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Factors Affecting Antenatal Care Attendance Among Mothers Receiving Antenatal Care Services at Oli Health Center IV, Arua City, Uganda

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ABSTRACT

The study aimed to understand the impact of demographic and socio-economic factors on the utilization of antenatal care services at Oli Health Center IV. The research involved 177 mothers selected using a simple random sampling method. Data was collected using a pretested questionnaire and analyzed using SPSS version 20. The results showed that parity had a significant association with antenatal care (ANC) attendance, while trimester had a perfect association. Age had a relatively significant association with ANC attendance, while mothers' level of education, partners' level of education, and personal monthly income were the socio-economic factors assessed. Client satisfaction was a key indicator of the quality of a health service. The study highlights the importance of addressing these factors to improve maternal and neonatal health and survival.

Keywords: antenatal care, pregnant women, delivery, trimesters, parity

INTRODUCTION

Antenatal Care (ANC) is a point of contact between the health care service provider and pregnant women during which interventions are offered to ensure the safety of both the mother and the fetus [1, 2, 3]. ANC has been recommended by the ministry of health in the United Kingdom (UK) since 1929. The recommendation for care were as follows; from as early in pregnancy as possible (before or after 16 weeks), with the next visit at 24 and 28 weeks and from 36 weeks and weekly until the onset of labour (London School of Hygiene and Tropical Medicine) [4, 5, 6]. During these visits the health care profession measures uterine height, check fetal heartbeat, tests urine and measure the mother's blood pressure. This same structure of ANC had been adopted worldwide and within the focused antenatal care (FANC) approach, endorsed by the world health organization in 2002 (London School of Hygiene and Tropical Medicine). The World Health Organization (WHO) recommended Focused Antenatal Care (FANC) requiring all stake holders to be more goal oriented, specific and targeting each mother's needs [1, 7, 8, 9, 10, 11, 12 13].

To achieve every woman every child vision and global strategy for women's, children's and adolescents" health, we need innovative, evidence-based approaches to antenatal care, enhancing their experience of pregnancy and ensuring that babies have the best possible start in life" [14, 15, 16]. On 7 November 2016 in Geneva, the world health organization issued a new series of recommendations to improve quality of antenatal care to reduce the risk of stillbirths and pregnancy complications and give a woman a positive pregnancy experience. In 2015, an estimated 303,000 women died from pregnancy related causes, 2.7 million babies died during the first 28 days of life and 2.6 million babies were stillborn [17, 18, 19, 20]. This is because of the increased opportunities to detect and manage potential complications. Eight or more contacts for antenatal care can reduce perinatal deaths by up to 8 per 1,000 births when compared to 4 visits [17].

Averagely 69% of mothers in Africa attend ANC at least four times [1, 21, 22]. A minimum of four visits is essential for life saving. It actually has the potential to reduce maternal mortality and morbidity [1, 23, 24]. Currently, the Ministry of

Health (MoH) goal oriented antenatal care protocols recommend a minimum of eight contacts aimed at an uncomplicated pregnancy.

The results from the 2001 Uganda Demographic and Health Survey (UDHS) showed that since 1995, maternal mortality rate stagnated at 505 per 100,000 live births and infant mortality rate increased from 81 to 88 per 1,000 live births which were significantly of track of achieving the countries own Poverty Eradication Action Plan (PEAP) and Millennium Development Goal (MDG) targets [25, 26 27].

METHODOLOGY

Study design

The study was a descriptive cross-sectional study using both quantitative and qualitative approaches [28].

Study site and setting

The study was conducted at Oli Health Center IV in Ayivu Division, Arua City, NorthernRegion, Uganda.

Study population

The study population involved all mothers attending ANC services at Oli Health Center IV.

Inclusion Criteria

All the mothers who were attending ANC services at Oli Health Center IV during the study period, those who were available during the days of data collection and those who voluntarily consented to the study were included in the study.

Exclusion Criteria

Mothers who were mentally unstable, those who came with obstetric emergencies and those who did not consent to the study were excluded.

Sample size determination

The study size was determined using a sample formula by Kish Leslie (1965) for cross-sectionalstudies.

$n = z^2 p (1 - p) / E^2$

Where: n = projected sample size,

P = assumed proportion of mothers with missed previousANC contacts.

