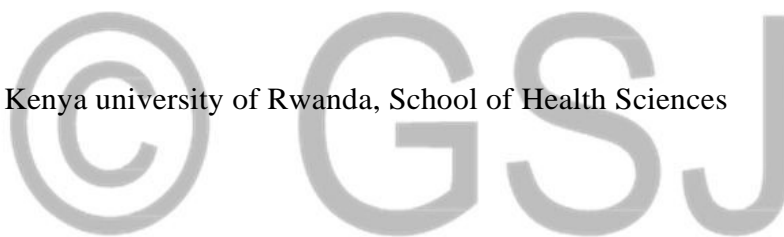![Global Scientific JOURNALS]

FACTORS INFLUENCING LATE UTILIZATION OF FIRST ANTENATAL CARE SERVICES AMONG PREGNANT WOMEN AT MUGONERO HOSPITAL CATCHMENT AREA, RWANDA

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ABSTRACT

Early ANC attendance promotes early detection and treatment of complications which result in proper management during delivery and puerperium. The research aimed to examine the factors behind late ANC services among pregnant women in Rwanda. This research was a cross-sectional study using a mixed research approach. The study population was included pregnant women in the age group of 15–49 years coming for ANC services from February to March 2020 in the seven health centers from Mugonero District Hospital catchment area. For quantitative data, a sample size of 140 respondents were selected using a two-stage randomized cluster sampling procedure from the study population. For qualitative data, 23 key informants were involved in the research and 8 FGDs and were selected using purposive sampling technique. Data were collected through structured questionnaire from quantitative data and through interview guide for qualitative data. Quantitative data were coded and analyzed using SPSS version 21 while qualitative data were transcripted from the key informants and FGDs for their deep understanding. The research findings revealed that the prevalence of late ANC utilization was 57.1%. The multivariate analysis showed that ANC late was 2.1 times higher among pregnant women with primary education level (AOR = 2.1, 95% CI: [1.32-2.60]), 1.85 times higher among housewives compared to mothers who were employed (AOR = 1.85, 95% CI: [1.36-3.82]), 1.90 times higher among mothers who paid themselves transport cost (AOR = 1.90, 95% CI: [1.25-2.18]), and was 2 times higher among mothers who previously attended ANC and failed to be served compared to well served mothers when previously attended ANC services (AOR = 2.0, 95% CI: [1.82-3.16]) keeping other variables constant. Qualitative result from the seven FGDs indicated that the main barriers for ANC utilization were the absence of their husbands, fear to go for ANC while pregnancy not visible, payment for laboratory tests, long distances to go to health facility, waiting time at health facility while waiting for ANC services, all of these were declared as the factors limiting the pregnant mothers to attend in time, while for the sources of information on antenatal care services, all groups pinpointed the community health workers and health facility staff. The key informants suggested that health care providers have to increase the number of health care providers, field outreach by approaching women for ANC, training of workers on ANC, health education to women about antenatal services, presence of various partners in ANC related services and avail free of charge for ANC service. The district health offices should work closely with CHWs on creating awareness about the benefits of early attendance of ANC both for the mother and the fetus. It is also better to make the service closer to mothers who need to travel long distances. The researcher recommended to the Ministry of Health to strengthen health education on ANC among women to guarantee that the late utilization of ANC service is eliminated.

CHAPTER ONE: INTRODUCTION OF THE STUDY

Introduction

This chapter is about background of the study, problem statement, objectives of the study, research questions, significance of the study, and limitation of the study, scope of the study and the organization of the study.

Background of the study

Antenatal care (ANC) is explained as the service given by expert healthcare to the pregnant women and teenage girls so that the best health conditions for the baby and mother in the gestation period (Claire, et al., 2019) . The constituents of ANC contain danger identification; hindrance and organization of gestation related diseases; and health education and health elevation (Umubyeyi, et al., 2014). ANC is the best way for health involvement for stopping maternal deaths mostly for unfortunate women (NISR, MOH, & ICF, 2015).

Globally, ANC services differ among countries. Numerous studies identified the average gestational age at booking in developed countries to be as early as 13 weeks and the average number of ANC visits at 6 weeks (Al-Shammaria, et al., 2016).

On international perspective, between 2007 and 2014, merely 64% of women in gestational period respected at least four times visits recommended by WHO to get ANC services recommending that many studies should be done to ensure the quality of ANC services (WHO et al., 2015). Above 70% of women in the world have one visit of antenatal care during gestational period, though differences exist between the countries, whereby in developed countries are 98% while in low-middle income countries (LMICs) are 68%. The low attendance of pregnant women on ANC services is seen in South Asia on 54% (WHO & UNICEF, 2013).

In Sub-Saharan African countries for example, many women are not given necessary information on pregnancy complications and essential skills on giving birth (Magoma, et al., 2011). Whereas normally, there wasn't enhancement in antenatal care services specifically for women in unfortunate 20% of town households in Africa between 1990-1999 and 2000-2011 (WHO, 2014).

