Determinants of Early Antenatal Care Visits Attending Antenatal Care in Rural Gambia

Babucarr Jassey[1*]

* Correspondence Author : baxjas@gmail.com
[1] Banjul International Airport, Public Health Office, Department of Public Health Services, Ministry of Health, The Gambia

INDEXING	**ABSTRACT**
	An estimated 303,000 maternal deaths occurred worldwide in 2018. The Gambia has an MMR of 400 per 100,000 live births. In The Gambia, 24% of pregnant women receive antenatal treatment four times. Insufficient knowledge of the value of prenatal care and lack of subsidized ANC services are the leading causes of the growing maternal and newborn mortality rate in The Gambia. The study investigated factors influencing pregnant women in rural Gambia who attended early prenatal care. A cross-sectional community-based survey using structured questionnaires was used for the investigation. Cluster random sampling was utilized in the study to choose samples from 5 distinct districts. The study found that socioeconomic factors, economic factors, and accessibility to antenatal care service centers influenced early ANC Attendance. After multivariate analysis, marital status, number of children, mother's occupation, cultural acceptance, and education level significantly correlate with early ANC attendance. The Foni district's early ANC attendance rate was comparatively low compared to WHO criteria and fell short of the national requirement. This condition may explain the high maternal and child mortalities observed in the Foni districts. The study found significant knowledge of ANC services but did not help increase the early ANC attendance rate.
	Pada tahun 2018, diperkirakan 303.000 kematian ibu terjadi di seluruh dunia. Gambia memiliki MMR 400 per 100.000 kelahiran hidup. Di Gambia, 24% wanita hamil menerima empat kali perawatan antenatal. Pengetahuan yang terbatas tentang nilai perawatan prenatal dan kurangnya layanan ANC bersubsidi adalah penyebab utama meningkatnya angka kematian ibu dan bayi baru lahir di Gambia. Penelitian ini akan menyelidiki faktor-faktor yang mempengaruhi wanita hamil di pedesaan Gambia harus mendapatkan perawatan prenatal dini. Survei cross-sectional dengan kuesioner digunakan untuk pengumpulan data. Cluster random sampling juga digunakan untuk memilih sampel dari 5 distrik yang berbeda. Studi ini menemukan bahwa faktor sosial ekonomi, faktor ekonomi, dan aksesibilitas ke pusat layanan antenatal care mempengaruhi kehadiran ANC dini. Melalui analisis multivariat, status perkawinan, jumlah anak, pekerjaan ibu, penerimaan budaya, dan tingkat pendidikan berkorelasi signifikan dengan kehadiran ANC dini. Tingkat kehadiran ANC dini di distrik Foni relatif rendah dibandingkan dengan kriteria WHO dan jauh dari persyaratan nasional. Kondisi ini dapat menjelaskan tingginya kematian ibu dan anak yang diamati di distrik Foni. Studi ini juga menemukan bahwa pengetahuan signifikan tentang layanan ANC tidak membantu meningkatkan tingkat kehadiran ANC dini.

INTRODUCTION

Antenatal care is one of the most significant health interventions for reducing mother and child mortality and morbidity by establishing a personalized delivery plan and anticipating complications (MoH The Gambia, 2021; NaNA, 2019). According to the World Health Organization, pregnant women should receive ANC at least four times. Early antenatal checkups allow health professionals to manage and discover pregnancy-related problems early on. It also provides tetanus toxoid immunization, intermittent malaria

preventative treatment, nutritional supplementation, and birth preparation services (Gitonga, 2019; Odusina et al., 2021; Stephen Mulinge, 2019).

Over the last twenty-five years, the global maternal death rate has decreased by roughly 44%, from approximately 532,000 in 1990 to an estimated 303,000 in 2015. Most (99%) of maternal deaths worldwide occur in developing nations, and The Gambia is no exception. Sub-Saharan Africa is home to 66 percent of the world's population (UNDP, 2020). To reduce morbidity and mortality, the third Sustainable Development Goal (SDG3) aims to promote maternal and newborn health and welfare. In Africa, direct obstetric causes accounted for 73% of all maternal fatalities, whereas indirect obstetric causes accounted for 27% of all maternal mortalities (Arciniegas Paspuel, O. G., Álvarez Hernández, S. R., Castro Morales, L. G., & Maldonado Gudiño, 2021; Azanaw et al., 2021; Ogunlesi, 2021; Rurangirwa et al., 2019). Postnatal hemorrhage (27.1%), hypertensive disorders of pregnancy (14.1%), the effects of botched abortion (7.9%), obstructed labor (9.6%), and infection are the leading causes of maternal death in Africa (SNNPR, 2022; UNDP, 2020). Eighty-six percent of pregnant women worldwide have access to good prenatal care at least once (UNDP, 2020; UNICEF, 2021). Women's mental health regarding free will determines how frequently they visit antenatal care, which can be managed to prevent complications (Tendean et al., 2021).

