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PREVALENCE AND FACTORS ASSOCIATED WITH LATE INITIATION OF ANTENATAL CARE AMONG PREGNANT WOMEN ATTENDING GITWE HOSPITAL, RWANDA

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Abstract

Introduction: Antenatal care (ANC) is very key health intervention provided to pregnant mothers for maintaining healthier pregnancy and baby inside womb through promotional, preventive and both detecting and treating early any health problems related to pregnancy. WHO recommends first ANC to be done within first 12 weeks of gestation (first ANC done after 12 weeks of gestation was considered as late initiation). This study aimed to determine prevalence and assess factors associated with late initiation of antenatal care among pregnant women attending Gitwe hospital in Rwanda.

Methods: Cross-sectional study design with quantitative approach was used. A sample size of 409 respondents were recruited by using systematic sampling technique with k^{th} value of two in four selected public health centers of Gitwe Hospital by convenience sampling technique from 10^{th} May 2022 up to 8^{th} August 2022. Structured questionnaire used to collect primary data. Descriptive analysis (percentage, mean and frequencies), bivariate (Chi-square test with α=0.05) and multivariate binary logistic regression analysis (95% CI and AOR) were done by using statistical packages for social sciences (SPSS v21.0).

Results: among 409 respondents, 67% of mothers were in age group of 21 and 34 years. Majority of them (57.9%) were primarily educated. Around 77.8% of respondents were farmers, 98% of respondents were Christians. 19% of mothers were single. 90.2% of respondents live in rural areas**.** Study showed that 43% of mothers late initiated ANC. Moreover, binary logistic regression revealed that these following factors: living in rural area {AOR=3.984, 95% CI: [1.718;9.236], P=0.001}; high family size (≥6 people) {AOR: 2.143, 95%CI: [1.243;3.695], P=0.006}; lack of health insurance{AOR: 3.337, 95%CI: [1.153;9.654], P=0.026}; unplanned pregnancy {AOR=2.014, 95%CI:[1.334;3.040], P=0.001};lack of knowledge about right time to start ANC { AOR: 3.000, 95%CI:[2.062-5.000], p<0.001} and experiencing family conflict {AOR: 4.584, 95%CI: [2.287;9.189], P<0.001} were significantly found to be associated with delay of ANC.

Conclusion: Therefore, Ministry of Health in collaboration with other stakeholders was recommended to plan and conduct community outreach educating all people importance of early ANC and disadvantages of late ANC to reduce late initiation of ANC.

Key words: Prevalence, factor associated, late initiation of ANC, antenatal care, predisposing factors, enabling factors and need factors

Introduction

Antenatal care services are health services provided by competent health care staffs to improve and maintain mother and newborn health within period of gestation and post- delivery through promotion, preventing, early detecting and also early management of gestational-birth related complications (WHO, 2016). Worldwide, maternal mortality was really very high in 2017. Estimation of daily maternal deaths was 810 and approximately 295000 women died during pregnancy and after delivery from preventable pregnancy related causes. High proportion of mothers who died come from developing countries around 94% and One thirds (65%) of maternal deaths occurred in WHO African Region. Maternal Mortality rate is high in developing countries (Africa and South East Asia) 415/100,000 live births while in developed countries (Europe, North America and others.) was 12/100,000 live births. Every year, around 2.5 million neonates die and 2.6 million are stillborn (WHO, 2019). In Rwanda, maternal and neonatal deaths are still high. Neonatal mortality rate was nineteen per one hundred thousand live births while 203 maternal deaths in one hundred thousand live births occurred (Rwanda Demographic Health Survey [RDHS], 2019-2020).

Globally, 87% of pregnant women consult health care providers for ANC one time during pregnancy and at least four ANC was 59%. In Sub-Saharan countries, proportion of pregnant women who receive at least once was 78% and at least four ANC was 53% (UNICEF global databases, 2021). According to the study which was done in United Kingdom found that 37.5% of mothers and girls did not early book antenatal care (Cresswell et al., 2013). Study done in United State of America revealed that 22.9 % of women visited health center for ANC consultation from second trimester of pregnancy (Osterman & Martin, 2018). Proportion of mothers who delayed ANC in Australia was 23% according to the study done (Hilder et al., 2014) and in China, 38.13% of pregnant mothers attended ANC after first trimester (Hu et al., 2021).

