Prevalence and factors associated with unwanted pregnancies among married women in Karongi District, Rwanda.

A cross-sectional study

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ABSTRACT

BACKGROUND: Globally, unwanted pregnancies are major public health concern. Unwanted pregnancies among married women results into a negative health impact like major depression and lead to unsafe abortion that can contribute to high increase of maternal morbidity and mortality rate. It affects both socio-economic status of the families, health system as well as the national economy. Demographic Health Survey in Rwanda shows that the prevalence of unwanted pregnancies among married women was 51%. The research intends to assess the prevalence and factors associated with unwanted pregnancies among married women in Karongi District, Rwanda.

METHODS: A cross-sectional study design was employed. Total of 402 married women were randomly selected to participate in the study. The data were collected used structured questionnaire developed by the principle investigator. Multivariate analysis was used to determine the factors associated with unwanted pregnancies among married women.

RESULTS: The prevalence of unwanted pregnancies among married women stands at 27.36%. Bivariate analysis shows that age P=0.03, women education level P=0.04, women occupation P=0.02, were associated with unwanted pregnancies among married women. Multivariate analysis shows that women aged between 35 and 39 (P=0.024, AOR=1.8, 95% CI=0.92-2.42), women age above 40 (P=0.023, AOR=1.947, 95%CI=0.98-3.01), completed primary (P=0.037, AOR=3.981, 95%CI=0.64-4.32), completed high school (O-level) (P=0.035, AOR=2.106, 95%CI=1.02-3.82), completed high school A-level (P=0.04, AOR=1.851 95%CI=1.00-5.02), unemployment (P=0.04, AOR=4.327, 95%CI=0.03-6.43), four living children (P=0.01, AOR=3.49, 95%CI=0.02-5.32), wishes two children (P=0.01, AOR=4.39, 95%CI=0.03-6.02) Ever had sex before marriage (P=0.01, AOR=1.24,

95%CI=0.89-3.03), Knew abortion complication (P=0.01, AOR=2.099, 95%CI=0.2-4.33), had abortion complication (P=0.01, AOR=4.171, 95%CI=0.31-5.01) were statistically significant and independently associated with unwanted pregnancies among married women.

CONCLUSION: The prevalence of unwanted pregnancies among married women was high in the age between 20 and 24. Therefore, Ministry of Health should re-enforce the availability and use of modern contraceptive methods among the youth corner and sexual reproductive health. Women with four children were more likely to have unwanted pregnancies, thus it is recommended to encourage women to use long-time contraceptive methods. Married women who ever had sex before marriage were more likely to have unwanted pregnancies, therefore, it is recommended to increase awareness intervention and appropriate social and behavior change communication strategies on unwanted pregnancies prevention.

Keywords: Unwanted pregnancies, Married women, Associated factors, Prevalence.

INTRODUCTION

Globally, WHO reported about 210 million pregnancies take place each year, 44% of them are unwanted and more than 50% of these unwanted pregnancies end in abortion. Across the world, 216 million of maternal deaths per 100,000 live births each year (Jonathan *et al.,* 2018).

Unwanted pregnancies in Latin America was 58%, Europe 44% and Northern America followed by Africa 39% (Sedgh *et al.*, 2014). Unwanted pregnancies in Asia was 37%, while in Britain was 16.2% (Wellings, et al., 2013). In Sab-Saharan Africa, 14 million of unwanted pregnancies take place and it is statistically associated with less use of hormonal methods of contraception (Mrosso *et al.*, 2021). In Africa, unwanted pregnancies vary from 15 to 58% in North Africa and Middle East respectively. Unwanted pregnancies in Yemen was 58%, Palestine 38%, Morocco was 32%, in Syria and Algeria was 31 as well as in Egypt was 23% (Roudi *et al.*, 2010).

Unwanted pregnancies are key health concerns in the community especially in the middle-income country. It adversely affects the productivity of nation as well as creating the economic and social burden among the families. Early marriage and sexual related actions are among the factors that exposes women to the unwanted pregnancies and lead to negative consequences (NISR-DHS, Fertility Preferences , 2020). Women age and religion were factors statistically associated unwanted pregnancies (Yusof *et al.*, 2018).