Many deaths of pregnant women and new-born should be eradicated if women get good advices from professional health care service provider (Hogan, et al., 2010). In poor countries, where deaths are more than developed countries, the percentage of pregnant women that get the services is 52% in 2014 (UNDP, 2014). In Rwanda, according to the RDHS 2015, only 44% of pregnant women get antenatal care Standardized 4 times; 56% get their first visit in first term. However, this percentage signifies a growth from 13% and 35% respectively in 2005 and 2010 13 % in 2005 and 35 % in 2010. It should also be renowned that 3 % of mothers had only one ANC visit, and 1 % had no visits. Consequences by residence show no difference in the percentage of women who had at least four ANC visits (44 % in both urban

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and rural areas). 56% of women in gestational period attend ANC in the fourth month in 2015. This percentage was only 38 % in 2010. There is no variation in this proportion between urban and rural women (NISR, MOH, & ICF, 2015). The results also show that 31 % of women had their first visit at the fourth or fifth month of pregnancy; 11 % began at the sixth or seventh month, and 1 % began at the eighth month or after. The middle period of pregnancy at the first ANC visit was 3.9 months for the country as a whole (3.8 months and 3.9 months in urban and rural areas, respectively). This signifies an upgrading from 2010, when the median duration was 4.5 months (NISR, MOH, & ICF, 2015).

Problem Statement

Although Rwanda has done some favorable strides in ANC services with 99% uptake such as provision of qualified health care providers at health facilities, increased ANC package, ANC service delivery two times a week minimum, the importance of Community health labors in charge of motherly and child health, maternal and child health promotion talks, availability of drugs and medical products; still first antenatal care service utilization/attendance remains at lower level, where by proportion of women in gestational period still make their first ANC visit far away the recommended 12th week of the pregnancy, averaging 3.9 months, and only 56% obtain this care in the first trimester and 31% by the sixth month of pregnancy. Furthermore, approximately 34 pregnant women died in the year 2015 in Rwanda and this is linked by poor utilization of ANC services, among others (NISR, MOH, & ICF, 2015).

In Mugonero Hospital catchment area, first ANC utilization is still a question and no research so far done to determine the limiting factors. Here, the Reports have revealed that, many women in Mugonero Hospital catchment area do not attend antenatal care as recommended (RHMIS, 2019). According to statistical reports of RHMIS from Mugonero District Hospital where the study was conducted, it was revealed in 2018 that pregnant women attended ANC1 were 29% and 21% for ANC4 whereas from January 2019 up to December 2019, the ANC1 attendance was at 34%, and ANC4 standard was at 22% (RHMIS, 2019).

Therefore, it is imperative to find out reasons related with late utilization of ANC services in order to develop acceptable interventional measures that could enhance early antenatal attendance and completion of recommended schedule (NISR, MOH, & ICF, 2015).

Specific objectives

1. To determine the prevalence of late utilization of ANC among pregnant women in Mugonero District Hospital catchment area;

2. To assess socio-demographic and economic factors associated with late ANC use in Mugonero District Hospital catchment area;

3. To establish health facility related factors associated with late ANC use in Mugonero District Hospital catchment area;

4. To explore the barriers and reasons behind the pregnant women of late attendance to ANC services in Mugonero hospital catchment area

Tools and methods

Research Design

The research was a cross-sectional study where the researcher conducted the study once and not repeatedly. The quantitative and qualitative approach were used in mixed research design. A structured questionnaire was used for quantitative data collection and an interview guide has been used for qualitative data collection. The study population was included of pregnant women in the generative age group (15–49 years) coming for ANC services from February to March 2020, in the seven health centers described above. For qualitative data, pregnant women, CHWs in charge of maternal and child health were involved in this research in FGDs and keys informants of healthcare providers were involved. Sample size was calculated using Slovin's formula with confidence interval of 95% and margin error of 5%. This formula is used when the researcher has no idea about a population's behavior and then the researcher calculate the sample size based on target population (Ali,

The sample size calculated was 140 participants .The population of Mugonero Hospital catchment area is 2568 per year then per month is 214 (RDHS, 2015), an exactness level of plus or minus five percent statistical level of confidence of 95%, the study considered a sample of 140 respondents/pregnant mothers as calculated above with help of mentioned formula. For qualitative data, 23 staffs (KIs) were involved in the research and 8 FGDS (7 FGDs for mothers and 1 for CHWs were used. For quantitative data collection, the two stages sampling techniques were used. In the first stage, cluster sampling technique was used. Clusters were selected from the sampling frame, which consisted of the health centers from which the sample was selected. A total of clusters with probability proportional to size was selected from the catchment area. In the second stage, systematic sampling technique where participants were selected by skipping one after one basing on their sequences of their arrival until reaching the needed sample units from all present ANC attendees according to their respective health centers and compliance to the sample size given by proportional allocation. This was done on the deferent days for antenal care services as ANC days were different for all health facilities.

