



International Journal of Social Economics

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Article information:

To cite this document:

Benedict Osei Asibey, Augustina Boakye Dankwah, Seth Agyemang, (2019) "The relationship between perceived service quality of antenatal care and use among rural women in Ghana", International Journal of Social Economics, Vol. 46 Issue: 5, pp.598-613, <https://doi.org/10.1108/IJSE-08-2017-0361>

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<https://doi.org/10.1108/IJSE-08-2017-0361>

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The relationship between perceived service quality of antenatal care and use among rural women in Ghana

Received 30 August 2017
Revised 13 December 2017
1 June 2018
29 September 2018
29 September 2018
Accepted 26 January 2019

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Abstract

Purpose – The purpose of this paper was to examine rural women's perceived quality of antenatal care (ANC) and its influence on the extent of ANC in the Amansie Central District in the Ashanti Region of Ghana.

Design/methodology/approach – A quantitative cross-sectional study was conducted with 120 women attending postnatal care at selected public health facilities. Structured interviews were used to obtain data. Crude odds ratio with 95% confidence interval (CI) was generated to determine the odds of women's utilisation of ANC with their perceived service quality. The association between women's background characteristics and ANC use was determined and assessed using Pearson's χ^2 (2) test.

Findings – Majority of the women (58.3 percent) utilised ANC for at least four times during pregnancy. Women's education ($p=0.027$), religious affiliation ($p=0.006$), source of income ($p=0.012$) and insurance status ($p=0.023$) all had a positive relationship with ANC use. Women who perceived ANC quality as good were three times more likely to have four or more ANC visits than those who perceived quality as poor (OR = 3.042, 95% CI = 0.181–0.647, $p=0.001$).

Originality/value – Ghana has had numerous policy interventions that address the accessibility and quality of ANC service. However, little is known about the extent to which they are observed and about the quality of service from users' perspective. Most existing literature on ANC use in Ghana focusses on socio-economic factors that influence utilisation. This paper will be the first to examine the perceived quality of ANC provided, and its influence on the extent of ANC visits among rural women in Ghana.

Keywords Ghana, Rural areas, Antenatal care, Perception of quality, Pregnant women

Paper type Research paper

Introduction

Maternal health is a matter of concern to governments, civil society, policy makers, and other stakeholders (Mugilwa *et al.*, 2005). Therefore, it has received attention at several platforms and fora, including the just-ended millennium development goals (MDGs). The use of antenatal care (ANC) services by pregnant women is one of the most vital health interventions needed to ensure safe motherhood. ANC is also important in reducing infant

Conflicts of interest: The authors declare that there are no conflicts of interest regarding the publication of this study. The authors appreciate the efforts of the postnatal mothers who participated in the study at the selected health facilities. The authors also thank the administrators of the selected health facilities where the study was conducted.



and maternal mortality, both in developed and developing countries (Nketiah-Amponsah *et al.*, 2012; Fagbamigbe and Idemudia, 2015; Karim *et al.*, 2015, 2016).

Ghana has over the years taken several measures to address maternal healthcare. The country embraced the World Health Organisation (WHO) and UNICEF Safe Motherhood Initiative launched in 1987. The Government of Ghana, in 1998, introduced free ANC services for all pregnant women in the country (Nketiah-Amponsah *et al.*, 2012; Asante *et al.*, 2004). This commitment to promote safe motherhood and child health was further enhanced by introducing a policy to exempt maternal services consumers from paying delivery fees in the four most deprived regions of Ghana, namely, Upper East, Upper West, Northern and the Central Regions in September 2003 (Nketiah-Amponsah *et al.*, 2013). This free maternal healthcare policy was extended to the remaining six regions in 2005. Development partners, such as the government of the UK, provided financial support to the laudable initiative (Nketiah-Amponsah *et al.*, 2012).

In spite of this, Ghana was not able to meet the MDG Goal 5 to improve maternal health (Escribano-Ferrer *et al.*, 2016). Consequently, Ghana's maternal mortality rate, though reducing, is still quite high. The WHO estimated Ghana's maternal mortality ratio at 376 per 100,000 live births in 2005, 325 per 100,000 in 2010, and 319 per 100,000 in 2015 (World Health Organization, 2015). Inadequate access, low quality and underutilisation of modern ANC services are key reasons for poor maternal and infant health outcomes in Ghana and other Sub-Saharan African countries (Nketiah-Amponsah *et al.*, 2013; Escribano-Ferrer *et al.*, 2016; Emelumadu *et al.*, 2014).

