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Background Determinants of Antenatal Care Utilization among Pregnant Women in Akwa Ibom, Nigeria

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Abstract

This study assessed the utilization pattern of Antenatal care with the view of identifying demographic factors affecting the utilization of antenatal care (ANC) among women of reproductive age in Akwa Ibom State, Nigeria. Population based cross sectional survey was adopted in this study. The investigation was conducted between September and October 2007 from the catchment areas of ANC offering Primary Health Centers (PHCs) in five (5) local government areas in Akwa Ibom State, Nigeria. 1,061 women of reproductive age who gave birth in the last 6 months were used for the study. Result of this study showed that 65% of the respondents attended ANC with majority being between the ages of 25 – 35 years(p=0.008), Pentecostals(p=0.000), married(p=0.000) and having either secondary or higher education(p=0.000). The odds of attending ANC is statistically significant for women between the ages of 25 and 35 years(p=0.037), married women(p=0.000) and women with secondary(p=0.000) and higher education(p=0.000). The odds of higher ANC visits (≥ 4) are statistically significant with married women (p=0.01) and respondents with secondary (p=0.01) and higher education (p=0.00). The odds increases as the ANC visits increases (married: OR – 1.9(p=0.004), 2.2(p=0.001), 4.8(p=0.011); secondary education: OR – 2.3(p=0.01), 5.8(p=0.000), 12.1(p=0.016); higher education: OR – 11.4(p=0.000), 33.7(p=0.000), 64.7(p=0.000). This study thus concluded that demographic characteristics especially age; marital status and educational level significantly affect ANC attendance and the frequency of ANC visits.

Keywords – Antenatal Care, Determinants, Nigeria

Introduction

Antenatal Care (ANC) continues to be one of the safest maternal care interventions aimed at significantly reducing maternal and perinatal morbidities (Asafo, 2019). It is the routine health care provided to pregnant women by skilled health professionals between conception and the onset of labour. (UNICEF, 2015; Tiruayet, 2019; WHO, 2016; Basha, 2019; Mekonnen, 2019). Utilization of ANC provides an opportunity of care for the prevention and management of existing and potential causes of maternal and new born mortality and morbidity (WHO, 2016; Basha, 2019; Ousman, 2019). It allows providers

to identify and manage infections as well as obstetric complications and to provide preventive injections, medications and supplements to women (NDHS 2018; Basha 2019). It also allows pregnant women the chance to take and make lifestyles decisions as health education and health promotion are core components of ANC (UNICEF, 2015; WHO, 2016; Asafo, 2019; NDHS, 2018).

The 2016 ANC model, the latest WHO recommendation, is an essential core package of interventions aimed at improving the quality of ANC and improving the outcome for the mother and child (WHO, 2016). The new model recommends a minimum of 8 contacts during pregnancy to reduce perinatal mortality and improve the women's experience of care (WHO, 2016). In addition, one of the official indicators for global tracking of ANC coverage is the proportion of women with a recent live birth who report at least 4 ANC visit with any provider (ANC +4) (Haddon, 2016) – as it helps to track progress towards achieving reduction in maternal mortality. Unfortunately, globally only around 50% of women receive adequate ANC (Finalyson, 2013). In Nigeria, 5 out of 10 women had 4 or more ANC and almost a quarter of these women did not receive any ANC during the length of their pregnancy (NDHS, 2018).

Health care utilization involves a complex human behavioural phenomenon (Babitsch, 2012; Hijazi, 2018). A widely used model to explain individual determinants of health care utilization is the Anderson's behavioral framework (Anderson, 1995) which noted that an individual's use of a service (ANC) is considered to be a function of 3 components – predisposing factors (sociocultural characteristics of the individual which existed prior to the pregnancy and affected the propensity to use care); enabling determinants (refers to the conditions which make ANC available to pregnant women); and need factors (refers to pregnancy related elements explaining the degree of care needed). (Hijazi, 2018; Ali, 2018).

