians and administrative staff. Therefore, this study assessed the contribution of health workers and patient characteristics on adherence to antenatal clinic appointments in public hospitals.

Methods

Design and setting of the study

The study adopted a cross-sectional research design because it involved a study across two public hospitals to answer the research questions. The setting of the study was Homabay and Kisumu Counties, located in the Lake Victoria region. The study selected Homabay and Kisumu County hospitals because of the population coverage, uniformity in services, municipality location and policy frameworks. These facilities offer similar antenatal services to majority of the population in their geographical locations.

Population of the study

The study targeted a total of four hospital managers and 200 registered antenatal clients for reasons of scope and confounding factors that may rise during the study. The hospital managers included maternity in-charges and hospital heads. Only consenting and registered antenatal clients with scheduled appointments were included. The study sampled 133 antenatal clients (Homabay County Hospital 70, Kisumu County Hospital 63) through random and stratified sampling, and four hospital managers, two from each facility sampled purposely as shown in Table 1. The inclusion criteria included consenting and registered antenatal clients with scheduled appointments. Exclusion criteria included non-consenting, unregistered

antenatal clients and those who did not turn up for appointments.

Sampling technique and sample size

Yamane's Simplified Sample Formula was used to calculate the sample as follows: the total target population is 200 clients in two hospitals.

$$N = N/(1+N(e^2))$$

Where: n is the sample size, N is the population size, e is the margin of error, $n1 = 200 / (1 + 200(0.05)^2)$, $n1 = 133.30$. Thus, $n1 = 133$.

Table 1 shows the sample distribution. The hospitals were purposely sampled because of their county level category in the respective counties, similar profile of the population they serve, services offered, and their geographical municipality location. Random sampling was used to recruit antenatal clients at registration. This inferred that antenatal clients who turn up in each hospital for antenatal visit was recruited. Upon recruiting the targeted sample per hospital, stratified sampling method was used for the clients based on the population of different hospitals in order to have a sample population that is representative of all the hospitals. Purposive sampling was used to sample hospital managers, where the head of the facility and the in-charge in the maternity department were included in the study.

Data collection method and instrument

The study employed both qualitative and quantitative methods of study during data collection, particularly structured questionnaires among antenatal clients. A self-administered structured questionnaire was used among the sample to collect data. Clients were approached at the registration point for data collection and asked to willingly participate in the study. The informed consent was then read out to them in a language they understood and asked to sign if ready and willing to participate. The clients were asked to participate in the study by answering the questions

in the structured questionnaire, which were self-administered at this point. Data collection was done twice a week until the sample was exhausted. Key Informant Interview Guide was used among the two hospital managers (hospital head and maternity in-charge) per hospital. The Key Informant Interview Guide was administered at the respective offices of the managers.

Ethical consideration

Prior to the commencement of the study, permission was obtained from the Kenya Methodist University's Scientific Research and Ethics Committee (SREC), NASCOTI and County health offices. Informed consent was also requested from all the respondents prior to the study.

Data analysis

Data analysis was done upon completion of data collection. The data from the two hospitals were coded together based on the responses to fit the variations acceptable in the SPSS statistical tool, which was used for analysis of quantitative data. Analysis was done by running frequencies and cross tabulations of the variables, after which a linear regression model was generated to inform the influence of the independent variables on the dependent variable. A Pearson's correlation was run to determine p-values and significant levels out of which conclusions were made. Descriptive statistics was used to describe the status of both the independent and dependent variable. Responses from KII were used to inform the findings and for triangulations. Regression models were then used to make inferences on the population and the independent variables and the dependent variable. Presentation of data was done through narrative illustrations and explanations of the findings.

Results

Contribution of health workers on adherence to appointments in antenatal clinics

Health care workers play an integral role on adherence to appointments in antenatal clinics in terms of their responsiveness to the needs of the clients and their attitude during service delivery. Based on the findings of the study, in Homabay County hospital, majority 55 (78.6%) reported that they are dissatisfied with the way staff respond to their health needs. Even though majority 30 (60%) of antenatal clients in Kisumu County hospital showed satisfaction with staff responsiveness towards their health needs, the same number expressed their dissatisfaction with the consistency of service delivery, where they stated that they are hardly served by the same health care worker. For example, in Homabay County hospital 35 (50%) of the antenatal clients are rarely served with the same health worker every time they visit the facility. Another 35 (50%) says that it is only sometimes that they are served with the same health worker. In Kisumu County hospital about 10 (20%) are rarely served with the same health worker, with majority 40 (80%) stating that it is only sometimes that they see the same health worker when they visit the facility. Due to these findings, adherence to appointments in antenatal clinics is affected because 50 (71.4%) and 20 (40%) of antenatal clients have ever missed their appointments because of the lack of such inconsistencies in Homabay County hospital and Kisumu County hospital respectively, and this is due to having to express your health needs in every visit to a new health care worker. Staff attitude towards antenatal clients during service delivery also affects adherence to appointments. Majority, 40 (57.1%) and 25 (50%) of antenatal clients in Homabay County hospital and Kisumu County hospital are dissatisfied with the attitude the health workers exhibit during service delivery. In fact, majority, 40 (57.1%) and 22 (44%) find the health workers unfriendly, with another 15 (21.4) and 10 (20%) complaining that the staff are rude in Homabay