Table 3. 1. Study population, sample size and sampling techniques

HC	Total population	Target population	Sample distribution by proportional allocation	Sampling technique
For quantitative data				
Gisovu HC	21251	51	33	Systematic
GATARE HC	11869	29	19	Systematic
Mugonero HC	18068	44	29	Systematic
Mubuga HC	11234	27	18	Systematic
Karora HC	10148	24	16	Systematic
Mpembe HC	6567	16	10	Systematic
Bisesero HC	9410	23	15	Systematic
Tot. pregnant women		214	140	Systematic
For qualitative data				
Key informants		23	23	Purposive

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| FGDs | 64 | 8 | Purposive |

Data collection methods

The study utilized three main data collection methods namely: questionnaires, interviews, and FGDs. A survey questionnaire was carried out in all seven health centers to identify social - demographic and economic factors, and skills of pregnant women on ANC services, benefits of seeking early ANC, this was directed to pregnant women. It used to develop recommendations of socio-economic factors and knowledge gaps to ANC, this can be utilized to promote early and appropriate ANC in hospitals. The in-depth interviews were carried out to all health centers in order to determine other reasons behind late attendance for first ANC services and the perception of health care providers on antenatal care services and this was directed to Healthcare providers. Twenty-three (23) key informants 'interviews were conducted with participants selected purposively based on their knowledge of the community and women's access to antenatal care services, professionalism; and factors of health service providers associated with use and non- use of ANC services.

These included three senior midwives, seven HC staff working in ANC unit at every health centers, Seven from Mugonero HC, Mubuga HC, Karora HC, Mpembe HC, Gatare HC, Gisovu HC and Bisesero in Mugonero Hospital catchment area, Two Mugonero Hospital monitoring and evaluation unit staff, the District health officer, Director General, clinical director and Director of nursing and midwifery at Mugonero Hospital.

About FGDs, one (1) FDG was conducted in each health center (Mugonero HC, Mubuga HC, Karora HC, Mpembe HC, Gatare HC, Gisovu HC and Bisesero HC). There was also one more FGD of CHWs in charge of maternal and child health in order to seek opinions/perception, knowledge and reasons behind connected to late operation of ANC services.

Women and CHWs were purposively selected; and were pregnant and not/ have standardized first ANC during the study period and not selected in interview study units, and CHWs in charge of maternal and child health in one HC under study with low first ANC attendance. Each focus group was consisted of 7-10 participants and discussions were taken for 1-2 hours.

FGDs was shepherded and focusing on the places where women go for ANC, The FGD was embarking on main topics such as: when they go for antenatal care, alternatives to ANC mothers use in early phases of pregnancy, why they go for ANC, ANC services provided, medicine given during ANC visits, challenges limiting pregnant mothers to attend first ANC at time and changes the mothers feel should be done to improve ANC services and neonatal and child health care at community level and at health facilities.

Reliability and validity of the research instruments

For the reliability testing, the questionnaire was pre-tested in Kibuye District Hospital which is located in Karongi District. Ten (10) questionnaires were pre-tested in this hospital before applying it to target population to make sure that the instrument is clear and measures what is intended to measure. Researcher worked closely with the supervisors and cross reviewed the questionnaire to ensure the reliability of research instrument. For validity of the research instrument, the internal consistency was measured using Cronbach's Alpha to know what is,

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and how a set of items are linked. A research instrument is considered as having a strong validity when a minimal correlation value or α coefficient is around 0.60 and 0.8. All questions were assessed. The research instrument has been found with a very relatively high alpha coefficient of 0.74 after controlling based on feedback during the data gathering of the present study. Based on this α coefficient and these items display strong validity.

In the qualitative part, qualitative research emphasizes on data trustworthiness instead validity and reliability more use in quantitative research (Connelly, 2016). To guarantee the data trustworthiness, the researcher has taken into account those four concepts:

Credibility: the researcher performed the triangulation of the information collected; (ii) Transferability: the researcher looked if the study findings could be generalized and attempt to apply them to other situations or contexts; (iii) Dependability: the researcher looked if the research instrument could produce consistent results if applied in a similar study and (iv) Confirmability: the researcher looked if the internal data could be consistent. Data analysis procedures.

Data analysis

Data were collected and cleaned to ensure its completeness and accuracy by using SPSS version 21 for quantitative data. The analyzed data were presented using frequencies, percentages and cross-tabulated. To assess the relationship between the dependent and the independent variables, the Pearson Chi-square test have been performed at 95% confidence interval. A multivariate logistic regression model has been used to calculate odds ratio and the corresponding 95% confidence interval. A two tailed p-value of less than or equal to 0.05 has been used in order to state the statistical significance or not. Qualitative data was classified and coded into themes and concepts. Key information and quotations were synthetized and tabulated in order to know the information saturation.

Presantation of Findings and Discusion

This chapter presents the findings of the study. The results are presented and interpreted based on the objectives of the study. A total of 140 respondents participated into the research giving a response rate of 100%. The results are detailed in tables in forms of descriptive statistics.

Basic characteristics of respondents

Under this section, the research explored the socio-economic and demographic factors, the health facility factors and the level of knowledge of the pregnant women on ANC services.