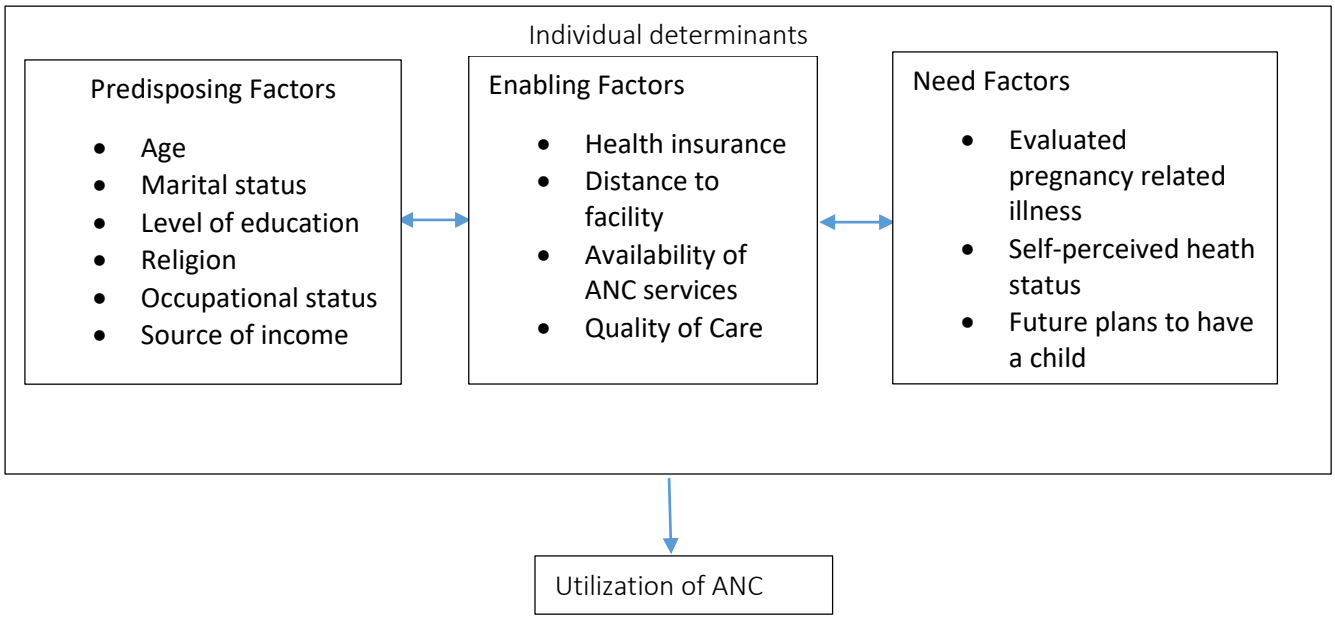


Figure 1 – Conceptual framework adopted from Anderson's model 1995

The present study was conducted to assess the utilization pattern of antenatal care and to identify background determinants affecting the utilization of antenatal care among women of reproductive age at Akwa Ibom State, Nigeria and more importantly background determinants about the

frequency of ANC visits. The findings will be helpful in policy making and in designing appropriate programs and services for the pregnant women population of Akwa Ibom and Nigeria as a whole.

Methods

Study Location

A population based cross sectional survey was conducted between September and October 2007. The survey was drawn from catchments areas of Local Government Area facilities offering antenatal care in five (5) Local Government Areas in Akwa Ibom State, Nigeria. This study was part of the rapid assessment of the Malaria Initiative Program situation in Nigeria. The Nigerian assessment focused on Akwa Ibom State in the South-south zone because it is one of the most highly malaria-endemic areas of the country.

Data Sources

Questionnaires were used to get information from women of reproductive age group. The inclusion criteria for being part of the study is that the women must be between the ages of 15 and 49years old and she must have given birth in the last 6 months regardless of the outcome of the pregnancy.