In Rwanda, unwanted pregnancies crosses through country districts. RHDS 2020 reported 45% of married women uses modern contraceptive methods and 6% of married women uses traditional methods of family planning (NISR-DHS, Fertility Preferences , 2020). Although there is an increase of married women using family planning methods, issues of unwanted pregnancies keep taking place in Rwanda. Married women are getting high number of children than they are in need. RDHS 2020 reported that married women have 4.6 children as family size yet they need 3.1 children as family size (NISR-DHS, Fertility Preferences , 2020).

In Rwanda, DHS reported 47% of unwanted pregnancies among married women (NISR-DHS, 2015). In addition, research study in Rwanda shows that the prevalence rate of unwanted pregnancies was 30.8% with 72.9% of unplanned pregnancies (Rutayisire *et.*, 2019). Furthermore, DHS reported 51% of unwanted pregnancies among married women (NISR-DHS, 2020). This has led us to assess the prevalence and factors associated with unwanted pregnancies among married women in Karongi District, Rwanda.

METHODS AND MATERIALS

Study design, setting and participants

Cross-sectional study design was employed. It was conducted in Karongi District in Rwanda. Karongi district is one of the seven districts in Western Province. It is bordered by Rutsiro to the North, Ngororero and Muhanga to the north-east. Nyamasheke and Nyamagabe to south pole as well as Ruhango to east side. It stretches on surface area of 993km^2 with 331,808 population distributed in 77,000 households. Karongi districts has 13 sectors (*Imirenge*), 88 cells (*Akagari*), and 538 villages (*Imidugudu*). Then, total of married women to be surveyed in each sector was determined using proportion to size (PPS) technique (Weight). Weight was obtained by taking number of populations in sector per total population. The PPS was the weight of each sectors out of the total sample. The estimated sample was 402 married women from the study population as shown in Table1.

Table 1: Sample distribution per sector

Sector	Total number of married women	Weight	Total sample
Bwishyura sector	7919	0.11	43
Gashari sector	4693	0.06	26
Gishyita sector	4783	0.07	26
Gitesi sector	5633	0.08	31
Mubuga sector	4369	0.06	24
Murambi sector	5106	0.07	28
Murundi sector	6142	0.08	34
Mutuntu sector	5075	0.07	28
Rubengera sector	7869	0.11	43
Rugabano sector	7283	0.10	40
Ruganda sector	4007	0.05	22
Rwankuba sector	4870	0.07	27
Twumba sector	5577	0.08	31
Total	73326	1.00	402

Data collection instrument and procedures

Structured questionnaire was used to assess the prevalence and factors associated with unwanted pregnancies among married women in Karongi district. The questionnaire comprised four parts which were socio-demographic characteristics, health related factors, life style factors and pregnancy related factors that are associated with unwanted pregnancies. The questionnaires were distributed among married women who were able to read, write and guided interview was used among those who were not able to read and write. Data were collected during working days from Monday to Friday. The respondents were found at the different health centers in their respective resident sectors for antenatal care, in post-partum room and immunization services or women who needed to participates in the research and meet the inclusion criteria but not come to look for health services. The questionnaire was structured in English first and then translated in Kinyarwanda. Data collection was directed in Kinyarwanda. Before data collection, designed questionnaire was pre-tested among 40 married women to test

the completeness, reliability, accuracy and time needed tom complete the questionnaire and the results was used to assess the validity of questionnaire.

Data analysis

For the purpose of data analysis, both inferential and descriptive statistics were employed using Statistical Package for Social Science (SPSS). The SPSS version 22.0 was used to analyze the collected data. The descriptive statistics supported to understand the socio-demographic characteristics of the respondents. In other words, it is assisted to measures central tendency, variability as well as the shape of distribution of the variables. On the other hand, the inferential statistics was employed to understand the level at which the selected variables explain the prevalence of unwanted pregnancies among married women in Karongi district.