Social demographic characteristics of the respondents

The social-economic factors and demographic data of pregnant women in Mugonero catchment area as key respondents of this research are explained in table 4.1.

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Table 1 Social-economic and demographic factors of pregnant women

Variables	Frequency (n)	Percent (%)
Marital status		
Unmarried	53	37.9
Married	87	62.1
Number of children		
0-1 child	17	12.1
2-3 children	41	29.3
More than 3 children	82	58.6
Education level		
No formal education	0	0
Primary	80	57.1
Secondary education	48	34.3
Tertiary education	12	8.6
Religion		
Christian	130	92.9
Muslim	2	1.4
Others	8	5.7
Occupation		
Employed	10	7.1
Unemployed	130	92.9

Source: Primary data, 2020

Findings in Table 4.1 indicated that the majority (62.1%) pregnant women involved in the research were married. Most pregnant women (58.6%) had more than 3 children. More than a half of respondents (57.1%) attended primary education, almost all respondents were Christian (92.9%). About the occupation, and 92.9% were categorized as unemployed.

Table 2. Health facility related factors

Variable		Frequency (n)	Percent (%)
Reasons of not being served when attending ANC services for those who came late	Lack/absence of staff	1	2.9
	Lack of medical supplies	1	2.9
	Long waiting time	19	55.9
	Attitudes of staff	7	20.6
	Inadequate lab equipment	6	17.6
	Total	**34**	**100**
Who attend pregnant women when seeking ANC services	Nurse	121	86.4
	Medical doctor	5	3.6
	Others	14	10.0
	Total	**140**	**100.0**
Charge of ANC services	0-500 RWF	86	61.4
	1,000-3,000 RWF	50	35.7
	3,000 RWF and above	4	2.9
	Total	**140**	**100**
Transport cost	Free	6	4.3
	Paid	134	95.7
	Total	**140**	**100**
Health Insurance subscription	**Yes**	86	61.4
	No	54	38.6

Source: Primary data, 2020

According to the findings presented in table 4.2, 55.9% of pregnant women involved in the research evoked the long waiting time as a reason that push them not to attend the health facility for ANC services on time while 20.6% and 17.6% respectively revealed staff attitudes and inadequate lab equipment as the other reasons of not being served when attended ANC services. The majority of the respondents (86.4%) said that they have been attended pregnant women when seeking ANC services. More than a half of respondents (61.4%) highlighted that they are charged between 0-500 RWF before being given the ANC services whereas 35.7% said they paid between 1,000-3,000RWF. The majority of the respondents (95.7%) reported themselves the transport cost when going at the health facility for ANC services and 61.4% have subscribed to the health insurance.

Table 3. Pregnant women's opinions on ANC services

Variable		Frequency (n)	Percent (%)
Limitations to attend ANC in first 12 weeks	Felt shameful to go to for ANC earlier	18	12.9
	Did not know the pregnancy	18	12.9
	Fear to declare the pregnancy at early stage	4	2.9
	Wanted to come with visible pregnancy	76	54.3
	No staff to provide the service at health facility	24	17.1
Importance of attending ANC	Helps to prepare for delivery	80	57.1
	It is wasting time coming for ANC service	19	13.6
	Makes mothers loose day worker	10	7.1
	It is tiresome to pregnant mothers	7	5.0
	It wouldn't be a must if a mother doesn't feel any problem	24	17.1
Motivation to attend ANC	Mobilization I got	88	62.9
	Live nearby health facility	14	10.0
	Helps to make a tour	19	13.6
	To verify pregnancy danger signs	19	13.6
Health care services expected at ANC attendance	HIV testing	11	7.9
	Super net and health education	23	16.4
	Pregnancy Consultation (GYN &OPS)	41	29.3
	Vaccine for anti – tetanus	9	6.4
	Iron phosphate	54	38.6
	Syphilis testing	2	1.4
Knowledge on pregnancy danger signs	Hemorrhage	55	39.3
	Anemia	24	17.1
	Headache or Fever	15	10.7
	Malaria, Edema	46	32.9
Advantages of timely first 12 weeks of ANC	Prevents miscarriage	14	10.0
	Minimizing maternal deaths	51	36.4
	Maternal health education	68	48.6
	Gift from health facility	7	5.0

Findings in table 4.3 showed that 54.3% did not attended the ANC during the first 12 weeks of pregnancy because they wanted to come when the pregnancy become visible, 17.1% were limited by the fact that there were no staff to serve them while there were others limited by the fact that they felt shameful to attend ANC earlier (12.9%) and did not know their pregnancy status (12.9%). More than a half (57.1%) were aware of the importance of attending ANC services as they help to prepare for delivery, 62.9% were motivated to attend ANC by the mobilization they got, 38.6% were expected to get iron phosphate, pregnancy consultation (29.3%) and super net and health education (16.4%) when attending ANC services. Thirty-nine percent (39.3%) were aware about hemorrhage as one the main pregnancy danger signs, malaria and edema (32.9%) and anemia (17.1%). Less than a half of the respondents (48.6%)

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knew about maternal health education and the minimization of maternal deaths (36.4%) as the main advantages of timely attendance of ANC during the first 12 weeks of pregnancy.