Many women do not get adequate ANC during pregnancy. This is especially so in the rural areas where access to such services is inadequate (Aseweh-Abor *et al.*, 2011; Arthur, 2012; Dixon *et al.*, 2014; Pell *et al.*, 2013). This has consequently led to the argument for the adoption of focussed ANC, in which case a pregnant woman has to obtain four ANC visits at specific intervals for pregnancies without complications. The focussed ANC is important since it allows for satisfactory attention to be given to each pregnant woman. The focussed ANC also offers opportunity to monitor high-risk pregnancies and improves the quality of ANC services provided in order to reduce the health issues and deaths associated with high-risk pregnancies (Arthur, 2012; Gudu and Addo, 2017).

Previous studies have reported on inconsistent ANC visits among pregnant women in Ghana (Nketiah-Amponsah *et al.*, 2013; Gudu and Addo, 2017; Ameyaw *et al.*, 2017; Bonfrer *et al.*, 2016; Asundep *et al.*, 2013, 2014). However, no study has assessed the quality of ANC services from the perspective of users, and the impact of the perceived quality on ANC utilisation. Service quality is vital to boost the use of ANC (Hutchinson *et al.*, 2011).

The standard of service quality in healthcare is determined by service providers and health managers. Since 1988, Ghana has had numerous policy interventions that address health care quality including ANC services. Specific examples of these strategic plans include Quality Assurance Strategic Plan 2007–2011 (Ghana Health Service, 2007), Standard Treatment Guidelines, National Cold Chain Inventory, the Reproductive Health Strategic Plan 2007–2011, Integrated Management of Childhood Illness (Escribano-Ferrer *et al.*, 2016), and a Roadmap for Repositioning Family Planning in Ghana 2006–2010 (Ghana Health Service, 2007).

Though a lot of policies and guidelines exist to ensure the quality of care in Ghana, little is known about the extent to which they are observed. Therefore, for policies and interventions to deliver optimally and ensure increased use of health services, there is a need to ensure that the quality of service is taken into consideration in the provision of services. Fighting maternal and infant mortality and morbidity through increased ANC use requires public health interventions put up on clear understanding of women's perception of ANC services quality within their cultural context (Arthur, 2012). Service quality can be assessed either subjectively or objectively. In subjective terms, quality is assessed using patients' perception of ANC services. Patient perception of quality of care is one major determinants of ANC visits

(Emelumadu *et al.*, 2014; Appiah, 2015). Good understanding of the perception of patients on healthcare services offers the chance to identify deficiencies in healthcare as well as barriers and motivators to the utilisation of services. It can also be used for gathering inputs of recipients of healthcare services for the purpose of establishing more patient-friendly services, and using the same to improve the quality of care (Appiah, 2015). Clients' perceived service quality is also vital for setting standards for ANC services in the country.

Against the backdrop and within the framework of efforts to address maternal and infant mortality, particularly among rural dwellers, this paper investigates the level of ANC use by rural women, with special focus on perceived ANC service quality and its influence on utilisation. The study was conducted in Amansie Central District, a rural district in the Ghana's Ashanti Region. The study seeks to answer the following questions: how accessible is maternal services provided to the women in the district?; what is the level of utilisation of maternal health services by pregnant women?; and to what extent does women's perception of service quality influence their use of ANC in rural Ghana?

Research hypothesis

- H₀*. Perceived service quality has no significant influence on women's use of ANC in Rural Ghana.
- H₁*. Perceived service quality has a significant influence on women's use of ANC in Rural Ghana.

Literature review

Service quality is an important determinant of people's utilisation of health care, both in rural and urban areas (Gega and Dapi, 2013; Turkson, 2009; Pramanik, 2016). Quality refers to the degree to which health services for individuals and populations increase the likelihood of desired health outcomes (Pramanik, 2016). It is determined by comparing a set of interest with a set of requirements, and operationally defined to mean closeness towards customers' expectation. The ultimate objective of measuring health service quality is to evaluate and understand the patients' satisfaction. However, measuring health service quality is a complicated process (Pramanik, 2016), and a number of dimensions of service quality have been suggested (Brady and Cronin, 2001; Scotti *et al.*, 2007).

