Factors Affecting the Utilization of Antenatal Care 4ᵗʰ Visit Among Mothers in Rubirizi District, Uganda

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Abstract

Globally, the World Health Organization recommends all women with uncomplicated pregnancies to attend up to four ANC visits during the course of the pregnancy. However, it has been reported elsewhere that the ANC 4ᵗʰ visit tends to be under-utilized in low-income settings. Among the 69 countries tracked by the countdown to 2015, the coverage rate of the 4ᵗʰ ANC visit is less than 50%. On average, only 16% of women in Uganda attend the 4ᵗʰ antenatal care visit, suggesting low utilization of the 4ᵗʰ antenatal care visit. The low attendances have persisted despite the efforts and awareness from government, policymakers and stakeholders. The purpose of this study was to determine the level of utilization ANC 4ᵗʰ visit and ascertain the factors affecting the utilization. An analytical cross-sectional design was used. Samples of 283 mothers were interviewed using questionnaires. Data were analyzed using SPSS. Quality controls and ethical considerations were taken care of. Only 59(20.8%) of the mothers utilized ANC 4ᵗʰ visit. Monthly income (p=0.003), knowledge about ANC 4ᵗʰ visit (p = 0.044), discussing ANC with Husband freely (p = 0.020) and husband providing financial support towards ANC visits (p=0.010) significantly influenced utilization of ANC 4ᵗʰ visit among mothers. Findings additionally showed cultural practices about ANC (p=0.000), mode of transport used during ANC visit (p =0.000) and instances of stockouts at health units (p=0.023) as having a significant bearing on utilization of ANC 4ᵗʰ visit among mothers (p values ≤ 0.05). The odds of attending 4ᵗʰ ANC visit were 3.44 times among mothers who discuss with their husbands freely about ANC compared to those who did not discuss it. Conclusively, the level of utilization 4ᵗʰ ANC visit in Rubirizi district health facilities is still unacceptably very low. Concerted efforts may be required by all stakeholders.

Keywords: ANC 4ᵗʰ Visit, mothers, Rubirizi District, Uganda

1. Introduction

1.1 Background of the Study

Globally, the World Health Organization (WHO) recommends all women with uncomplicated pregnancies to attend up to four ANC visits during the course of the pregnancy (WHO, 2015).WHO (2014), during the fourth ANC visit, recommends that it should take place between weeks 36 and 38 and should include history taking, review of the woman's antenatal card to be familiar with care provided thus far, personal and social history that notes any changes or events since second visit, particularly check-up on habits like smoking. On this stage, WHO (2014), recommends that pregnant women can also be screened for signs associated with high probability of complications and subsequent specialized care can be arranged. For example, in HIV-endemic countries, antenatal care includes HIV testing and it is an entry point for prevention of mother-to-child transmission services. Antenatal care attendance is also associated with an increase in facility-based deliveries and use of postnatal services. Akin and Hutchinson (2016), reported that in Asian and American (both North and South) countries, the fourth ANC visit records and confirms medical history and reviews relevant issues of medical history as recorded at first, second and third visits. It checks high-risk symptoms, such as blurred vision, fever, and the like, inter-current diseases, injuries, or other conditions since first visit as well as noting the intake of medicines, other than iron and folate and Iron intake compliance. Akin and Hutchinson (2016. p.31), further disclosed that the 4ᵗʰ ANC visit also involves other medical consultations, hospitalization, or sick leave in present pregnancy. Obstetric history which

reviews relevant issues of obstetric history as recorded at first and second visits. Bhatia (2014), disclosed that the fourth ANC visit does the final review of obstetric history relevant to any previous delivery complications, records the present pregnancy symptoms and events since previous visit, for example contractions (pre-term labour), pain, bleeding, and vaginal discharge (amniotic fluid) and other specific symptoms or events. At this stage, Akin and Hutchinson (2016), disclosed that the physician asks about abnormal changes in body features or physical capacity (example; peripheral swelling, shortness of breath), as observed by the woman herself, by her partner or other family members and whether mother has felt fetal movements.

In Africa, Armar-Klemusu, et al. (2016, p.100), the fourth ANC visit includes the physical examination and pays attention to blood pressure as well as major complications like Cesarean Sections. An analysis of Demographic Health Surveys (DHS) from African developing countries according to Becker (2015, p.23), showed that more than 43.7% of the pregnant women in sub-Saharan Africa don't attend the 4th ANC visit. Similarly, other studies reported that poor attendance of the 4th ANC visit in sub-Saharan African countries was declining to 40.4% in 2014.

In 1999, among women who gave birth in five years preceding the survey, approximately 96% of the pregnant women in Tanzania didn't attend the 4th ANC visit from at least one antenatal care visit from a skilled provider, and only 61% of these women attended the 4th antenatal care visit (Borghi, Storing and Filippi, 2016). According to Burns and Grove (2015, p.104), the estimates from 2004/05 and 2010 Tanzanian Demographic Surveys (TDHS), approximately between 62% and 75% of the pregnant women in Tanzania attended less than three antenatal care visits, respectively. However, the percentage of the women who had attended the 4th antenatal visit declined to 62% and 43%, respectively (Burns and Grove, 2015). The decrease in the attendance of the 4th ANC visit represents a concern for the Ministry of Health and Social Welfare (MoHSW) and partner organizations, who would like to understand this decline and address barriers to accessing the recommended 4th ANC visit across all 8 geographic zones.

Although the 4th ANC visit is considered an important intervention for reducing maternal and newborn mortality, Fawcus, et al. (2016, p.102), reported that the ANC 4th visit tends to be under-utilized in low-income settings. Among the 69 countries tracked by the countdown to 2015, the coverage rate of the 4th ANC visit is less than 50%. Furthermore, descriptive analyses from Fawcus, et al. (2016), analyzed that multiple Tanzanians, Zambian, Angola's and South Africa's Demographic and Health Surveys (TDHS) have shown that, although coverage of at least one ANC visit is almost universal, there are growing gaps in coverage of the 4th ANC visit with a skilled provider is still under question.

In Uganda, according to Bwera (2017), understanding the utilization of the 4th antenatal care visit is at low rates, mainly in government health facilities. The 4th antenatal care visit in government health facilities is a matter of need for a great policy concern to the government and other stakeholders, especially donors. On average, according to Amooti-Kaguna and Nuwaha (2010), only 16% of women in Uganda attend the 4th antenatal care visit, suggesting low utilization of the 4th antenatal care visits. However, few regional studies across the country attempt to understand the utilization of the 4th antenatal care visit.