For inferential statistics, the explained variables of this study were prevalence of unwanted pregnancies. It was measured by the respondents' perceived desire of pregnancy. Mothers questions were used: "Number of pregnant, did you want to become pregnant". This question was a yes or no response. Since the outcome variable was classified into two groups, binary logistics regression was used. Respondents were classified into two categories: those who had unwanted pregnancy (was assigned a numeric 1 indicating the presence of the attribute) and those who had wanted pregnancies were treated as benchmark. To select the regressors' that determined unwanted pregnancy the researcher was guide by the number of studies agreed upon.

Ethical consideration

To certify the safety and privacy of contestants was adequate and to prevent human rights abuse, before conducting this research, researcher asked permission to IRB at Mount Kenya University and to Ethical committee at Karongi district. participant given clear explanation about the study (Aim, objectives, duration and importance of participant). The informed consent form was signed prior participating in the research. Participating in the research was voluntary. No names of participants appeared on questionnaires and not sharing information to any other person known by participants without the participant permission to assure participant's confidentiality for provided information.

RESULTS

Socio-demographic characteristics associated unwanted pregnancies among married women in Karongi District

The prevalence of unwanted pregnancies among married women participated in this study was 27.36% in Karongi district.

The highest percentage (34.8%) of married women aged above 40 years and followed by 33.3% of married women aged between 35 and 39 years. Regarding to women education, the highest percentage (35.8%) of married women attended high school (A-level) while 13.7% of married women did not attended school. Majority (56.2%) of married women were protestant. About half (46%) of married women were self-employed while 28.1% of married women were unemployed during the period of survey. The highest percentage (71.4%) of married women were in third social class categories (*Ubudehe*) while 10.2% of married women were in the first social class categories (*Ubudehe*). Regarding number of living children, about 31.3% of

married women have two living children. More than half (50.7%) of married women desired four children.

Women age group (P=0.03) and education level (P=0.04) were significantly associated with unwanted pregnancies. Furthermore, occupation (P=0.029) and number of living children (P=0.029) as well as desired number of children (P=0.01) were significantly associated with unwanted pregnancies among married women.

Table 2: Socio-demographic characteristics associated with unwanted pregnancies among married women in Karongi District.

Variable	Wanted Pregnancy	Unwanted Pregnancy	X^2 Value	P-Value	Total
Age group					
20-24	18 (62.1%)	11 (37.9%)			29 (7.2%)
25-29	31 (73.8%)	11 (26.2%)			42 (10.5%)
30-34	40 (70.2%)	17 (29.8%)	2.16	**0.03**	57 (14.2%)
35-39	100 (74.6%)	34 (25.4%)			134 (33.3%)
Above 40	103 (73.6%)	37 (26.4%)			140 (34.8%)
Respondent education level					
No education	44 (80%)	11 (20%)			55 (13.7%)
Primary school	60 (70.6%)	25 (29.4%)			85 (21.2)
High school (O-level)	45 (68.2%)	21 (31.8%)	5.089	**0.04**	66 (16.4%)
High school (A-level)	105 (72.9%)	39 (27.1%)			144 (35.8%)
University	38 (74.5%)	13 (25.5%)			51 (12.7%)
Vocational training	0 (0%)	1 (100%)			1 (0.2%)
Religion					
Roman Catholic	76 (71.7%)	30 (28.3%)			106 (26.4%)
Protestant	166 (73.5%)	60 (26.5%)			226 (56.2%)
Muslim	43 (69.4%)	19 (30.6%)	1.35	0.718	62 (15.4%)
Jehovah witnesses	7 (87.5%)	1 (12.5%)			8 (2%)
Respondent Occupation					
Public servant	65 (80.2%)	16 (19.8%)			81 (20.2%)
Private servant	15 (65.2%)	8 (34.8%)			23 (5.7%)
Self-employed	134 (72.4%)	51 (27.6%)	3.7421	**0.029**	185 (46.0%)
Unemployed	78 (69.0%)	35 (31.0%)			113 (28.1%)
Social Class categories					
Category 1	32 (78.0%)	9 (22.0%)			41 (10.2%)
Category 2	49 (66.2%)	25 (33.8%)			74 (18.4%)