Researchers are of the opinion that actual improvement in the quality of health care cannot occur if the perceptions of the patients or users are not involved (Bhattacharjee, 2007; Pramanik, 2016; Sharma and Narang, 2011). The importance of patients' perception lies in the fact that it has a huge impact on their "health-seeking behaviour", including actual service utilisation. The patients' perception also seeks their involvement regarding issues directly related to them and helps the service provider to better meet their expectations (Sharma and Narang, 2011). Quality of health service is defined not by suppliers or service providers, but by the consumers or patients (Pramanik, 2016). Consumers, however, mostly assess the quality of healthcare based on their perception, and the perception of service quality develops by comparing the expectation of customers with actual service performance (Brady and Cronin, 2001; Pramanik, 2016).

Quality of service ranges from "totally unacceptable quality" to "ideal quality" (Bhattacharjee, 2007). A "positive" rating shows that the health facility provides services above the customer expectation and a negative rating shows health facility offers services below the customers' expectation and signifies the attributes that the customer deems important and the health facility can devote more of its resources to those areas (Pan *et al.*, 2006; Bhattacharjee, 2007).

Several factors contribute to poor health service quality, particularly in developing countries. Studies have identified poor infrastructure, incompetence of health care professionals, delays in

receiving appropriate care at health facilities, non-availability of medical supplies such as drugs, lack of specialists, inadequate referral systems, and the attitudes of health care professionals as factors contributing to poor service quality (D'Ambruoso *et al.*, 2005; Onah *et al.*, 2009; Øvretveit, 2004; Shaikh and Hatcher, 2004; Pramanik, 2016; Zineldin, 2006; Sharma and Narang, 2011; Turkson, 2009). These factors translate into the loss of the public's confidence in the health care systems in developing countries and may have a significant impact on their utilisation.

The impact of quality on utilisation may be service specific, and that although certain dimensions of quality may have little or no impact on the utilisation of some services, they may be important determinants of the use of other health services (Pramanik, 2016; Shaikh and Hatcher, 2004). In Ghana, the Ministry of Health found that one key factor associated with the poor quality of health care provision is overpopulation, where the size of the country's population exerts pressure on the already inadequate health care facilities amidst limited resource (Turkson, 2009).

A number of studies have found a positive relationship between clients' perceived service quality and their level of service utilisation. Gega and Dapi (2013) studied the influence of patients' perception of service quality on utilisation and satisfaction in Albania and found that there is a positive relationship between perceived service quality and patients' willingness to reuse the same health facility or service in the future or recommend it to others. Karim *et al.* (2015) studied the influence of perceived quality and satisfaction on the utilisation status of the community clinic services in Rural Bangladesh and found a positive relationship between perceived service quality and their use of both Antenatal and Postnatal Care. In a similar study on the effects of perceived service quality on maternal healthcare utilisation in Kenya, Audo *et al.* (2005) found under-utilisation of maternal health services in Municipal health facilities due to perceived poor quality of care in the facilities. In Ghana, Agyapong *et al.* (2017) examined the relationship between perceived service quality and behavioural intentions in the Ashanti Region and found a significantly positive relationship between patients' perceived service quality and their level of service utilisation and satisfaction.

Data and methods

Study design and sampling

This study used a cross-sectional and quantitative survey design to investigate women's ANC seeking behaviour and the influence of service quality on ANC utilisation. The study focussed on health facilities in selected communities in the Amansie Central District. The Amansie Central District was selected because of its rural character with few health facilities available.

The mixed sampling method was employed to select the respondents. First, 3 out of 14 health facilities in the District were purposively selected. These included the health facilities located at Jacobu, Atobiase and Hia. Only three health facilities were selected because the District covers a vast area of land with the health facilities scattered in several small communities with great distances apart. This made it difficult for the researchers to be able to contact all the health facilities considering the short time available. Also, the three selected health facilities serve several rural communities in the district. The study also used a systematic random sampling technique to select mothers who visited the health facilities for postnatal care. The postnatal care attendance register at each health facility served as the sampling frame. The postnatal attendance registers at Jacobu, Atobiase and Hia had 614, 196 and 136 mothers, respectively, giving a total of 946 mothers.

Out of total 946 mothers, 120 were systematically sampled to participate in the survey. This consisted of 78 from the St Peter's Hospital at Jacobu, 24 from Atobiase Clinic and 18 from Hia Health post. The systematic random sampling procedure used sample intervals of eight for both St. Peter's Hospital at Jacobu and Atobiase Clinic, and seven for Hia Health Post. These sampling intervals were obtained by dividing the total number of mothers on

the attendance list for a particular health facility by the sub-sample for that health facility. In each facility, one woman was randomly selected between the first person on the postnatal attendance list and the sample interval. The sample selection then continued using the sample interval for each health facility. In a situation where a sampled mother declined to participate, the next person was contacted and the same sample interval was used to select subsequent respondents. This was done till the sample size of 120 women was reached. Potential participants who presented for postnatal care at the study health facilities were informed of the study by the attending nurses and health assistants.