Studies conducted in western, central and northern Uganda have shown that women who attend the 4th antenatal care visit are more likely to be assisted during delivery unlike those who don't attend the 4th antenatal care visit (Kabami, 2015). Findings from government health facilities nationally, according to the Ministry of Health, Uganda (2016), indicated that at the 4th antenatal visit, only 24% of the women got assessment on maternal and fetal well-being of their pregnancies. Preventive measures on Hypertension and anaemia and were assessed on concerns of multiple pregnancy mal-presentation (Ministry of Health, Uganda, 2016).

Responses from Kabami (2015), reported that in Ugandan heath centre IVs, between 2014 to 2016, only 34% of the women who attended the 4th antenatal visit got a review on a modified birth and emergency plan as well as birth advice and counsel. In most cases, Parkhurst and Ssengooba (2015), thought that those who attend the 4th antenatal care visit by skilled health workers compared to those who initiate ANC late and attend only few visits were likely to have complications during delivery.

According to Parkhurst and Ssengooba (2015), although the 4th antenatal care visit might not have the potential to predict and avert obstetric emergencies during pregnancy and childbirth, attending the 4th antenatal care visit either helps or exposes women to health education on risk factors and encourages them to be delivered by skilled health workers in health facilities.

In Rubirizi District, according to Rubirizi District Health Office (2017), the ability to attend the 4th antenatal care visit is affected by a number of factors. The district report on ANC disclosed the immediate cause of pregnancy-related complications, ill-health and death due to incomplete antenatal care rounds of mothers during

pregnancy and in particular the 4th ANC visit. Ministry of Health, Uganda (2016), further examined that rural women in Rubirizi District do not seriously consider antenatal care for the fourth time to be an important step towards improving their delivery, yet it is a pre-requisite for safe motherhood in the district. Rubirizi District Health Office (2017), indicated that 4th antenatal care in the district has been hindered by factors such as traditional beliefs, poor availability and accessibility, and above all, negligence. Also, demographic factors; education, knowledge of the importance of ANC services and less obstetric history, were noted. For example, in Lugazi Health Center IV, despite holding a successful antenatal care service in the region, the 4th ANC visit was still more a question which needs effective policy interventions. It was revealed that; of the women who start antenatal services, only 22.2% attend the 4th ANC visit. Despite continuous reminders on each visit to complete and attend the 4th ANC visit, few of the women attend the 4th visit. While any woman can develop complications during pregnancy and delivery, many such complications can be detected at the 4th antenatal care visits and are prevented or treated before becoming life-threatening emergencies. All these can be managed appropriately by trained and equipped health care providers.

1.2 Area of Study

The study was conducted in Rubirizi District, located in western Uganda. Rubirizi District is bordered by Kasese District to the north, Kamwenge District to the northeast, Ibanda District to the east, Buhweju District to the southeast, Bushenyi District to the south, Rukungiri District to the southwest and the Democratic Republic of the Congo to the west. The district headquarters at Rubirizi are located approximately 90 kilometres (56 mi), by road, northwest of Mbarara, the largest city in the Ankole sub-region. The District Serves a population of 137,156 people where 52% of them are females and 48% of it are males, with a growth rate of 1.99% per annum and a population density of 124 persons per sq. KM.

Health units in Rubirizi District are categorized into government, Private Not for Profit (PNFP) and Private for Profit (PFP). In 2017/18, the district had 30 health units of which there is no Hospital. It had one HC IV (Govt), 3 HC III's (Gov't), 9 Gov't HC II's, 15 Private HC II's and 2 PNFP Health Centres. Of those facilities,19 of them offers ANC but with only eight high volume health facilities. The Health structure of the district has 1023 functional village health teams (VHTs).

1.3 Research Questions

The following research questions were considered;

i). What was the level of utilization of ANC 4th visit among mothers in Rubirizi district?

ii). What were the factors influencing the utilization of ANC 4th visit among mothers in Rubirizi district?

iii). What was the comparison between the experiences of mothers who utilized ANC 4th visit and those who did not in Rubirizi district?

iv). What was the category of complications developed by mothers in Rubirizi district health facilities?

1.4 Conceptual Framework

Independent Variables

Socio Demographic Factors
- Age
- Occupation
- Level of Education
- Marital status
- Religion
- Income Level

Factors on knowledge of Antenatal Care
- Awareness on Risks and benefits of ANC
- Time of first visits (Initiation)
- Interval between visits
- Number of visits

Accessibility Factors
- Availability
- Costs of tests, screening, drugs
- Distance to facility
- Mode of Transport

Perceived Quality of care services rendered
- Personnel behaviour
- Skills of personnel
- Attitude of personnel
- Past Experiences
- Experiences from friends/ relatives
- Service provided

Intervening Variables
- Government policy
- Level of community mobilization and sensitization
- Cultural beliefs

Dependent Variable

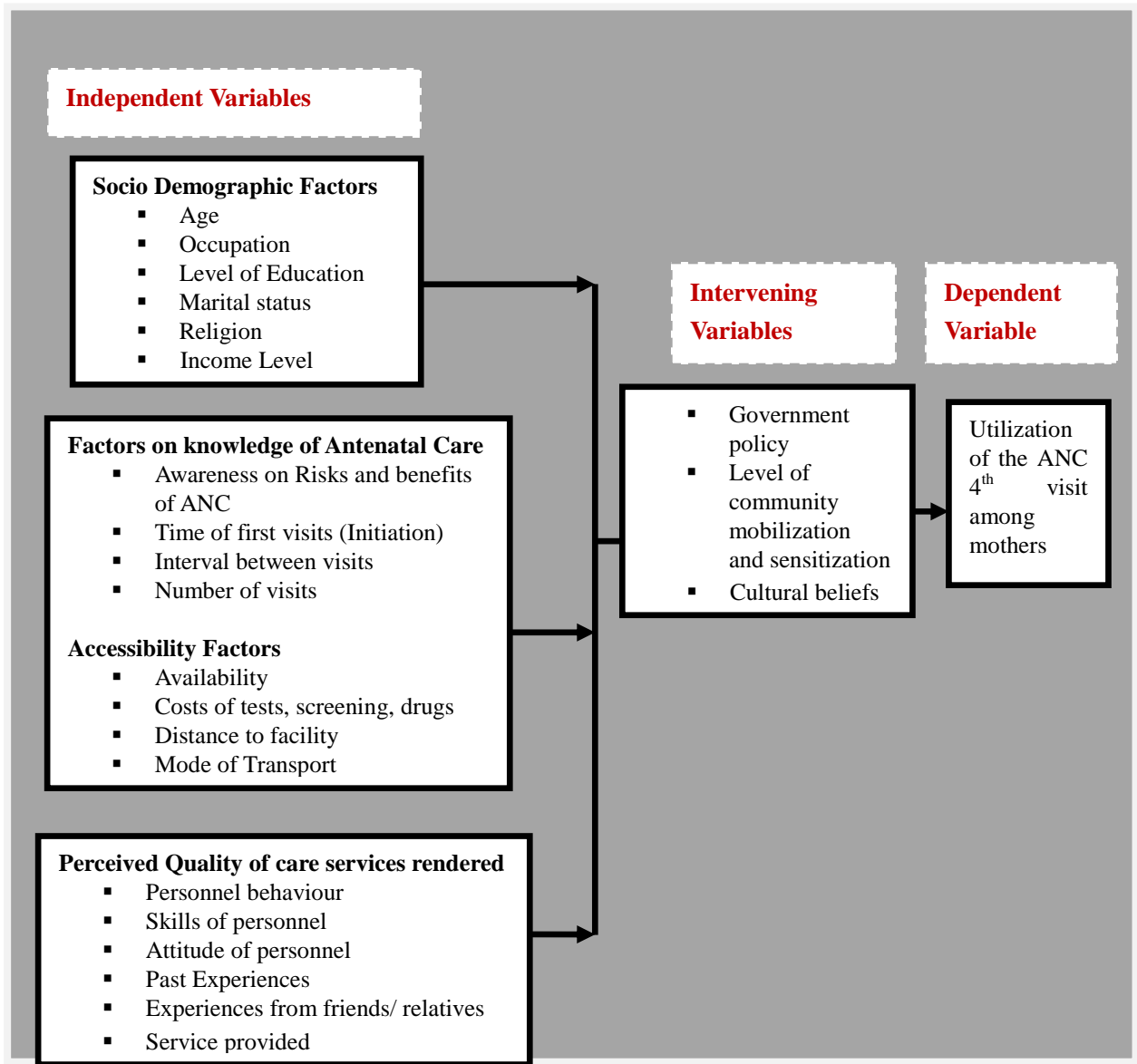Utilization of the ANC 4th visit among mothers