The main components of the questionnaire were the demographic characteristics of each respondents, their birth and stillbirth history, knowledge level about pregnancy complications, malaria and HIV (transmission, effects and prevention); personal experience related to last pregnancy and antenatal care services (prevention services against malaria and prevention against maternal to child transmission of HIV); medical care seeking behavior of these women when pregnant; and the household characteristics.

Statistical analyses

Data was analyzed using STATA software version 15. The primary outcome was defined as antenatal care utilization. It was assessed in two ways: ever attended antenatal clinic during past pregnancy and those that attended the ANC, their frequency of attendance was also assessed. Each of these outcomes, they were analyzed using four (4) of the demographic characteristic of the respondents – age, religion, marital status, education level. Each of the demographic characteristics was modeled as categorical dependent variables except age which was modeled as both continuous and categorical variables. Logistic regression was used to analyze the first aspect of the outcome (ANC Utilization) - 'ever attended antenatal clinic'.

Both simple logistic regression and multiple logistic regression methods were used to get both crude and adjusted effects of the demographic characteristics on the first aspect of the outcome. Pair wise correlation of the demographic characteristics used for analysis was checked. The model was checked by predicting probability (p), predicting the residuals, plotting outcome against 'p' and residual; plotting area under the curve and goodness of fit (Pearson's test). The second aspect (frequency of attendance) of the outcome was modeled using multinomial logistic regression. Frequency of attendance was stratified into 3 categories (1 -3; 4 – 6; 7 – 9) to obtain a better interpretation of the multinomial regression results.

Results

A total of 1,061 eligible women responded from the five local government areas for this study and they all gave information about their demographic characteristics. The mean age of all respondents was 25.2 years (SD- 5.8). Forty-nine percent (517) of the respondents were less than 25 years, 46% (490) were aged between 25 and 35 years and 5% (54) were above 35 years. Fifty-four (5%) of the respondents were Catholics, 513 (48%) were protestants, 461 (44%) were Pentecostals and 33 (3%) were other types of religion. Fourteen percent (149) were never married, 85% (901) were married and 1% (11) were previously married. Fifty-nine (6%) of the respondents never had formal education, 405(38%) had primary education, 521 (49%) had secondary education and 76 (7%) had higher education.

Table 1. Baseline characteristics

	Attended ANC (n = 686)	Did not attend ANC (n= 375)	Total (n = 1,061)	P value
Demographics				
Age (years)				
Mean	25.2	24.5	25.2	
SD	5.7	5.9	5.8	
Age groups - %				0.008
15 – 24 years	45.5	54.7	48.7	
25 – 35 years	49.7	39.7	46.2	
>35 years	4.8	5.6	5.1	
Religion - %				0.000
Catholics	4.8	5.6	5.1	
Protestants	43.7	56.8	48.4	
Pentecostals	48.0	35.2	43.5	
Others	3.5	2.4	3.1	
Marital Status - %				0.000
Never married	10.6	20.3	14.0	
Married	88.3	78.7	84.9	
Previously married	1.0	1.1	1.0	
Education - %				0.000
No education	3.9	8.5	5.6	
Primary education	30.3	52.5	38.2	
Secondary education	55.3	37.9	49.1	
Higher education	10.5	1.1	7.2	
ANC visits - %				0.000
0			35.3	
1 – 3			32.5	
4 – 6			26.1	
7 – 9			6.0	
Mean(SD)			3.5(2)	

Source – Author's Analysis, 2007

Table 2. Baseline characteristics (cont'd)

	Attended ANC	Did not attend ANC	Total (N = 1,061)	P value
Demographics				
Age groups – N (%)				0.008
15 – 24 years	312(60)	205(40)	517	
25 – 35 years	341(70)	149(30)	490	
>35 years	33(61)	21(39)	54	
Religion – N (%)				0.000
Catholics	33(61)	21(39)	54	
Protestants	300(58)	213(42)	513	
Pentecostals	329(71)	132(29)	461	
Others	24(73)	9(27)	33	
Marital Status – N (%)				0.000
Never married	73(49)	76(51)	149	
Married	606(67)	295(33)	901	
Previously married	7(64)	4(36)	11	