In Sub-Saharan Africa, where most maternal deaths occur, only 52% of pregnant women have at least four prenatal visits (Manjang, 2022; UNICEF, 2021; WHO, UNICEF, 1998). In The Gambia, 24 percent of pregnant women receive antenatal treatment at least four times (GDHS, 2019/20). The Gambia Health and Demographic Survey reported that 79% of women deliver at a primary health facility and 2er at home. From the same source, 67% of pregnant women in rural area areas of ANC visits either at the end of their second trimester or at the beginning of their third trimester. Furthermore, 15% of pregnant women who once had miscarriages have limited access to post-abortion care (Birhan & Seretew, 2020; UNICEF, 2021). According to a study by (B. Manjang, 2022), women who received antenatal care earlier had a seven-fold increased risk of giving birth in a health institution. Many African women underutilize attentive prenatal care. They frequently arrive late for ANC services and attend fewer prenatal care visits than advised (Nxiweni et al., 2022; Stephen Mulinge, 2019; Tessema et al., 2021).

In most of Sub-Saharan Africa, maternal and child health care remains a significant issue, with maternal mortality estimated at 546 per 100,000 people in 2019 (GDHS, 2019/20; MICS, 2018). The Gambia's maternal mortality rate is around 400 deaths per 100,000 live births (GDHS, 2019/20). This number is significantly higher than Kenya's 316 fatalities per 100,000 live births rate. One in every nine women in The Gambia is believed to die because of pregnancy-related complications (UNICEF, 2021). One out of every ten Gambian children dies before age one. Antenatal care coverage in The Gambia for at least four visits in rural Gambia is 41%. This condition is low compared to neighboring countries such as Senegal, which is 58 % (GDHS, 2019/20; SDHS, 2019)

Around 1.2 million women and men in The Gambia need emergency health services (MoH The Gambia, 2021). Emergency calls can be reduced by proper health education and healthy behaviors, including proper diet, good sleep patterns, and routine antenatal care attendance (Suryoputro & Budiyanti, 2019). In 2020, under-five mortality rates in The

Gambia were 62.74 deaths per 1000 live birth (NaNA, 2019). Anemia affects 44 percent of women of reproductive age and 55.8% of children under five (Urmale Mare et al., 2022). Furthermore, over 20,000 confirmed malaria cases raised the risk of low birth weight and complications during pregnancy (Gitonga, 2019; Manjang, 2022; Ononokpono & Odimegwu, 2021).

RESEARCH METHOD

1. Research Design

This study used a cross-sectional community-based survey with structured questionnaires because the researcher intended to determine the frequency (prevalence) of a particular attribute (determinants of early antenatal care attendance) in a defined population (pregnant women) at a particular point in time. For population and sample, the study's target population group was women of reproductive age aged 15 to 49. The sample for the study was only pregnant women within the Fonis.

2. Sampling Technique

The Fonis were purposively selected for the study the reason was that Fonis are among the top five districts with high maternal and infant mortalities. The district has more than 50 villages erratically picked for the research using pieces of paper folded using simple random sampling. The respondents were then drawn from the houses using systematic random sampling with a 5-point or predetermined interval. The first respondent from the household was selected using simple random sampling through folded pieces of paper. The village's fifth household was chosen for an interview, and so on, until the necessary number of responders had been attained. The respondents selected from each household were proportional to the number of village households. The total sample size for the study was 384 pregnant women as respondents.

2.1.Inclusion/Eligibility and Exclusion Criteria

The study included pregnant women between the ages of 15 and 49 who had lived in the area (Fonis) for at least a year and were willing to participate in the study. The study excluded those who are not pregnant women and, pregnant women of reproductive age but are not willing to participate, very ill women and thus unable to participate.

2.2.Data Collection Tools

The research used a well-structured questionnaire to collect data from primary respondents. Trained research assistants will be recruited (if necessary) to interview the respondents. Questionnaires were used to collect information from the respondents. The questionnaire was pretested in Brikama, a city in the west coast region of The Gambia with the same characteristics as the Foni districts. Twenty pregnant women were used as respondents for the pretesting.

2.3.Data Coding and Analysis

Data analysis of quantitative raw data from questionnaires was done by coding the data using epi data. The coded data were entered into SPSS 22.0 data entry program and then analyzed. Statistical modes such as chi-square test and multivariate logistic regression were used to determine the relationship between the variables. In the study, the estimated mean age was 24 years.

2.4.Multivariate Analysis

Multivariate analysis was conducted on seven variables that initially had a statistical relationship during the bivariate analysis using Pearson's Correlation coefficient and logistic regressions.