Figure 1. Conceptual diagram

Source: WHO Global Health Observatory (GHO) (2011)

The conceptual framework (Figure 1) is composed of dependent, intervening and independent variables. Independent variables include Socio-demographic, Factors on knowledge of Antenatal Care, accessibility factors and perceived quality of care. Socio-demographic factors included; Age, Occupation, Level of Education, Marital status, Religion and Income Level. Factors on knowledge of Antenatal Care were; Awareness on Risks and benefits of ANC, Time of first visits (Initiation), Interval between visits and Number of visits. Accessibility factors included; Availability, Costs of tests, screening, drugs, Distance to facility and Mode of Transport. Also, the Perceived Quality of care services rendered include; Personnel behaviour, Skills of personnel, Attitude of personnel, Past Experiences, Experiences from friends/ relatives and Service provided.

The above are intervened by Government policy, Level of community mobilization and sensitization and cultural beliefs, which lead to full utilization of the ANC 4th visitamong mothers.

2. Materials & Methods

2.1 Research Design

The research design was an analytical cross-sectional study; combining both qualitative and quantitative methods.

2.2 Study Population

The study population comprised of mothers and pregnant women in the reproductive age group (18–49 years) seeking antenatal care (ANC) services in Rugazi Health center IV, Katerera Health center III, Kichwamba Health center III, Katunguru III, Kyanzaza Health center II, Mushuba Health center II, Holistic care clinic and Rutoto Health center II.

2.3 Study Unit

The study unit was a pregnant mother attending the ANC visits in Rugazi Health center IV, Katerera Health center III, Kichwamba Health center III, Katunguru III, KyanzazaHealth center II, Mushuba Health center II, Holistic care clinic and Rutoto Health center IIwith in Rubirizi District.

2.4 Eligibility Criteria

2.4.1 Inclusion Criteria

All mothers attending ANC visits in the selected health centers in Rubirizi District, aged between 18-49 years of age and who consented to participate were included in the study.

2.4.2 Exclusion Criteria

All mothers attending antenatal care visit outside the selected health centers in Rubirizi District or less than 18 years of age and above 49 years of age were excluded from the study.

2.5 Determination of Sample Size

The sample size was determined using the Taro Yamane (1967) formula which is presented as follows;

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

Where n = sample size

N = Population size

e = level of confidence (at 95% CI) = 5% = 0.05

Thus,

$$n = \frac{2172}{[1+(2172*0.05^2)]} = \frac{2172}{6.43} = 337.7916 = 338$$

These were proportionately selected in the different health facilities as shown in Table 1 below.

Table 1. Proportionate samples of respondents per health facility

S. No	Health facility	Population	Calculation	Sample size
01	Rugazi Health center IV	327	$\frac{327}{2172}$x338	51
02	Katerera Health center III	307	$\frac{307}{2172}$x 338	48
03	Kichwamba Health center III	253	$\frac{253}{2172}$x 338	39
04	Katunguru III	235	$\frac{235}{2172}$x 338	37
05	Kyanzaza Health center II	273	$\frac{273}{2172}$x 338	42

06	Mushuba Health center II	289	$\frac{289}{2172}$x 338	45
07	Holistic care clinic	271	$\frac{271}{2172}$x 338	42
08	Rutoto Health center II	217	$\frac{217}{2172}$x 338	34
TOTAL SAMPLE				**338**

2.6 Sample Technique

Purposive and systematic random sampling techniques were used to choose health facilities and respondents respectively. Health facilities were purposely selected on the basis of the number of women attending the 4th ANC services. At each facility level, potential participants were selected systematically. A list of the 4th ANC visit attendees on a clinic day was prepared and a number assigned for each attendee by random sampling.

2.7 Data Collection Tool and Method

Questionnaire survey

A questionnaire survey is a method of data collection containing a series of questions and providing spaces as well as options to be attempted by the respondents themselves (Yin and Robert, 2003). The questionnaire surveys used involved close-ended and open-ended questions as well as leading questions pertaining the research variables and objectives.

Pilot testing of the instrument

A pilot study was carried out in ANC clinics and health centers in Rubirizi District between 27th may and 29th July 2019. A total of 24 participants were sampled for the pre-test whom according to Orodho, (2009) make up more than 10% of the sample size for the actual study. During the pilot testing of the instrument, we assessed the clarity of the instruments and their ease of use. Information obtained during the pilot testing was used to revise the study instruments.

2.8 Data Entry, Analysis and Presentation

After data collection, the raw data collected was systematically organized to facilitate analysis. Completed questionnaires were cross examined for completeness and consistency. Descriptive statistics were used in data analysis. Data obtained from open-ended items in the questionnaires were categorized according to themes relevant to the study and were presented in a narrative form using descriptions. Analysis of data employed Statistical Package for Social Scientists (SPSS) version 16 software where descriptive statistics were generated.

In this study, quantitative data from the questionnaires was analysed using frequency counts and frequency tables derived from the responses to the research questions. Pearson product moment correlation was used to determine the existing relationship between factors affecting the utilization of ANC 4th visit among mothers in Rubirizi district since the study involved two variables.