Presentation of findings

The presentation of findings and interpretations were organized into sections which is the prevalence late ANC in women who are pregnant, the association of social, financial and demographical influences on ANC use, the association of health facility factors on ANC use, and the multinomial logistic regression of independents variables to dependent variable.

Objective 1:Prevalence of ANC services utilization among pregnant women

The criticality of attributing particular factors to ANC services use drew the researcher's attention to keep on investigating prevalence of ANC among pregnant women.

Table 4. Prevalence of ANC services utilization among pregnant women

Variables		Frequency(n)	Percent (%)
Trimesters for ANC visit	1st Term	60	42.9
	2nd Term	50	35.7
	3rd Term	30	21.4
Late ANC care utilization(after first twelve weeks)	Yes	80	57.1
	No	60	42.9

The table 4.4 details a lot about prevalence of ANC services utilization among pregnant women in Mugonero District Hospital catchment area. The results showed that 42.9% of pregnant women attended ANC services when they were in first trimester of pregnancy, 35.7% visited health facilities for ANC when they were in second trimester while 21.4% used ANC services when they were in third trimester of their pregnancy. These results also revealed that above a half of all respondents (57.1%) attended ANC services after the first trimester, which might lead to many dangers on those pregnant women.

Socio-demographic and economic factors associated with late ANC use

The researcher attempted to know how social-economic and demographic factors are associated to ANC use and the information revealed is summarized in the table 4.5.

Table 5. Socio-demographic and economic factors associated with late ANC use

Variables   Item   Late ANC use X^2 p-value

Variables	Item	Yes	No	X^2	p-value
Marital status	Unmarried	51(96.2)	2(3.8)	63.9	< 0.001
	Married	27(31)	60(69)		
Parity	0-1	16(94.1)	1(5.9)		
	2-3	39(95.1)	2(4.9)	74.2	< 0.001
	More than 3	22(26.8)	60(73.2)		
Education level	Primary	78(95.5)	2(2.5)		
	Secondary	5(10.4)	43(89.6)	140	< 0.001
	Tertiary	1(8.4)	11(91.6)		
Religion	Christian	80(61.5)	50(38.5)		
	Muslim	1(50.0)	1(50.0)	14.3	0.001
	Others	1(13.5)	7(87.5)		
Occupation	Employed	9(90.0)	1(10.0)	8.07	0.004
	Unemployed	70(53.8)	60(46.2)		
Health care Insurance	Yes	80(93)	6(7.0)	117.2	< 0.001
	No	2(3.5)	56(96.5)		

As indicate in table 4.5, single/unmarried pregnant women compared to married pregnant women (p<0.001), pregnant women with two (2) or more than 2 children compared to pregnant women with less than 2 children (p<0.001), pregnant women attended primary school compared to others attended secondary and tertiary education (p<0.001), and pregnant women subscribed to a health insurance (p<0.001) were significantly more likely to have late ANC utilization. Unemployed and Christian pregnant women have been found more likely to have late ANC utilization respectively with p = 0.004 and p = 0.001.

Health facility related factors associated with late ANC use

Under this section, the research explored the association of health facility factors and late ANC use. The outcomes are below in the table 4.6 in terms of frequencies, percentages, Chi-square (X^2) and P value (p).

Table 6 Health facility related factors associated with late ANC use

Variables	Item	Late ANC use		X^2	p-value
		Yes	**No**		
Previously attending ANC and failed to be served	Yes	32(94.1)	2(5.9)	33.6	< 0.001
	No	46(43.4)	60(57.6)		
Who attend pregnant women seeking ANC services	Nurse	61(50.4)	60(49.6)		
	Medical doctor	4(80.0)	1(20.0)	16.4	< 0.001
	Others	12(85.7)	2(14.3)		
Charge of ANC services	0-500 RWF	80(93)	6(7.0)		
	1,000-3,000 RWF	1(2.0)	49(98.0)	117.2	< 0.001
	3,000 RWF and above	1(25.0)	4(75.0)		
Transport cost	Free	1(1.3)	5(98.7)	42	0.001

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Paid	79(56.4)	55 (43.7)

Findings presented in table 4.6 showed that having previously attended ANC services and failed to be served (p<0.001), the one who serves pregnant women seeking ANC services (p<0.001), the amount of money pregnant women are charged before being given the ANC services (p<0.001) and the transport cost to reach the health facility for ANC services (p=0.001) have been found to be associated with the late ANC services utilization.