Education - N (%)				0.000
No education	27(46)	32(54)	59	
Primary education	208(51)	197(49)	405	
Secondary education	379(73)	142(27)	521	
Higher education	72(95)	4(5)	76	

Source – Author's Analysis, 2007

Three hundred and seven five (35%) of these women did not receive antenatal care during their last pregnancy while 686 (65%) did receive antenatal care during their last pregnancy. Respondents that attended antenatal care and those that did not attend antenatal care had almost similar mean ages- 25.2 years (SD – 5.7) for those who attended ANC and 24.5 years (SD – 5.9) for those that did not attend ANC. The respondents that did not attend ANC, 54% were less than 25 years, 40% were aged 25 – 35 years, 6% were older than 35 years as compared to those who attended ANC whose age group distribution were 45%, 50% and 5% respectively (p=0.008). Those who attended ANC, based on their marital status, 11% never married, 88% married and 1% previously married as compared to 20% never married, 79% married and 1% previously married for those who never attended ANC (p=0.000). Based on educational level, for those that attended ANC, 3.9% had no formal education, 30.3% had primary school education, 55.3% had secondary education and 10.5% had higher education and for those respondents that did not attend ANC, 8.5% had no education, 52.5% had primary education, 38% had secondary education and 1% had higher education (p=0.000). ANC attendees, 5.6% were Catholics, 57% were protestants, 35% were Pentecostals and 2.4% had other religion as compared to 5% Catholics, 44% protestants, 48% Pentecostals and 4% of respondents with other religion did not attend ANC (p=0.000). (Table 2)

The crude odds ratio for attending ANC was 1.5(p=0.002) and 1.0(p=0.913) for respondents ages, 25 – 35 years and >35 years respectively as compared to respondents less than 25 years. The unadjusted odds ratio for Protestants, Pentecostals and other religion are 0.9(p=0.709), 1.6(p=0.121), 1.7(p=0.271) as compared to Catholics while the adjusted odds ratios are 1.1(0.850), 1.8(0.063), 1.9(0.231). The unadjusted odds ratio for attending ANC based on marital status are 2.1(p=0.000) for married and 1.8(p=0.354) for previously married when compared with respondents who had never married. Adjusted odds ratio based on marital status is 2.2(p=0.000), 2.4(p=0.205) for married and previously married respectively. The unadjusted odds ratio for ANC attendance among respondents with primary education, secondary education and higher education after comparing with those with no education are 1.3(p=0.423), 3.2(p=0.000), 21.3(p=0.000) respectively while the adjusted odds ratio are 1.3(p=0.375), 3.5(p=0.000), 18.8(p=0.000) respectively.