RESULT AND DISCUSSION

The study administered 384 questionnaires to pregnant women. The study was conducted between January 2022 and March 2022. Questionnaires that had been correctly filled out and returned were considered and analyzed. Following data validation and cleaning, 384 surveys representing a 100% response rate were considered suitable for the study (Table 1).

Table 1 shows the characteristics of respondents where most pregnant women in the Fonis are between the ages of 25-29 years (30.2%), and approximately 75% are married. Almost half of them either have no formal education or got primary education. Most (more than 30%) have three children, and many (73.9%) are housewives. Furthermore, the study found that a significant number of them (38.3%) have a monthly income between 50-100$ and live near the antenatal care site. Modern antenatal care services are culturally accepted in almost all the regions (more than 95%) and cost less fortune or are sometimes free for antenatal women with a Gambian national identity.

The study showed that 54% of the respondents attended one ANC visit in the Foni Bintang Karanai district. This number is higher than in the Foni Berefet district, where early ANC attendance was 13% (MoH, 2022). In The Gambia, the rate of early ANC visits by women of reproductive age was meager compared to neighboring nations. This condition can be related to The Gambia's women's poor educational levels, incidences of insecurity, and cultural concerns. Sierra Leone had a 62% rate of antenatal care attendance, Nigeria had a 58% rate, and The Gambia had a 24% rate (GDHS, 2019/20; NPC, 2018; SLDHS, 2019). Although 96.8% of respondents said that ANC services are culturally acceptable, Foni had a relatively low rate of early ANC attendance. Most women (62,5%) were also aware of the ANC services. Meanwhile, women's use of maternal health care, specifically ANC services, may have been positively influenced by their awareness of ANC services (El-Khatib et al., 2020).

Furthermore, 30.2% of respondents between the ages of 25 and 29 reported attending ANC. According to (NPC, 2018), mothers aged 20 to 34 are marginally more likely to receive prenatal care than mothers of other ages. There was no significant correlation between respondent age and early ANC attendance in rural Gambia (p>0,005). Contrary to popular belief, age is statistically significant for early ANC attendance, according to a Nepalese study (Azanaw et al., 2021; Nxiweni et al., 2022). The respondents' marital status, educational background, and parity significantly influenced early ANC attendance. According to the findings, 223 married respondents (78.0%) went to ANC during their first trimester. Marriage status and early ANC attendance were significantly associated (p<0.005). This study is comparable to a Rwandan study that found married women were likelier to attend early ANC appointments than widowed or separated women (Habimana & Biracyaza, 2019; Rurangirwa et al., 2019). The difference may be that married women have husband assistance. In contrast, widowed women do not, especially if the husband is well-educated

and financially secure. This issue increases the likelihood that he will take his wife to a medical institution (Okedo-Alex et al., 2019; Omar et al., 2020).

According to the findings, almost half (44.0%) of the respondents in the study who had no formal education did not attend ANC. Early ANC attendance and educational level were associated (p<0.005). Education is related to getting the recommended number of ANC visits, according to (GDHS, 2019/20). Compared to 69 percent of women with secondary or higher education, 43 percent of women without education attended four or more ANC visits. According to a study by (Kim et al., 2021; Muyunda et al., 2020), women with greater levels of education were more likely to attend at least four ANC visits than women with no formal education in HIV-positive pregnant women. Educated women are more likely to know about ANC services' availability and benefits.

Additionally, educated women are more knowledgeable about health issues, are more aware of the services available for healthcare, and are better able to use the information than uneducated women. Women are more likely to seek health care when their education levels rise. This reality was comparable to a study conducted in Pakistan, which discovered that more education positively influences health-seeking behaviors and may give women more control over their pregnancies (Ali et al., 2021; Purbaningrum et al., 2019; Tolossa et al., 2020).

The study showed 133 (34.6%) of the respondents with three or more children as a baseline had not attended ANC. There was a significant statistical association between the number of children and early ANC attendance (p<0.005) refer to (table 2). The findings in this study are not in line with a rural Ghanaian study where women with one kid were more likely to attend ANC than women with two to four children (Duodu et al., 2022; Manyeh et al., 2020). The reason could be that younger women, who may have had previous pregnancies without issues, may not perceive the need to visit an antenatal clinic. In contrast, older women may be experiencing their first pregnancy and feel that they do. In this region, grand multiparity is widespread; 42.9% of respondents have four or more springs (Tesfaye et al., 2019).

