

Factors Associated With Unmet Need for Family Planning Among Unmarried Women in Rwanda: A Cross Sectional Study

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Abstract: While unmet need for family planning (FP) in Rwanda has decreased to 14% among married women, it remains 37% among sexually active unmarried women. Thus, factors, reasons for not using contraceptives and intentions for future use are not well documented. We aimed to assess factors associated with the unmet need for FP, reasons and intentions for the future among sexually active unmarried women in Rwanda.

Researcher-designed data abstraction form was used to conduct a secondary data analysis using Rwanda demographic and health survey (RDHS) 2019/2020 which had surveyed on 12,949 households, of whom 417 were sexually active unmarried women. Sociodemographic characteristics, reasons and intentions are presented using frequencies and percentages. Logistic regression models were fitted to identify factors associated with the unmet need for FP at 95% CI, with a probability value of ≤ 0.05 .

Out of 417 unmarried women, 156 (37%) were with an unmet need for FP. The majority aged between 15–24 years ($n=155$, 37%), protestants ($n=224$, 54%), richer wealth index ($n=105$, 25%), owned medical insurance ($n=320$, 77%) and 264 (63%) had between one to four children. Factors associated with unmet need for FP were: being richer (aOR: 0.46; 95% CI: 0.23–0.91; $p=0.025$), richest wealth category (aOR= 0.435; 95% CI: 0.2091–0.905; $p=0.026$), multiparty (aOR: 0.23; 95% CI: 0.13–0.42; $p<0.000$) and nulliparous (aOR: 0.26; 95% CI: 0.11–0.59; $p<0.001$). Amongst the 97 women who had provided reasons for not using FP, most cited were having infrequent sex ($n=46$, 47.4%), nulliparous ($n=11$, 11.3%) and fear of side effects ($n=7$, 7.2%). While 73.1% ($n=114$) of women had the intention to use FP in future.

One in three unmarried women had an unmet need for FP. Richer, richest, nulliparous and multiparous are less affected than their counterparts. Thus, need for tailored social behavioural change messages on FP for each female subpopulation (poor wealth categories and those with one to four children) when designing public health programs to address their FP unmet needs.

Keywords: family planning, intentions, unmarried women, unmet needs.

I. INTRODUCTION

Family planning (FP) is associated with a significant reduction in maternal and child mortality globally [1]. Notably, the contribution of FP through use of contraceptives has been associated with reduction of 1.5 million maternal deaths and expected to avert approximately two million infant deaths on annual basis by 2030 [1–3]. In addition, family planning offers to women and men an opportunity to secure their rights to decide freely for themselves, whether, when and how many children they want to have reducing the cases of unintended pregnancies, abortions and associated deaths [2,3].

World Health Organisation defines women with unmet need for family planning, as those who are fecund and sexually active but are not using any method of contraception, and report not wanting any more children or wanting to delay the next child [4]. Globally, 190 million women of reproductive age who want to avoid pregnancy do not use any contraceptive method [5].

In Sub Saharan Africa, unmet need for FP accounts for 23.7% of women in reproductive age in need of contraceptives [6], with the highest proportions in Ghana (38.9%), Angola (26%), and Liberia (25%) [5]. A study in Tanzania revealed one of the reasons of repeat pregnancy among unmarried adolescent mothers is the lack of knowledge on the use of family planning [7].

Recent Rwanda population census 2022 revealed women of reproductive age comprised 26% of entire population [8]. While, Rwanda Demographic Health Survey (RDHS) 2020 showed that 14% of married women, 37% of sexually active unmarried women in reproductive age had experienced unmet need for family planning [9]. This unmet need for family planning among unmarried women varied by province with Western being highest with 45.9%, followed by the City of Kigali with 45.5% [9]. Unmarried women represent a significant proportion of 45.7% of women in reproductive age in 2022 [8]. The unmet need for family planning among unmarried women increased considerably between 2015 and 2020 from 5.7% to 37% [9,10], which was 2.5 times higher than that of married women [9]. Which reflects that 48% of sexually active unmarried women in Rwanda use modern contraceptives, compared with 58% among currently married women [9]. Prior similar studies had been conducted among HIV positive women [11,12], pregnant women attending antenatal care or delivery services [13,14], on prevalence and associated factors among the women of reproductive age [6,15,16] and unmet family planning needs among married women [15–17], but none focused on unmet need for family planning among this subpopulation of women.