Data collection

Structured interview schedule was used to obtain data. Issues sought were: socio-demographics; access to ANC service; women's ANC services seeking behaviour; and perceived quality of ANC services received. Included in the socio-demographics section were questions about respondents' health insurance status during pregnancy. Before the actual data collection, the research instrument was reviewed by one nurse, one midwife, and one academic to ensure cultural sensitivity and content validity. With the aim of improving its reliability, the instrument was then pre-tested on three new mothers who were not part of the actual survey, and pretest modifications were made.

Data collection was done at the selected health facilities by using exit interview with mothers seeking postnatal care. The low literacy levels in the study communities necessitated the adoption of the interviewer-administered approach. The interactions were mostly done in the local Twi language which is the most patronized dialect in the study area. However, few of the respondents opted to be interviewed in the English Language. Such respondents revealed that they are not natives of the communities but rather civil servants who have been posted to work there. Participation in the study was voluntary. Also, informed consent was obtained from the participants before the start of the interview. Verbal permission was also sought from the administrators of the selected health facilities before the commencement of the fieldwork. Each interview with a single respondent took about 40 min to complete. Interaction with each respondent took place in a private area. Also, no identifying information was recorded. Confidentiality was assured. All the respondents were aged 18 years and above.

Study variables

The dependent variable for the study was ANC use. ANC use was defined and operationalized as whether or not a respondent was able to attend the minimum required four ANC visits during pregnancy, in accordance with WHO standards (World Health Organization, 2015). Response was coded as 0 if attendance was < 4 and 1 if it was ≥ 4 . The independent variable, on the other hand, was service quality, defined as the quality of ANC as perceived by respondent. Quality of service was rated on a scale from 1 to 3 and described as 1 = Poor, 2 = Satisfactory and 3 = Good. Respondents' rating of ANC quality was guided by specific issues such as individualised care, privacy, adequacy of information, clean environment, quick attention and sufficiency. Quality of ANC was also guided by the sufficiency and attitude of caregivers, which was guided by items such as caregivers' comfortability with users, kind of treatment given, the possibility of stigmatization and discrimination on the part of services providers, and the staffs' attitude towards safety.

Other background characteristics of the respondents sought included age, education, husbands' education, employment status, religious background, source of income and health insurance status during pregnancy. Access to ANC was also included in the study, and this was measured in terms of physical distance to reach health facility, travel time and means of transport. Insurance status and employment status were entered as dichotomous variables. Insurance status was defined as insured = 1 and uninsured = 0, and employment status was defined as employed = 1 and unemployed = 0. Age was entered as a continuous variable.

Education was included in the study since educated people are considered to have greater awareness of the existence and value of ANC. Education also influences people's perception on the quality of ANC.

Data analysis

Continuous and ranked data were used in the quantitative analysis. Each objective of the study and the data analysis method used to achieve it are presented below.

The first objective to examine the level of accessibility of maternal health services by the women was achieved using the descriptive statistics (frequency and percentage counts). This was done by finding the frequencies and percentages of women who responded to the various questions on their level of access to ANC.

The second objective of determining the rural women's level of ANC use was also achieved by finding the number and percentage of women's responses to the question on whether or not they had the WHO recommended minimum of four ANC visits during pregnancy. Pearson's χ^2 test was also performed to determine the association between the respondents' background characteristics (age, education, employment status, religious affiliation and health insurance status) and their use of ANC services, at a 0.05 level of significance.

The third objective to examine the influence of women's perception of service quality on their use of ANC using the crude odds ratios from binary logistic regression. Binary logistic regression was used by Karim *et al.* (2015) to identify the influence of perceived quality on the utilisation status of the community clinic services in Bangladesh. Crude odds ratio with 95% confidence interval (CI) was generated to determine the odds of women utilisation of ANC with their perceived service quality.

All data analyses were done using the Statistical Product for Service Solution for windows version 20.

External validity

The elements of external validity considered in this research were the generalisability of the results, relevance of findings to new settings and participants, and stability of results. In ensuring external validity, the researchers used the random sampling technique to select a fair sample that is representative of the population of postnatal women who use the selected health facilities. All the 120 sampled respondents participated in the study; hence, the dropout rate was 0 percent. The research was also conducted not in only one place, but three different places. Also, multiple sources of evidence and expert information from several participants were used.