The number of children gives women an experience where they tend to understand and know exactly what to expect during antenatal care visits. These visits will give them much protection against most of the antenatal complications, such as anemia. Other studies (Birhan & Seretew, 2020; Duodu et al., 2022; Ibworo et al., 2020) revealed that the more children women have, the more they become aware and willing to attend antenatal care services at their own convenient time. WHO recommends at least four visits, but some pregnant women have issues with that (Arciniegas Paspuel, O. G., Álvarez Hernández, S. R., Castro Morales, L. G., & Maldonado Gudiño, 2021).
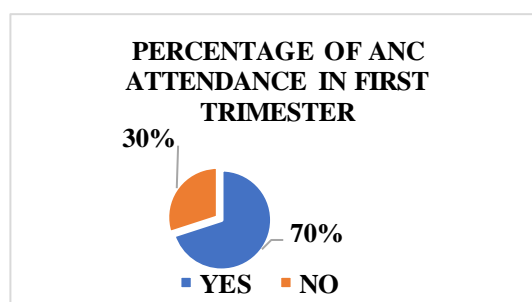
Figure. 1 Percentage of antenatal care attendance among pregnant women attending antenatal care services in rural Gambia

Figure 1 shows that 70% of pregnant women attend antenatal care services during their first trimester. Family support and encouragement are important in decision-making as the pregnant woman will need someone to encourage her to make most of the decisions, especially those related to health.

a. Economic factors

The respondent's occupation, husband's occupation, and the respondents' income level were not significant for early ANC attendance. The results revealed that 128 (72.0%) housewives respondents did not attend ANC. A significant statistical association existed between respondents' occupations and early ANC attendance ($p < 0.005$). The result agrees with a study done in Ghana which reported that the mother's occupation is statistically significant for early ANC attendance (Akowuah et al., 2018; Manyeh et al., 2020).

Table. 2 Multivariate analysis of the variables related to early antenatal care attendance among pregnant women in rural Gambia.

Variable	OR	95% CI		P	B
		Min	Max	Value	
Number of Children	0.82	0.72	1.29	0.004	0.998
Respondent's occupation	2.03	1.91	2.15	0.001	0.203
Household monthly Income	2.04	1.75	2.25	0.062	0.709
Distance to the nearest health facility (km)	0.75	0.50	1.10	0.072	0.556
Cultural acceptance	2.82	2.60	3.11	0.001	1.038
Marital Status	2.30	1.85	2.59	0.001	0.713
The highest Educational Level Attained	1.03	0.86	1.25	0.003	0.873

used multivariate logistic regression

Table 2 above shows a multivariate logistic regression analysis. The number of children, respondent's occupation, culture, marital status, and level of education have a significant statistical relationship with early antenatal care visits in rural Gambia.

Experience allows pregnant women to evolve and grow. They learn and adapt to the situation to succeed in a new environment. They may also develop new ideas and strategies because of their past experiences during their pregnancies. From the analysis, the more children a parent has, the more likelihood for her to attend antenatal care services in the first trimester (1.06) times more likely (OR [95% CI]: 1.06 [0.72-1.29]). The less busy a pregnant woman is at work (not working in an office), the more likely for her to visit antenatal care services earlier (2.03 times more likely). People's culture and traditions are important in their health-seeking behaviors. If a pregnant woman feels like her family or culture accepts her to do antenatal care services, it is 2.82 times more likely for them to attend antenatal care services earlier (OR [95% CI]: 2.82 [2.60-3.11]).

Education level is important as mothers tend to know much and are well-informed about the importance of early antenatal care attendance. Highly educated pregnant women are 1.03 times more likely to attend antenatal care services during their first trimester than those without formal education systems. (OR [95% CI]: 1.03 [0.86-1.25]).

Pregnant women in rural Gambia are more likely willing to attend antenatal care services during the first trimester when they are not far from the antenatal care service centers, regardless of their household income.

According to the study, 62.3% of responders with husbands who worked irregular hours skipped ANC. The husband's profession and the wife's early ANC attendance were related in other studies and rural Gambia (p<0.005). This finding is consistent with a study conducted in Ethiopia that found the father's profession statistically relevant for early ANC attendance (Woldu, 2018).

According to the study, 61 (35.5%) respondents with family incomes under $ 50 did not participate in ANC. The husband's profession and the wife's early ANC attendance were related (p>0.005). Some respondents may struggle to afford the direct and indirect fees associated with accessing ANC services. The study's findings align with a study by (Habimana & Biracyaza, 2019; Kafulafula et al., 2019), where women in high-income households were three times more likely to receive ANC services than women in low-income households. The chance of households attending ANC services is predicated on their income level, which is assumed to rise.

b. Accessibility to the health services

The study further revealed that almost three-quarters of the pregnant women in rural Gambia attend antenatal care services during their first trimester. More than 96% of the people accept and support pregnant women to do so because it is culturally accepted in the area.