This study was conducted with three specific objectives:

- To assess factors associated with unmet need for family planning among sexually active unmarried women in Rwanda.
- To assess reasons for not using FP methods among sexually active unmarried women with unmet need of FP in Rwanda.
- To assess intentions to use FP methods among sexually active unmarried women with unmet need of FP in Rwanda.

We contributed to ongoing dialogue on unmet need for family planning by assessing and documenting factors associated with the unmet need for family planning among sexually active unmarried women in Rwanda. Understanding the factors associated with unmet need for family planning among unmarried women is critical for designing and implementing effective public health programs for all women.

II. METHODS AND MATERIALS

Study setting

Recent RDHS 2020 indicated that the maternal mortality rate (MMR) was 203 per 100,000 live birth, and 114 per 1000 women of reproductive age had unintended pregnancies [9]. The national MMR is currently 2.6 times lower than the average African countries MMR which is 531 per 100,000 live births [21]. Nonetheless, this was still higher than SDG target 3.1 of 70 per 100,000 live births to achieve by 2030 [19]. Surprisingly, family planning services are freely available in more than 95% of public and private health facilities in Rwanda [9,22] but induced abortions still occurs [23].

Study design

This was a retrospective cross-sectional study conducted using secondary data from the 2019-20 RDHS. A detailed explanation of the methodology of the RDHS has been outlined in the next section.

Sampling technique

Our findings are based on RDHS 2019-20 analysis which was implemented by the National Institute of Statistics of Rwanda (NISR). The RDHS 2019-20 followed a two-stage sample design and was intended to allow estimates of key indicators at the national level as well as for urban and rural areas, five provinces, and each of Rwanda's 30 districts for some limited indicators [9].

The first stage involved selecting sample points (clusters) consisting of enumeration areas (EAs) delineated for the RDHS 2019-20. A total of 500 clusters were selected, 112 in urban areas and 388 in rural areas. The second stage involved systematic sampling of households. [9]. All the households in the selected EAs were listed from June to August 2019, and households to be included in the survey were randomly selected from these lists. Twenty-six households were selected from each sample point, for a total sample size of 13,000 households [9].

All women aged 15-49 who were either permanent residents of the selected households or visitors who stayed in the household the night before the survey were eligible to be interviewed. We selected women documented as unmarried from whom those whose reports indicated self-reported unmet need for family planning, information was gathered on socio economic states (specific age, religion, wealth index, employment status, presence of health insurance) and parity were documented [9].

Sample size

The RDHS surveyed on a total population of 14634 women aged 15-49 years. This population was extracted from 12,949 households that were selected. However, this population includes 417 sexually active unmarried women, among whom 156 expressed unmet need for FP.

We included all sexually active women who were unmarried. The "take all" sampling approach, was employed. We included the entire population of unmarried women, therefore ensured that every individual was considered in the study. By opting for the take all approach, the research aimed to provide a comprehensive and exhaustive understanding of the entire population, minimizing the potential for sampling bias. This approach was particularly suitable for our study due to the manageable size of the population and the feasibility of studying each unit. We excluded those who became pregnant unintentionally due to contraceptive method failure, and those who are infecund.

Data collection

In this study, relevant information was abstracted from unmarried women documented in the RDHS 2019/20 whereby face to face interviews using pre-tested questionnaires were conducted by experienced and trained data collectors in accordance with DHS guidelines to ensure data quality [9]. Information on sociodemographic, health-related factors and use of contraceptives was collected.

To assess unmet need for FP, a number of questions related to fertility intentions were asked in the RDHS women's questionnaire (e.g., "are you currently using any method of contraception?", "Do you want to have another child?", "Have you had sexual intercourse in the last 12 months?", "The last time you had sexual intercourse, was a condom used?". These questions were chosen because they best describe the unmet need of women in reproductive age. Therefore, in this study unmet need for family planning was measured by considering all pregnant women whose pregnancies were unintended, all postpartum amenorrhoea who are not using FP and those whose last born was unplanned, and fecund women who are not using any contraceptive method.