Results

Characteristics of the sample

Table I shows respondents' background characteristics. It presents the percentages associated with each of age groups, educational status, partner's level of education, employment status and type of work, religious background, and health insurance status. The respondents were found to be generally young. The average age of the respondents was 28 years with a standard deviation of eight years. Some 45 percent ($n = 54$) of the 120 respondents were within the age bracket of 20–29, while 40 percent were 30 years and above. Most of the women were formally educated, though the level of education was mostly not high. Some 25 percent of the women had no formal education, while 53 percent had been educated up to just the basic level. Only 6.7 percent had tertiary education. Partners' level of education was higher compared to the women's educational levels. About 10 percent had partners with no formal education, 35 percent had only basic education and 18.3 percent had tertiary education. This is consistent with the findings from the 2010 Ghana Population and Housing Census that males are highly educated than females (Ghana Statistical Service, 2012). Majority (74.6 percent) of the

Table I.
Background
characteristics of the
study participants

Variable	Category	Frequency	Percentage
Age	Below 20	18	15.0
	20–29	54	45.0
	30 and above	48	40.0
	Mean	28	
	SD	8	
Educational status	No formal	30	25.0
	Basic education	64	53.3
	Secondary education	18	15.0
	Tertiary	8	6.7
Level of partner's education	No formal education	12	10.0
	Basic	42	35.0
	Secondary	36	30.0
	Tertiary	22	18.3
Employment status	No idea	8	6.7
	Unemployment	30	25.4
Type of work	Employed	88	74.6
	Farmer	24	26.7
	Petty trader	30	33.3
	Artisan	18	20.0
	Public/civil servant	14	15.6
	House wife	4	4.4
Religious background	Christian	102	85.0
	Muslim	18	15.0
Health insurance status	Insured	55	46
	Uninsured	65	54

pregnant women were found employed. The women were engaged in variety of occupation, with petty trading (33.3 percent) as the most dominant, followed by farming (26.7 percent). Other livelihood activities discovered included artisanal works (20.0 percent) and public/civil service (15.6 percent). Also, consistent with the findings of 2010 Ghana Population and Housing Census, most of the women were found to be Christians (85 percent), with few being Muslims (15 percent). According to the Ghana Statistical Service (2012), 71.2 percent of Ghanaians reported to be Christians, followed by Islam (17.6 percent) and Traditionalists (5.2 percent). Women's subscription to health insurance was found to be poor. More than half (54 percent) of the women had no health insurance coverage.

Access to ANC by the pregnant women

The result on the extent of access to ANC by the women is presented in Table II. Access was defined in this study in terms of distance from the users' dwelling to the health facility,

Table II.
Respondents access
to ANC

Variable	Category	Frequency	Percentage
Distance from house to health facility (km)	Less than 1	20	16.4
	1–3	36	30.0
	4–5	18	15.0
	> 5	46	38.3
	Mean		
Travel time (hrs)	Less than 1	84	70.0
	1 to 2	34	38.3
	More than 2	2	1.7
Means of transport	Foot	56	46.7
	Car	64	53.3

travel time and means of transport. The results show that distance from respondents' dwelling to the health facilities was generally long. More than half of the respondents covered not less than 4 km to access ANC; 38.3 percent covered more than 5 km; and 15 percent covered 4–5 km. Also, some 30.0 percent of the respondents covered 1 to 3 km to access ANC. Travel time to access ANC was not long. Some 70 percent of the respondents reported that they travel for less than 1 h to reach to health facility to access ANC. Only 1.7 percent travel for more than 2 h to access ANC. Travelling time was shorter because the respondents from the selected communities mostly travelled with car (52.3 percent) and 46.7 percent travelled on foot to access ANC. Travelling time was also shorter because most of the respondents were from the communities where the health facilities are located.

Women's ANC seeking behaviour

Table III presents the result on the extent of ANC use by the respondents. Generally, women's level of use of ANC in the rural communities was found to be acceptable though there is still much to be worried about. Though majority (58.3 percent) of the women achieved the recommended minimum of four visits, a significantly higher proportion (41.7 percent) also failed to achieve the recommended four visits.