The study shows that although the distance to the health facility or nearest antenatal care service center has no significant statistical relationship, cultural acceptability was significant for early antenatal care attendance in rural Gambia. The results confirmed that 77 (43.0%) respondents whose distance to the nearest health facility was 11-15km still attended ANC services. There was no significant statistical association between distances to the nearest health facility and early ANC attendance (p> 0.005). In contrast, distance has always been noted as a significant impediment to the usage of services, particularly in rural areas (Afaya & Sciences, n.d.; Manjang, 2022; UNICEF, 2021). According to studies, the distance to services

impacts how often people use general health services. Unfortunately, that was not the case in rural Gambia, as pregnant women choose ANC service areas according to their liking.

According to the study, 96% of those who said that ANC services should tolerate culture had used ANC. Early ANC attendance and cultural acceptance had a significant statistical relationship (p<0.005). A study conducted in Malawi by (Kafulafula et al., 2019) found that culture was a determining factor of ANC utilization, and women who were comfortable attending the services compared to their counterparts were more likely to do so (Akowuah et al., 2018; UNFPA, WHO, UNICEF, WORLD BANK, 2018). Culture can impact early ANC attendance since, in some African cultures, it is the social norm to announce pregnancy only when it is visible, especially in women in the prime of pregnancy. This condition can result in a late start to ANC (Ali et al., 2021; Kafulafula et al., 2019).

The study also found that 39.5% of those who said ANC services were free did not use them. However, there was no correlation between the price of ANC services and early ANC attendance (p>0.005). The result contradicts a study conducted in East Africa and Central Africa that found that early ANC attendance was severely obstructed by the high cost of ANC treatment (Adedokun & Yaya, 2020; Beyene et al., 2022; Nxiweni et al., 2022). It was also found that in certain parts of rural Indonesia, antenatal services are being paid for, which retarded the voluntary participation of pregnant women to attend antenatal care services earlier than expected (Dewi et al., 2020).

c.   Level of Awareness and Early ANC Attendance

The survey found that most of the 165 respondents (80.5%) who were aware of ANC programs in the district participated in ANC. There was a relationship (p>0.005) between awareness level and early ANC attendance. This finding is consistent with a study conducted in Nigeria, which found that pregnant women who were highly informed about ANC services used those services more frequently overall, especially ANC (Ali et al., 2021; El-Khatib et al., 2020; NPC, 2018).

d.   Multivariate analysis of the variables related to early antenatal attendance among pregnant women attending antenatal care services in rural Gambia.

The multivariate analysis shows that knowledge about ANC, level of education, number of children, mother's occupation, marital status, and cultural acceptance (p-value <0.005) have a significant statistical relationship with early antenatal care attendance of pregnant women in rural Gambia. In contrast, distance to the nearest health facility and monthly household income have no significant statistical relationship (p-value> 0.005) with early antenatal care attendance of pregnant women in rural Gambia.

CONCLUSION

According to the study, most socio-demographic variables (number of children, education level, marital status and mother's occupation) affected early ANC attendance. The study had a statistically significant relationship between early ANC attendance and marital status, education level, and parity. According to the study's findings, many economic circumstances significantly influenced respondents' early ANC attendance.

The findings demonstrated the significance of health facility accessibility for encouraging early ANC attendance. Early ANC attendance was not significantly influenced by the distance to the medical institution but by cultural acceptance.

According to the study's findings, the district's early ANC attendance was low by WHO guidelines, accounting for the district's high mother and infant mortality rates. The study found widespread knowledge about ANC services, but regrettably, it still did not help boost the percentage of early ANC attendance.

ACKNOWLEDGMENT

REFERENCES

Adedokun, S. T., & Yaya, S. (2020). Correlates of antenatal care utilization among women of reproductive age in sub-Saharan Africa: evidence from multinomial analysis of demographic and health surveys (2010–2018) from 31 countries. *Archives of Public Health*, 78(1), 1–10. https://doi.org/10.1186/s13690-020-00516-w

Afaya, A., & Sciences, A. (n.d.). *PLOS ONE Women's knowledge of and factors associated with the utilisation of antenatal care in rural Ghana : analysis of a community-based cross-sectional study.*

Akowuah, J. A., Agyei-Baffour, P., & Awunyo-Vitor, D. (2018). Determinants of antenatal healthcare utilisation by pregnant women in third trimester in peri-urban Ghana. *Journal of Tropical Medicine*, 2018(2000). https://doi.org/10.1155/2018/1673517

Ali, S. A., Dero, A. A., Ali, S. A., & Ali, G. B. (2021). Factors Affecting the Utilization of Antenatal Care among Pregnant Women in Moba Lga of Ekiti State, Nigeria. *International Journal of Traditional and Complementary Medicine*, 2(2), 41–45. https://doi.org/10.28933/sina-ijtcm-2016