It is a common in poor setting countries especially Sub-Saharan countries. There is a high proportion of late ANC booking (Thin et al., 2014). The study which was done in South Africa

showed that (51%) of women from rural area late began ANC (Ebonwu et al., 2015). Bourkina Faso (62.93%) (Somé et al., 2020). In Tanzania, study was done and found that 70.4% of mothers attended ANC after 12 gestational weeks (Njiku et al., 2017). According to Rwanda demographic health survey showed that 59% of mothers early started antenatal care which means that others attended ANC after 12 weeks was 41% (RDHS, 2019-2020).

There was no prior study done in Gitwe hospital catchment area on factors associated with late initiation of ANC. Therefore, this study was aimed to determine prevalence and factors associated with late initiation of Antenatal care among pregnant women attending Gitwe Hospital.

Materials and methods

Research Setting

The research was done in four public health centers of Gitwe Hospital (Byimana, Gishweru, Giwe and Karambi). Gitwe Hospital is one of Ruhango District hospitals in South Province. Gitwe Hospital is located in 98 kilometers from Kigali city, capital of Rwanda. Gitwe Hospital is located in Murama cell, Bweramana sector, Ruhango district, Southern province of Rwanda.

Research Design

Research design of this study was a cross sectional study design, using quantitative approach. Cross-sectional study is the study design which measure prevalence of health problem or event and factors associated with health problem at the same time. So, researcher chose cross-sectional study design because main objective of the study was to determine prevalence and factors associated with late initiation of antenatal care among pregnant women.

Target Population

All pregnant women aged 15 to 49 years old who lived in Gitwe Hospital catchment area. According to Rwanda health information system report, Gitwe Hospital catchment area had an estimation of 4,841 expected number of women to get pregnant in 2022 which a sample size was drawn from (RHMIS, 2022).

Sample size and sampling technique

Sample size was 409 respondents calculated by using Fisher *et al,* 1998 formula n= $\frac{(Z\alpha/2)^2 P(1-P)}{d^2}$

For cross sectional study because it studies prevalence and factors associated with a health-related problem at the same time. Systematic sampling technique was used to select participants of the study among pregnant women who attended ANC in selected health centers. By taking total number of new registered women in ANC at selected health centers divided by sample size to be used means 882 divided by 409 equals to 2. The first participant was randomly chosen and then every second participant who was eligible to participate was recruited in the study. Number of respondents were proportionally distributed to selected HCs according to number of pregnant women and girls newly registered in ANC at selected HCs for past four months (September 2021, October 2021, November 2021 and December 2021) in each health center because four months data for new registration can estimate number of all women who can attend ANC in one month for different visits either first, second, third, fourth visits. Below formula was used to allocate sample size.

$$nh = \frac{Nh}{N} \times n$$

If

nh: sample size to be allocated to health center

Nh: Number of pregnant women visited selected HC

N: total number of pregnant women visited all selected HCs

n: total sample size calculated of participants to be used in the study (409).

Data Collection instrument

In this study, structured questionnaire was used to collect primary data of variables among participants of the study. This study used quantitative approach. Questionnaire was designed in English language and translated in Kinyarwanda during data collection. Data collectors used also antenatal care cards to check gestational age at first antenatal care visit. Questionnaire consisted of three parts; first part was predisposing factors, second parts was enabling factors and third part was need factors.

Data Analysis

Coding of categories was done and then collected data were entered into Statistical Package for Social Sciences (SPSS) version 21.0 for being analyzed. Data cleaning and categorization (where necessary) were done then descriptive analysis (frequencies, mean (where necessary) and percentage) was done for all independent variables. Chi square test with α =0.05 (bivariate analysis) was done to assess association of independent variable and dependent variable and

significant variables in bivariate analysis were further subjected to multivariate binary logistic regression analysis (adjusted odd ratios, 95% CI and P value ≤0.05) were done to measure strength of association between independent variables and outcome variable. Results were presented using tables and graphs.