2.9 Ethical Considerations

All the required ethical approval were sought and granted as appropriate.

Confidentiality: To ensure confidentiality, the respondents had the option to either indicate or not indicate their names of respondents on questionnaires.

Informed consent: Informed consents were sought from each respondent.

3. Results

3.1 Demographic Characteristics of Respondents

The response rate was 83.7%. In this study age in years, education level, occupation, religion, tribe and income levels were established as the demographic characteristics of mothers who were attending Rubirizi district Health Facilities. The findings are presented in Table 2 below.

Table 2. Demographic characteristics of mothers

S. No	Demographic Variables			Frequency (N = 283)	Percentage(%)
01	Age (in years)	▪	<18	4	1.4
		▪	15-25	163	57.6
		▪	26-35	86	30.4
		▪	36-49	30	10.6
		▪	<18	4	1.4
02	Highest education level	▪	Primary	170	60.1
		▪	Secondary	54	19.1
		▪	Tertiary	6	2.1
		▪	Others (None)	53	18.7
03	Occupation	▪	Housewife	168	59.4
		▪	Runs small business	22	7.8
		▪	Formal employment	2	0.7
		▪	Others (Farming)	91	32.2
04	Religion	▪	Islam	24	8.5
		▪	Christianity	259	91.5
05	Tribe	▪	Mukiga	82	29.0
		▪	Mukonjo	10	3.5
		▪	Munyankole	141	49.8
		▪	Munyaruguru	50	17.7
06	Income level	▪	< UGX50,000/=	139	49.1
		▪	UGX50,000 - < 100,000/=	63	22.3
		▪	UGX100,000 - < 200,000/=	56	19.8
		▪	>UGX200,000/=	25	8.8

Source: Primary (2019), UGX=Ugandan Shillings

As can be seen from Table 2 above, most of the mothers who were attending Rubirizi district Health Facilities were aged 15 to 25 years 163(57.6%), studied up to primary education level 170(60.1%) and housewives by occupation 168(59.4%). The study results also showed that the majority of the of the mothers who were attending Rubirizi district Health Facilities were Christians 259(91.5%), Ankole by tribe 141(49.8%) and were earning a monthly income of less than 50,000 Ugandan shillings 139(49.1%).

3.2 Level of Utilization of ANC 4th Visit Among Mothers

The mothers attending Rubirizi district Health Facilities were asked at which week they attended their ANC before they gave birth to their youngest children. 'YES' and 'NO' responses were solicited for 4th visit attendance. The descriptive results were as presented in Figure 2 below
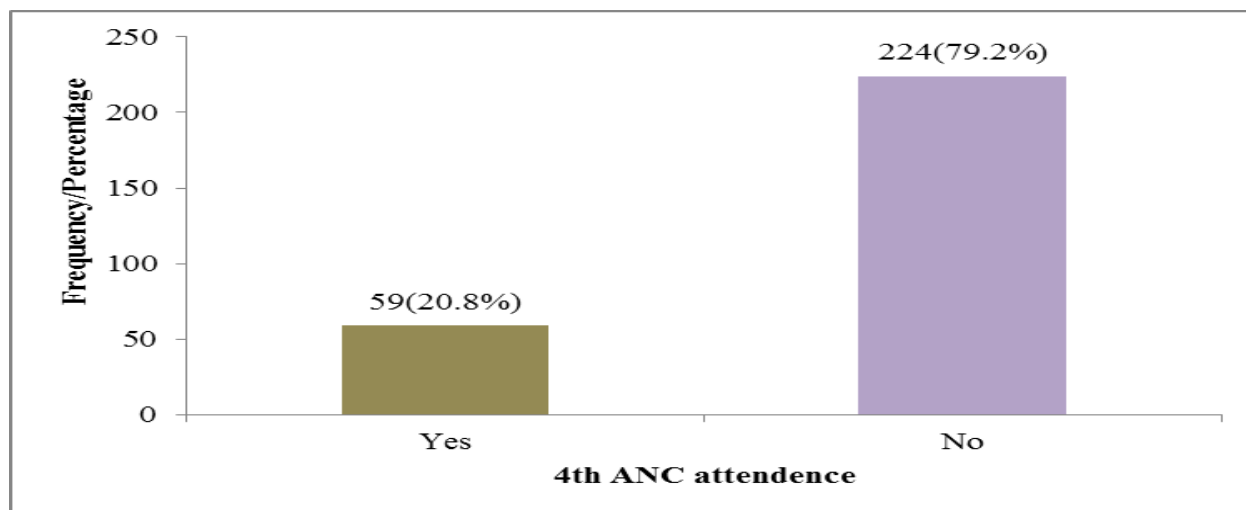
Figure 2. Level of utilization of ANC 4th visit among mothers (Primary source, 2019)

The findings showed that only 59(20.8%) of the mothers attending Rubirizi district Health Facilities utilized ANC 4th visit.

3.3 Factors Influencing the Utilization of ANC 4th Visit Among Mothers

This study as its second objective was set to determine the factors influencing the utilization of ANC 4th visit in Rubirizi district. To address this objective a number of factors were studied starting with the personal factors, through the community factors to those that were health system related. Both univariate descriptive analysis and Pearson Chi-Square Results for the factors were done. The descriptive results on the factors that influence utilization of ANC 4th visit mothers are presented in Table 3 and Pearson Chi-square results presented in Table 4 while Multivariate logistic regression is presented in Table 5 below

Table 3. Univariate Descriptive Analysis of the factors that influenced utilization of ANC 4th visit among mothers

Factor	Frequency (N= 283)	Percentage (%)
Personal Factors		
▪ Recommend 4TH ANC visit to fellow mothers		
➢ Yes	249	88.0
➢ No	34	12.0
▪ Knowledge about ANC 4th visit		
➢ Yes	234	82.7
➢ No	49	17.3
Community Related Factors		
▪ Discusses ANC with Husband freely		
➢ Yes	229	80.9
➢ No	54	19.1
▪ Husband provides ANC financial support		
➢ Yes	180	63.6
➢ No	103	36.4
▪ Cultural practices about ANC		

➢ None		146	51.6
➢ Traditional medicine works better		137	48.4
Health System Related Factors			
▪ Time to reach health facility			
➢ Less than 30 minutes		124	43.8
➢ 30 minutes to 1 hour		103	36.4
➢ > 2hour		56	19.8
▪ Transport mode used during ANC visits			
➢ Walking		185	65.4
➢ Others(Bicycle, Car, Public means)		98	34.6
▪ Equipment adequacy at health unit			
➢ Yes		245	86.6
➢ No		38	13.4
▪ Health workers' conducts			
➢ Good		118	41.7
➢ Fair		163	57.6
➢ Poor		2	.7
▪ Drug/Supplies Stock outs			
➢ Yes		210	74.2
➢ No		73	25.8
▪ Time taken before being attended to at health facility			
➢ At most 2 hours		250	88.3
➢ More than 2hrs		33	11.7

Source: Primary (2019)

The study with regard to the personal factors found that the majority 249 (88.0%) of the mothers who were attending Rubirizi district Health Facilities would recommend fellow mothers for ANC 4th visit. This result demonstrated that that mothers had a good attitude towards attending antenatal services particularly forth visit.