Arciniegas Paspuel, O. G., Álvarez Hernández, S. R., Castro Morales, L. G., & Maldonado Gudiño, C. W. (2021). *Willingness of Antenatal Care Attendance Among Pregnant Women in Congo.*

Azanaw, M. M., Gebremariam, A. D., Dagnaw, F. T., Yisak, H., Atikilt, G., Minuye, B., Engidaw, M. T., Tesfa, D., Zewde, E. A., & Tiruneh, S. A. (2021). Factors associated with numbers of antenatal care visits in rural ethiopia. *Journal of Multidisciplinary Healthcare*, 14, 1403–1411. https://doi.org/10.2147/JMDH.S308802

Beyene, T., Melka, A. S., & Yadecha, B. (2022). Determinants of postnatal care service utilization among married women in rural areas in western Ethiopia. *Journal of Health, Population and Nutrition*, 41(1), 1–7. https://doi.org/10.1186/s41043-022-00320-y

Birhan, T. Y., & Seretew, W. S. (2020). Trends and determinants of an acceptable antenatal care coverage in Ethiopia, evidence from 2005-2016 Ethiopian demographic and health survey; Multivariate decomposition analysis. *Archives of Public Health*, 78(1), 1–12.

https://doi.org/10.1186/s13690-020-00510-2

Dewi, A., Supriyatiningsih, S., Sundari, S., Sugiyo, D., & Lellee, R. J. (2020). Willingness to Pay for Maternity Waiting Homes in Rural Indonesia. *Jurnal Medicoeticolegal Dan Manajemen Rumah Sakit*, 9(2), 121–126. https://doi.org/10.18196/jmmr.92122

Duodu, P. A., Bayuo, J., Mensah, J. A., Aduse-Poku, L., Arthur-Holmes, F., Dzomeku, V. M., Dey, N. E. Y., Agbadi, P., & Nutor, J. J. (2022). Trends in antenatal care visits and associated factors in Ghana from 2006 to 2018. *BMC Pregnancy and Childbirth*, 22(1). https://doi.org/10.1186/s12884-022-04404-9

El-Khatib, Z., Odusina, E. K., Ghose, B., & Yaya, S. (2020). Patterns and predictors of insufficient antenatal care utilization in Nigeria over a decade: A pooled data analysis using demographic and health surveys. *International Journal of Environmental Research and Public Health*, 17(21), 1–14. https://doi.org/10.3390/ijerph17218261

GDHS. (n.d.). *Gambia Demographic and Health Survey Report*.

GDHS. (2019). *2019-20 Demographic and Health Survey Summary Report The Gambia*. www.DHSprogram.com

Gitonga, E. (2019). Skilled Birth Attendance among Women in Tharaka-Nithi County, Kenya. *Advances in Public Health*, 6, 1–5. https://doi.org/10.1155/2017/9740196

Habimana, S., & Biracyaza, E. (2019). Risk Factors Of Failure To Attend Antenatal Services Among Pregnant Women In The Eastern And Western Provinces Of Rwanda: Analysis Of Rwanda Demographic And Health Survey 2014/2015. *Pediatric Health, Medicine and Therapeutics*, *Volume 10*, 115–130. https://doi.org/10.2147/phmt.s222198

Hospital, K. C., Ibworo, A. A., & Ibworo, V. (2020). Factors influencing compliance to Focused Antenatal Care in Kisumu County Referral Hospital, Kenya. *IOSR Journal of Nursing and Health Science (IOSR-JNHS)*, 9(4), 38–43. https://doi.org/10.9790/1959-0904103843

Kafulafula, U. K., Hutchinson, M. K., Gennaro, S., Guttmacher, S., & Chirwa, E. (2019). Practice environment related barriers to Antenatal Care Attendance among HIV-positive Pregnant Women in Blantyre, Malawi. *Health*, 05(09), 1412–1421. https://doi.org/10.4236/health.2013.59193

Kim, M. O., Coiera, E., & Magrabi, F. (2021). Problems with health information technology and their effects on care delivery and patient outcomes: a systematic review. *Journal of the American Medical Informatics Association : JAMIA*, 24(2), 246–250. https://doi.org/10.1093/jamia/ocw154

Manjang, B. (2022). Implementation and Guidance to Antenatal Care Attendance in Sub-Saharah African Regions. In *Making EHS an Integral Part of Process Design*. https://doi.org/10.1002/9780470935576.ch7

Manyeh, A. K., Amu, A., Williams, J., & Gyapong, M. (2020). Factors associated with the timing of antenatal clinic attendance among first-time mothers in rural southern Ghana. *BMC Pregnancy and Childbirth*, 20(1), 1–7. https://doi.org/10.1186/s12884-020-2738-0