Ethical Consideration

Mount Kenya University provided introduction letter to conduct research in Gitwe hospital catchment area. Researcher submitted research introduction letter to Gitwe Hospital administration. Gitwe Hospital provided approval letter of conducting research in Gitwe Hospital catchment area. Data collectors ensured that all participants were explained objectives of the study and its implication and accepted voluntarily to participate and signed informed consent. Names of respondents were not written to questionnaires to keep identity confidential**.**

Results

Socio-demographic Characteristics of Respondents

As indicated in the table 1 which presents the distribution of the respondents by their socio-demographic characteristics. Among respondents, 274(67%) of them were in range of 21-34 years old with the mean (±SD) age of respondent were 28.8(6.5) years. The majority 237(57.9%) of participants were primarily educated and 118(28.9%) of them had no education level attained. By occupation, majority of them 318(77.8%) respondents were farmers. Majority of respondents 402(98%) were Christians. This study shows that 79(19%) respondents were single. Among respondents, majority of them 369(90.2%) came from rural areas. Of 41(11.3%) of mothers had experienced family conflict during pregnancy. Most of them 322(88.7%) had no family conflict.

Table 1: Descriptive of socio-demographic characteristics

socio demographic characteristics (n=409)	Frequency(n)	Percentage (%)
Maternal age(years)		
≤20	48	11.7
21-34	274	67.0
≥35	87	21.3
Mean age (±SD)	28.8 (6.5)	

Maternal education		
No one	118	28.9
Primary	237	57.9
Secondary	46	11.2
University	8	2.0
Maternal occupation		
Housewife	6	1.5
Farmer	318	77.8
Self employed	29	7.1
Monthly paid job	9	2.2
No job	47	11.5
Maternal religion		
Christians	402	98
Others	7	2
Marital status		
single	78	19
married	331	81
Place of residence		
Urban	40	9.8
Rural	369	90.2
Family conflict		
yes	41	11.3
No	322	88.7

Source: Primary data, (2022)

Description of predisposing factors of respondents

As indicated in the table 2 which presents description of predisposing factors of respondent, Mothers who had husband (legally and illegally) presents 331(79.9%). Among 331 husbands, 140(42.3%) were aged between 31-40 years. Mothers whose husband had primary level presents 177(53.5%) and no education level presents 108(32.6%). Respondents whose paternal occupation were farmers presents 250(75.5%). Paternal alcohol use presents 184(55.6%). Pregnant women who used traditional drugs thinking that their pregnancy should be poisoned

were 83(20.3%) while 326(79.7%) mothers did not use traditional drugs. Majority of respondents 280(68.5%) were multigravida. Majority of respondents 217(53.1%) had one live child. Respondents who had family size of 6 people and above were 79(19.3%).

Table 2: Description of predisposing factors of respondent

Predisposing factors	frequency(n)	Percent (%)
Paternal age(years) n= 331		
≤30	134	40.5
31-40	140	42.3
≥41	57	17.2
Paternal Education		
none	108	32.6
primary	177	53.5
secondary	39	11.8
university	7	2.1
Paternal occupation		
farmer	250	75.5
self employed	47	14.2
monthly salary paid	27	8.2
no job	7	2.1
Paternal Alcohol use		
yes	184	56.6
no	147	44.4
Non applicable	78	19.1
Traditional drug use(n=409)		
yes	83	20.3
No	326	79.7
Gravidity(n=409)		
Primigravida	129	31.5
Multigravida	280	68.5
Number of live children(n=409)		
1	217	53.1
2 and above	192	46.9

Family size(n=409)		
1-3	165	40.3
4-5	165	40.3
6 and above	79	19.3

Source: primary data, (2022)

Description of enabling factors of respondent

The table 3 presents description of enabling factors. Of 409 respondents, 245(59.9%) of them were in poor class (ubudehe category two) and 94(23% were in very poor class(ubudehe category one). Respondents had no health insurance were 17(4.2%). Mothers who played role in decision making were 394(96.3%). Mothers were not accompanied by their partners were 104(27.2%). Majority of pregnant women 188(46%) walk from 30 and 60 minutes. Majority of respondents 310(75.8%) use one thousand and less Rwandan francs (≤1000 Rwf) to arrive at HC. Mothers who pay more than one thousand Rwanda francs (>1000) were 99(24.2%.