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Table 7. Multivariable logistic regression of predictors to late ANC use among pregnant women

Variable	Crud OR (95% CI)	Adjusted OR (95% CI)	*P*-value
Marital status			
Unmarried (Ref)	1	1	
Married	1.4 (0.7 - 2.6)	0.83 (0.36 - 1.66)	0.642
Educational level			
No formal education (Ref)	1	1	
Primary education	2.7 (1.9 - 3.2)	2.1 (1.32 -2.60)	**0.043**
Secondary education	0.8 (0.3 - 1.6)	0.6 (0.1 - 1.2)	0.478
Tertiary education	0.3 (0.1 - 1.4)	0.1 (0.07 - 0.9)	0.283
Occupation			
(Self-) Employed (Ref)	1	1	
Unemployed (housewife)	2.3 (1.41- 4.23)	1.85 (1.36 - 3.82)	**0.032**
Religion			
Christian (Ref)	1	1	
Muslim	0.9 (0.4 - 1.8)	0.53 (0.23 - 1.30)	0.143
Other	1.9 (1.4 - 3.1)	1.51 (0.87 - 2.60)	0.124
Transport cost			
Free (Ref)	1	1	
Paid	1.7 (0.5 - 2.35)	1.90 (1.25 - 2.18)	**0.041**
Parity			
0-1 child (Ref)	1	1	
2-3 children	1.43 (0.48 - 2.12)	0.67 (0.45 - 1.27)	0.542
More than 3 children	1.1 (0.98 - 1.7)	0.74 (0.43 - 1.44)	0.426
Health care insurance			
Yes (Ref)	1	1	
No	1.6 (0.3 - 3.4)	1.78 (0.38 - 3.10)	0.061
Previously attending ANC and failed to be served			
Yes (Ref)	1	1	
No	2.3 (1.42 – 3.4)	2.0 (1.82 - 3.16)	**0.005**
Who attend pregnant women seeking ANC services			
Clinicians (Ref)	1	1	
Other	1.1 (0.3 - 2.2)	0.67 (0.78 - 1.58)	0.062
Charge of ANC services			
0-500 RWF (Ref)	1	1	
1000 – 3000 RWF	1.4 (0.9 - 2.2)	0.87 (0.50 - 1.50)	0.609
More than 3000 RWF	0.78 (0.32 - 1.34)	0.34 (0.14 - 1.26)	0.270

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In the bivariate analysis, factors like marital status, education level, parity, occupation, religion, welfare facilities, health insurance ownership, previously attending ANC and failed to be served, the who has attended to you when you were seeking ANC services and amount of money charged by the health facility before you are given the service were significantly associated with late utilization of ANC services.

However, in the multivariate analysis, only variables like education level, occupational status, travel cost, previously attending ANC and failed to be served were found to be the independent predictors of late ANC use. The odds of attending ANC late was 2.1 times higher among pregnant women with primary education level keeping other variables constant (AOR = 2.1, 95% CI: [1.32-2.60]), there were 1.85 times higher among housewives compared to mothers who were employed keeping other variables constant (AOR = 1.85, 95% CI: [1.36-3.82]). The odds of late ANC use was 1.90 times higher among mothers who paid themselves transport cost keeping other variables constant (AOR = 1.90, 95% CI: [1.25-2.18]). The odds of being late for ANC was 2 times higher among mothers who previously attended ANC and failed to be served compared to well served mothers when previously attended ANC services keeping other variables constant (AOR = 2.0, 95% CI: [1.82-3.16]) (Table 4.7).

Analysis on Qualitative findings

The findings of this study are presented according to their objectives as shown below. There were seven focus group discussions (FGDs) among pregnant women to capture detailed information on pregnant women and ANC at Mugonero District Hospital Catchment area that support the information captured from the quantitative data.

Mothers were asked whether there are issues affecting the pregnant women gestational timing of attendance to ANC services in Mugonero District Hospital catchment area. It has been found that husbands don't accompany their wives to seek ANC services; whereby, some participant mentioned it. For instance, one participant said this: *"Sometimes husbands are not at home being occupied with their businesses as they are considered to be bread winners". (FGD 1, participant 5).*

This was complimented by another respondent who said this: *"Those who made them pregnant delay to accept it" (FGD 1, Participant 3).* Not only had that but also another woman mentioned this: *"The long time we take there also makes us not to go there, for instance you go at health center early in the morning and you return home evening late even hungry without something to eat, and we move long distance, we reach home late night". (FGD 1, participant 4).*

Participant 3 in FGDs2 added: *"Others refused to go to ANC services due to nurses bad attitudes, here one said that nurses abuse them in public. Here one said that "at health center in Antenatal service room they do not respect us, if you come without husband they chase you away with abusing voice".*

In addition, participants when asked about the occupancy of financing/payment of ANC services among women in Mugonero District Hospital catchment area: *"They said that money we pay is for laboratory examination, yet are not much when a person has health insurance but mothers haven't health insurance are suffering". (FGDs3, participant 2).*

Health insurance and service payment were much of the time repeated by various participants where they continued to mention this: *"Hospitals can facilitate the mothers for ANC services by reducing the cost of amount charged the one who has not health insurance to enhance the late of utilization ANC service". (FGDs4, participant 1).*

Community rituals and traditional briefs are among the factors limiting early late attendance of ANC services in the area of study, where some participants mentioned some traditional practices and attitudes which may hinder ANC's services, this was highlighted by the following statements from participants when asked about the mother's cultural practices (rituals, traditions, beliefs and customs) in their community that affect ANC Services on the pregnant women.