MICS. (2018). *Gambia Multiple Indicator Cluster Survey, Survey Findings Report*. 260–263. https://www.statistics.sl/images/StatisticsSL/Documents/sierra_leone_mics6_2017_report.pdf

MoH The Gambia. (2021). Maternal and Child Health Reports, The Gambia. *Ministry of*

Health, The Gambia, Vol 3(Maternal and Child Health Program). www.moh.gm

Muyunda, B., Musonda, P., Mee, P., Todd, J., & Michelo, C. (2020). Effectiveness of Lifelong ART (Option B+) in the Prevention of Mother-to-Child Transmission of HIV Programme in Zambia: Observations Based on Routinely Collected Health Data. *Frontiers in Public Health*, 7(January), 1–10. https://doi.org/10.3389/fpubh.2019.00401

NaNA. (2019). *The Gambia National Nutrition Profile* (Ministry of Health The Gambia (ed.); 2019 Annua). Ministry of Health.

NPC. (2018). *Nigeria Demographic and Health Survey 2018. Abuja, Nigeria, and Rockville, Maryland, USA: NPC and ICF; 2019 - Google Search.* https://www.google.com/search?q=National+Population+Commission+%28NPC%29+ %5BNigeria%5D%2C+ICF.+Nigeria+Demographic+and+Health+Survey+2018.+Abuja %2C+Nigeria%2C+and+Rockville%2C+Maryland%2C+USA%3A+NPC+and+ICF%3 B+2019&source=hp&ei=mDmjYc77Da-GjLsPwMewIA&ifls

Nxiweni, P. Z., Oladimeji, K. E., Nanjoh, M., Banda, L., Anyiam, F. E., Hyera, F. L. M., Apalata, T. R., Mbokazi, J. A., & Oladimeji, O. (2022). Factors Influencing the Utilization of Antenatal Services among Women of Childbearing Age in South Africa. *Women*, 2(3), 285–303. https://doi.org/10.3390/women2030027

Odusina, E. K., Ahinkorah, B. O., Ameyaw, E. K., Seidu, A. A., Budu, E., Zegeye, B., & Yaya, S. (2021). Noncompliance with the WHO's Recommended Eight Antenatal Care Visits among Pregnant Women in Sub-Saharan Africa: A Multilevel Analysis. *BioMed Research International*, 2021. https://doi.org/10.1155/2021/6696829

Ogunlesi, T. A. (2021). Maternal socio-demographic factors influencing the initiation and exclusivity of breastfeeding in a Nigerian semi-urban setting. *Maternal and Child Health Journal*, 14(3), 459–465. https://doi.org/10.1007/s10995-008-0440-3

Okedo-Alex, I. N., Akamike, I. C., Ezeanosike, O. B., & Uneke, C. J. (2019). Determinants of antenatal care utilisation in sub-Saharan Africa: A systematic review. *BMJ Open*, 9(10), 1–14. https://doi.org/10.1136/bmjopen-2019-031890

Omar, F., Musili, F., & Kodhiambo, O. (2020). Socio-Demographic and Economic Factors Associated With Anc Attendance Among Women of Reproductive Age. *Journal of Health, Medicine and Nursing*, 5(1), 48–59.

Ononokpono, D. N. goz., & Odimegwu, C. O. bb. (2021). Determinants of Maternal Health Care Utilization in Nigeria: a multilevel approach. *The Pan African Medical Journal*, 17(Supp 1), 2. https://doi.org/10.11694/pamj.supp.2014.17.1.3596

Purbaningrum, S. A., Qadrijati, I., Adriana, R. B., & Prasetya, H. (2019). Multilevel Analysis on the Determinants of Antenatal Care Visit at Community Health Center in Madiun, East Java. *Journal of Maternal and Child Health*, 4(3), 180–189. https://doi.org/10.26911/thejmch.2019.04.03.05

Rurangirwa, A. A., Mogren, I., Nyirazinyoye, L., Ntaganira, J., & Krantz, G. (2019). Determinants of poor utilization of antenatal care services among recently delivered women in Rwanda; a population based study. *BMC Pregnancy and Childbirth*, 17(1). https://doi.org/10.1186/s12884-017-1328-2

SDHS. (2019). *2019 Demographic and Health Survey Summary Report Senegal.* www.DHSprogram.com

SLDHS. (2019). Sierra Leone Demographic and Health Survey. *Africa Yearbook*, *16*, 105.

SNNPR. (2022). Health Management Information System (HMIS) Facilitator's Guide for Training of Trainers. *SNNP Regional Health Bureau, February*.