Table IV presents the results of categorical bivariate analysis to determine the association between women's ANC use and their background characteristics. Background characteristics of interest included age, education, employment status, religious affiliation, and health insurance status. Women's education ($p \leq 0.027$) had a positive and significant association with their ANC use. This is because education has impacts on the knowledge and awareness levels of women and their use of health services. Education also affects the women's income levels, since highly educated women tend to have better paid jobs and much higher incomes than women with low education. Women's religious affiliation

Table III.
Women's ANC
seeking behaviour

Variable	Categories	Frequency	Percentage
ANC Use (At least 4 visits)	No	50	41.7
	Yes	70	58.3
	Total	120	100.0

Table IV.
Association between
ANC use and selected
background
characteristics

Variable	Categories	Use of ANC				χ^2 (<i>p</i> -value)
		No		Yes		
		Freq	%	Freq	%	
Age	Below 20	12	66.7	6	33.3	0.328
	20–29	22	40.7	32	59.3	
	30 and above	16	33.3	32	66.7	
Education	None	8	26.6	22	73.4	0.027
	Basic	32	50.0	32	50.0	
	Secondary	4	22.2	14	77.8	
	Tertiary	0	0.0	8	100.0	
Employment	Unemployed	16	53.3	32	36.4	0.264
	Employed	14	46.7	56	63.6	
Religion	Christian	40	39.2	12	66.7	0.006
	Muslim	62	60.8	6	33.3	
Insurance status	Insured	12	19.7	49	80.3	0.023
	Uninsured	38	64.1	21	35.9	

Notes: χ^2 -test was used. *The level of significance at $\alpha = 0.05$

($p \leq 0.006$) was also found to have a positive and significant association with their use of ANC. Christian women (66.7 percent) had higher utilisation of recommended four or more ANC visits than Muslim women (33.3 percent). Being insured ($p \leq 0.023$) also had a positive association with the rural women's ANC use. Insurance significantly reduces the cost of accessing of ANC as well as other vital medicines.

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Service quality and ANC use

Table V presents the results on respondents' perception on ANC quality. The general perception of ANC quality was acceptable. Majority (65 percent) of the respondents rated quality of ANC as good. Only 2.4% of the women rated service quality as poor. The women also rated the factors taken into consideration in their general rating of quality of ANC. These include privacy, individualised care, adequacy of information, quickness of attention, sufficiency of workers and attitude of workers. Majority of the women received individualised care (61.7 percent), had their privacy (98.3 percent), adequate information (73.3 percent) and given quick attention (96.6 percent). Also, 93.3 percent indicated that they met sufficient number of workers. Attitude of workers at the selected health facilities was also rated by the women as mostly good (58.3 percent). Higher number of formally educated women in the study may account for the generally higher perceived quality of ANC. Education influences peoples' perception of service quality.

Binary logistic regression analysis was performed with ANC use as the dependent variable and perceived service quality as the independent variable. The results show a positive association between respondents' perceived service quality and their use of ANC. As shown in Table VI, the women who perceived service quality as "good" were 3 time more likely to have the recommended four ANC visits than the women who perceived service quality as "poor" (OR = 3.042, 95% CI = 0.181–0.647, $p \leq 0.001$). Also, women who perceived service quality as Satisfactory were 1 time more likely to have the recommended four ANC visits compared to those women who perceived service quality to be poor (OR = 1.046, 95% CI = 0.001–0.356, $p \leq 0.003$).

Variable	Category	Frequency	Percentage
Individualised care	Yes	74	61.7
	No	46	38.3
Privacy ensured	Yes	118	98.3
	No	2	1.7
Adequacy of information received	Yes	88	73.3
	No	16	13.3
	No idea	16	13.3
Clean environment	Yes	116	96.6
	No	2	1.7
	No idea	2	1.7
Receive quick attention	Yes	116	96.6
	No	4	3.3
Sufficiency of workers	Yes	112	93.3
	No	8	6.7
Attitude of health workers	Poor	12	10.0
	Satisfactory	38	31.7
	Good	70	58.3
	Poor	4	2.4
Perceived service quality	Satisfactory	38	31.6
	Good	78	65.0

Table V.
Quality of ANC perceived by the pregnant women

Discussion

The study focussed on access and use of ANC by women in rural Ghana. The study specifically focussed on how the women perceive quality of ANC services and the influence of their quality perception on actual service utilisation. Maternal and child mortality is still a worrying issue in Ghana (Asundep *et al.*, 2013), and the use of ANC remains one of the most important strategies to fight it. Therefore, investigating the use of ANC and the importance of service quality in relation to ANC use will provide a basis for policy options and programmatic planning.

