

Utilization of antenatal care services among HIV-positive pregnant mothers attending Katabi Military Hospital, Wakiso District. A cross-sectional study.

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Abstract.

Background.

Antenatal care (ANC) is a critical entry point for prevention of mother-to-child transmission (PMTCT) of HIV and for improving maternal and neonatal outcomes among HIV-positive pregnant women. This study assessed the utilization of antenatal care services and associated barriers among HIV-positive pregnant mothers attending Katabi Military Hospital in Wakiso District.

Methodology.

A cross-sectional descriptive study was conducted among 30 HIV-positive pregnant mothers attending ANC at Katabi Military Hospital. Data were collected using structured questionnaires and analyzed using descriptive statistics, including frequencies and percentages, to assess socio-demographic characteristics and health facility-related, socio-cultural, and individual barriers to ANC utilization.

Results.

The majority of respondents were aged 25–34 years (50%) and had attained secondary education (46.6%). Health facility-related barriers included inadequate counseling and health education on HIV and ANC (46.7%), long waiting times, and insufficient services (46.7%). Half of the respondents (50%) reported poor attitudes from health workers. Socio-cultural barriers were prominent, with 56.7% experiencing stigma during ANC visits and 73.3% reporting fear of disclosing their HIV status as a major barrier. Decision-making regarding healthcare was largely influenced by husbands or partners (53.3%). Individual barriers included poor knowledge of recommended ANC visits, with 40% unaware of the required number, and personal perceptions, such as feeling healthy and not needing ANC (46.7%). Forgetting appointment dates was the most common time-related barrier (73.3%).

Conclusion.

Utilization of ANC services among HIV-positive pregnant mothers was influenced by health system inefficiencies, socio-cultural stigma, and individual knowledge gaps. These barriers collectively hinder optimal ANC attendance and PMTCT outcomes.

Recommendations.

Nurses should strengthen counseling, promote positive interactions, and integrate follow-up systems. Health facilities should improve accessibility and introduce appointment reminders. Communities should reduce stigma and support professional ANC attendance.

Keywords: Antenatal Care Utilization, HIV-Positive Pregnant Mothers, Katabi Military Hospital, Wakiso District.

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Background.

Antenatal care (ANC) refers to healthcare provided throughout pregnancy to monitor maternal and fetal health and detect complications early. An HIV-positive pregnant mother is infected with HIV during pregnancy. Globally, 84% of HIV-positive pregnant women attend ANC and receive ART, but attendance is lower in low- and middle-income countries due to socio-economic and individual barriers. In Indonesia, only 29% seek ANC for ART because of low income and limited partner support. Across Africa,

ANC utilization varies; in Sub-Saharan Africa, it is affected by depression and partner violence, and in East Africa, 30–40% miss recommended visits due to stigma and distance. In Uganda, 85% start ART, but only 48% complete four ANC visits. Declining ANC attendance at Katabi Military Hospital highlights the need to examine barriers. In Katabi Military Hospital, antenatal care (ANC) attendance among HIV-positive mothers remains low despite national and global efforts to improve maternal health outcomes. Reports from the Health Management

Information System (HMIS) indicate that only 35% of HIV-positive pregnant mothers on antiretroviral therapy (ART) actively attend ANC (HMIS, 2025), leading to poor monitoring of viral loads, increased risk of mother-to-child transmission of HIV, and heightened maternal morbidity. The Government of Uganda has introduced several strategies, such as the Option B+ approach, to integrate HIV care into antenatal services and ensure lifelong ART for all HIV-positive pregnant and breastfeeding women. However, despite these interventions, ANC utilization among HIV-positive mothers in Katabi Military Barracks remains suboptimal. This raises concerns that the barriers at the individual, socio-cultural, and health facility levels may be limiting uptake of services. This study assessed the utilization of antenatal care services and associated barriers among HIV-positive pregnant mothers attending Katabi Military Hospital in Wakiso District.

Methodology.

Study Design.

This study adopted a descriptive cross-sectional design and utilized quantitative techniques for data collection and analysis.

Study Setting.

The study was conducted in Katabi Military Hospital, located within the Entebbe UPDF Air Force base, in the Katabi neighborhood, part of Entebbe City, Wakiso District, Central Uganda, about 40 km southwest of Mbuya Military Hospital. It served as a primary care provider for the local population, offering outpatient services, maternal and child health care, and emergency medical care.