Category 3	211 (73.5%)	76 (26.5%)	2.25	0.32	287 (71.4%)
Category 4	0 (0%)	0 (0%)			0 (0%)
Number of children					
One	54 (75.0%)	18 (25.0%)			72 (17.9%)
Two	94 (74.6%)	32 (25.4%)			126 (31.3%)
Three	78 (78.8%)	21 (21.2%)	7.79	**0.029**	99 (24.6%)
Four	86(64.8%)	65 (35.2%)			105 (26.2%)
Desired number of children					
One	1 (50%)	1 (50%)			2 (0.5%)
Two	57 (52.4%)	56 (47.6%)			113 (28.2%)
Three	63 (75.9%)	20 (24.1%)	7.009	**0.01**	83 (20.6%)
Four	145 (71.1%)	59 (28.9%)			204 (50.7%)

Health related factors associated with unwanted pregnancies among married women in Karongi district

Majority (97.8%) of married women have heard about family planning methods while 2.2% of married women never heard about family planning methods. In addition, more than half (63.9%) of married women think that reproductive health education can influences the use of family planning methods. Almost (79.9%) of married women have ever used family planning methods. The highest (72.9%) of married women never faced discrimination looking for family planning methods. Majority (56%) of married women though that using family planning is not harmful. Regarding distance to the health facility, more than half (56%) of married women travel below 5km reach to the nearby health facility.

There were no any health-related factors that was associated with unwanted pregnancies among married women in Karongi District.

Table 3: Health related factors associated with unwanted pregnancies among married women in Karongi District.

Variables	Wanted pregnancy	Unwanted pregnancy	X2 Value	P Values	Total
Ever heard of Family Planning					
Yes	285 (72.5%)	108 (27.5%)	2.66	0.264	393 (97.8%)
No	7 (77.8%)	2 (22.2%)			9 (2.2%)
Reproductive HE influences of FP use					
Yes	184 (71.6%)	73 (28.4%)	0.388	0.56	257 (63.9%)
No	108 (74.5%)	37 (25.5%)			145 (36.1%)
Ever used family planning methods					
Yes	233 (72.6%)	88 (27.4%)	2.66	0.264	321 (79.9%)
No	59 (72.8%)	22 (27.2)			81 (20.1%)
Ever faced discrimination looking for FP					
Yes	84 (71.1%)	25 (22.9%)	1.89	0.387	109 (27.1%)
No	208 (71.0%)	85 (29.0%)			293 (72.9%)
Using family planning is harmful					
Yes	124 (70.1)	53 (29.9%)	1.0594	0.303	177 (44.0%)
No	168 (74.7%)	57 (25.3%)			225 (56%)
Length to health facility					
Less than 5km^2	167 (74.2%)	58 (25.8%)			225 (56%)

6-10km^2	87 (70.7%)	36 (29.3%)	0.648	0.723	123 (30.6%)
More than 10km^2	38 (70.4%)	16 (29.6%)			54 (13.4%)

Life style-related factors associated with unwanted pregnancies among married women in Karongi district.

Majority (54.2%) of married women have never had sex before marriage. The highest percentage (54.4%) of married women have had first sex aged above 20 years while 2.7% of married women have had first sex aged under 14 years. Almost (96.5%) never had multiple sexual partners. Women who ever had sex before marriage was significantly associated with unwanted pregnancies (P=0.01).

Table 4: Life style-related factors associated with unwanted pregnancies among married women in Karongi district.

Variables	Wanted pregnancy	Unwanted pregnancy	X^2 Value	P Values	Total
Ever had sex before marriage					
Yes	108 (58.7%)	76 (41.3%)	33.2	**0.01**	184 (45.8%)
No	184 (84.4%)	34 (15.6%)			218 (54.2%)
Age at first sex					
Under 14	3 (60.0%)	2 (40.0%)			5 (2.7%)
14-16	6 (50.0%)	6 (50.0%)	2.28	0.684	12 (6.5%)
17-19	37 (55.2%)	30 (44.8%)			67 (36.4%)
Above 20	62 (62.0%)	38 (38.0%)			100 (54.4%)
Multiple sexual partner					
Yes	12 (85.7%)	2 (14.3%)	1.745	0.418	14 (3.5%)
No	280 (72.2%)	108 (27.8%)			388 (96.5%)
Number of sexual partners					
Two	8 (88.9%)	1 (11.1%)			9 (64.3%)
Three	3 (100%)	0 (0%)	2.4	0.494	3 (21.4%)
More than three	1 (50.0%)	1 (50.0%)			2 (14.3%)

Pregnancies-related Factors associated with unwanted pregnancies among married women in Karongi district.