Other additional results shown to table 4 indicate that most of the mothers who were attending Rubirizi district Health Facilities were knowledgeable about ANC 4th visit 234 (82.7%) and as a community factor discussed ANC with their respective husbands freely 229 (80.9%) and their husbands provided financial support in form of transport and others when it comes to antenatal care 180 (63.6%). This financial support is necessary given the low incomes demonstrated among the majority of them. The study results however show that a good proportion of the mothers had beliefs that traditional medicine works better in ensuring safe delivery to their children than the hospital related medicine 137 (48.4%). This result indicative of the need for programs that sensitize the mothers in Rubirizi society about the dangers of using traditional medicines instead of attending all the antenatal visits as recommended.

The findings in table 4 show as health system related factors that while majority 124 (43.8%) of the mothers take less than 30 minutes to reach the nearest health facility 124 (43.8%) some take more than 2 hours 56(19.8%). The results also show that the majority 185 (65.4%) have to walk to the health facilities used during antenatal visits as compared to the minority 98 (34.6%) who use other means like a Bicycle, Car and Public transport means. This result however indicates that it's possible for one to walk when still health not when she is about to give birth as walking becomes impossible. This calls for interventions like ambulance services to pick the mothers from their homes.

Table 4 results also show that on the overall there is adequate equipment at health units to support the health care services sought by the mothers 245 (86.6%) with the majority 163 (57.6%) of the health care personnel at the

health facilities demonstrating a fair conduct when handling mothers who attend ANC services. The study results show that while the majority of the mothers are attended to not exceeding 2 hours 250 (88.3%), the health facilities in Rubirizi district are characterized by drug or supplies stock outs 210 (74.2%). The latter result indeed illustrates the need to mechanisms that ensure adequate medical stocks in the health facilities if the antenatal health care needs of the mothers are to be met.

Table 4. Pearson Chi-Square Results for the factors that influence utilization of ANC 4th visit among mothers

Factors			4th ANC Utilization				
			Yes	No			
			N (%)	N (%)	χ^2	df	P-Value
Age in years	▪	Less the 35	54(21.3)	199(78.7)	0.356	1	0.551
	▪	35 and above	5(16.7)	25(83.3)			
Occupation	▪	Housewife	34(20.2)	134(79.8)	0.093	1	0.760
	▪	Others (Business, Formal)	25(21.7)	90(78.3)			
Education level	▪	At most Primary	46(20.6)	177(79.4)	0.031	1	0.860
	▪	Secondary above	13(21.7)	47(78.3)			
Religion	▪	Islam	6(25.0)	18(75.0)	0.274	1	0.601
	▪	Christianity	53(20.5)	206(79.5)			
Income level	▪	Less than 100,000	33(16.3)	169(83.7)	8.705	1	**0.003****
	▪	100,000 and above	26(32.1)	55(67.9)			
Attitude towards ANC	▪	Positive	54(21.7)	195(78.3)	0.883	1	0.347
	▪	Negative	5(14.7)	29(85.3)			
Knowledge about ANC 4th visit	▪	Yes	54(23.1)	180(76.9)	4.069	1	**0.044****
	▪	No	5(10.2)	44(89.8)			
Discuss ANC with Husband freely	▪	Yes	54(23.6)	175(76.4)	5.431	1	**0.020****
	▪	No	5(9.3)	49(90.7)			
Husband provides Financial support	▪	Yes	46(25.6)	134(74.4)	6.642	1	**0.010****
	▪	No	13(12.6)	90(87.4)			
Cultural practices about ANC	▪	None	44(30.1)	102(69.9)	15.770	1	**0.000****
	▪	Traditional medicine better	15(10.9)	122(89.1)			
Time to reach health unit	▪	Less than 1Hour	47(20.7)	180(79.3)	0.014	1	0.905
	▪	More than 1 hour	12(21.4)	44(78.6)			
Transport mode during ANC visit	▪	Walking	26(14.1)	159(85.9)	14.944	1	**0.000****
	▪	Others(Bicycle, Car,Public)	33(33.7)	65(66.3)			
Equipment adequacy at Health facility	▪	Adequate	49(20.0)	196(80.0)	0.795	1	0.373
	▪	Inadequate	10(26.3)	28(73.7)			
Health worker' Conduct	▪	Good	28(23.7)	90(76.3)	1.018	1	0.313
	▪	Fair	31(18.8)	134(81.2)			
Stock out	▪	Yes	37(17.6)	173(82.4)	5.144	1	**0.023****

instances at health unit	▪ No	22(30.1)	51(69.9)			
Waiting time	▪ At most 2 hours	53(21.2)	197(78.8)	0.161	1	0.688
	▪ More than 2hours	6(18.2)	27(81.8)			

Df=Degree of freedom, **Significant at 5%

Table 4 above indicates that the mothers' age in years, occupation, education level, religion and attitude towards antenatal care did not significantly influence utilization of ANC 4th visit among mothers attending Rubirizi district Health Facilities (*p* values> 0.05). The study results additionally showed that the time to reach health unit, equipment adequacy at Health facility, health worker conduct and waiting time did not significantly influence utilization of ANC 4th visit among mothers attending Rubirizi district Health Facilities (*p* values > 0.05)

However, monthly income in Uganda shilling (*p* = 0.003), knowledge about ANC 4th visit (*p* = 0.044), discussing ANC with Husband freely (*p* = 0.020) and husband providing financial support towards ANC visits (p = 0.010) significantly influenced utilization of ANC 4th visit among mothers attending Rubirizi district Health Facilities. Findings additionally show cultural practices about ANC (p = 0.000), the mode of transport used during ANC visit (p = 0.000) and instances of stock outs at health units (p = 0.023) as having a significant bearing in as far as utilization of ANC 4th visit among mothers attending Rubirizi district Health Facilities (p values ≤ 0.05).

The study, as a way of controlling for confounding, subjected factors that were significant at bivariate analysis level to multivariate analysis by conducting a Multivariate Binary Logistic Regression Analysis. See Table 5 below. The results depicting the Adjusted Odds Ratio (AOR) for each of the factors processed alongside the respective p values at a 5% level of significance were as presented below.