Study Population.

The population of interest was all pregnant mothers with HIV attending the antenatal clinic at Katabi Military Barracks.

Sample Size Determination.

The population of interest was 32. The sample size was calculated using Slovin's formula to get sample size.

$$n = \frac{N}{1 + Ne^2}$$

where n = sample size

and N = population of interest = 32 (Pregnant mothers with HIV)

e = level of precision (maximum allowed error at 95% confidence interval in estimating the population size) = 5% = 0.05

Substituting the formula

$$n = \frac{32}{1 + 32 \cdot 0.05^2}$$

$$n = 29.63$$

$$n = 30$$

Therefore, the sample size was 30 respondents.

The sample size was selected because it was adequate to generate the information needed for the study; it was

relatively cheap and manageable for the researcher in terms of time and finances.

Sampling Procedure.

Simple random sampling was used, where 30 small pieces of paper were made each day, the same size and color. Six pieces of paper were labeled "yes" and six pieces of paper were labeled "no". These pieces of paper were picked randomly on the first day of data collection. Each participant was allowed to pick only one piece of paper from the box. Respondents who answered "yes" participated in the study. The same was applied in the subsequent 5 days of data collection to make a total of 30 respondents. This ensured clarity and avoided bias.

Inclusion criteria.

The study included pregnant mothers with HIV who consented and were present during the period of data collection.

Exclusion criteria.

The study excluded those who were very sick, those who refused consent, and those with mental illness.

Independent Variable.

These were health facility-related barriers, socio-cultural barriers, and individual barriers to utilization of antenatal care services among HIV pregnant mothers with HIV.

Dependent Variable.

This was the utilization of antenatal services among HIV positive pregnant mothers.

Research Instrument.

Structured and semi-structured questionnaires were developed with both open and closed-ended questions for data collection to find out the barriers to accessing antenatal services among HIV positive pregnant mothers at Katabi Military Barracks. It started with a confidentiality statement and consisted of sections A, B, C, and D, which comprised questions on demographic data, health facility-related barriers, socio-cultural barriers, and the individual barriers to accessing antenatal care services among HIV pregnant mothers with HIV.

Data Collection Procedure.

A letter of introduction was obtained from the research committee of Mildmay Uganda School of Nursing and Midwifery and presented to the administrative personnel at Katabi Military Barracks to seek permission to proceed with the study. A brief explanation for carrying out research in that particular study area was stated; the researcher introduced herself to the other staff and explained the

purpose of the study to the participants and reassured them of the confidentiality of the information collected.

Questionnaires were used to capture data from the respondents, ensuring that full informed consent was obtained. Data were collected in 5 working days by the researcher. Questionnaires were filled out anonymously, kept under key and lock, and accessed only by the researcher. A password to the data was kept secret and only known to the researcher.

Data Management and analysis.

The completed questionnaires were checked for completeness, accuracy, and logical flow of responses. Missing responses were filled by making revisits to the respondents concerned. Data collected were sorted, classified, summarized, and tabulated, then computed in the form of frequencies and percentages using SPSS. It was then further presented in pie charts, tables, and bar graphs. Data were analyzed using a calculator, simple algebra, and by grouping similar ideas in a tally sheet, and then Microsoft Excel programs were used to explain their meanings.

Quality Assurance.

Validity.

Validity referred to the ability of the instrument to measure accurately what it was supposed to measure (Burns and

Grove, 2017). It was the extent to which an instrument had an appropriate sample of items for the construct being measured (Polit & Beck, 2014). To ensure validity, the supervisor cross-checked the instrument to ensure that content validity was appropriate, and the study instrument was adjusted accordingly.

Reliability

Reliability is the degree to which a research instrument yields consistent results after repeated intervals (Polit & Beck, 2014). To ensure reliability, standardized procedures throughout data collection, training research assistants to apply uniform methods, and pretesting the instruments to identify and correct ambiguities were employed.

Ethical Considerations.

An introductory letter was obtained from the school before reaching the study area. Permission was sought at the site where the research was conducted. Informed consent was obtained from all participants by explaining the objectives, significance, benefits, and voluntary acceptance to participate. Those who were not willing to participate were allowed to freely withdraw.

Confidentiality, privacy, and respect for respondents’ rights were ensured by allowing respondents to withhold their names and use codes instead.