Table 3. Crude and adjusted odds ratio of ANC utilization

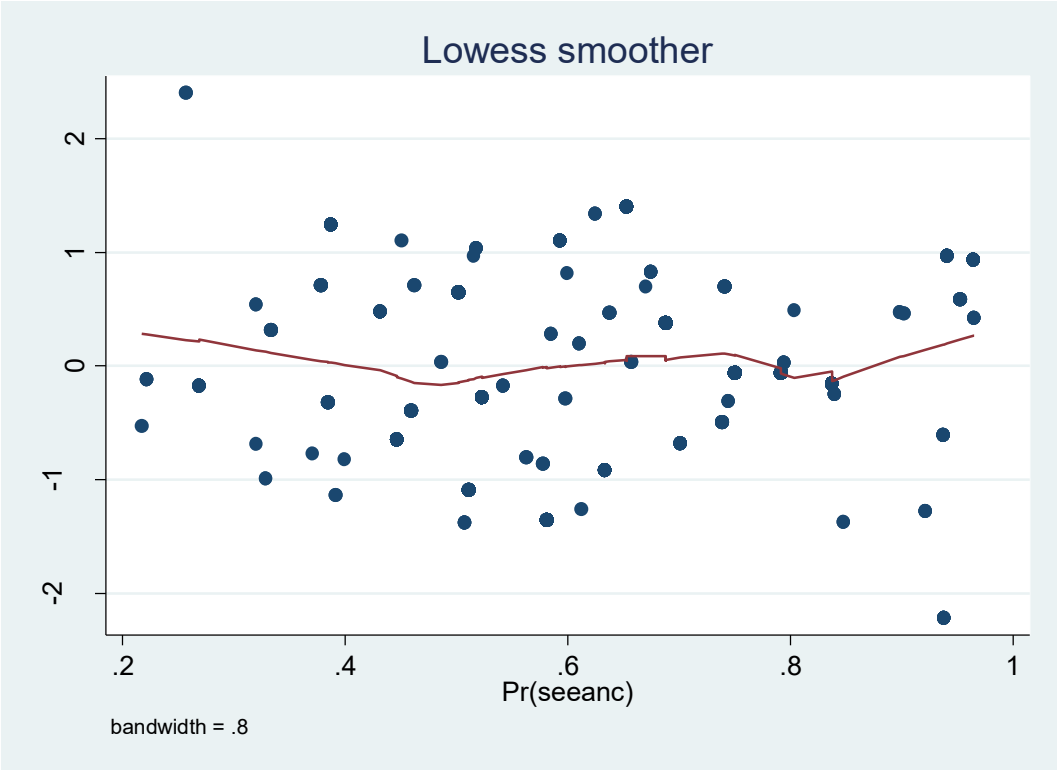
	crude			adjusted		
	OR	95% CI	P value	OR	95% CI	P value
Age groups			0.007			
15 – 24 years	1.0			1.0		
25 – 35 years	1.5	1.2-2.0	0.002	1.4	1.0-1.8	0.037
>35 years	1.0	0.6-1.8	0.913	0.8	0.4-1.4	0.388
Religion			0.003			
Catholics	1.0			1.0		
Protestants	0.9	0.5-1.6	0.709	1.1	0.6-2.0	0.850
Pentecostals	1.6	0.9-2.8	0.121	1.8	0.97-3.4	0.063
Others	1.7	0.7-4.3	0.271	1.9	0.7-5.1	0.231

Marital Status			0.000			
Never married	1.0			1.0		
Married	2.1	1.5-3.0	0.000	2.2	1.5-3.2	0.000
Previously married	1.8	0.5-6.5	0.354	2.4	0.6-9.0	0.205
Education			0.000			
No education	1.0					
Primary education	1.3	0.7-2.2	0.423	1.3	0.7-2.3	0.375
Secondary education	3.2	1.8-5.5	0.000	3.5	2.0-6.2	0.000
Higher education	21.3	6.9-66.0	0.000	18.8	5.9-59.1	0.000

Source – Author's Analysis, 2007

The model was checked by predicting the probability (p) and residuals and the outcome was plotted against 'p' and residuals respectively. The outcome vs. residual plot has fairly random distribution around zero with few outliners (figure 2). The Pearson's goodness of fit was done with continuous age in the model and categorical age in the model. The probability of the Pearson's goodness of fit for the model with continuous age was 0.5836 while the probability of the Pearson's goodness of fit for the model with the categorical age was 0.7063. The model with the categorical age was chosen and used for analysis. The area under the curve was 70% (0.7038).

Figure 2: Outcome (ANC attendance) plotted against predicted residuals after fitting the multiple logistic regression model



The frequency of ANC attendance was categorized into 3 groups (1 – 3; 4 – 6; 7- 9). The mean frequency of ANC visits for all respondents that ever attended ANC was ~4(SD- 2).