Table 3: Description of enabling factors of respondents

Enabling factors (n=409)	Frequency(n)	Percent (%)
Economic status		
Very poor (ubudehe category one)	94	23.0
Poor (ubudehe category two)	245	59.9
Moderate rich (ubudehe category three)	70	17.1
Maternal health insurance		
Yes	392	95.8
No	17	4.2
Decision making involvement		
Yes	394	96.3
No	15	3.7
Paternal accompany		
Yes	278	72.8
No	104	27.2

Travel time(walking)		
< 30 minutes	81	19.8
30-60 minutes	188	46.0
1hour-2hours	121	29.6
>2 hours	19	4.6
Transport fees(motocycle) to HC in RWF		
≤1000	310	75.8
>1000	99	24.2

Source: primary data, (2022)

Description of need factors of respondent

As indicated in the table 4 which presents description of need factors of respondents. Majority 265(64.8%) of respondents got planned pregnancy**.** Respondents who have experienced pregnancy complications were 42(14.5%). Respondents had not experienced pregnancy complications were 248(85.5%). Among 42 pregnancy complications revealed in this study, 33(78.6%) were abortion. Respondents who delivered vaginally were 223(77.4%). Study showed that 332(82%) pregnant women who were interviewed knew that right time to visit HC for first ANC services should be done within first 12 weeks of gestation. Majority 333(81.4%) of respondents knew former ANC calendar of four standard visits. Only 3(0.7%) mothers knew updated calendar of eight contacts of ANC. Majority 286(69.9%) of respondents were visited by community health workers. Majority of them 304(74.3%) perceived quality of ANC as good while 97(23.7%) of mothers appreciated ANC service as very good.

Table 4: Description of need factors of respondents

Variable(n=409)	Frequency(n)	Percent (%)
Pregnancy planned		
yes	265	64.8
No	144	35.2
Previous pregnancy complications		
yes	42	14.5

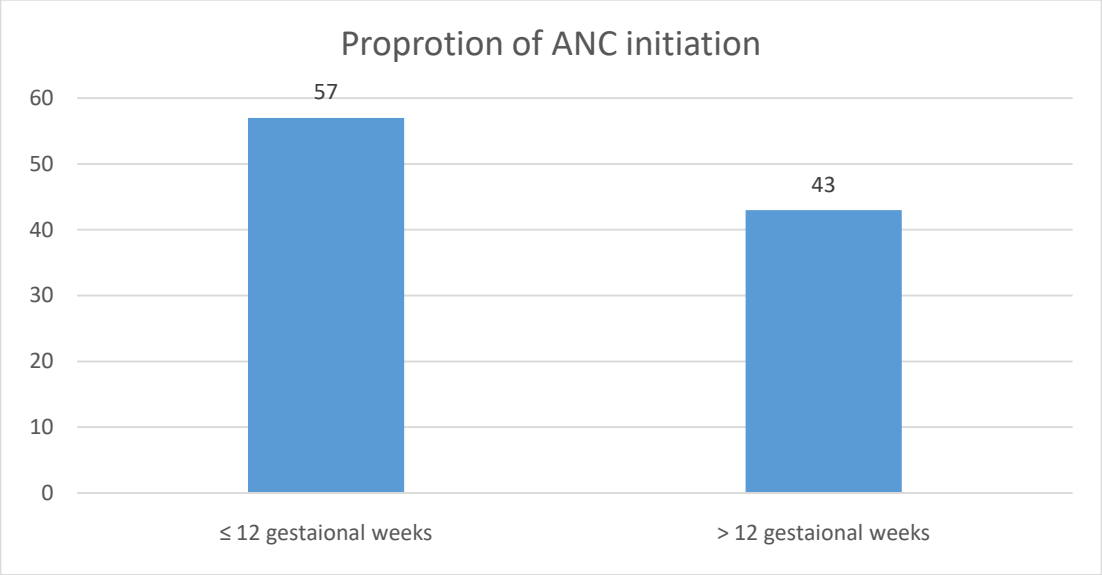
no	248	85.5
Types of pregnancy complications(n=42)		
Abortion	33	78.6
stillbirth	4	9.5
Hypertension	2	4.8
bleeding under pregnancy	3	7.1
Mode of previous delivery(n=288)		
vaginally	223	77.4
Cesarian section	65	22.6
Knowledge about right time of first ANC (Gestation age in weeks)		
≤12	332	82
13-20	77	18
ANC recommended visits		
Four (4)	333	81.4
Eight (8)	3	0.7
Others/Unknown	73	17.8
CHW visit		
Yes	286	69.9
No	123	30.1
Perception of quality of ANC at health facility		
Very bad	3	.7
bad	5	1.2
good	304	74.3
Very good	97	23.7

Source: primary data, (2022)

Prevalence of late initiation of ANC among pregnant women attending Gitwe Hospital, Rwanda.