The study suggests that access to ANC in the rural areas was generally satisfactory. Most women did not have to travel long distances to access ANC services. Most of the women were either residents of the communities in which the health facilities were located or lived very close. This result of relatively easy access to ANC by the rural women is encouraging. A high level of accessibility to ANC has a positive influence on the level of utilisation, as found by previous studies in other African countries such as Ghana (Addai, 2000; Buor, 2004; Nketiah-Amponsah *et al.*, 2013; Asundep *et al.*, 2013), Ethiopia (Mekonnen and Mekonnen, 2003; Girma *et al.*, 2011; Tsegay *et al.*, 2013) and Nigeria (Dahiru and Oche, 2015). Increased utilisation results in positive health outcomes such as reduced maternal and infant morbidity and mortality resulting from pregnancy and birth complications.

Level of ANC use by the rural women was also acceptable, though a significant number of the women were not able to achieve the recommended four ANC visits. This is good since it reduces pregnancy-related complications that could affect both mother and child. The high level of ANC utilisation may be as a result of the ease of access in terms of distance and travel time, confirming the findings of previous studies (Ameyaw *et al.*, 2017; Nketiah-Amponsah *et al.*, 2013; Gudu and Addo, 2017; Dahiru and Oche, 2015).

Education also explains the rural women's ANC utilisation. There was a significant difference between the women with high level of education and those with less education in terms of level of ANC use. Similar studies involving ANC and other health services observed that maternal education was the most consistent and important determinant of use. For example, studies in Bangladesh (Shahjahan *et al.*, 2013), Philippines and Haiti (King-Schultz and Jones-Webb, 2008), as well as other studies in sub-Saharan Africa (Buor, 2003; Nketiah-Amponsah *et al.*, 2013; Dahiru and Oche, 2015; Girma *et al.*, 2011) all established that literacy of women had a significant association with use of ANC services. Education impacts on women's knowledge and awareness, their use of various health services including the importance of seeking ANC and the effects of non-utilisation. Highly educated women also tend to have better paid jobs. Hence, they have much higher incomes than their counterparts, as compared to their uneducated or less educated counterparts (Buor, 2004; Nketiah-Amponsah *et al.*, 2013; Mensah *et al.*, 2010; Jewell, 2009). Educational level is also a strong determinant of health insurance enrolment. Individuals with less education are less likely to enroll in health insurance (Mensah *et al.*, 2010; Asibey and Agyemang, 2017). It is therefore important to design health education programs that

Independent variable	Crude OR	[95% Conf. Interval]	<i>p</i> -value
<i>Service quality</i>			
Poor	1		
Satisfactory	1.046	0.001–0.356	0.003
Good	3.042	0.181–0.647	0.001

Note: *n* = 120

Table VI.
Logistic regression
analysis showing
crude odds ratio for
association of
perceived service
quality with ANC use

will take into consideration women with no formal or basic education. This would likely increase ANC use and therefore likely reduce adverse maternal outcomes. Another way to boost ANC use is to educate women, especially those in rural areas on dangers of inadequate use of the services. Use of ANC by the women also significantly differed based on their insurance status and religious affiliation. There was evidence to suggest that women with active health insurance used ANC more than those with no insurance cover. Though ANC services in public health facilities in Ghana are free, pregnant women still have to make payments for some vital services including medicines. Hence, having health insurance cover makes the cost of accessing the service cheaper than for those with no insurance cover. Uninsured women have to pay for the use of services, and this prevents them from using the services for the recommended number. This finding of difference in services use between insured and uninsured individuals validates findings from previous studies in other countries including Ghana (Asibey and Agyemang, 2017; Ameyaw *et al.*, 2017; Bonfrer *et al.*, 2016; Mensah *et al.*, 2010; Atinga *et al.*, 2012), Ethiopia (Girma *et al.*, 2011), South America (Jewell, 2009) and in South Korea (Kim *et al.*, 2016). Such previous studies indicated that ownership of health insurance is an important determinant of the intensity of health service use via lowering out-of-pocket cost. Appropriate government policies are therefore needed to improve the rate of use ANC for the rural people by way of expanding health insurance services to all.

The study also found that all the women who participated in the study had religious affiliations. This indicates the importance of religion to the life of the rural women in Ghana, and could shape their ANC decision making and practice. There was a significant difference in ANC visits in terms of religious affiliation. Christian women had higher utilisation of recommended four or more ANC visits than Muslim women. This significant association of religious affiliation to ANC use may be attributed to the number of social supports that women mostly get by being a member of a religious group. Religious groups in Ghana are used to organising medical counselling for members free of charge and this have effects on their health care education and seeking behaviours. Therefore, policies to organise such programmes should reduce and possibly eliminate partiality towards particular religion, but should align positive health teachings and beliefs of various religions with the aim of improving maternal and child health through better of ANC.