The NISR defined the unmet need as a number of women who want to postpone their next birth for two or more years, or who want to stop childbearing altogether but are not using a contraceptive method [9,24]. In addition, we referred sexually active unmarried women as all women who are not currently married or in a consensual union, such as single, divorced, widowed, and separated, and who had sexual intercourse within the last 30 days. Sexually active unmarried women with an unmet need for FP were selected to identify reasons and intentions for future use. The RDHS 2019/2020, used unmet need for family planning to refer to total unmet need, that combines both the unmet need for spacing and limiting births.

Data were collected by 17 diverse well-trained and supervised teams of data collectors using computer-assisted personal interviewing. The questionnaires were in English, but translated into Kinyarwanda, a national language used countrywide to facilitate easy data collection for all Rwandans. The concurrent processing of the data was used to ensure the data being error-free and accurate.

Study variables

The variables that were gathered were: marital status, use of family planning method, age, education, religion, wealth index, health insurance, distance to the nearest health facility, hearing about family planning messages, reasons for not using family planning, the intention to use family planning in the future, collected data using standardized household, man, woman, biomarker, and fieldworker questionnaires between November 2019 to July 2020.

Data analysis

Respondents' characteristics, reasons, and intentions to use family planning in future were described using frequency and percentages while the independent associations between unmet needs for FP and explanatory variables were examined using binary logistic regression. Significant variables at a p-value of 0.05 in the binary logistic regression were included in the multivariable logistic regression. Both the crude (COR) and adjusted odds ratios (AOR) and the corresponding 95%

confidence interval were reported. All analyses were performed using Stata version 17 and sample weights were applied to account for the unequal probability sampling in different strata and multistage sampling design and to ensure representativeness of the study results.

However, independent variables that prior showed multi-collinearity were removed in multivariate regression models of the analysis. The collinear independent variables such as type of residence, working status, owning health insurance, and distance to the nearest health facility influenced the outcome variable (unmet need for FP) by inflating standard errors of all regression coefficients. This effect could lead to flawed study results, making them vague, imprecise, and unreliable, that in turn mislead the interpretation of the results.

III. RESULTS

Respondents' characteristics

In 2020, a total of 14,634 women were reported to be in reproductive age bracket 15 to 49 years. Of these, a total of 417 (2.8%) were sexually active unmarried women. Table 1 presents the characteristics of sexually active unmarried women. Of the 417 sexually active unmarried women, those in the age bracket of 15 to 24 and 25 to 34 years comprised almost the same proportion of 37% and 36% of the total, respectively.

Slightly more than a half of the women, 224 (54%) were protestants. About a quarter of the total women, 105 (25%) were categorized to belong to the richer wealth index. Slightly more than three quarters, 320 (77%) were reported to own some kind of medical insurance cover. A total of 264 (63%) were reported to have between one to four children. An overwhelming majority, 391(94%), reported that they had not gotten information on family planning from print media such as newspaper or magazine (Table 1).

Table 1. Sociodemographic characteristics of sexually active unmarried women in RDHS 2019/20

Variables	Category	Sample (n=417) n (%)	Met need (n=261)	Unmet need (n=156) n (%)
Age, years	15-24 Years	155 (37.2)	76 (49.0)	79 (51.0)
	25-34 Years	152 (36.5)	114 (75.0)	38 (25.0)
	>= 35 Years	110 (26.4)	71 (64.5)	39 (35.5)
Education level	No education	38 (9.1)	27 (71.1)	11 (28.9)
	Primary	272 (65.2)	172 (63.2)	100 (36.8)
	Secondary and higher	107 (25.7)	62 (57.9)	45 (42.1)
Religion	Catholic	174 (41.7)	113 (64.9)	61 (35.1)
	Protestants	224 (53.7)	135 (60.3)	89 (39.7)
	Others	19 (4.6)	13 (68.4)	6 (31.6)
Residence	Urban	110 (26.4)	62 (56.4)	48 (43.6)
	Rural	307 (73.6)	199 (64.8)	108 (35.2)
Employment status	Yes	310 (74.3)	197 (63.5)	113 (36.5)
	No	107 (25.7)	64 (59.8)	43 (40.2)
Wealth index	Poorest	92 (22.1)	68 (73.9)	24 (26.1)
	Poorer	79 (18.9)	46 (58.2)	33 (41.8)
	Middle	69 (16.5)	46 (66.7)	23 (33.3)
	Richer	105 (25.2)	64 (61.0)	41 (39.0)
	Richest	72 (17.3)	37 (51.4)	35 (48.6)
Health insurance	Yes	320 (76.7)	201 (62.8)	119 (37.2)
	No	97 (23.3)	60 (61.9)	37 (38.1)
Distance to health facility				