County hospital and Kisumu County hospital respectively. Antenatal clients are also missing their appointments because of the attitude displayed by the staff. In fact, in Homabay County hospital and Kisumu County hospital, majority, 50 (71.4%) and 28 (56%) confirm that they have at one point missed their appointments because of the attitude of health workers during service delivery respectively.

The regression result shows that health workers significantly contribute to adherence to appointments as indicated below:

Regression equation

$$Y = a + bX_1 + cX_2$$

Y= Missed Appointment (Dependent variable indicator) X_1 = Satisfaction with staff responsiveness (Independent variable indicator) X_2 = Satisfaction with staff attitude (Independent variable indicator)

Based on the regression equation above, and as shown in Table 2, an increase in satisfaction with staff responsiveness by one unit will result into a decrease in missed appointment by 0.391 and 2.000 units in Homabay County and Kisumu County respectively provided all other factors are held constant. Also, an increase in satisfaction with staff attitude by one unit will result into a decrease in missed appointment by 0.239 and 1.000 units provided all other factors are held constant. Nonetheless, the health workers factors variables (independent variable) have a significance level of up to 0.000, indicating a high significance to adherence to appointment (dependent variable). Therefore, an intervention on issues of health workers such as attitude and responsiveness is likely to improve adherence to appointments in antenatal clinics.

Role of patient characteristics on adherence to appointments in antenatal clinics

The study has revealed that patient characteristics such as age and socioeconomic factors have a

significant effect on adherence to antenatal appointments in both Homabay and Kisumu County hospitals. Even though majority of antenatal clients in both Homabay and Kisumu Counties are between the age of 28 and 32 years, most appointments are missed by young mothers of between 18 and 27. The findings have also revealed that mothers of between 33 and above tend to adhere to appointments more than their younger counterparts. Majority, 59 (84.3%) and 33 (66%) % in Homabay County hospital and Kisumu County hospital reported that they have missed their appointments before for other reasons including but not limited to forgetfulness and the fear of corona virus in the hospitals. The study also noted that about 20 (28.5%) and 20 (40%) of antenatal clients in Homabay County hospital and Kisumu County hospital make their first antenatal visit at the third month of their pregnancy. The findings have also established that even though majority, 35 (50%) and 20 (40%) of antenatal clients in Homabay County hospital and Kisumu County hospital respectively are married, 15 (21.4%) and 10 (20%) are single mothers. This has an impact on adherence as revealed by the study that single and separated antenatal clients miss more appointments compared to their married and cohabiting counterparts. Just about 40 (57.1%) and 21 (42%) of antenatal clients in Homabay County hospital and Kisumu County hospital are also not in any formal employment, rendering income levels of the majority, 35 (50%) and 21 (42%) at less than Ksh20000 in Homabay County and Kisumu County respectively. With this income level, many antenatal clients are likely to prefer working to attending antenatal appointments. In fact, the study shows that those in lower income bracket tend to miss more of their appointments compared to their counterparts in higher income bracket. These findings have justified that patient characteristics influence adherence to appointments in antenatal clinics.

The regression result shows that patient characteristics directly affect adherence to appointments as indicated below:

Regression equation

$$Y = a + bX_1 + cX_2$$

Y= Missed Appointment (Dependent variable indicator)
 X1= Age (Independent variable indicator)
 X2= Income Level (Independent variable indicator)

Based on the regression equation above, and as depicted in Table 3, an increase in the age by one unit will result into a decrease in missed appointment by 0.290 and 0.056 units in Homabay County and Kisumu County respectively provided all other factors are held constant. Also, an increase in income level by one unit will result into a decrease in missed appointment by 0.548 and 0.149 units provided all other factors are held constant. Nevertheless, patient characteristics (independent variable) have a significance level of up to 0.007, indicating a high significance to adherence to appointment (dependent variable). Therefore, an intervention on patient characteristics is likely to improve adherence to appointments in antenatal clinics.