Multinomial logistic regression was used to analyze this outcome based on the categorical groups of demographic characteristics (Table 4). The odds of having 1 -3 ANC visits was significantly higher among married women (OR=1.9; P=0.004) when compared to never married women; women with secondary education (OR=2.3; p=0.010) and higher education (OR=11.4; p=0.000) when compared to women with no education. The odds of having 4 – 6 ANC visits was significantly higher among married women (OR=2.2; p=0.001) when compared to never married women; women with secondary education (OR=5.8, p=0.000) and higher education (OR=33.7; p=0.000) when compared to women with no education. However, the odd of attendance was less for women aged >35 years (OR=0.4; p=0.033) when compared to women aged 15-24 years old. Additionally, the odds of having 7-9 ANC visits was significantly higher among women aged 25 – 35 years old (OR=2.1; p=0.016) when compared to women aged 15 - 24 years old; married women (OR=4.8; p=0.01) when compared to never married women; and women with secondary education (OR=12.1; p=0.016) and higher education (OR=64.7; p=0.000) when compared to women with no education.

Table 4. Multinomial regression for the ANC visits versus demographic characteristics

	Odds ratio	95% CI	P value
1 -3 ANC visits			
Age groups			
15 – 24 years			
25 – 35 years	1.3	0.97-1.9	0.073
>35 years	1.0	0.5-2.0	0.974
Religion			
Catholics			
Protestants	0.4	0.4-1.8	0.784
Pentecostals	1.5	0.8-3.1	0.219
Others	1.8	0.6-5.4	0.279
Marital Status			
Never married			
Married	1.9	1.2-3.0	0.004
Previously married	2.2	0.5-9.8	0.286
Education			
No education			
Primary education	1.0	0.6-1.9	0.892
Secondary education	2.3	1.2-4.2	0.010
Higher education	11.4	3.3-37.7	0.000
4 – 6 ANC visits			
Age groups			
15 – 24 years			
25 – 35 years	1.3	0.9-1.8	0.181
>35 years	0.4	0.1-0.9	0.033
Religion			
Catholics			
Protestants	1.1	0.5-2.4	0.800
Pentecostals	2.0	0.9-4.3	0.083
Others	1.8	0.5-6.3	0.330
Marital Status			
Never married			
Married	2.2	1.4-3.7	0.001
Previously married	2.7	0.5-13.9	0.230

Education			
No education			
Primary education	1.8	0.8-4.4	0.168
Secondary education	5.8	2.5-13.5	0.000
Higher education	33.7	8.8-121.5	0.000
7 -9 ANC visits			
Age groups			
15 – 24 years			
25 – 35 years	2.1	1.1-3.8	0.016
>35 years	1.3	0.4-4.6	0.679
Religion			
Catholics			
Protestants	4.5	0.6-33.1	0.156
Pentecostals	6.3	0.9-4.4	0.082
Others	2.6	0.5-6.3	0.524
Marital Status			
Never married			
Married	4.8	1.4-16.3	0.011
Previously married	-	-	1.000
Education			
No education			
Primary education	2.1	0.3-16.4	0.497
Secondary education	12.1	1.6-90.0	0.016
Higher education	64.7	6.0-665.1	0.000

Source – Author's Analysis, 2007

Discussion

More than half (65%) of the respondents attended ANC and the remaining did not. This is consistent with what was observed in the 2003 & 2013 NDHS (NDHS, 2003; NDHS, 2013). Within each age group strata, higher proportion of respondents attended ANC with a highest proportion (70%) among respondents between the age group of 25 – 35 years (p=0.008) and the highest percentage of non-attendance of ANC was among respondents whose ages were less than 25 years (40%; p-0.008). In studies conducted in Nigeria (Oladokun, 2010), Jordan (Hijazi, 2018) and Ethiopia (Ousman, 2019) the mean ages of women who attended ANC was between 20-34 years which is similar to findings in this study. Also, according to National Demographic Health Survey reports (NDHS, 2003; NDHS, 2013; NDHS, 2018) almost half of teenage mothers did not receive antenatal care, compared with approximately one third of mothers age 20 and older. Married respondents had higher ANC utilization as compared to the two other groups. Never married with the lowest ANC attendance (49%) when compared to other marital respondents with different marital status (p=0.000). this was similar to another study conducted in Nigeria (Ononokporo, 2013) in which ANC utilization was higher among women who took joint decisions with their husbands. However, in a study conducted in Western Ethiopia (Tiruayet, 2019) the marital status was not associated significantly with ANC utilization.