As indicated in the figure 1 the researcher found that 43% of respondents booked ANC late while 57% early initiated ANC.

Figure1: Proportion of late initiation of ANC



Source: Primary data, (2022)

Associated factors of late initiation of antenatal care.

To find the independent variables which were significant with dependent variable, bivariate and multivariate binary logistic regression analysis were done with α=0.05 as level of significance and adjusted odd ratio was calculated.

Predisposing factors of late initiation of ANC

The table 5 indicates bivariate analysis of predisposing factors. Mothers with no education level attended ANC late was 44.9% while 43.5% of mothers attained primary level and it is significant as evidenced by (**P<0.001**). Mothers who were Christians and attended ANC late was 43% and it was significant with **P<0.001**. Mothers who were single late initiated ANC were 65.3% while married pregnant women who booked ANC late were 35% and study showed that there was statistical significance with late initiation of ANC (**P< 0.001**). Mothers with no education level attended ANC late was 44.9% while 43.5% of mothers attained primary level and it is significant as evidenced by (**P<0.001**).

Women from rural areas booked ANC late were 45.8% and there is an association between place of residence and late initiation of ANC (**P value=0.001**). The study shows that mothers from high family size (6 people and above) late initiated were 57%. There is an association between family size and late initiation (P value= **0.018).** Mothers who had family conflict and

booked ANC late were 46.3%. The study shows that there is an association between family conflict and late initiation of ANC **(P<0.001).**

Table 5: Bivariate analysis for predisposing factors and late initiation of ANC

Predisposing factors	**Late initiation of ANC Frequency (%)**		**P-value**
	No	**Yes**	
Maternal age(years)			0.219
≤ 20	22(45.8)	26(54.2)	
21-34	158(57.7)	116(42.3)	
≥35	53(60.9)	34(39.1)	
Maternal Education			**<0.001**
No education	65(55.1)	53(44.9)	
Primary	134(56.5)	103(43.5)	
Secondary and above	34(63)	20(37)	
Maternal occupation			**0.534**
Housewife	2(33.3)	4(66.7)	
Farmer	180 (56.6)	138(43.4)	
Self employed	16(55.2)	13(44.8)	
Monthly paid	7(77.8)	2(22.2)	
No job	28(59.6)	19(40.4)	
Maternal religion			**<0.001**
Christians	229(57)	174(43)	
Islam and other	4(57)	3(43)	
Marital status			**< 0.001**
Single	30(37)	49(63)	
Married	203(61)	127(39)	
Paternal age			**0.659**
≤ 30	81(60.4)	53(39.6)	
31-40	84(60)	56(40)	
≥41	38(66.7)	19(33.3)	

Paternal education			**0.423**
No education	62(57.4)	46(42.6)	
primary	109(61.6)	68(38.4)	
secondary	28(71.8)	11(28.2)	
university	5(71.4)	2(28.6)	
Paternal occupation			**0.753**
Farmer	157(62.8)	93(37.2)	
Self employed	27(57.4)	20(42.6)	
Monthly paid job	15(55.6)	12(44.4)	
unemployment	5(71.4)	2(28.6)	
Paternal Alcohol consumption			**0.439**
yes	110(59.8)	74(40.2)	
no	94(63.9)	53(36.1)	
Cultural beliefs(Traditional drug use)			**0.415**
yes	44(53)%	39(47)	
No	189(58)%	137(42)	
Place of residence			**0.001**
Urban	33(82.5)	7(17.5)	
Rural	200(54.2)	169(45.8)	
Gravidity			**0.238**
Primigravida	68(52.7)	61(47.3)	
Multigravida	165(58.9)	115(41.1)	
Number of living children			**0.746**
1	122(56.2)	95(43.8)	

≥2	111(57.8)	81(42.2)	
Family size			**0.018**
1-3	102(61.8)	63(38.2)	
4-5	97(58.8)	68(41.2)	
6 and above	34(43)	45(57)	
Family conflict			**<0.001**
yes	22(53.7)	19(46.3)	41(10)
No	199(61.8)	123(38.2)	322(78.7)

Source: Primary data, (2022)

Enabling factors of late initiation of ANC

The table 6 presents bivariate analysis of enabling factors and late initiation of ANC. There are statistically significant association between some of enabling factors and late initiation of antenatal care. Mothers without health insurance late initiated ANC than mothers who had health insurance 70.6% and 41.8% respectively. There is an evidence that there is an association between health insurance and late initiation of ANC (P value= **0.019**). Study showed that mothers who were accompanied and late began ANC were 105(62.2%) While mothers who were not accompanied and late initiated ANC were 53(37.8%).There is an association between paternal accompany and late initiation of antenatal care (P =**0.020).** Mothers who used more than one thousand Rwandan francs who late initiated ANC was 49% and it was found to be significant(P<0.001).