The results of this study also suggest that rural women are gradually becoming aware of the importance of improving health service quality. This may be explained by the higher number of women being formally educated, bearing in mind that education has a strong influence on peoples' perception of service quality. It may also be attributable to the effective supervision of ANC services and some recent upgrade in facilities at the selected hospital, clinic and health centres by the government of Ghana and the hospital administration. Several other studies have also found higher client perceived health service quality in Nigeria (Emelumadu *et al.*, 2014; Nwaeze *et al.*, 2013; Fagbamigbe and Idemudia, 2015), Malawi (Kambala *et al.*, 2015) and Bangladesh (Karim *et al.*, 2015, 2016). It however, contradicts findings of a previous study in India (Pramanik, 2016) that patients of both rural and urban hospitals are not satisfied with the health care services provided by hospitals.

This study has also revealed that the level of ANC visits by the rural women is influenced by their perception of service quality. Women who perceived service quality to be good and satisfactory were significantly more likely to attain the recommended four or more ANC visits than women who perceived quality to be poor. This implies that for ANC services to be adequately used by pregnant women, there is the need for the health facilities to ensure the delivery of quality services. This finding is consistent with previous studies in other countries such as Nigeria (Abdulkarim *et al.*, 2008; Emelumadu *et al.*, 2014), Burkina Faso (Nikiema *et al.*, 2010) and Ghana (Appiah, 2015; Boateng and Awunyor-Vitor, 2013).

Such previous studies report that the use of health care is determined by the quality of service provided and that even poor households limit their demand for health care when the services are of poor quality. There is therefore the need for appropriate policies to strengthen interventions that encourage women's utilisation of ANC services.

There were some limitations regarding the methodology of the study. There may be a possibility of recall bias in self-reported ANC visits by the women. The study was confined to the ANC services provided in a particular rural district in Ghana, which could be extended to other geographical areas of the country. Also, the sample of 120 rural women is only representative of the rural women who were seeking postnatal care at the selected health facilities. However, it is not representative of all women in rural areas in Ghana; hence, the result cannot be generalised for all women in rural Ghana. One other key limitation of this research is that it was conducted among women who had already given birth and seeking postnatal care in the selected health facilities and did not reflect the opinion of pregnant women who are currently seeking ANC services.

Conclusions

The study has shown the need to improve the use of ANC services in rural Ghana. Some 41.7 percent of the women could not attain the WHO recommended minimum of four ANC visits during pregnancy. This comes on the background that ANC service in Ghana is free in public health facilities and some accredited private institutions, at least in principle. This suggests that efforts are needed to target women in rural areas of lower socioeconomic status, with the provision of basic maternal healthcare services, especially ANC services.

The study showed a high perceived quality of ANC by the rural women in the Amansie Central District. The results further indicate that women's perceived service quality is an important factor in their ANC use. It is therefore important for the healthcare organisations and administrators of health facilities to improve the quality of services provided in order to boost utilisation. The government and management of the health facilities should also recruit adequate number of highly skilled and experienced health professionals to provide quality ANC services to women in rural areas. Health facilities in rural areas should also improve the quality of ANC service through the provision of proper advice and counselling to ANC attendants in order to increase their number of visits.

The study also concludes that women's background characteristics such as education, insurance status and religious affiliation are important factors associated with their ANC use. Health insurance ownership was a significant factor in determining the frequency of ANC visits by the rural women. The fact that health insurance ownership in rural Ghana positively influences the frequency of ANC visits makes it vital to intensify health insurance awareness and enrollment campaign in the rural areas. It is recommended that various stakeholders such as the Ghana Health Service, Ministry of Health, and the Nation Insurance Authority should put in place all necessary interventions to improve access to health insurance services particularly for the rural people. Women's education was also associated with the frequency of ANC visits. It is therefore recommended that education of expecting mothers should be intensified to reach the rural areas in order to minimise any risks of maternal and child mortality. The study also recommends empowerment of rural women through formal and informal education and income-generating activities in the long run so as to boost their ANC use. It is also recommended that policies to organise social support and medical counselling programmes should reduce and possibly eliminate partiality towards particular religion. Such policies and programmes should rather align positive health teachings and beliefs of various religions with the aim of improving maternal and child health through better use of ANC. Also, though ANC services in Ghana is free, there is still the need to empower the rural women with income-generating activities.

This is because some minimum level of wealth is required to induce ANC visitations. Though women don't pay for accessing ANC, other factors including distance to the health facility and transportation costs could affect their frequency of ANC visits.

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