Most of participants said that: who said this: *"In this area there are churches which discourage people to attend ANC service and there is a problem of poisoning, abortion, therefore, those mothers with invisible pregnancies meet with fear to ANC services". (FGDs5, participant 5).*

Women in this community aware of the government policies related to ANC utilization. Some

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mothers said this: *"Here, much information about pregnancy and child health, health education from community health workers and health center staff, they sensitize us in village and cell meetings, on radio, and sometimes health care providers visit on the field". (FGDs5, participant5).*

This group did not go far from other FGDs, where they declared that going to health facility while the pregnancy is not visible is shameful. *One mentioned that: "How can I go to health center while the pregnancy is at visible? I cannot go there people can rough at me when nurse tells me that I am not pregnant".*

This statement was highly appreciated by her fellow group members while craping their hands, they also said that husbands are not willing to accompany their wives because they are most of the time away from home, they also commented that the charges for laboratory tests is expensive and not feasible to all pregnant mothers, here one woman said that: *"Money we pay for laboratory tests is much and not easy to get it and food at time, better to buy food instead of paying it to antenatal care". (FGDs7, participant4).*

This FGD also declared that the information related to pregnancy and antenatal care services is got from community health workers in their villages; here the commenter said this: *"CHWs care for us, they visit us many times to mobilize pregnant mothers to go to health centers, the problem is that they know our pregnancy when is visible, but we hide it until visible because we fear bad wishers in our community" (FGDs7, participant4).*

In general, the findings from all seven FGDs of pregnant mothers, all in common showed the absence of their husbands, fear to go for ANC while pregnancy not visible, payment for laboratory tests, long distances to go to health facility, waiting time at health facility while waiting for ANC services, all of these were declared as the factors limiting the pregnant mothers to attend in time, while for the sources of information on antenatal care services, all groups pinpointed the community health workers.

The specific focus group discussion was composed by CHWs. CHWs when asked on issues behind women's gestational timing of attendance to ANC services in Mugonero District Hospital catchment area, most of the respondents mentioned issues like; fear of women to declare their pregnancy in early stage, absence of their husbands, lack of medical insurance, Waiting time at health center, teenagers and single ladies who hide the pregnancy and denial to leave their jobs yet they do not have any pain, here one community health work said that *" pregnant women who do not have husbands feel ashamed of pregnancy without a husband"(FGDs8, participant1).*

Another CHW said that: *"Young girls hide their pregnancies fearing their parents, friends and relatives who may accuse them to be pregnant by unknown men as terming their babies/Ibinyandaro" (FGDs8, participant3).*

Here another CHW added that: *"She can commit induced abortion instead of going for ANC" (Yayikuramo aho kujya kwipimisha) (FGDs8, participant2).*

Another CHW mentioned that: *"Most of the women and their husbands are discouraged by*

waiting time they take at health center waiting for the service, where they go early in the morning and return home at late evening, there is even when pregnant mothers return home un tasted saying that laboratory test are over" (FGD8, participan1).

When asked how is the financing/payment of ANC services among women in Mugonero District Hospital catchment area, they declared that payment to the service is a challenge to families without medical insurance, here they proposed to make antenatal care service to let it free of charge, here one respondent said this: *"Laboratory tests cost a woman one thousand when you have Mutuelle de santé, and not all pregnant women can have this money, when you do not have Mutuelle de santé you pay more, this makes women not to go to health center when they have no pain"* (FGDs8, participant3).

When CHWs asked on the cultural practices (rituals, traditions, beliefs and customs in their community in relation to pregnancy, most of them said that cultural beliefs are there and pregnant women practice them before going for antenatal care and even before going to health facility for delivery, For instance, one community health worker said this: *" Most of the women in our cell believe in witchcrafts, most of them go for traditional healers to give them protection of their pregnancies not to abort, they also go there before going for maternity in order to protect them from giving birth of dead baby"* (FGDs8, participant2) another added that, many go for traditional healers to give them the protecting medicines.

The most of the participant when asked on how they get information about the government policies related to ANC utilization. Most FGDs mentioned this, for instance one participant said this:

"The information related to antennal care reach to mothers from health education by CHWs, Radios and by health care workers at health facilities during service delivery sessions and at village levels during community works day" (FGDs6, participant 7).

In addition to that, the above statement is not contrary to what was mentioned by specific FGD

8 composed of CHWs in charge of maternal and child health, where they declared enthusiastically that: *"We are the ones who health educates pregnant women and all people who are in gestational age on policies and procedures for antenatal care services, the health staff also tells at health facilities and even health talks at villages during community meeting and* community works day*"* (FGDs8, participant4).

The findings from key informants indicate that ANC 1 in the catchment area is (35.2%) and ANC4 standard is (28.1%). It has been found that the Hospital catchment area has seven health centers in total and all health services including antenatal care services.

Regarding to human resource capacity of Hospital catchment area in handling of ANC services, it was found that there is 10 medical Doctors at Hospital level, 7midwives at every heath center,8 midwives at hospital, at least 4 nurses at each health center, at least 1 laboratory technician at each health center and at least 5 at Hospital.