Table 5. Multivariate Logistic Regression Results for the utilization of ANC 4th visit among mothers

Factors	ANC 4th visit Utilization		COR(95%CI)	AOR(95%CI)	P- Value
	Yes N (%)	No N (%)			
Income					
▪ Less than 100,000	33(16.3)	169(83.7)	0.41(0.23-0.75)	**0.43(0.22-0.86)**	**0.016**
▪ 100,000 and above	26(32.1)	55(67.9)	1	1	-
Knowledge about ANC 4th Visit					
▪ Yes	54(23.1)	180(76.9)	2.64(0.99-6.99)	**6.14(2.01-18.75)**	**0.001**
▪ No	5(10.2)	44(89.8)	1	1	-
Discuss ANC Husband freely					
▪ Yes	54(23.6)	175(76.4)	3.02(1.15-7.97)	**3.44(1.20-9.83)**	**0.021**
▪ No	5(9.3)	49(90.7)	1	1	-
Husband provides financial support for ANC					
▪ Yes	46(25.6)	134(74.4)	2.38(1.22-4.65)	1.62(0.76-3.46)	0.216
▪ No	13(12.6)	90(87.4)	1	1	-
Existence of Cultural practices about ANC					
▪ None	44(30.1)	102(69.9)	3.51(1.85-6.67)	**3.39(1.68-6.84)**	**0.001**
▪ Traditional medicine better	15(10.9)	122(89.1)	1	1	-
Transport mode used during ANC visits					
▪ Walking	26(14.1)	159(85.9)	0.32(0.18-0.58)	**0.31(0.15-0.62)**	**0.001**

▪ Others(Bicycle, Car, Public)	33(33.7)	65(66.3)	1	1	-
Instances of Stock outs at Health facility					
▪ Yes	37(17.6)	173(82.4)	0.49(0.27-0.92)	0.68(0.32-1.42)	0.304
▪ No	22(30.1)	51(69.9)	1	1	-

COR=Crude Odd Ratio, AOR=Adjusted Odd Ration,**Significant at 5%

Table 5 indicates that monthly income in Uganda shilling (COR = 0.41; 95%CI:0.23-0.75); p = 0.003) which influenced was similarly significant at multivariate analysis level (AOR= 0.43;95%CI:0.22-0.86; p = 0.016). This result implies that monthly income significantly influenced4thANC utilization among mothers attending Rubirizi district Health Facilities. The mothers earning less than 100,000 Uganda shillings on a monthly basis are 57% less likely to attend the 4thANC than mothers earning 100,000 Uganda shillings and above. This result is indicative of the need for initiatives that boost income of the women of reproductive age if antenatal care schedules are to be honored.

The other results in Table 5 show that knowledge about ANC 4thVisit (COR =2.64; 95%CI:0.99-6.99; p = 0.044) significantly influenced ANC 4thvisit attendance at bivariate analysis level. After controlling for confounding knowledge about ANC 4th Visit remained significant (AOR = 6.14; 95%CI:2.01-18.75; p = 0.001). This finding meant that Knowledge about ANC 4thVisit significantly influences the utilization of ANC 4thvisit among mothers attending Rubirizi district Health Facilities. The odds of attending ANC 4thvisit were 6.14 times among mothers who know about 4th ANC visit compared to those mothers who did not know about 4thANC visit. This result calls for initiatives that regularly promote knowledge about the 4th ANC visit in the women of reproductive age.

Table 5 shows that the provision of financial support for ANC did significantly influence attendance of ANC 4thvisit at bivariate analysis level (COR =2.38; 95%CI: 1.22-4.65; p = 0.010). The influence was, however, lost when subjected to multivariate analysis (AOR = 1.62; 95%CI: 0.76-3.46; p = 0.216). This thus means that financial support for ANC visits by the husbands has no significant bearing in the utilization of ANC 4th visit among mothers attending Rubirizi district Health Facilities. This could be attributed to the fact that even when the mother is given money, she can decide not to reach the health facility thus the insignificance.

The study findings also show that discussing freely about ANC with the Husband significantly influences attendance of ANC forth visit at bivariate analysis level (COR=3.02; 95%CI:1.15-7.97; p = 0.020) which influence was equally the case when subjected to multivariate analysis (AOR= 3.44;95%CI: 1.20-9.83; p = 0.021). This implies that discussing freely about ANC with the Husband is a significant predictor of the utilization of ANC 4th visit among mothers attending Rubirizi district Health Facilities. The odds of attending the 4th ANC visit were 3.44 times among mothers who discuss with their husbands freely about ANC compared to those who did not discuss with their husbands about ANC. This result is indicative of the need to put up mechanisms that support husband's role in antenatal care.

The existence of cultural beliefs and practices about ANC equally showed a significant influence in as far as attendance of ANC forth visit was concerned at bivariate analysis level (COR = 3.51; 95%CI:1.85-6.67; p = 0.000). This was equally the case after controlling for confounding (AOR =3.39; 95%CI:1.68-6.84; p = 0.001). This meant that cultural beliefs and practices were significant predictors of attendance of 4th ANC visit. The odds of attending the 4th ANC visit were 3.39 times among mothers who did not demonstrate any cultural beliefs and practices about ANC compared to those who indicated traditional medicines as being better in ensuring safe delivery in the pregnant women. This result demonstrates the necessity for ignition of approaches that promote women awareness about the dangers of using traditional medicines.

Table 5 indicates that mode of transport used when coming for ANC (COR = 0.32; 95%CI:0.18-0.58; p = 0.000) has got a significant influence on the attendance of ANC fourth visit among mothers at bivariate analysis level. This influence remained significant at multivariate analysis level (AOR = 0.31; 95%CI:0.15-0.62; p = 0.001). This means that mode of transport used during visits for antenatal care is significant predictor of forth ANC attendance among mothers. The mothers who walk while coming for antenatal care are 69% less likely to attend the fourth ANC than mothers who use other means of transport such as the bicycles, cars and public taxis. This could be attributed to the fact that the journeys are tiresome and more burdening when mothers are actually about to deliver since they are heavier at that point.

Findings lastly indicate instances of Stock outs at health facility as significantly influencing attendance of ANC forth visit at bivariate analysis level (COR = 0.49;95%CI:0.27-0.92; p =0.023). The influence was however lost

when subjected to multivariate analysis (AOR = 0.68; 95%CI:0.32-1.42; p = 0.304). This thus means that instances of Stock outs at health facility did not significantly influence the utilization of ANC 4th visit among mothers. This may be attributed to the fact that it is not only the drugs that are provided in antenatal care after all the drugs can be bought outside.

3.4 Experiences of Mothers Who Utilized ANC 4th Visit Versus Mothers Who Did Not

The third objective of the study was set to compare the experiences of mothers who utilized ANC 4th visit in relation to those experiences of the mothers who did not attend ANC 4th visit. The descriptive comparisons were as presented in Table 6 below.