Results.

Socio-demographic data of the respondents.

Table 1 shows the distribution of respondents according to their socio-demographic characteristics (n=30)

Variable	Responses	Frequency (f)	Percentage (%)
Age of respondent.	18-24 years	7	23.3
	25-34 years	15	50
	35-44 years	8	26.7
Level of respondents' Education?	Non-formal	2	6.7
	Primary	8	26.7
	Secondary	14	46.6
	Tertiary/Institution	6	20
Religion of the respondent.	Catholic	10	33.3
	Protestant	7	23.3
	Muslim	5	16.7
	Born again	8	26.7
Parity of respondents	1	6	20
	2	15	50
	3	5	16.7
	4 and above	4	13.3
Total of each variable		30	100

Source field findings (2025).

Table 1 shows that the majority, 15 (50%) of the respondents were aged 25–34 years, while the least, 7 (23.3%) were aged 18–24 years. Regarding the level of education, the majority,

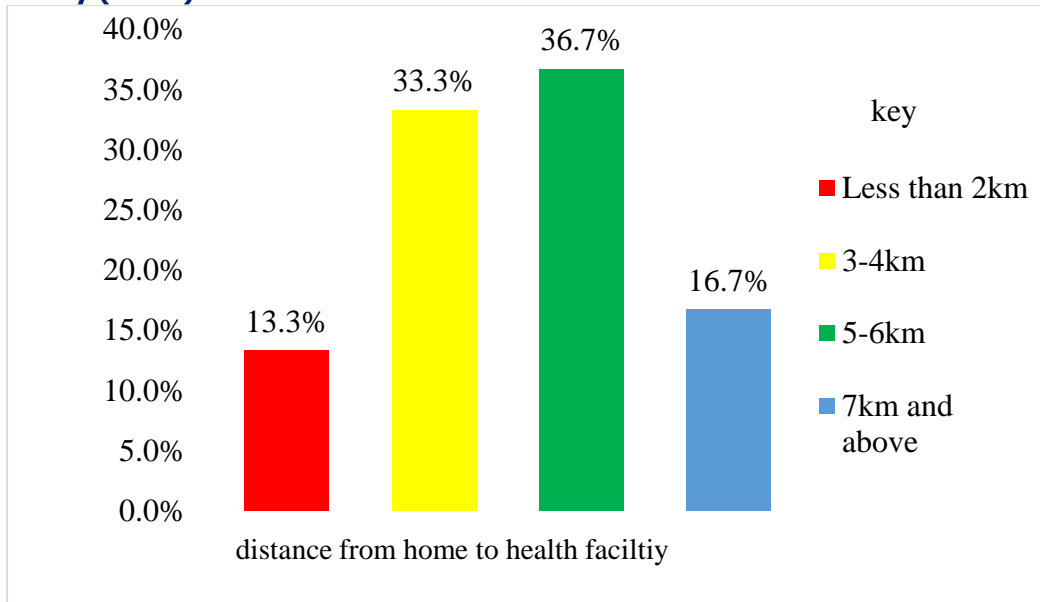
14 (46.6%) of the respondents had attained secondary education, while the minority, 2 (6.7%) had no formal education. Concerning religion, the majority, 10 (33.3%),

were Catholics, while the least were 5 (16.7%) were Muslims. In relation to parity, the majority, 15 (50%), had

two children, whereas the least, 4 (13.3%), had four or more children.

Health facility-related barriers to utilization of antenatal care services among HIV pregnant mothers.

Figure 1 shows the distribution of respondents according to the distance of their home to the health facility (n=30)



Source field findings (2025)

Figure 1 shows that the majority, 11 (36.7%) of the respondents stated that they had a distance of 5-6km from their homes to the facility, while 4 (13.3%) had a distance of less than 2km.

A half 15 (50%) of the respondents stated that health workers had a poor attitude towards them during service provision, 7 (23.3%) stated that health workers had a good attitude, 6 (20%) stated that health workers had a good attitude towards them while the least 2 (6.7%) stated that health workers had a fair attitude.