Table4. 6: Bivariate analysis for enabling factors and late initiation of ANC

Enabling factors	**Late initiation of ANC count(%)**		**P-value**
	No	**Yes**	
Economic status			**0.683**
Very poor(ubudehe category one)	57(60.6)	37(39.4)	
Poor(ubudehe category two)	138(56.3)	107(43.7)	
Moderate	38(54.3)	32(45.7)	

rich(Ubudehe category three)			
Maternal health insurance			**0.019**
yes	228(58.2)	164(41.8)	
No	5(29.4)	12(70.6)	
Decision making involvement			**0.192**
Yes	222 (56.3)	172(43.7)	
No	11(73.3)	4(26.7)	
Paternal accompany			**0.020**
Yes	173(62.2)	105(37.8)	
No	51(49)	53(51)	
Travel time(walking)			**0.635**
< 30 minutes	50(61.7)	31(38.3)	
30-60 minutes	104(38.3)	84(44.7)	
1hour-2hours	70(55.3)	51(42.1)	
>2 hours	9(44.7)	10(52.6)	
Transport fees(moto-cycle) to HC in RWF			**<0.001**
≤1000	182(58.7)	128(41.3)	
>1000	51(51)	48(49)	

Source: primary data, (2022)

Need factors and late initiation of ANC

The table 7 presents bivariate analysis of need factors and late initiation of ANC. The **s**tudy showed that 54.2% of mother who did not plan to get pregnancy late initiated ANC while 37% of mothers who planned to get pregnancy late initiated ANC. There is an association between pregnancy planned

and late initiation of ANC (**P value=0.001**). Among mothers who had experienced pregnancy complications, mothers with an experience of bleeding under pregnancy booked late were 100% while mothers with an experience of still birth were 28.3% but there is significance as evidence (**P value=0.011**). Mothers who knew that right time of first ANC is done between 13-20 weeks of gestation and late initiated ANC were 65.8%. There is statistical significance of association between knowledge about right time of first ANC and late initiation of ANC (**P <0.001**).

Table7: Bivariate analysis for need factors and late initiation of ANC

Need factors	**Late initiation of ANC count (%)**		**P-value**
	No	**Yes**	
Pregnancy planned			**0.001**
yes	167(63)	98(37)	
No	66(45.8)	78(54.2)	
Previous pregnancy complications			**0.340**
yes	28(66.7)	14(33.3)	
no	146(58.9)	102(41.1)	
Types of pregnancy complications			**0.011**
Abortion& stillbirth	28(71.7)	11(28.3)	
Others	0(0)	3(100)	
Mode of previous delivery			**0.269**
vaginally	127(57)	96(43)	
Cesarean section	42(64.6)	23(35.4)	
Knowledge about right time of first ANC(Gestation age in weeks)			**<0.001**
≤12	208(62)	124(38)	
>13	25(33)	52(67)	
ANC recommended visits			**0.300**

Four(4)	190(57.1)	143(42.9)	
Eight(8)	3(100)	0(0)	
Others/Unknown	40(54.8)	33(45.2)	
CHW visit			**0.816**
Yes	164(57.3)	122(42.7)	
No	69(56.1)	54(43.9)	
Perception of quality of ANC at health facility			**0.485**
Very bad	2(66.7)	1(33.3)	
bad	2(40)	3(60)	
good	168(55.3)	136(44.7)	
Very good	61(62.9)	36(37.1)	

Source: Primary data, (2022)

Multivariate Analysis

To find strength of association of factors which were associated with dependent variable, Multivariate binary logistic regression was used. Adjusted Odds ratios, 95% confidence interval and P value were calculated.