Discussion

Contribution of health workers on adherence to appointments in antenatal clinics

The study has established that the ability of health workers to respond to the needs of the patients and the attitude while at it affects adherence to appointments in antenatal clinics. These findings are in concurrence with those of Einstein [9] that the lack of adequate competent health workers who can effectively respond to patient needs directly impedes health service delivery, leading to numerous missed appointments. In addition, Einstein [9] agree that even though there is a great need for more health workers in order to meet the current need to improve maternal health and reduce child mortality, reducing missed appointment rates does not only require health workers, but adequate competent health personnel with the ability to respond to the health needs and deliver services in a timely manner. The

study added that patients may be reluctant to attend appointments due to fear of lack of adequate health personnel who can effectively respond to their health needs. The findings of Palmer [10] also support the findings of this study by asserting that patients tend to miss more appointments when they are not satisfied with the way health workers respond to their needs. These findings also concur with some of the illustrations provided by the managers in both the facilities. Two managers confirmed that when one health worker on duty serves many patients, sometimes full responsiveness becomes an issue.

The study has also highlighted that poor staff attitude hamper adherence to appointments. These findings are similar to those of Einstein [9] who reported that patients who find health workers less friendly tend to avoid seeking health services in those facilities, leading to high missed appointment rates. In addition, patients tend to avoid facilities where they are not cared for or addressed well. Einstein [9] also suggested that a culturally competent health care system improves health worker patient relations, resulting in quality of care. Also, patients tend to show up for their medical appointments when they are certain about the professionalism of the health care providers. The findings of the study also agree with Ferlie *et al.* [11] that there is a high likelihood of minimal missed appointments where workers are professional and friendly to the patients. Dean *et al.* [12] also documented that health workers play an integral role in adherence to appointments in medical facilities. In addition, patients still tend to miss appointments in cases where the health workers are not receptive to them in terms of attitude and perceptive harassment. The study also found out that missed appointments can be attributed to health workers in many aspects such as their numbers, competency level, responsiveness and attitude towards patients. The study findings also concur with the recommendations of Dean *et al.* [12] that in order to reduce missed appointment rates, health workers must be ultimately responsive and

receptive to patients. The study findings have proven that where health workers are not responsive, and exhibit unfriendly attitude, majority of antenatal clients tend to miss their appointments.

Role of patient characteristics on adherence to antenatal appointments

The study has revealed that age and socioeconomic status have a bearing on adherence to appointments in antenatal clinics. These findings are in coherent with those of [13] that older age is associated with lower missed appointment rate. World Health Organization [14] also agree that older people tend to honor their appointments compared to young people. Sims *et al.* [15] documented similar findings, and adding that missed appointment rates are even lower among women of older age. These findings are in support of the study findings which have shown that younger women miss their appointments more compared to the older women. The study established that patients in high social status honor more appointments. Prasad *et al.* [13] affirms these findings stating that people with low social status and low-income bracket tend to have multiple missed appointments compared to their counterparts in middle and high social status and income bracket. The findings of the study are also in agreement with [16] that poverty not only limits people from accessing health services, but also restricts them from participating in making decisions affecting their health, leading to missed appointments. Kazi *et al.* [16] also added that challenging socio-economic conditions are detrimental to healthcare in multiple ways, including resulting in missed appointments, and these are in concurrence with the findings of the study.

According to the study findings, single and separated patients miss more antenatal appointments compared to their married and cohabiting counterparts. These findings are in agreement with those of [16] asserted that more married women and people with high income level

tend to honor their appointments compared to their counter parts with no income. Prasad *et al.* [13] also assert that missed appointments are directly associated with patient characteristics such as age, marital status, social status, and income level. Kazi *et al.* [16] also reported similar findings that patient characteristics if not addressed appropriately would result into high missed appointments in medical setting. These results are in coherence with the findings of the study.

Conclusion

Healthcare workers significantly contribute to the adherence to appointments in antenatal clinics in public hospitals based on the findings and discussions of the study. Based on the arguments of the majority of the antenatal clients, health care workers are not responsive enough to their health needs, resulting into missed appointments. In addition, many antenatal clients find health workers with an unfriendly attitude, which hinders their efforts to honor appointments in certain occasions. Some health workers are also rude to the patients, straining their relationship. Therefore, intervening on these health workers factors is likely to improve their efforts to contribute positively to the appointment adherence in antenatal clinics in public hospitals. Patient characteristics also play a pivotal role in adherence to appointments in antenatal clinics in public hospitals based on the findings and discussions of the study. Many antenatal clients begin their antenatal visits at the beginning of the second trimester in Homabay and Kisumu Counties. Patient factors such as age and socioeconomic factors have an impact on appointment adherence in both Homabay County hospital and Kisumu County hospital. Younger antenatal clients miss more appointments than their older counterparts. Notably, single and separated antenatal clients miss more appointments compared to their married and cohabiting counterparts. With many unemployed patients in Homabay and Kisumu Counties, there is high missed appointment rates among those who have lower income levels compared to those who

fall under higher income bracket. However, sufficient education about the importance of antenatal care is likely to strengthen appointment adherence in antenatal clinics.