Stephen Mulinge, N. (2019). Factors Influencing Utilization of Antenatal Care Services Among Teenage Mothers in Malindi Sub-County Kenya-A Cross-Sectional Study. *Science Journal of Public Health*, *5*(2), 61. https://doi.org/10.11648/j.sjph.20170502.12

Suryoputro, A., & Budiyanti, R. T. (2019). Development Framework of Emergency Call Application in Pregnant Women. *Jurnal Medicoeticolegal Dan Manajemen Rumah Sakit*, *8*(3), 179–185. https://doi.org/10.18196/jmmr.83105

Tendean, A. F., Dewi, A., & Wirasto, A. (2021). The Implementation of Antenatal Care with Telehealth Towards Pregnant Women's Mental Health. *JMMR (Jurnal Medicoeticolegal Dan Manajemen Rumah Sakit)*, *10*(2), 103–118. https://doi.org/10.18196/jmmr.v10i2.11399

Tesfaye, T., Shikur, B., Shimels, T., & Firdu, N. (2019). Prevalence and factors associated with diabetes mellitus and impaired fasting glucose level among members of federal police commission residing in Addis Ababa, Ethiopia. *BMC Endocrine Disorders*, *16*(1), 1–9. https://doi.org/10.1186/s12902-016-0150-6

Tessema, Z. T., Teshale, A. B., Tesema, G. A., & Tamirat, K. S. (2021). Determinants of completing recommended antenatal care utilization in sub-Saharan from 2006 to 2018: evidence from 36 countries using Demographic and Health Surveys. *BMC Pregnancy and Childbirth*, *21*(1), 1–12. https://doi.org/10.1186/s12884-021-03669-w

Tolossa, T., Turi, E., Fetensa, G., Fekadu, G., & Kebede, F. (2020). Association between pregnancy intention and late initiation of antenatal care among pregnant women in Ethiopia: A systematic review and meta-analysis. *Systematic Reviews*, *9*(1), 1–10. https://doi.org/10.1186/s13643-020-01449-9

UNDP. (2020). Maternal and Child Health Programs and Future Improvements in Africa. *UNDP Programs to Improve MCH in Africa*.

UNFPA, WHO, UNICEF, WORLD BANK, U. (2018). Executive summary of Trends of Maternal Mortality from 2000-2017. *Composites in Infrastructure - Building New Markets*, ix–xii. https://doi.org/10.1016/b978-185617368-1/50001-5

UNICEF. (2021). Health Results 2020 Maternal, Antenatal, Newborn and Adolescent Health. *Adolescent Health Journal*.

Urmale Mare, K., Gebre Wuneh, A., Shemsu Awol, M., Ahmed Ibrahim, M., Kahsay Hiluf, M., Birara Aychiluhm, S., Ahmed Mohammed, O., & Gemeda Sabo, K. (2022). Factors Affecting Nonadherence to WHO's Recommended Antenatal Care Visits among Women in Pastoral Community, Northeastern Ethiopia: A Community-Based Cross-Sectional Study. *Nursing Research and Practice*, *2022*. https://doi.org/10.1155/2022/6120107

WHO, UNICEF, U. (1998). Evidence for the Ten Steps to Successful Antenatal Care Attendance to Delivery Plans; Division of Child Health. In *Division of Child Health*.

Woldu, M. A. (2018). *Attendance of Fourth Antenatal Care Visit in Ethiopia : Analysis from 2016 Ethiopian Demographic Health Survey*. 1–15. https://doi.org/10.21203/rs.2.19760/v1

Table.1 Characteristic of Respondents about ANC Services Provided in Rural Gambia

Variable	Frequency	Percentage
Age of the pregnant woman		
15-24	100	**26.0**
25-29	116	30.2
30-34	95	24.7
35-39	46	11.9
40-44	16	4.1
45-49	11	2.9
Marital Status		
Married	286	74.5
Divorced	70	18.2
Widowed	18	4.7
Separated	10	2.6
Level of Education		
No formal education	169	44.0
Primary	170	44.2
Secondary	42	10.9
Tertiary	3	0.78
Number of Deliveries (Parity)		
One	26	6.8
Two	60	15.6
Three	133	34.6
Four	62	16.1
Five	48	12.5
Six or more	55	14.3
Respondent's Occupation		
Housewife	284	73.9
Businesswoman	59	15.4
Unemployed	36	9.4
Employed	5	1.3
Level of Household Income in Dollars ($)		
<50	79	21.3
50-100	142	38.3
150-200	93	25.0
200-250	35	9.4
> 250	22	5.9
Distance to the nearest ANC Center (KM)		
< 5	111	28.9
6-10	116	30.2
11-15	128	33.3
16 or more	29	7.5
Cost of the ANC Services ($)		
<20	101	35.9
20-30	67	23.8
40-50	21	7.5
>50	4	1.4
Cultural Acceptance		
Yes	372	96.8
No	12	3.1