In a study by Rashid at Kawolo General Hospital, Buikwe District, Uganda, 2015, p=79% (Rashid, 2015)

Z = confidence interval range, z = 1.96 (for 95% Confidence interval)

E^2 = margin of error, E = 0.06

$$n = \frac{1.96 \times 1.96 \times 0.79 (1-0.79)}{0.06 \times 0.06} \quad n = 177$$

Sampling technique

The researcher used a simple random sampling technique. A simple random sample is a randomly selected subset of a population. In this sampling method, each member of the population has an exactly equal chance of being selected. Participants were selected at intervals of daily attendance of ANC services. Therefore, pregnant women were selected on Monday, Wednesday and Friday in the first week, and then Tuesday and Thursday in the second week, interchangeably till the target study population size was reached. There was no limit on the number of participants per day, though the target number of participants was 25 per day.

Study procedure

The study was conducted at daily intervals of attendance of ANC services. Therefore, pregnant women were selected on Monday, Wednesday and Friday in the first week, and then Tuesday and Thursday in the second week, interchangeably in the following weeks till the target study population size was reached. There was no limit on the number of participants per day, though the target number of participants was 25 per day. Two midwives were recruited and trained to help the researcher in data collection.

After health education at the ANC care point on the selected days of conducting the study, the researcher asked for consent from the pregnant women by explaining the purpose of the study, benefits of the study, nature of the study and that participation was voluntary. The mothers who accepted to participant in the study were issued consent forms and those who refuse were left out of the study to continue with their routine ANC contact services.

The mothers who consented to the study were issued structured questionnaires that consisted of 4 sections; Section A (Antenatal Information) was to be filled in the examination room by the researcher or assistant before the obstetric examination was performed and it used interview and data review from the ANC card as the methods of data collection. The Section B

(Demographic Factors Affecting Utilization of ANC Services), Section C (Socio-economic Factors Affecting Utilization of ANC Services) and Section D (Maternal Satisfaction with ANC Services) were sections containing structured questions that were to be filled by the participants after the ANC service at the ANC point waiting area, A reasonable amount of time was allocated to each participant to give in their response after which the questionnaires were collected.

Data analysis

The data collected was coded, stored and entered into Statistical Package for the Social Science (SPSS version 20), tallied and converted to frequencies and percentages and then presented in tables. Data analysis was done with the help of a statistician.

Logistic regression was used to analyze data using a dichotomous dependent variable. This was used to describe data and explain the relationship between one or more categorical independent variables and the dependent variable. The statistical test that was used is binary logistic regression and the level of significance was set at $p<0.05$. Odds ratio (OR) and 95% Confidence Interval (CI) was calculated as a measurement of association between an independent variable and the outcome.

Ethical consideration

After obtaining approval of the proposal by the supervisor, KIU, and an acceptance letter from the in-charge Oli Health Center IV, the participants were explained to the purpose of the study, benefits of the study to the stake holders, voluntary participation in the study, therefore no financial or material reward was given in appreciation to the participants and ensured confidentiality. Participation was voluntary and an informed consent form was signed by each participant [29]. The consent form also summarized the purpose of the study, its benefits, clearly indicated that the decision to either participate or not was not to interfere with the quality of services rendered to the participant or their babies and the participant could withdraw from the study at any time.

RESULTS

Table 1: Showing the characteristics of the variables

Variables		Frequency (N)	Percentage (%)
Demographic variables			
Trimester	First trimester Second trimesterThird trimester Pregnancy more than 9 months	23	13.0
		70	39.5
		68	38.4
		16	9.0
Parity	This is my first pregnancy	73	41.2
	1 to 2	54	30.5
	3 to 4	40	22.6
	5 and more	10	5.6
Age	10 – 19 years	46	26.0
	20 – 24 years	71	40.1
	25 – 35 years	56	31.6
	36 years and above	4	2.3
Residence	Urban	97	54.8
	Peri-urban	52	29.4
	Rural	28	15.8
Marital status	Married	162	91.5
	Single	15	8.5
Religion	Roman catholic	50	28.2
	Moslem	92	52.0
	Anglican	32	18.1
	Others	3	1.7
Distance to facility	Less than 1 km	67	37.9
	Between 1 to 5 km	82	46.3
	Between 6 to 10 km	21	11.9
	More than 10 km	7	4.0
Socio-economic variables			
Mothers' education	No formal education	15	8.5
	Primary	96	54.2
	Secondary	53	29.9
	University/College	13	7.3
Partners' education	No formal education	9	5.1
	Primary	53	29.9
	Secondary	86	48.6
	University/ College	29	16.4
Personal monthly income	Less than 50,000	71	40.1
	50,000 – 100,000	64	36.2
	100,000 – 500,000	37	20.9
	500,000 – 1,000,000	4	2.3
	More than or equal to 1,000,000	1	0.6
Total		**177**	**100.0**