The highest percentage (29.3%) of married women have been pregnant two times while 18.7% were first pregnancies. Almost (93.8%) of married women never had any abortion while 6.2% of married women have had abortion. Among those who have had abortion, majority (68.9%) of married women had at least one abortion-related complication.

All pregnancies-related factors were significantly associated with unwanted pregnancies among married women in Karongi district. Number of pregnancies were significantly associated with unwanted pregnancies (P=0.04). And also, women who ever had abortion were significantly associated with unwanted pregnancies (P=0.01). Moreover, women who ever had

abortion-related complication were significantly associated with unwanted pregnancies (P=0.01)

Table 5: Pregnancies-related factors associated with unwanted pregnancies among married women in Karongi district.

Variables	Wanted pregnancies	Unwanted pregnancies	X2 Value	P Values	Total
Number of pregnancies					
Once	58 (77.3%)	17 (22.7%)			75 (18.7%)
Twice	88 (74.6%)	30 (25.4%)			118 (29.3%)
Three times	80 (77.7%)	23 (22.3%)	8.106	**0.044**	103 (25.6%)
More than three times	66 (62.3%)	40 (37.7%)			106 (26.4%)
Ever had abortion					
Yes	6 (24.0%)	19 (76.0%)			25 (6.2%)
No	286 (75.9%)	91 (24.1%)	31.96	**0.01**	377 (93.8%)
Had any abortion complication					
Yes	104 (37.55%)	173 (62.45%)			277 (68.9%)
No	6 (4.84%)	118 (95.16%)	46.028	**0.01**	125 (31.1%)

Multivariate analysis of factors associated with unwanted pregnancies among married women in Karongi district.

The variables that has been found to be associated unwanted pregnancies among married women in Karongi district were taken to logistics regression. This was to understand the influence of each group of variables on the change of likelihood of having unwanted pregnancies among married women. It also shows the significant level of each independent variables on the variation of dependent variable.

Women aged between 35 and 39 years were about 2 times more likely to have unwanted pregnancies (AOR=1.8; 95%CI=0.92-2.42; P=0.024). In addition, women aged above 40 years were about 2 times more likely to have unwanted pregnancies among married women (AOR=1.947; 95%CI=0.98-3.01; P=0.023). Women with primary education were 3 times more likely to have unwanted pregnancies compare to Women with no education (AOR=3.981; 95%CI= 0.64-4.32; P=0.037). Married women with high school (O-level) were 2 times more likely to have unwanted pregnancies (AOR=2.106; 95%CI=1.02-3.82; P=0.035). Married women with high school (A-level) were 1.8 times more likely to have unwanted pregnancies (AOR=1.851; 95%CI=1.00-5.02 P=0.023). Unemployed women were 4 times more likely to have unwanted pregnancies compared to public servant women (AOR=4.327; 95%CI=0.03-6.43; P=0.04). Women with four living children were 3 times more likely to have unwanted pregnancies compared to women with one child (AOR=3.49; 95%CI=0.02-5.32; P=0.01). Women desired two children were 4 times more likely to have unwanted pregnancies compare to women desire one child (AOR=4.39; 95%CI=0.03-6.02; P=0.01). Women who ever had sex before marriage were 1.24 times more likely to have unwanted pregnancies compared to women who never had sex before marriage (AOR=1.24; 95%CI=0.89-3.03; P=0.01). Women who knew abortion complication were 2 times more likely to have unwanted pregnancies compared to women who didn't knew abortion complication (AOR=2.099; 95%CI=0.21-4.33; P=0.01). Women who have had abortion complication were 4 times more likely to have

unwanted pregnancies compared to women who never had abortion complication
(AOR=4.171; 95%CI=0.31-5.01; P=0.01).