	Not a big problem	322 (77.2)	201 (62.4)	121 (37.6)
	Big problem	95 (22.8)	60 (63.2)	35 (36.8)
Parity				
	0	109 (26.1)	39 (35.8)	70 (64.2)
	1-4	264 (63.3)	200 (75.8)	64 (24.2)
	>4	44 (10.6)	22 (50.0)	22 (50.0)
Heard of FP on radio in last few months				
	Yes	171 (41.0)	109 (63.7)	17 (40.9)
	No	246 (59.0)	152 (61.8)	25 (59.0)
Heard of FP on TV in last few months				
	Yes	38 (9.1)	21 (55.3)	17 (44.7)
	No	379 (90.0)	240 (63.3)	139 (36.7)
Heard of FP in newspaper/magazine in last few months				
	Yes	26 (6.2)	17 (65.4)	9 (34.6)
	No	391 (93.8)	244 (62.4)	147 (37.6)
Told of FP at HF (n=250)				
	Yes	106 (25.4)	77 (72.6)	29 (27.4)
	No	144 (34.5)	95 (66.0)	49 (34.0)
Source is known for any method				
	Health Facility	145 (34.8)	145 (100.0)	0 (0.0)
	CHWs	21 (5.0)	21 (100.0)	0 (0.0)
	Pharmacy	12 (2.9)	12 (100.0)	0 (0.0)
	Outreach	6 (1.4)	6 (100.0)	0 (0.0)
	Other sources	233 (55.9)	77 (33.0)	156 (67.0)
Intention to use FP method (n=209)				
	Use later	151 (36.2)	37 (24.5)	114 (75.5)
	Does not intend	58 (13.9)	16 (27.6)	42 (72.4)

Factors associated with unmet need for FP among unmarried sexually active in Rwanda.

The findings of bivariable and multivariable logistic regression analyses are presented in table 2. In the bivariate analysis, age bracket of 15 to 24 years ($p=0.012$), poorer household wealth index ($p=0.032$), and parity of women were found to be associated with lower odds of unmet needs for FP among sexually active unmarried women in Rwanda. Women aged 15–24 years had 48% lower odds of having unmet need for FP (COR: 0.52; 95% CI: 0.32–0.87; $p=0.012$) compared to those aged 35 years and above. Women from poorer, richer, and richest households had 45–62% lower odds of having unmet needs for FP compared to those from the poorest households (COR: 0.49; 95% CI: 0.26–0.94; $p=0.032$), richer (COR: 0.55; 95% CI: 0.30–1.01; $p=0.052$) and richest (COR: 0.38; 95% CI: 0.20–0.73; $p=0.004$). In addition, women who did not have children (COR: 0.18, 95% CI: 0.11–0.29; $p<0.000$) and those who had more than four (COR: 0.32, 95% CI: 0.17–0.62; $p<0.001$) had 82% and 68% lower odds of having unmet need of FP compared to those who had one to four children.

In the multivariable analysis, factors associated with unmet need for FP include being richer (AOR: 0.46; 95% CI: 0.23–0.91; $p=0.025$), richest wealth category (AOR= 0.435; 95% CI: 0.2091–0.905; $p=0.026$), multiparty (AOR: 0.23; 95% CI: 0.13–0.42; $p<0.000$) and nulliparous (aOR: 0.26; 95% CI: 0.11–0.59; $p<0.001$) (Table 2).

Table 2. Bivariate analysis of factors associated with unmet needs for family planning.