Predisposing factor

As indicated in the table 8 which presents Binary Logistic regression for predisposing factors and late initiation of ANC, Mothers who live in rural area were 3.9 times more likely to book ANC late than mothers who live in urban areas {AOR=3.984, 95%CI: [1.718-9.236], P=0.001}. Mothers who had high number of household members (6 people and above) were 2.1 times more likely to attend ANC after 12 weeks of gestation age than mothers with small family size {AOR: 2.143, 95%CI: [1.243-3.695], P=0.006}. Mothers who had experienced conflict during pregnancy were 4.5 times more likely to initiate ANC late than mothers from family which had not experienced family conflict {AOR: 4.584, 95%CI: [2.287-9.189], P<0.001}.

Table 8: Binary Logistic regression for predisposing factors and late initiation of ANC

Predisposing factors	Adjusted OR	CI (95%)	P value
Marital status			

Single	2	[1.000-4.000]	<0.001
Married	**Reference**		
Place of residence			
Urban	**Reference**		
Rural	3.984	**[**1.718-9.236]	0.001
Family size			
≤3	**Reference**		
4-5	1.135	[0.730-1.765]	0.574
≥6	2.143	[1.243-3.695]	0.006
Family conflict			
Yes	4.584	[2.287-9.189]	<0.001
No	**Reference**		

Source: Primary data, (2022)

Enabling factor

As indicated in the table 9 which presents Binary Logistic regression for enabling factors and late initiation of ANC, mothers who had no health insurance were 3.3 times more likely to late entry in ANC than mothers who had health insurance {AOR: 3.337, 95%CI: [1.153-9.654], P=0.026}.

Table 9: Binary Logistic regression for enabling factors and late initiation of ANC

Enabling factors	Adjusted OR	CI (95%)	P value
Maternal health insurance			
Yes	**Reference**		
No	3.337	[1.153-9.654]	0.026
Paternal accompany			
Yes	**Reference**		
No	0.520	[0.214-1.262]	0.148

Source: Primary data, (2022)

Need factors

As indicated in the table 10 which presents Binary Logistic regression for need factors and late initiation of ANC, mothers with unplanned pregnancy were 2 times more likely to book ANC late than mothers who planned to get pregnant {AOR=2.014, 95%CI: [1.334-3.040], P=0.001}.

Pregnant women who did not know right time to start ANC (who perceive that first ANC starts between 13-20 weeks of gestation) were 3 times more likely to attend first ANC late compared to pregnant women who knows right time to initiate ANC (within 12 weeks of gestation) {AOR: 3.000, 95%CI: [2.062-5.000], p<0.001}.

Table 10: Binary Logistic regression for need factors and late initiation of ANC

Need factors	Adjusted OR	CI(95%)	P value
Pregnancy planned			
Yes	**reference**		
No	2.014	[1.334-3.040]	0.001
Knowledge about right time of first ANC(Gestation age in weeks)			
≤12	**Reference**		
>13	3.000	[2.062-5.000]	<0.001

Source: Primary data, (2022)

DISCUSSION

The main objective of this study was to determine prevalence and assess factors associated with late initiation of antenatal care among pregnant women attending Gitwe Hospital, Rwanda. The study revealed that prevalence of late initiation of ANC among pregnant women attending Gitwe hospital was 43%. This result can be well explained that Government of Rwanda put more efforts in maternal and child health services including training of community health workers to provide community based maternal and newborn health such as early pregnancy test and refer mother to ANC within 12 weeks of gestation, visiting and counselling pregnant women health, encouraging pregnant women to consult heath center for ANC services, paying health insurance for poorer families, provision of porridge powder for poor pregnant women and breastfeeding mothers, recruitment of midwives at health center, avail of ultra sound at health center, provision of PBF for ANC standard visits of health center staffs all those efforts contribute to increase number of pregnant women who initiate ANC early but still 43% of ANC delay is still high and

it affects other following ANC visits which leads to poor pregnancy outcomes. Women have not yet understood the importance of early initiation of ANC.

This result of present study is almost similar with results of study conducted in Cameroon at Douala general hospital in 2017 found that 44% booked ANC late (Tolefac et al., 2017) and slightly higher than prevalence of late initiation of ANC in Rwanda found in DHS which was 41% (RDHS, 2019-2020). This findings of current study is really higher than results found in the study done in United States of America in 2016 and revealed that 21.3% of pregnant women lately began antenatal care (Osterman & Martin, 2016). Finding from current study is lesser than prevalence of late ANC found in similar study which was conducted in Northern Bangladesh in 2016 and found that 88.8% of pregnant women late initiated (Sarker et al.,2021). Difference of findings may be due to different study designs, research settings and sample size used in the studies.