Narrative 1: Attitude of health facility staff during your ANC visits

Table 2 shows the distribution of respondents according to their other health facility-related barriers to utilization of antenatal care services among HIV pregnant mothers (n=30)

Variable	Responses	Frequency (f)	Percentage (%)
Do you feel the health facility provides adequate counseling and health education on HIV and ANC?	Strongly agree	5	16.7
	Agree	11	36.7
	Disagree	14	46.7
What challenges have you experienced at the health facility that make it difficult for you to attend ANC regularly?	Long waiting times	9	30
	Inadequate services	14	46.7
	Fear of bad nurses reactions	7	23.3
Are you guys always provided with privacy and confidentiality during ANC	Yes	28	93.3
	No	2	6.7

service provision in the facility?			
Total for each variable		30	100

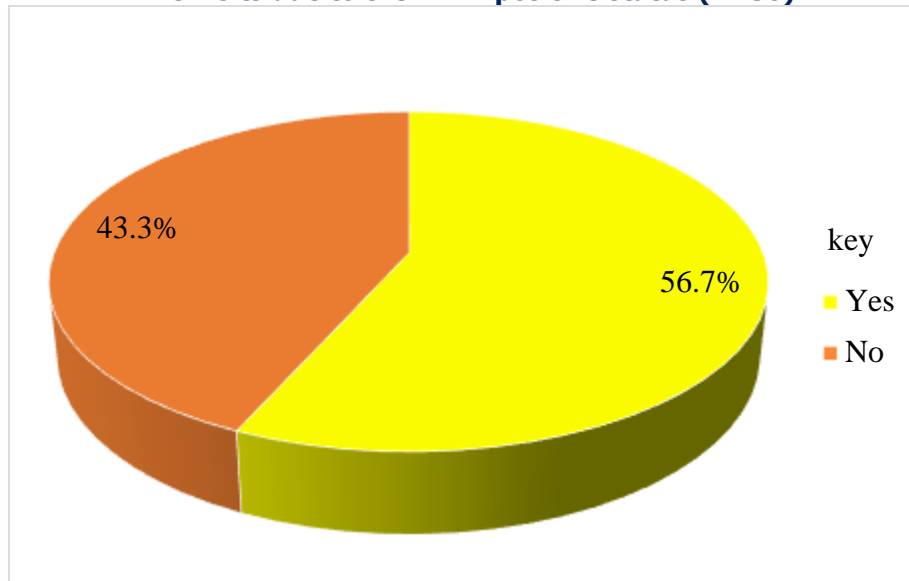
Source field findings (2025).

Table 2 shows that the majority, 14 (46.7%) of the respondents disagreed that the health facility provides adequate counseling and health education on HIV and ANC, while the least, 5 (16.7%) strongly agreed. Regarding challenges experienced at the facility, the majority, 14 (46.7%), reported that inadequate services, while the

minority, 7 (23.3%), experienced fear of bad nurses' reactions. Concerning privacy and confidentiality, the majority, 28 (93.3%), stated that they were provided with privacy, while the least 2 (6.7%) stated that they were not provided with privacy during ANC service provision.

Socio-cultural barriers to utilization of antenatal care services among HIV pregnant mothers.

Figure 2 Shows the distribution of respondents according to whether they feel stigma during ANC visits due to their HIV positive status (n=30)



Source field findings (2025)

Figure 2 shows that more than half 16, 56.7%) of the respondents stated that they felt stigmatized during ANC visits due to their HIV positive status, while 14 (46.7%) stated that they never felt any form of stigma.

Table 3 shows the distribution of respondents according to their other socio-cultural barriers to utilization of antenatal care services among HIV pregnant mothers(n=30)

Variable	Responses	Frequency (f)	Percentage (%)
Does fear of disclosing your HIV status to family or community members affect your ANC attendance	Yes, greatly	22	73.3
	No, not at all	8	26.7