Variable	Category	Outcome variable		Bivariable		Multivariable	
		Met need n (%)	Unmet need n (%)	cOR	P>z	aOR	P>z
Age, years	15–24	76 (49.0)	79 (51.0)	0.53 (0.32, 0.87)	0.012	0.77 (0.37, 1.60)	0.490
	25–34	114 (75.0)	38 (25.0)	1.61 (0.94, 2.75)	0.080	1.23 (0.64, 2.40)	0.532
	≥35	71 (64.5)	39 (35.5)	Ref.		Ref.	
Education level	No education	27 (71.1)	11 (28.9)	1.47 (0.67, 3.25)	0.342	-	
	Primary	172 (63.2)	100 (36.8)	Ref.			
	Secondary and higher	62 (57.9)	45 (42.1)	1.09 (0.68, 1.74)	0.734		
Religion	Protestant	113 (64.9)	61 (35.1)	Ref.			
	Catholic	135 (60.3)	89 (39.7)	1.20 (0.80, 1.81)	0.251	-	
	Others	13 (68.4)	6 (31.6)	1.55 (0.56, 4.31)	0.808		

Residence	Rural	62 (56.4)	48 (43.6)	Ref.	-	
	Urban	199 (64.8)	108 (35.2)	0.71 (0.45, 1.10)	0.122	
Employment (<i>Respondent currently working</i>)	Yes	197 (63.5)	113 (36.5)	1.16 (0.74, 1.83)	0.514	-
	No	64 (59.8)	43 (40.2)	Ref.		
Wealth index	Poorest	68 (73.9)	24 (26.1)	Ref.		Ref.
	Poorer	46 (58.2)	33 (41.8)	0.49 (0.26, 0.94)	0.032	0.57 (0.28, 1.16) 0.123
	Middle	46 (66.7)	23 (33.3)	0.70 (0.35, 1.39)	0.305	0.65 (0.31, 1.35) 0.245
	Richer	64 (61.0)	41 (39.0)	0.55 (0.30, 1.01)	0.052	0.46 (0.23, 0.91) 0.025
	Richest	37 (51.4)	35 (48.6)	0.38 (0.20, 0.73)	0.004	0.44 (0.21, 0.91) 0.026
Health insurance	Yes	201 (62.8)	119 (37.2)	1.03 (0.65, 1.65)	0.888	
	No	60 (61.9)	37 (38.1)	Ref.		
Distance to HF	Big problem	60 (61.9)	37 (38.1)	Ref.		
	Not a big problem	201 (62.4)	121 (37.6)	0.96 (0.60, 1.54)	0.859	
Parity	0	39 (35.8)	70 (64.2)	0.18 (0.11, 0.29)	<0.001	0.23 (0.13, 0.42) <0.001
	1–4	200 (75.8)	64 (24.2)	Ref.		Ref.
	>4	22 (50.0)	22 (50.0)	0.32 (0.17, 0.62)	0.001	0.26 (0.11, 0.60) 0.001
Heard FP on the radio last few months		109 (63.7)	62 (36.3)	1.09 (0.73, 1.64)	0.667	
Heard of FP on TV in the last few months		21 (55.3)	17 (44.7)	0.73 (0.37, 1.42)	0.351	
Heard of FP in a newspaper in the last few months		17 (65.4)	147 (37.6)	1.19 (0.52, 2.72)	0.690	
Told of FP at HF	Yes	77 (65.4)	29 (27.4)	Ref.		
	No	95 (62.4)	49 (34.0)	1.37 (0.79, 2.38)	0.259	
Intention to use the FP method	Use later	37 (24.5)	114 (75.5)	Ref.		
	Does not intend to use	16 (27.6)	42 (72.4)	1.18 (0.60, 2.34)	0.636	

Ref: Reference category; aOR: adjusted odd ratio; CI: confidence interval; P>z: probability value

Reasons for not using family planning among sexually active unmarried women in Rwanda

Out of the 97 women who provided reasons for not using FP, 46 (47.4%) and 28 (28.9%) of them reported not having sex frequently and not being married as the main reasons for not using FP, respectively; with 7 (7.2%) fearing side effects or possible health concerns (Table 3).