Table 2: Cross tabulation between ANC attendance and demographic variables

Demographic variables		ANC attendance (Frequency (N) and Percentage (%))			Total
		Made more than 75% of the expected ANC contacts	Made 50% to less than 75% of the expected ANC contacts	Made less than 50 % of the expected ANC contacts	
Trimester	First trimester	18(78.3%)	0(0.0%)	5(21.7%)	23(100.0%)
	Second trimester	10(14.3%)	9(12.9%)	51(72.9%)	70(100.0%)
	Third trimester	6(8.8%)	14(20.6%)	48(70.6%)	68(100.0%)
	Pregnancy more than 9 months	3(18.8%)	2(12.5%)	11(68.8%)	16(100.0%)
Parity					
This is my first pregnancy		23(31.5%)	13(17.8%)	37(50.7%)	73(100.0%)
1 to 2		10(18.5%)	7(13.0%)	37(68.5%)	54(100.0%)
3 to 4		3(7.5%)	5(12.5%)	32(80.0%)	40(100.0%)
5 andmore		1(10.0%)	0(0.0%)	9(90.0%)	10(100.0%)
Age	10 – 19 years	15(32.6%)	8(17.4%)	23(50.0%)	46(100.0%)
	20 – 24 years	15(21.1%)	7(9.9%)	49(69.0%)	71(100.0%)
	25 – 35 years 36 years and above	7(12.5%)	10(17.9%)	39(69.6%)	56(100.0%)
		0(0.0%)	0(0.0%)	4(100.0%)	4(100.0%)
Residence	UrbanPeri-urban	19(19.6%)	16(16.5%)	62(63.9%)	97(100.0%)
	Rural	12(23.1%)	6(11.5%)	34(65.4%)	52(100.0%)
		6(21.4%)	3(10.7%)	19(67.9%)	28(100.0%)
Marital status	Married	34(21.0%)	21(13.0%)	107(66.0%)	162(100.0%)
Single		3(20.0%)	4(26.7%)	8(53.3%)	15(100.0%)
Religion	Roman catholic	11(22.0%)	7(14.0%)	32(64.0%)	50(100.0%)
	Moslem Anglican	19(20.7%)	13(14.1%)	60(65.2%)	92(100.0%)
	Others	7(21.9%)	5(15.6%)	20(62.5%)	32(100.0%)
		0(0.0%)	0(0.0%)	3(100.0%)	3(100.0%)
Distance to facility					
Less than 1 kmBetween 1 to 5 km		14(20.9%)	11(16.4%)	42(62.7%)	67(100.0%)
		16(19.5%)	9(11.0%)	57(69.5%)	82(100.0%)
Between 6 to 10 km		5(23.8%)	4(19.0%)	12(57.1%)	21(100.0%)
More than 10 km		2(28.6%)	1(14.3%)	4(57.1%)	7(100.0%)
Total		**N =177 (100.0%)**			