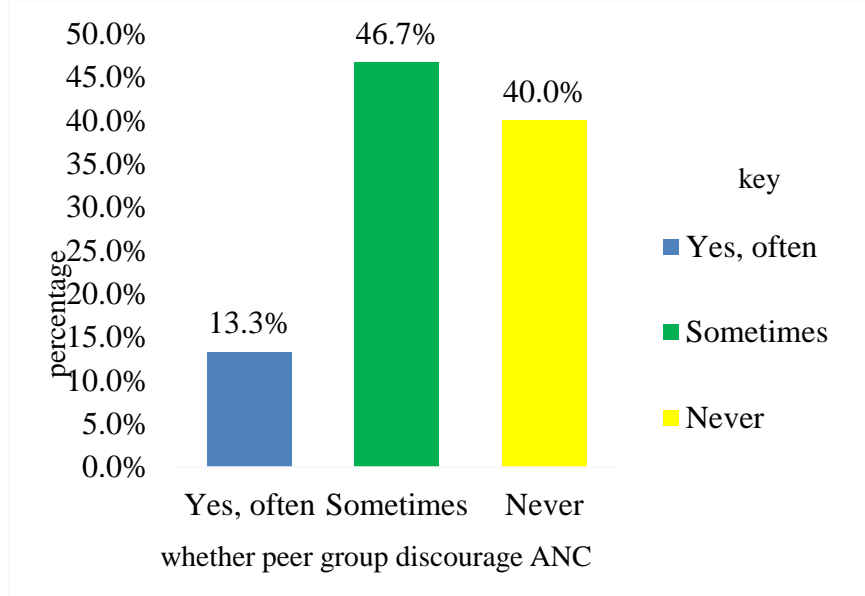
What socio-cultural factors in your family or community make it difficult for you to attend ANC regularly	Misconceptions	10	33.3
	Believe in prayers	11	36.7
	I like traditional birth attendants	9	30
Who usually makes decisions about your healthcare in your household	Myself	8	26.7
	Husband/partner	16	53.3
	Parents/elders	6	20
Total for each variable		30	100

Source field findings (2025).

Table 3 shows that the majority, 22 (73.3%) of the respondents stated that fear of disclosing HIV status affected their ANC attendance, while the least, 8 (26.7%) reported that it did not affect them. Regarding socio-cultural factors, the majority, 11 (36.7%), stated that they preferred traditional birth attendants, while the least, 9 (30%), noted

misconceptions in the community. Concerning decision-making, the majority, 16 (53.3%), indicated that husbands/partners made decisions about their healthcare, while the least, 6 (20%), stated that parents or elders made these decisions.

Figure 3 Shows the distribution of respondents according to whether the community or the peer group discourages attending ANC services for HIV-positive mothers (n=30)

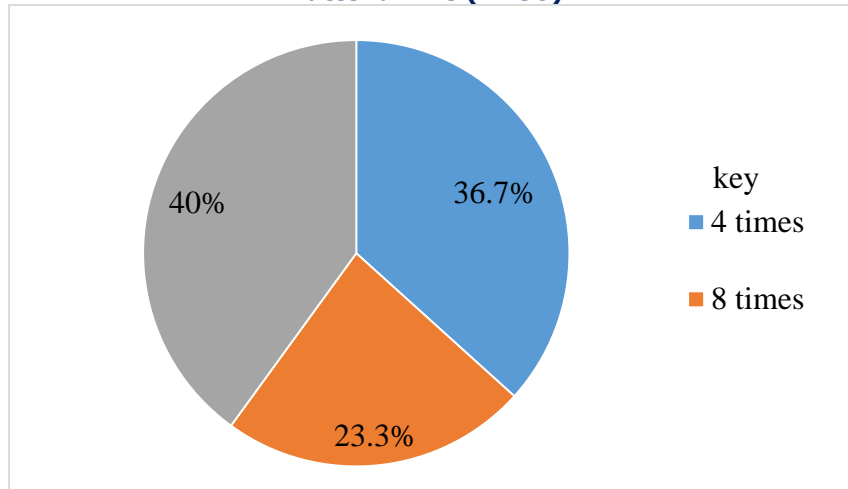


Source field findings (2025)

Figure 3 shows that the majority, 14 (46.7%) of the respondents stated that they sometimes their peer groups sometimes discourage them from attending ANC services due to their status, whereas the least 4 (13.3%) said yes.

Individual barriers to utilization of antenatal care services among HIV pregnant mothers.

Figure 4 Shows the distribution of respondents according to how many times one should attend ANC (n=30)



Source field findings (2025).

Figure 4 shows that, majority, 12 (40%) of the respondents stated that they do not know the number of times one should attend ANC, while the least, 7 (23.3%), mentioned 8 times.