In relation to infrastructure, it was also found that, all health centers have at least one ANC consultation room with coaches, one delivery room, pharmaceuticals well managed, even give mosquito net as incentive to all pregnant mothers on their first visit, while on Hospital there is theater, one delivery room and three consultation rooms.

When key informants asked their opinion on clear Hospital policy on ANC service delivery and kits effectiveness, all mentioned that the policy is clear and would be effective when stake holders complies with it. The key informants also when asked on main challenges facing health facilities in implementation of ANC policy, all of them mentioned; shortage of nurses and midwives at Hospital and health centers where shortfalls continue to exist, they also mentioned women's ignorance on ANC services, lack of medical insurance, long distance to and from health facility, unwanted pregnancies/unplanned.

When key informants asked about the gestational age do women should seek ANC services, they all mentioned with in twelve weeks of gestation, which is in line with the current policy. When asked on the roles of community leaders in implementing ANC service utilization policy, most of the respondents mentioned that the role of local leaders is not clearly seen only that the visible role is that of community health workers.

The key informants when asked on how they are conversant with community health strategy, and how is its implementation especially concerning maternal and neonatal health in Mugonero Hospital Catchment area, they appreciated the role being played by community health worker. Here one said that *"In general community health workers play a big role, to mobilize community to attend ANC, this leads to good results, they care for antenatal and postnatal consultation mother and identifying dangerous signs" (Key informant no 4).*

Discussion

This study mainly examined factors influencing late utilization of first ANC services among pregnant women in Rwanda. Different studies reported different risk factors for late initiation of ANC; our study assessed socio-demographic, economic and health facility related factors associated with late ANC use were found be significantly associated with late ANC utilization.

The findings of the study revealed that unmarried pregnant women also started ANC attendance late due to various factors. This finding is consistent with the literature. For example, a comparative study conducted in Kenya, Ghana and Malawi reported that adolescent and unmarried young women hid their pregnancies and delayed ANC to avoid the potential social implications of pregnancy, exclusion from school, expulsion from their home, partner abandonment, stigmatization, and gossip (Tekelab & Berhanu, 2014).

On the other hand, our finding was lower than the result of other studies done in Ambo, Ethiopia (86.8%) (Damme, 2015), Kembata Tembaro zone, Ethiopia (68.6%) (Tekelab & Berhanu, 2014), Gondar, Ethiopia (65%) (Gudayu, 2015), Southern Ethiopia (78.3%) (Geta & Yallew, 2017), Tanzania (70.4%) (Njiku, Wella, Sariah, & Protas, 2017), Zambia (72%) (Banda, et al., 2012), Nigeria (82.6%) (Adekanle & Isawumi, 2018), East Wollega, Ethiopia (81.5%) (Ejeta, et al., 2017), Gedio Zone, Ethiopia (64.6%) (Abuka, et al., 2016), and meta-analysis that used a polled data from studies done in Ethiopia (64%) (Tesfaye, et al., 2017).

This could be explained by the socio-cultural differences among the study populations. Another reason could be time differences between the studies because currently there is a better improvement in awareness about ANC and there is also good access to the health facilities than the past times by comparison study done by (Njiku, Wella, Sariah, & Protas, 2017).

The possible reason for self-employed mothers to be late for ANC might be lack of time as found in Ethiopia (Haileab,et al., 2019). In addition, mothers might be busy making money for the basic needs of their families. In this study, pregnant women have been found to attend ANC services lately due to the fact that they wanted to come when the pregnancy become visible (54.3%), were limited by the fact that there were no staff to serve them (17.1%) while other mothers were limited by the fact that they felt shameful to attend ANC earlier (12.9%) and did not know their pregnancy status (12.9%). Therefore, even if more than a half (57.1%) were aware of the importance of attending ANC services and knew the appropriate time for the visit, they might be late because of their busy days by similar study done by Haileab,et al., (2019)..

Conclusion

The researcher concluded that that education level, occupational status, travel cost, previously attending ANC and failed to be served greatly influence pregnant women's attendance of ANC services timely. The district health offices should work closely with CHWs on creating awareness about the benefits of early attendance of ANC both for the mother and the fetus. It is also better to make the service closer to mothers who need to travel long distances. Moreover, the government also needs to meet the WHO-recommendation for the accessibility of health facilities to pregnant women.

Recommendations

The Hospital should recommend their nurses and midwives how to socialize better (empathy and customer care delivery) with mothers; Implement a lot of policies regarding to ANC services to enhancing and much with mother's perception on ANC service at Mugonero catchment area; Promote the engagement in care and compliance to ANC utilization. This is going to give positive impact on the compliance to ANC service utilization appropriately and timely. Improve pregnant mother's access to health education on ANC service; Strengthen health education on ANC among women to ensure that the late utilization of ANC service is eradicated.

Suggestions for further studies

Causes of late ANC services use among women should be assessed in order to identify more causes on lack of knowledge and associated factors towards ANC services in Rwanda.

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