Table 6: Multivariate analysis of factor associated with unwanted pregnancies among married women in Karongi.

Variables	AOR	95% C I		P-value
		Lower	Upper	
Age group				
20-24	**Reference**	**Reference**		**Reference**
25-29	0.742	0.14	0.62	0.183
30-34	0.873	0.25	0.72	0.116
35-39	1.803	0.92	2.42	**0.024**
Above 40	1.947	0.98	3.01	**0.023**
Respondent education level				
No education	**Reference**	**Reference**		**Reference**
Primary school	3.981	0.64	4.32	**0.037**
High school (O-level)	2.106	1.02	3.82	**0.035**
High school (A-level)	1.851	1.00	5.02	**0.04**
University	1.349	1.73	2.65	0.075
Women occupation				
Public servant	**Reference**	**Reference**		**Reference**
Private servant	0.299	1.01	3.15	0.22
Self-employed	0.537	0.98	2.45	0.14
Unemployed	4.327	0.03	6.43	**0.04**
Number of living children				
One	**Reference**	**Reference**		**Reference**
Two	0.46	1.23	3.21	0.12
Three	0.66	2.01	4.75	0.06
Four	3.49	0.02	5.32	**0.01**
Desired number of children				
One	**Reference**	**Reference**		**Reference**
Two	4.39	0.03	6.02	**0.01**
Three	0.17	2.11	4.23	0.21
Four	0.36	3.12	7.47	0.07
Have had sex before marriage				
No	**Reference**	**Reference**		**Reference**
Yes	1.24	0.89	3.03	**0.01**
Knew abortion complication				
No	**Reference**	**Reference**		**Reference**
Yes	2.099	0.21	4.33	**0.01**
Ever had abortion complication				
No	**Reference**	**Reference**		**Reference**
Yes	4.171	0.31	5.01	**0.01**

DISCUSSION

The current study aimed to assess the prevalence and factors associated with unwanted pregnancies among married women in Karongi district, Rwanda. This research reported 27.36% of unwanted pregnancies among married women in Karongi district. This prevalence was closer to the studies done in Ethiopia with 26.1% unwanted pregnancies (Goshu *et al.*, 2019) and Gelemseo Hospital with 27.1% unwanted pregnancies (Mohammed *et al.*, 2016).

Even though, it was high compared to study done in Tanzania with 24.3% of unwanted pregnancies (Mrosso *et al.*, 2021), in Gambia with 25.3% of unwanted pregnancies (Barrow *et al.*, 2022) and in Kenya with 24% (Ikamari *et al.*, 2013). It was much higher compared to study conducted in West Bellessa Woreda in Ethiopia with 13% of unwanted pregnancies (Tsegaye *et al.*, 2018) and in Nigeria with 11% of unwanted pregnancies (Yaya, et al., 2018).

According to systematic review done, the prevalence of unwanted pregnancies varies in different region across the world, it was slightly low compare to study in Kicukiro in Rwanda with 30.8% of unwanted pregnancies (Rutayisire *et al.*, 2019) and in Nigeria with 29% of unwanted pregnancies (Ameyaw, et al., 2019). It was also much low compare to the studies conducted in Ghana with 40% (Nyarko *et al.*, 2019), in Angola with 38.3% (Yaya *et al.,* 2018), in Uganda with 37% (Wasswa *et al.*, 2020), in Ethiopia with 35.2% (Ayele *et al.,* 2017) and in Congo DRC with 40% (Ndziessi *et al.*, 2016).

In addition, the current prevalence of unwanted pregnancies was low compared to the study done in Debre Markos with 32.9% (Kibert *et al.*, 2015), 36.9% in Dilla (Feyisso *et al.*, 2017), 37.8% in Addis Ababa (Mulatu *et al.*, 2017), 36.5% in Wellega (Teshome *et al.*, 2014). This might be proven by number of factors like social cultural difference, research design difference, and demographic variation within the current research and previous research. Furthermore, according to Rwanda demographic health survey, it was very low compared to 47% (NISR-DHS, 2015) and 51% (NISR-DHS, 2020). This should be explained by the coverage area in terms of sample size and regions (rural and urban). For instance, Demographic Health Survey has used large sample size compared to the current study as it has covered the whole country while the present study covered a single district among the thirty-district covered by Demographic Health Survey.