Table 4 shows the distribution of respondents according to other individual barriers to utilization of antenatal care services among HIV pregnant mothers(n=30)

Variable	Responses	Frequency (f)	Percentage (%)
Which of the following personal feelings discourages you from attending ANC	Stress or depression	11	36.7
	Feeling healthy and not needing ANC	14	46.7
	Fear of HIV testing or the result	5	16.7
Which of the following time-related issues has prevented you from attending ANC	Forgetting appointment dates	22	73.3
	Household responsibilities and childcare	8	26.7
Which of the following dangers do you think can result from not attending antenatal care (ANC) services while being HIV positive	Increased risk of mother-to-child HIV transmission	23	76.7
	Delayed access to prevention and treatment services	3	10
	I am not aware of any dangers	4	13.3
Total for each variable		30	100

Source field findings (2025).

Table 4 shows that the majority, 14 (46.7%) of the respondents reported that feeling healthy and not needing ANC discouraged them from attending services, while the least, 5 (16.7%), feared HIV testing or results. Concerning time-related issues, the majority, 22 (73.3%), stated that they forgot appointment dates, while the least 8 (26.7%) reported household responsibilities and childcare as barriers. Regarding dangers of not attending ANC while HIV-positive, the majority, 23 (76.7%) mentioned increased risk

of mother-to-child transmission, while the least 3 (10%) noted delayed access to prevention and treatment services.

Discussion of the study findings.

Health facility-related barriers to utilization of antenatal care services among HIV pregnant mothers with HIV.

The purpose of the study was to find out the health facility barriers to utilization of antenatal care services among HIV pregnant mothers with HIV. The study revealed that the

majority (36.7%) of the respondents had a distance of 5-6km from their homes to the facility, which was far and discouraging for them to attend all ANC services. The researcher attributes this to the fact that those long distances increase travel time and transportation costs, making regular visits challenging, especially for HIV-positive pregnant mothers who require frequent check-ups, counselling, and access to antiretroviral therapy. These study findings are in line with a study conducted in Uganda by Bhutada et al. (2021), which revealed that many HIV-positive women face long distances to the facility, making it difficult to attend ANC appointments regularly, while the least (13.3%) had a distance of less than 2km and were more likely to attend ANC services.

From the study findings, half (50%) of the respondents mentioned that health workers' poor attitude towards them during service provision limited their regular attendance for ANC. This is possibly because negative attitudes, such as rudeness, lack of empathy, or judgmental behavior, create fear and discomfort among HIV-positive pregnant mothers, discouraging them from consistently seeking antenatal care services. The study findings align with a study conducted by Sabin et al. (2024), which reported that negative attitudes by healthcare workers, such as rude treatment, discouraged HIV mothers from attending ANC.

The study found that the majority (46.7%) of the respondents disagreed that the health facility provided them with adequate counseling and health education on HIV and ANC, which limits their awareness about HIV and ANC attendance. The researcher attributes this to the fact that insufficient counseling and health education reduce mothers' understanding of the importance of regular ANC visits, HIV management, and prevention of mother-to-child transmission, leading to lower utilization of available services. A similar study was conducted in Vietnam by Nguyen et al. (2018), which stated that Insufficient counseling and lack of information about HIV, prevention of mother-to-child transmission (PMTCT), and available services contribute to low utilization of ANC.

The study further found that the majority (46.7%) reported that inadequate services were the reasons for their reduced ANC attendance. This is possibly because the limited availability of essential medical supplies, long waiting times, and insufficient staff at the health facility make accessing care difficult and time-consuming, discouraging HIV-positive pregnant mothers from attending ANC regularly. These study findings are in line with a study conducted by Tengera (2025), which found that inadequate service provision limited ANC among HIV mothers. The findings of the study showed that the above health facility-related barriers influenced the utilization of antenatal care services among pregnant women with HIV.

Socio-cultural barriers to utilization of antenatal care services among HIV pregnant mothers with HIV

The study further revealed that more than half (56.7%) of the respondents felt stigmatized during ANC visits, limiting their ANC visits due to their HIV-positive status. The researcher attributes this to fear of judgment, discrimination, and negative attitudes from health workers or other patients, which discouraged HIV-positive pregnant mothers from consistently seeking antenatal care. The study findings are in agreement with a study conducted by Drigo et al. (2020), which found that stigmatizing behaviors of the community towards pregnant women with HIV discouraged them from seeking ANC services.