Table 3. Reasons for not using family planning among sexually active unmarried women

Reasons	Frequency (n)	Percentage (%)
Infrequent sex	46	47.4
Not married	28	28.9
Fear of side effects/health concerns	7	7.2
Other	4	4.1
Not having sex	3	3.1
Sub fecund/infecund	2	2.1
Interferes with the body's processes	2	2.1
Postpartum amenorrhoeic	1	1.0
Breastfeeding	1	1.0
Fatalistic	1	1.0
Respondent opposed	1	1.0
Don't know	1	1.0

Intentions to use family planning among sexually active unmarried women in Rwanda

Of the 156 sexually active unmarried women with an unmet need for FP, 114 (73%) expressed that they wanted to use FP contraceptives later in the future. Despite this, 26.9% did not intend to use FP contraceptives. The majority (57%) of those who intend to use, were aged between 15–24 years, and 60.5% of them attended primary. Of those who intend to use FP contraceptives in future, the majority were richer and richest (26%, and 25% respectively) and great proportions lived in rural areas (81%). Of half of those who expressed that they intend to use FP contraceptives in future, 52% were nulliparous). Many of them (68%) heard FP information on the radio (Table 4).

Table 4. Intentions to use FP contraceptive among sexually active unmarried women.

Variable	Category	Not intend to use FP (n=42)	Intend to use FP later (n=114)	Total [n, (%)]
		n (%)	n (%)	
Age	15-24 Years	14 (33.3)	65 (57.0)	79 (50.6)
	25-34 Years	4 (9.5)	34 (29.8)	38 (24.4)
	>= 35 Years	24 (57.1)	15 (13.2)	39 (25.0)
Education level	No education	5 (10.9)	6 (5.3)	11 (7.1)
	Primary	31 (75.0)	69 (60.5)	100 (64.1)
	Secondary and higher	6 (14.1)	39 (34.2)	45 (28.8)
Religion	Catholic	24 (56.8)	37 (32.5)	61 (39.1)
	Protestants	17 (41.3)	72 (63.2)	89 (57.1)
	Others	1 (1.9)	5 (4.4)	6 (3.8)
Respondent currently working	Working	36 (86.0)	7 (6.1)	43 (27.6)
	Not working	6 (14.0)	107 (93.9)	113 (72.4)
Wealth index	Poorest	11 (26.2)	13 (11.4)	24 (15.4)
	Poorer	8 (19.0)	25 (21.9)	33 (21.2)
	Middle	6 (14.3)	17 (14.9)	23 (14.7)
	Richer	11 (26.2)	30 (26.3)	41 (26.3)
	Richest	6 (14.3)	29 (25.4)	35 (22.4)
Place of residence	Urban	15 (35.7)	22 (19.3)	37 (23.7)
	Rural	27 (64.3)	92 (80.7)	119 (76.3)
Province	Kigali	14 (33.3)	24 (21.1)	38 (24.4)
	South	11 (26.2)	18 (15.8)	29 (18.6)
	West	6 (14.3)	25 (21.9)	31 (19.9)
	North	1 (2.4)	13 (11.4)	14 (9.0)
	East	10 (23.8)	34 (29.8)	44 (28.2)
Parity	Parity 0	11 (25.5)	59 (51.8)	70 (44.9)
	Parity 1-4	19 (44.6)	45 (39.5)	64 (41.0)
	Parity >4	12 (29.9)	10 (8.8)	22 (14.1)
Source known for any method	Don't know	42 (100.0)	114 (100.0)	156 (100.0)
Distance to health facility	Big problem	10 (23.4)	111 (97.4)	121 (77.6)
	Not a big problem	32 (76.6)	3 (2.6)	35 (22.4)
Covered by health insurance	Yes	27 (64.0)	10 (8.8)	37 (23.7)
	No	15 (36.0)	104 (91.2)	119 (76.3)
Heard FP on radio last few months	Yes	17 (41.0)	77 (67.5)	94 (60.3)
	No	25 (59.0)	37 (32.5)	62 (39.7)
	Yes	2 (4.8)	7 (6.1)	9 (5.8)
	No	40 (95.2)	107 (93.9)	147 (94.2)
Heard FP on TV last few months	Yes	5 (11.9)	12 (10.5)	17 (10.9)
	No	37 (88.1)	102 (89.5)	139 (89.1)
Told of FP at health facility (78)	Yes	24 (38.1)	5 (33.3)	29 (18.6)
	No	39 (61.9)	10 (66.7)	49 (31.4)