The highest rate of ANC attendance was found among respondents who had higher education (95%) and the rate gradually decreases as the educational status reduces – 73%, 51% and 46% for those with secondary, primary and no education respectively. This is similar to studies conducted in Bangladesh (Ali, 2018), Ethiopia (Ousman, 2018; Tiruayet, 2019) and Nigeria (Babalola, 2009; Oladokun, 2010; Ononokpono, 2013; Omer, 2014; Takur, 2015) in which higher rate of ANC attendance were seen among highly educated women. Also the rate of non-attendance was highest among respondents with the no formal education (54%) and this rate decreases as

the educational status increases – 49% for primary education, 27% for secondary education, 4% for higher education (p=0.000). This finding was similar to studies done in Ethiopia (Mekonnen, 2018) and Nigeria (Akinyemi, 2016) in which women with lower education were less likely to utilize ANC services. Also, according to National demographic surveys, ANC attendance among women with no education showed a decreasing trend over the years - According to 2003 NDHS, 60% of women with no education received ANC which is higher than what was observed in the study (54%) and higher than what was observed in 2013 NDHS (42.3%) and 2018 NDHS (45%). Whereas, ANC attendance increased among women with higher education according increased over the years - 70% (NDHS, 2003), 95% (what the study observed), 98.9% (NDHS, 2013) and 97% (NDHS, 2018). Also, ANC utilization showed a decreasing order based on religion with other religion (73%) having the highest rate of ANC attendance, Pentecostals, Catholics (61%) and Protestants (58%) having the least ANC attendance (p=0.000). Protestants have the highest percentage of non-attendance of ANC (42%) and respondents with other religion having the least percentage of non-attendance (27%) (p=0.000).

The peak reproductive age of women (25 – 35 years) is associated with 50% statistically significant increased odds of attending ANC as compared to respondents less than 25 years (p=0.002). There were no significant differences in the odds of attending ANC among respondents older than 35 years as compared to those less than 25 years (p=0.913; 95%CI: 0.6 – 1.8). Also, there were no statistically significant differences in the odds of antenatal attendance based on the religious status of the respondents but a 80% almost statistically significant increase in odds was observed among Pentecostals attending ANC as compared to Catholics after adjusting for other co-variables (OR: 1.8; p=0.063; 95%CI: 0.97 – 3.4).

The odds of attending ANC were 2 times higher among the married respondents compared to respondents who were never married (p=0.000; 95% CI: 1.5 – 3.0) and there was no major improvement in this odds after adjusting for other co-variables (OR: 2.2; p=0.000; 95% CI: 1.5 – 3.2). The odds of attending ANC among respondents who were previously married was increased by 80% and was 2.4 times higher after adjusting for other variables but this finding was not significant (p value[crude] – 0.354; [adjusted] – 0.205).