What is known about this topic

- *There is inadequate number of health workers in Homabay and Kisumu County hospitals;*
- *Antenatal care is free in public hospitals in Kenya, but experiences low coverage (at least 4 ANC) in Homabay County (68%) and Kisumu County (61%).*

What this study adds

- *Inadequate staff responsiveness contributes to the low antenatal coverage in Homabay and Kisumu County hospitals;*
- *Poor staff attitude affects adherence to antenatal appointments in Homabay and Kisumu counties;*
- *Poverty in Homabay and Kisumu County contributes to the low antenatal coverage in Homabay and Kisumu County hospitals.*

Competing interests

The authors declare no competing interests.

Authors' contributions

Shadrack Ochieng Opon: the main author, data collection, analysis, writing report and the manuscript. Dr. Wanja Mwaura Tenambergen: project inception support, supervision, revising report, manuscript revision and approval. Dr. Kezia Muthoni Njoroge: project inception support, supervision, revising report, manuscript revision and approval. All authors have read and agreed to the final manuscript.

Tables

Table 1: distribution of sampled population per hospital

Table 2: relationship between health workers factors and missed appointments

Table 3: relationship between patient characteristics and missed appointments

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Table 1: distribution of sampled population per hospital

| | Target patients | Sampled | Hospital Head | Maternity In-charge |
|-------------------------|-----------------|---------|---------------|---------------------|
| | (N) | | (n) | (n) |
| Homabay County Hospital | 104 | 70 | 1 | 1 |
| Kisumu County Hospital | 96 | 63 | 1 | 1 |
| Total Population | 200 | 133 | 2 | 2 |

Table 2: relationships between health workers factors and missed appointment

| Unstandardized Coefficients | | | | Standardized Coefficients Beta | t | Sig. | 95.0% Confidence Interval for B | |
|-----------------------------|--|---------------|------------|--------------------------------|---------------|--------------|---------------------------------|-------------|
| Medical Facility | Model | B | Std. Error | | | | Lower Bound | Upper Bound |
| Homa-Bay County Hospital | (Constant) | 1.478 | 0.148 | | 9.990 | 0.000 | 1.183 | 1.774 |
| | Satisfaction with staff responsiveness | -0.391 | 0.048 | -0.623 | -8.236 | 0.000 | -0.486 | -0.296 |
| | Satisfaction with staff attitude | -0.239 | 0.031 | -0.593 | -7.837 | 0.000 | 0.178 | 0.300 |
| Kisumu County Hospital | (Constant) | 9.000 | 0.000 | | -8.723 | 0.000 | 9.000 | 9.000 |
| | Satisfaction with staff responsiveness | -2.000 | 0.000 | -2.000 | -4.127 | 0.000 | -2.000 | -2.000 |
| | Satisfaction with staff attitude | -1.000 | 0.000 | -1.528 | -9.714 | 0.000 | -1.000 | -1.000 |

a. Dependent Variable: Missed Appointment

Table 3: relationship between patient characteristics and missed appointment

| Unstandardized coefficients | | | | Standardized Coefficients Beta | t | Sig. | 95.0% Confidence Interval for B | |
|-----------------------------|-----------------------|---------------|------------|--------------------------------|----------------|--------------|---------------------------------|-------------|
| Medical Facility | Model | B | Std. Error | | | | Lower Bound | Upper Bound |
| Homa-Bay County Hospital | (Constant) | 0.700 | 0.044 | | 16.097 | 0.000 | 0.614 | 0.787 |
| | Age of the respondent | -0.290 | 0.036 | -1.260 | -8.093 | 0.000 | -0.362 | -0.219 |
| | Income level | -0.548 | 0.047 | -1.800 | -11.556 | 0.000 | 0.454 | 0.643 |
| Kisumu County Hospital | (Constant) | 0.850 | 0.165 | | 5.140 | 0.000 | 0.517 | 1.183 |
| | Age of the respondent | -0.056 | 0.078 | -0.125 | -2.717 | 0.007 | -0.100 | 0.212 |
| | Income level | -0.149 | 0.063 | -0.410 | -2.357 | 0.003 | 0.022 | 0.276 |

a. Dependent Variable: Missed Appointment