The study identified different factors associated with unwanted pregnancies among married women in Karongi district. These factors were age group between 35-39 and above 40 years, primary and secondary education level, unemployment, four living children and wishes two children, had sex before marriage, knew abortion complication and ever had abortion. Married women aged between 35 and 39 were significantly more likely to unwanted pregnancies. In addition, women aged above 40 years were more likely to unwanted pregnancies. Similarly, to study conducted in Tanzania reported that the likelihood of unwanted pregnancies increases with older age (Calvert, et al., 2013). Opposites to another study conducted in Tanzania reported women aged between 15 and 20 years were significantly more likely to unwanted pregnancies (Mrosso *et al.*, 2021).

Married women who completed high school (O-level & A-level) were more likely to have unwanted pregnancies compared to married women who completed university. This means, as women increase her education level, the likelihood of having unwanted pregnancies decreases. Also, women education increases reproductive health knowledge like proper use of modern

contraceptive methods. Contrary to research conducted in Ethiopia showed that, the increase of women education level was associated with the likelihood of unwanted pregnancies (Ayele *et al.*, 2017).

Unemployed women were significantly more likely to have unwanted pregnancies compared to private servant or self-employed women. This means, unemployed women have enough time to interact with their male partner which mighty contribute to unwanted pregnancies. But, women in private sector or self-employed women are busy in their work and they don't have plentifully time with their husband which reduce probability of unwanted pregnancies.

Women with four living children were significantly more likely to have unwanted pregnancies compared to women with less than four living children. It implies that, number of children increases the likelihood of unwanted pregnancies. In addition, women with four living children don't properly use modern contraceptive methods. Similarly, the study conducted in Tanzania showed that number of living children were significantly associated with unwanted pregnancies (Mrosso *et al.*, 2021). Furthermore, women who desired two children were significantly more likely to have unwanted pregnancies compared to women who desire more children. It means, once women reached desired number of children all other children will be reported as unwanted. This also, indicate poor use or failure of modern contraceptive methods. Consistent to research conducted in Kenya, shows that high parity was significantly associated with unwanted pregnancies (Ikamari *et al.*, 2013). Moreover, research conducted in Ethiopia showed that, women desired small number of children were significantly associated with unwanted pregnancies (Ayele *et al.*, 2017).

Limitation

The findings of the study were not generalized to the entire nation since the research was limited in Karongi district. The study was conducted within 6 months from May to November 2022 which could bring biased information.

Conclusion

The prevalence of unwanted pregnancies was 27.36% among married women in Karongi district. It signifies that unwanted pregnancies among married women is one of reproductive-related concerns in Karongi district. Women aged between 35 and 39 as well as aged above 40 years, low education level, Unemployment, four living children and desired two children, Women who ever had sex before marriage, Women who knew abortion complication and Women who ever had abortion were identified as major independent factors associated with unwanted pregnancies among married women in Karongi district.

Recommendations

Referring to the study findings, the following recommendations were made:

(i)   The prevalence of unwanted pregnancies was high in the age group between 20 and 24, therefore Ministry of health should re-enforce the availability and use of modern contraceptive methods among the youth through strengthening youth corner and sexual reproductive health.

(ii)   Married women with four living children were more likely to have unwanted pregnancies, thus it is recommended that women should be encouraged to use long-term family planning methods.

(iii)   Married women who ever had sex before marriage were more likely to have unwanted pregnancies, therefore it is recommended to increase awareness intervention and appropriate social and behavior change communication strategies on unwanted pregnancies prevention.

Author's contribution

Viateur HATEGEKIMANA designed the study, collected and analyzed data, findings interpretation and wrote the manuscript. Alphonse HABINEZA and Onesmus Marete supervised the study. Leoncie UMUGWANEZA and Sylivine NAYITURIKI revise the work. All authors have read and approved the manuscript for publication.

Declaration of conflict of interest

The authors declare no conflict of interest with regards to this study.

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