There were increased odds of attending ANC with increasing education status. Respondents with primary school education have 30% increased odds of attending ANC than respondents with no education but this is not statistically significant (OR: 1.3; p=0.423; 95% CI: 0.7- 2.2). Respondents with secondary school education have a 3 times higher odds of attending ANC (OR: 3.2; p=0.000; 95% CI: 1.8 – 5.5) and respondents with higher education are likely to attended ANC than respondents with no education (OR- 21.3; p=0.000; 95% CI: 6.9 – 66.0) even after adjusting for other variables (adjusted p=0.000). This was similar to studies conducted in Ethiopia, Kenya and Nigeria (Ousman, 2018; Tiruayet, 2019; Mekonnen, 2019; Barasa, 2015; Babalola, 2009; Oladokun, 2010; Ononokpono, 2013; Omer, 2014; Takur, 2015) which revealed that odds of receiving ANC services from skilled health personnel for uneducated women was less than educated women. It was argued that educated women tend to have a greater awareness of the existence of ANC services and the advantages of using such services (Ali, 2018). In a study conducted in Bagladesh (Ali, 2018) in addition to maternal education, other factors associated with at least 4 ANC visits were husband's education, mass media exposure, no of children and wealth quintile.

There is a decreasing trend of no ANC visits among women over the years. According to the study, 35% had no ANC visits which is less than that reported in the 2003 NDHS (37%) but more than that reported in the 2013 NDHS (34.2%) and 2018 NDHS (33%). According to NDHS 2018, 17.1% had less than 4 visits while 32.5% which was observed; 56.8% had more than 4visits while 32.1% was observed in the study (table 1). The mean ANC visits observed form the study was ~4 visits (SD- 2) (table 1) which is similar to the recommended ANC visits in the NDHS reports (NDHS, 2003; NDHS, 2013; NDHS, 2018);

however, WHO's new antenatal care model increases the number of contacts a pregnant woman has with health providers throughout pregnancy to eight (8) as this reduces the likelihood of negative outcomes.

The odds of higher ANC visits (≥ 4) are statistically significant with married women (p-0.01) and respondents with secondary (p=0.01) and higher education (p=0.00). The odds increases as the ANC visits increases (married: OR – 1.9(p=0.004), 2.2(p=0.001), 4.8(p=0.011); secondary education: OR – 2.3(p=0.01), 5.8(p=0.000), 12.1(p=0.016); higher education: OR – 11.4(p=0.000), 33.7(p=0.000), 64.7(p=0.000). Respondents between the ages of 25 and 35 years have a marginally significant finding with ANC visits less than 4 (p=0.073) but a statistically significant odds ratio for ANC visits greater than 6 (p=0.016) (table 5). In other studies carried out in Nigeria (Babalola, 2009; Ononokpono, 2013; Omer, 2014; Takur, 2015), the key predictors of 4 or more ANC visits were living in urban areas, more education of the woman and her partner, age at the birth of last child, having help from family members during pregnancy, living in the southern part of the country, attitude to family planning, women having formal employment and taking joint decision with husband. Similarly, in a trend study conducted among Ethiopia women, mother's age, birth order of the child, religion, place of residence, women's education, wealth index, media exposure, sex of household lead and women empowerment were significant determinants for completing 4 or more ANC visits (Ousman, 2018).

Table 5: demographic characteristic with significant impacts on ANC visits

	1 – 3 ANC visits Odds ratio (P value)	4 – 6 ANC visits Odds ratio (P value)	7 – 9 ANC visits Odds ratio (P value)
Age group			
25 – 35 years	1.3(0.073)	1.3(0.181)	2.1(0.016)
Marital status			
married	1.9(0.004)	2.2(0.001)	4.8(0.011)
Education			
Secondary education	2.3(0.010)	5.8(0.000)	12.1(0.016)
Higher education	11.4(0.000)	33.7(0.000)	64.7(0.000)

Source – Author's Analysis, 2007

Conclusion

Certain demographic characteristics of respondents who attended ANC were significantly different from those that did not attend ANC even though the mean ages for both groups were similar. Young adult age group, married status and higher education levels were associated with increased frequency of ANC visits. Religion had an effect on ANC utilization but it was not statistically significant. In conclusion, the study revealed that younger age, never married and lower education levels were associated with non-attendance of ANC. Efforts should be put by government to educate the girl child. Also, this target group should be focused for further research and future programming so as to reduce maternal mortality in the country.

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