Table 3: Cross tabulation between ANC attendance and socio-economic variables

Socio-economic variables	ANC attendance (Frequency (N) and Percentage (%))			Total
	Made more than 75% of the expected ANC contacts	Made 50% to less than 75% of the expected ANC contacts	Made less than 50 % of the expected ANC contacts	
Mothers' education				
No formal education	3(20.0%)	1(6.7%)	11(73.3%)	15(100.0%)
PrimarySecondary	22(22.9%)	12(12.5%)	62(64.6%)	96(100.0%)
University/College	11(20.8%)	8(15.1%)	34(64.2%)	53(100.0%)
	1(7.7%)	4(30.8%)	8(61.5%)	13(100.0%)
Partners' education				
No formal education	2(22.2%)	2(22.2%)	5(55.6%)	9(100.0%)
PrimarySecondary	12(22.6%)	6(11.3%)	35(66.0%)	53(100.0%)
University/ College	17(19.8%)	14(16.3%)	55(64.0%)	86(100.0%)
	6(20.7%)	3(10.3%)	20(69.0%)	29(100.0%)
Personal monthly income				
Less than 50,000	17(23.9%)	10(14.1%)	44(62.0%)	71(100.0%)
50,000 – 100,000	14(21.9%)	9(14.1%)	41(64.1%)	64(100.0%)
100,000 – 500,000	5(13.5%)	6(16.2%)	26(70.3%)	37(100.0%)
500,000 – 1,000,000	1(25.0%)	0(0.0%)	3(75.0%)	4(100.0%)
More than or equal to 1,000,000	0(0.0%)	0(0.0%)	1(100.0%)	1(100.0%)
Total	**N = 177 (100.0%)**			

Table 4: showing Chi-square tests for the different variables

Variables	Monte Carlo Sig. (2- sided)		
	Sig.	95% Confidence Interval	
		Lower Bound	Upper Bound
Demographic factors			
Trimester	0.000[b]	0.000	0.000
Parity	0.019[b]	0.016	0.022
Residence	0.897[b]	0.891	0.903
Age	0.089[b]	0.083	0.094
Marital status	0.338[b]	0.329	0.348
Religion	0.972[b]	0.969	0.976
Distance to health center	0.928[b]	0.923	0.933
Socio-economic factors			
Mothers" level of education	0.569[b]	0.560	0.579
Partners" level of education	0.954[b]	0.949	0.958
Personal monthly income	0.940[b]	0.936	0.945

b. Based on 10000 sampled tables with starting seed 263739791

There was no significant difference between mothers in second trimester, 70/177(39.5%) and those in third trimester, 68/177(38.4%) that were the majority followed by those in first trimester, 23/177(13.0%) and lastly those mothers whose pregnancy exceeded 9 months were 16/177(9.0%). This probably indicated late ANC service seeking behavior because the majority of respondents were in their second and third trimester.

The cross tabulation between ANC attendance and trimester revealed a perfect associationbetween the two with a p value of 0.000 (Pearson chi-square at 0.05 level of significance). The probability of a mother making 75% or more of the expected ANC contacts decreases with increase in trimester with the highest probability of 0.783 in the first trimester, 0.143 in the second trimester and 0.088 in the third trimester. Contrary, a mother's probability of making lessthan 50% of the expected ANC contacts generally increased with increase in trimester with a probability of 0.217 in the first trimester, 0.729 in the second trimester and 0.706 in

the third trimester. The probability that the pregnancy of a mother who has made less than 50% of her expected ANC contacts will exceed 9 months was 0.688.

The majority 73/177 (41.2%) reported their pregnancies as their first. This probably indicated decreasing ANC service seeking behavior with increase in parity.

Table 5; Frequency table of responses to assess maternal satisfaction with ANC services

Maternal satisfaction with ANC services		Frequency (N)	Percentage (%)
Overall, quality of ANC service(s) I have been receiving is/are good			
Response	Disagree	2	1.1
	Neutral	6	3.4
	Agree	93	52.5
	Strongly agree	76	42.9
The provider's attitude has been good			
Response	Disagree	4	2.3
	Neutral	10	5.6
	Agree	101	57.1
	Strongly agree	62	35.0
The examination room privacy has been good			
Response	Disagree	3	1.7
	Neutral	28	15.8
	Agree	82	46.3
	Strongly agree	64	36.2
The danger signs and complications in pregnancy have been explained to me			
Response	Strongly disagree	5	2.8
	Disagree	8	4.5
	Neutral	20	11.3
	Agree	51	28.8
	Strongly agree	93	52.5
Total		**177**	**100.0**

The majority 93/177(52.2%) agreed, 76/177(42.9%) strongly agreed, 6/177(3.4%) were neutral and 2/177(1.1%) disagreed with the statement „overall, quality of ANC service(s) I have been receiving is/are good". Therefore, the majority 169/177(95.1%) were satisfied with the overall quality of ANC services, 6/177(3.4%) were neutral and 2/177(1.1%) were not satisfied with the overall quality of ANC services.