Table 6. Experiences of mothers who utilized ANC 4th visit versus mothers who didn't

Mothers' Experiences	ANC 4th Visit Attendance	
	Yes	No
Recognition of danger signs and symptoms in time		
▪ Yes	51(86.4%)	0(0.0%)
▪ No	8(13.6)	224(100.0%)
Reached Health facility in time		
▪ Yes	15(34.1%)	49(30.4%)
▪ No	29(65.9%)	112(69.6%)
Health Worker Receptiveness		
▪ Very Receptive	59(100.0%)	16(7.1%)
▪ Not so Receptive	0(0.0%)	208(92.9%)
Time to be attended		
▪ Not long	48(81.4%)	17(7.6%)
▪ Took long	11(18.6%)	207(92.4%)
Kind/type of delivery		
▪ Normal	48(81.4%)	149(66.5%)
▪ Cesarean Birth	11(18.6%)	75(33.5%)
Complications after delivery		
▪ Yes	10(16.9%)	88(38.3%)
▪ No	49(83.1%)	136(60.7%)

Source: Primary (2019)

Table 6 shows that the recognition of danger signs and symptoms in time was highly experienced in mothers who had attended ANC 4th visit and lowest in mothers that had not attended it (86.4% versus 0.0%). This trend was similar with regard to reaching the health facility in time (34.1% versus 30.4%) and receptiveness demonstrated by the health workers towards the mothers as they arrived for delivery (100% versus 0.0%). The results presented also show that it took a short time for mothers who had attended forth visit to be attended to(81.4%) compared to the mothers who had missed out fourth visit (7.6%) which was equally the trend the mothers experienced in terms of normal births (81.4% versus 66.5%).

3.5 Categories of Complications Developed by Mothers

The findings show that fewer mothers who had attended ANC fourth visit developed complications after delivery (16.9%) compared to the mothers who had not attended ANC forth visit (38.3%). See Table 6 above. The study results on the categories of complications developed were as presented in Figure 3.
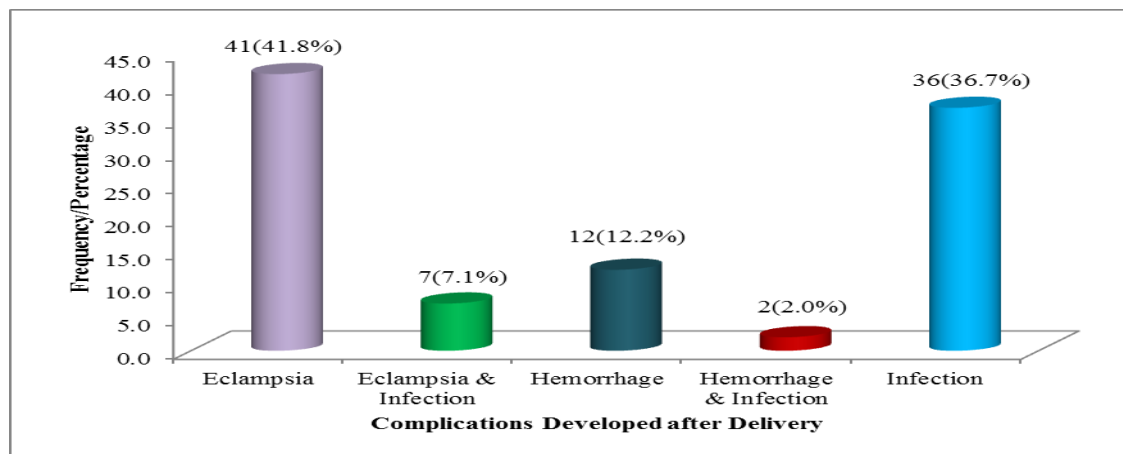
Figure 3. Complications After Delivery Among the Mothers (Primary source, 2019)

As can be seen from the figure 3 above, the majority 41(41.8%) of the mothers developed eclampsia followed by those that developed infection 36(36.7%). The issue of hemorrhage as a complication was experienced among 12(12.2%) of the mothers. The foregoing result demonstrates that attending the fourth ANC visit is important amongst the pregnant mothers as it reduces the likelihood of experiencing complications. Besides it makes it easier of the health staff to handle the women during delivery since they understand her condition better. On part of the mothers, the results have demonstrated that they are on alert to understand the danger signs and even reach the health facilities in time compared to those who failed to attend ANC forth visit. This result demonstrates the need for awareness efforts to step up attendance of 4th ANC visit given its significance in the delivery experiences.

3.6 Summary of Results

The findings showed that only 59(20.8%) of the mothers attending Rubirizi district Health Facilities utilized ANC 4th visit. However, monthly income in Uganda shilling (p=0.003), knowledge about ANC 4th visit ($p = 0.044$), discussing ANC with Husband freely ($p = 0.020$) and husband providing financial support towards ANC visits (p=0.010) significantly influenced utilization of ANC 4thvisit among mothers attending Rubirizi district Health Facilities. Findings additionally show cultural practices about ANC (p=0.000), the mode of transport used during ANC visit (p =0.000) and instances of stock outs at health units (p=0.023) as having a significant bearing in as far as utilization of ANC 4thvisit among mothers attending Rubirizi district Health Facilities (p values ≤ 0.05).

At bivariate and multivariate analysis, discussing freely about ANC with the Husband significantly influences utilization of ANC fourth visit (COR=3.02;95%CI:1.15-7.97; p = 0.020) which influence was equally the case when subjected to multivariate analysis (AOR= 3.44;95%CI: 1.20-9.83; p = 0.021). The odds of attending the 4th ANC visit were 3.44 times among mothers who discuss with their husbands freely about ANC compared to those who did not discuss with their husbands about ANC. Again, existence of cultural beliefs and practices about ANC equally showed a significant influence in as far as attendance of ANC fourth visit was concerned at bivariate analysis level (COR = 3.51;95%CI:1.85-6.67; p = 0.000). This was equally the case after controlling for confounding (AOR =3.39;95%CI:1.68-6.84; p = 0.001).

Recognition of danger signs and symptoms in time was highly experienced in mothers who had attended ANC 4th visit and lowest in mothers that had not attended it (86.4% versus 0.0%). This trend was similar with regard to reaching the health facility in time (34.1% versus 30.4%) and receptiveness demonstrated by the health workers towards the mothers as they arrived for delivery (100% versus 0.0%). The results presented also show that it took a short time for mothers who had attended forth visit to be attended to (81.4%) compared to the mothers who had missed out fourth visit (7.6%)

4. Discussion

4.1 Level of Utilization of ANC 4th Visit

The findings showed that only 59(20.8%) of the mothers attending Rubirizi district Health Facilities utilized ANC 4th visit. The result is similar to an earlier finding, where inRubirizi in western Uganda, Kyomuhendo (2013) explained that only 22.2% of the mothers giving birth in the District had attended the ANC 4thvisit.