IV. DISCUSSION

Our study revealed that wealth index and parity were the factors associated with the unmet needs for FP among sexually active unmarried in Rwanda. Sexually active unmarried women from the richer and richest categories of the wealth index were less likely to have unmet needs for FP as opposed to women in the poorest category, elucidating a protective effect against the unmet need for FP among sexually active unmarried women. Similarly, to other authors in low resource setting from Burundi, Ethiopia [25,26] and Kenya [27]. Contrary, a multi-level effect analysis in DRC revealed that families with women in richer wealth are more likely to have unmet for FP [28]. It is not surprising for our finding to showcase that woman in richer and richest wealth category are more protected from unmet need for FP as opposed to those in poorer and poorest households, for a number of facts such as better access, affordability, financial capabilities to cover FP costs and transport amenities that allow them to reach to desired health facilities.

Our findings revealed that unmet FP need significantly differed by parity among both married and unmarried women. This evidence is supported, however, by the study conducted in Nigeria, which found a uniform distribution rate of unmet need for FP among nulliparous women, with a lower risk of unmet among null-para and multiparous women [28–30], contrary to our findings. These studies reported that nulliparous women and those who have more children have increased unmet needs for FP. However, it is not surprising to find that women who had many children tend to have less no likelihood of unmet need for FP. This may be because traditionally women with a higher parity, whether desired or not, probably are more inclined to use family planning methods as they consider having reached their ideal number of children.

Reasons for not using FP contraceptives among sexually active unmarried women vary across countries and population groups. In our study, about one in two women reported having infrequent sex as the prominent reason similarly to other authors in Ghana [31] and in the Guttmacher review of DHS surveys [32]. Reasons cited included being not in marriage, fear of FP side effects, infrequent coital activities commonly among sexually active unmarried women may lead them to lose the opportunity to seek FP contraceptives, which serves as evidence that addressing the FP contraceptive needs of these women is of paramount importance and inadequate information on FP contraceptive [32]. Others reported breastfeeding in Guinea [33] and health concerns [34].

We found that three-quarters of women intend to use FP contraceptives. This could be explained by similar cited reasons in Ethiopia like women's education, access to FP information, cost, place of residence, younger age, religion, pastoralist community, the number of children, influence sexually active women to either use or not intend to use FP contraceptive [35]. Thus, need for programs to increase community awareness of FP use, reaching all women population subcategories especially unmarried ones.

V. CONCLUSION

Our study found that slightly more than one in three unmarried women had an unmet need for FP. Richer, richest, nulliparous, and multiparous are less affected than their counterparts. There is a need for tailored social behavioural change messages on FP to women in poor wealth categories, and those with one to four children, as well as to implement interventions that address the unmet needs for FP among unmarried women.

VI. LIMITATION AND STRENGTHS

The limitation of this study relies on the cross-sectional nature which means causality was not inferred. Moreover, the RDHS 2019/20 collected data on sexually active women, pregnant and postpartum amenorrhoea women, whose unmet need classification is intended to be unrelated to current sexual activity and were not included in the survey, which would restrict deeper analysis of women's associated factors in general and intentions. This could be related to cultural barriers, stigma associated with sexuality and unintended pregnancy (present or previous) and recall bias. Nonetheless, this study is the first to unpack factors associated with unmet needs for family planning, reasons, and intentions to use FP among unmarried women in Rwanda. The findings will help policymakers address the family planning needs of sexually active unmarried women who were given little attention.

VII. ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The researcher requested in writing the ethical approval and permission to conduct the study from Mount Kenya University and obtained ethical clearance (MKU04/PGS&R/0768/72023). Additionally, the access and use of the DHS data set were requested and obtained from the DHS program. However, prior to conducting the survey, RDHS received ethical approval from Rwanda National Ethics Committee and ICF Institutional Review Board and the need of informed consent was waived due to retrospective nature of the study

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