DISCUSSION

Concerning parity, the majority 73/177 (41.2%) reported their pregnancies as their first. This probably indicated decreasing ANC service seeking behavior with increase in parity. There was astatistically significant association between parity and ANC attendance with a p value of 0.019 (Pearson Chi-square at 0.05 level of significance) indicating decreasing ANC attendance with increasing parity. The probability of a mother making 75% or more of the expected ANC contacts was highest (0.315) among mothers who reported their pregnancies as their first, followed by those who reported a parity of 1 to 2(0.185), those who reported a parity of 5 and more (0.100) and lastly, parity of 3 to 4 (0.075). The probability of making less than 50% of the expected ANC contacts increased with increase in parity. The

mothers who reported their pregnancies as their first had a probability of 0.507, those who reported a parity of 1 to 2 had a probability of 0.685, those who reported a parity of 3 to 4 had a probability of 0.800 and those who reported a parity of 5 and more had a probability of 0. 900. Parity was among the demographic factors associated with the number of ANC visits in a study by [1]. Similar results were obtained in a study conducted by Kyasiimire in Kigezi region 2019, where a higher percentage of mothers with less than four children (65.4%) were using ANC services compared to their counterparts (51.9%) with more than four children. According to [30], having parity two, three and four impeded attending four or more ANC visits and in a study by [31], in Goa, India 2008, the use of ANC decreased significantly with increase in parity.

As regards to age, the majority 71/177(40.1%) were aged 20-24 years. This probably indicated reducing rates of adolescent and teenage pregnancies. Descriptive analysis revealed an association between age and ANC attendance and but there was no significant statistical association between the two with a p value of 0.089 (Pearson Chi-square at 0.05 level ofsignificance). Generally, the probability of a mother making 75% or more of the expected ANC contacts was low and about the same among the categories of age. However, the probability decreased with increase in age, with a probability of 0.326 among mothers aged 10-19 years, 0.211 among mothers aged 20 -24 years, 0.125 among mothers aged 25-35 years and mothers aged 36 years and above had no chance of making 75% or more of the expected ANC contacts. The probability of making less than 50% of the expected ANC contacts increased with increase in age, with a probability of 0.500 among mothers aged 10-19 years, 0.690 among mothers aged 20-24 years, 0.696 among mothers aged 25-35 years and mothers aged 36 years and above were expected to make less than 50% of the expected ANC contacts because they had a probability of 1.000. Similarly, in studies conducted in Botswana 2017, Rwanda 2017, Uganda 2016, Jinja Regional Referral Hospital 2018 and Uganda 2020, age was among the demographic factors associated with ANC service utilization [32, 33, 30, 34, 35]. Contrary to the above results, studies conducted by [32, 33, 30, 34, 35] and a systemic review study by [36] found an association between ANC service utilization and marital status.

Concerning maternal satisfaction with overall quality of ANC services, the majority 169/177(95.1%) were satisfied with the overall quality of ANC services. Similar results were obtained in a study by [37] in Nigeria 2018 where 90% of ANC patients were satisfied with ANC services and in a study by [38] in Eastern Uganda 2012 where most of the respondents (74.6%) rated the overall ANC services as satisfactory. Contrary to the above, in a study by [39] in Bursa district, Sidama zone, Southern Ethiopia, only 97 (33.4%) of the mothers were satisfied with ANC services.

Regarding providers‟ attitude, the majority 163/177(92.1%) were satisfied with the providers, attitude, 10/177(5.6%) were neutral and only 4/177(2.3%) were not satisfied with the providers' attitude.

The majority 146/177(82.5%) were satisfied with the examination privacy, 28/177(15.8%) were neutral and only 3/177(1.7%) were not satisfied.

Therefore, the majority 144/177(81.3%) were satisfied with the explanation of danger signs and complications in pregnancy, 20/177(11.3%) were neutral and only 13/177(7.3%) were not satisfied.

CONCLUSION

The factors affecting ANC attendance among mothers attending ANC services at Oli H/C IV are parity, age of the mother and trimester of the pregnancy. The majority, 95.1% of mothers were satisfied with ANC services.

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