This study found that mothers from rural were more likely to late initiate ANC than mothers from urban area. In fact, there is a limitation to access reproductive health information, services and products. People in rural areas majority are not educated and know one another which leads to hide information to your neighbors so that she or he will not spread it out to other neighbors. Other study done in Myanmar 2014, where women from rural area was significantly found to be factor influencing starting of ANC early (Aung et al., 2016). Another study which was done in South Sudan, in 2010 showed that women living in Rural settings booked late Antenatal care (Mugo et al., 2010).

Mothers from big family size of 6 people and above were more likely to late initiate ANC compared to mothers from small family size. In fact, more you have many children, more scarcity of resources, more you work hard to find food for them and responsibilities increase, and love of children decreases because they stress you out when you do not have enough money. Other similar study done in Zambi in 2014 revealed that women with 5 children and above were found to be factors which influence late beginning of ANC (Sinyange et al., 2016).

This study showed that mothers without health insurance were more likely to delay ANC compared to mothers who had health insurance. In Rwanda, Government pays health insurance for poor families (ubudehe category one) so that they can afford cost of maternal services. When mothers are not categorized in ubudehe category one, they pay health insurance themselves so when they get pregnant without health insurance, they wait for paying health insurance first then

they go to consult health center for ANC initiation. There is a similar study done in Tanzania and found that having health insurance was associated with proper timing of 1st ANC attendance (AOR=1.89, p<0.001) and skilled birth attendance (AOR=2.01, p<0.01) (Kibusi et al., 2018).

This study showed that mothers who got unplanned pregnancy were more likely to book ANC late than mothers who wanted and planned to get pregnant. When women are not proud of being pregnant, they do not even want to go out where people can see them. They are stressed thinking about how a baby shall be taken care and funds to be spent on a baby. Unplanned pregnancy makes woman psychologically disturbed. There is another similar study done in Malaysia 2016, women with unplanned pregnancies, women with perception of presenting marriage certificate during ANC as challenge, women who did not experience pregnancy complications during past pregnancies were associated with late start of ANC (Jiee et al., 2018).

This study showed that mothers with perception of initiating ANC after 12 weeks of gestation were more likely to delay ANC compared to mothers who perceived to start ANC within 12 weeks of gestation. Women think that pregnancy is not a disease. There is no need to go to health center while pregnancy is still small. They think it is a good to consult HC while a baby in kicking inside womb. In Rwandan context especially in rural, some women hide pregnancy thinking that wicked people can poison and stop early pregnancy. Another similar study in northwest Ethiopia which was done and found that mothers who perceived to start ANC within 12 weeks of gestation were more likely to initiate early compared to mothers who perceived to start ANC within second trimester {OR: 2.39, CI(95%): [2.23–9.86]} (Belaynehetal.,2014). Another study was done in Nigeria in 2010 revealed that not to know right time to initiate antenatal care, misunderstanding of purpose of antenatal care, fear of being poisoned during early pregnancy and poverty are associated with lake booking of antenatal care (Ndidi&Oseremen, 2010).

Lastly, this study revealed that mothers who had experienced family conflict were more likely to late book ANC compared to mothers who did not experienced family conflict. When a woman is not loved and cared, she does not love herself and her baby because she is not mentally healthy. The similar study which was done in Madang, Papua New Guinea and found that family conflict affects initiation of antenatal care visit (Andrew et al., 2014).

Conclusion

This study was done to determine prevalence of late initiation of antenatal care and assess factors associated with late initiation of antenatal care among pregnant women attending Gitwe hospital, Rwanda. The findings of this study revealed that there is a high prevalence of late initiation of ANC among pregnant women attending Gitwe hospital and factors such as living in rural areas, high family size (≥6 people), lack of health insurance, unplanned pregnancy, lack of knowledge about recommended time of first ANC and experiencing family conflict during pregnancy were significantly associated with late initiation of ANC.

Limitations of the study

The research was conducted in public health centers of Gitwe Hospital catchment area in Ruhango district, and it is located in rural setting, its findings might not be generalized to all settings.it was cross-sectional study conducted only in Gitwe hospital.

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