The study also found that the majority (36.7%) preferred traditional birth attendants, which limited their regular ANC attendance. This is possibly because some mothers trust traditional practices, find them more culturally acceptable, or perceive them as more accessible and less intimidating than formal health facilities, reducing their utilization of professional ANC services. The study findings are in line with a study conducted by Kagoya et al. (2025) in Uganda, which reported that mothers' preference for traditional birth attendants over healthcare facilities reduced their attendance of ANC services. The findings of the study showed that the above socio-cultural barriers influenced the utilization of antenatal care services among pregnant mothers with HIV.

Individual barriers to utilization of antenatal care services among HIV pregnant mothers with HIV

The study found that the majority (40%) of the respondents did not know the number of times one should attend ANC, which limited their regular attendance. The researcher attributes this to inadequate health education and counseling at the facility, which left mothers uninformed about the recommended ANC schedule and the importance of consistent visits for monitoring their health and preventing mother-to-child HIV transmission. A similar study was conducted by Chace et al. (2021), which stated that inadequate knowledge of ANC scheduling and poor awareness of ANC services significantly hindered service utilization.

From the study findings, less than a half (46.7%) of the respondents who had a healthy feeling were observed to less likely attend regular ANC possibly because they perceived no immediate need for medical care, underestimated the risks associated with HIV during pregnancy, and lacked awareness that regular ANC visits are essential for monitoring both maternal and fetal health, even in the absence of symptoms. The study findings are in line with a study conducted by Alhassan et al. (2022), which revealed that some HIV-positive pregnant women who perceive ANC as unnecessary since they feel healthy or have not experienced complications hardly attend ANC.

The study further found that the majority (73.3%) of the respondents mentioned that they forgot appointment dates, which also reduced their regular ANC attendance. This could be because of busy household responsibilities, lack of reminder systems, and poor time management, making it difficult for HIV-positive pregnant mothers to consistently keep track of scheduled ANC visits. The study findings are consistent with a study conducted by Sibanda et al. (2018), who found that 44% of missed appointments were due to forgetting the scheduled date. The findings of the study showed that the above individual barriers influenced the utilization of antenatal care services among mothers with HIV pregnancies.

Conclusion.

From the study findings, utilization of antenatal care services among HIV-positive pregnant mothers at Katabi Military Barracks was hindered by individual factors (lack of ANC knowledge, feeling healthy, forgetting appointments), health facility factors (long distances, poor staff attitudes, limited counseling and services), and socio-cultural factors (stigma, preference for traditional birth attendants). Health workers and policymakers should educate mothers on regular ANC, improve counseling and service delivery, address staff attitudes, and work with communities to reduce stigma and promote professional care, improving maternal and child health outcomes.

Recommendation.

Provide consistent health education and counseling to HIV-positive pregnant mothers on ANC schedules, HIV management, and prevention of mother-to-child transmission. Demonstrate empathetic, non-judgmental attitudes during service provision to encourage regular attendance.

Improve accessibility by reducing waiting times, ensuring adequate staffing, and providing essential ANC services and supplies. Implement reminder systems (e.g., SMS or phone calls) to help mothers keep track of ANC appointments.

Reduce stigma by promoting awareness and acceptance of HIV-positive mothers attending ANC through community sensitization programs. Encourage family and community support for regular ANC attendance, discouraging reliance solely on traditional birth attendants.

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Evalyne, and Eddy for their encouragement, along with many others who contributed to the success of the work.

List of Acronyms.

ANC: Antenatal Clinic
ART: Antiretroviral Therapy
HIV: Human Immune Deficiency Virus
NGO: Non-government organization
OPD: Outpatient Department
PMCT: Prevention of Mother-to-Child Transmission
SDG: Sustainable Development Goal

Source of funding.

The study was not funded.

Conflict of interest.

There is no conflict of interest.

Availability of data.

Data used in this study are available upon request from the corresponding author.

Author's contribution.

JA designed the study, conducted data collection, cleaned and analyzed data, drafted the manuscript, and HN supervised all stages of the study from conceptualization of the topic to manuscript writing and submission.

Author's biography.

Judith Adeke is a student of a diploma in Midwifery at Mildmay Uganda School of Nursing and Midwifery. Hasifa Nansereko is a research supervisor at Mildmay Uganda School of Nursing and Midwifery. Immaculate Prosperia Naggulu is a research supervisor at Mildmay Uganda School of Nursing and Midwifery. Jane Frank Nalubega is a research supervisor at Mildmay Uganda School of Nursing and Midwifery.

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