This finding is inconsistent with many international results, far much below the utilization levels in developed countries. In Finland, almost the entire (99.8%) pregnant population attends the 4th antenatal care visit since it is

provided by the state free of charge and is easily accessible (Leonard, et al. 2014). Recent estimates indicate that the number of women in Least Developed Countries (LDCs) attending at least the 3rd ANC service on date of appointment increased from 64% in 1990 to 81% in 2009 and those attending the 4th ANC and more visit or more times rose from 35% to 51% over the same period. However, major disparities exist within and between continents, between countries, and between urban and rural populations (WHO and UNICEF, 2015).

4.2 Factors Influencing Utilization of ANC 4th Visit Among Mothers

Monthly income in Uganda shilling (p=0.003), knowledge about ANC 4thvisit (p=0.044), discussing ANC with Husband freely (p=0.020) and husband providing financial support towards ANC visits (p=0.010) significantly influenced utilization of ANC 4thvisit among mothers attending Rubirizi district Health Facilities. Findings additionally showed cultural practices about ANC (p=0.000), the mode of transport used during ANC visit (p=0.000) and instances of stock outs at health units (p=0.023) as having a significant bearing in as far as utilization of ANC 4thvisit among mothers attending Rubirizi district Health Facilities. This finding is similar to those found elsewhere. Studies by Borghi, Storing and Filippi (2015), on women booking late or not booking at all to the 4th antenatal care visit have shown that the most common barriers to attendance at the 4thantenatal care visit in modern Western society are lack of insurance, low income, low educational level, low social class, unmarried status, ethnic origin of the woman, difficulties in obtaining appointments and long distances.

It is an established fact that the employment status of expectant women influences their ANC use for the 4th visit and more (Awusi and Anyanwu, 2010). World Health Organization (2015), reported that the involvement of women in employable ventures negatively influences their use of 4th antenatal care and services. This keeps pregnant mothers busy in disguise to increase control over the things which affect their lives as far their healthcare needs are concerned. In its study on the socio-economic determinants of the 4thANC and more services in seven countries, World Health Organization (2015), revealed that household wealth significantly influenced the facility type for accessing maternal care. Adekanle and Isawumi (2016), on the determinant factors for utilization of the fourth ANC and more visit in Africa has identified maternal education, employment, age, poverty and access to the media as influencing the utilization of the fourth ANC visit. Also, Osungbade, Oginni and Olumide (2010), analyzed that the economic status of household also has an influence on the utilization pattern of fourth ANC and more visit. Achievement of fourth ANC visit is related to the economic status of the household. Awusi and Anyanwu(2010), like in Botswana in which it was found that pregnant women with low economic status were less likely to use 4th antenatal care services than those with higher economic status.

4.3 Experiences of Mothers Who Utilized ANC 4th Visit Versus Mothers Who Did Not

Recognition of danger signs and symptoms in time was highly experienced in mothers who had attended ANC 4th visit and lowest in mothers that had not attended it (86.4% versus 0.0%). This trend was similar with regard to reaching the health facility in time (34.1% versus 30.4%) and receptiveness demonstrated by the health workers towards the mothers as they arrived for delivery (100% versus 0.0%). The results presented also show that it took a short time for mothers who had attended forth visit to be attended to (81.4%) compared to the mothers who had missed out fourth visit (7.6%) which was equally the trend the mothers experienced in terms of normal births (81.4% versus 66.5%). According to Israel and Glenn (2015), the optimal amount and content of antenatal care in either low- or high-risk pregnancies at the 4th antenatal care visit is not yet resolved. There is, however, evidence showing some unquestionable benefits of the 4th antenatal care visit and overall, the outcome of pregnancies among women giving birth at home and without any antenatal care for religious reasons is known to be severely impaired. Ensor (2016), further disclosed that child-bearing women's own expectations are diverse, some wishing for more and some, specifically women over 35 years of age or with an unfortunate timing of pregnancy, wanting the 4th antenatal care visit. Kruk, Galea, Prescott and Freedman (2017) asserted that the good quality the 4th antenatal care visit improves maternal health. It decreases the chances of suffering from anemia, pregnancy induced hypertension, preterm labor and promotes positive pregnancy outcomes, including a reduced risk of low birth weight and preterm babies. Nwakoby, et al (2017); ANC increases the use of a Skilled Birth Attendant during delivery and the 4th antenatal care visit because the visit can be an opportunity to educate women about the merits of skilled birth attendance. Leonard et al, (2014); the 4th antenatal care visits provide an excellent opportunity to deliver education regarding the danger signs and symptoms during pregnancy, delivery and the postpartum period and to focus on birth spacing and family planning.

According to Murray and Lopez (2017), the percentage of mothers who had the 4th antenatal care visit prior to their last birth in Assiut city was 56.7%. Attitudes were shaped by previous experiences of the 4th antenatal care visit, such as waiting times, quality of care, and perceptions of preventative care and medical interventions during pregnancy. Interpersonal factors included relationships with healthcare providers, pregnancy disclosure, and

family conflict. In Rubirizi in western Uganda, Kyomuhendo (2013) asserted that 23.5% of mothers with complications like post-partum hemorrhage and maternal deaths skipped 4th antenatal visit.

4.4 Category of Complications Developed by Mothers

The findings showed that fewer mothers who had attended ANC fourth visit developed complications after delivery (16.9%) compared to the mothers who had not attended ANC forth visit (38.3%). Few literatures are available on this subject matter. However, Nwakoby, et al (2017) asserted that ANC increases the use of a Skilled Birth Attendant during delivery and the 4th antenatal care visit because the visit can be an opportunity to educate women about the merits of skilled birth attendance. Leonard, et al. (2014); the 4th antenatal care visits provide an excellent opportunity to deliver education regarding the danger signs and symptoms during pregnancy, delivery and the postpartum period and to focus on birth spacing and family planning. This lowers the risk of complication as seen in this study.

5. Conclusion

The level of utilization 4th ANC visit in Rubirizi district health facilities is still unacceptably very low. Concerted efforts may be required by all stakeholders. Base on the findings of this study, it is quite important to encourage mother to attend at least four visits during their pregnancy if birth associated risks are to be averted. In fact, Rubirizi District Health Office (2017) asserted that ANC 4th visit utilization is still low despite the intervention by government through programs like family connect programs health education and Marie Stopes voucher project. If the situation is not contained, mothers with complications and maternal deaths are likely to increase, putting not only pregnant mothers at risk but also increasing the risk of neonatal complications and death.

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Declaration

Contributorship

KA conceptualized the work, wrote the proposal and did the initial analysis.

OK drafted the manuscript, supervised the work for all intellectual competence, approved final work for publication and is the corresponding author for all future concerns related to this work.

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