

Prevalence and Factors Influencing Family Planning Use among Women with Non-Communicable Diseases in Urban Areas in Rwanda

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Abstract

Background

Women with non-communicable diseases (NCDs) are at an elevated risk of experiencing pregnancy-related complications. Usually, they are advised to use effective family planning (FP) methods. This study assessed the prevalence of FP use and the factors influencing their use among women with NCDs in urban areas in Rwanda.

Methodology

A descriptive cross-sectional study was conducted for 244 women aged 15-49 years attending follow up care in NCDs clinics at selected health centers and hospitals. Data were analyzed using SPSS version 25. Simple logistic regression was used to identify the association between independent variables and FP use, while multinomial logistic regression examined the strength of the identified association between both modern and natural FP methods.

Results

The prevalence of FP use among female with NCDs in reproductive age is 68.4%. The most common NCDs in the group are hypertension, diabetes, cancer, and heart failure. Women aged 25-34 mostly prefer to use modern FP method, the same as women living in the Southern Province. Furthermore, living with a partner had higher odds of using both natural and modern methods of FP.

Conclusion

Use of FP among women with NCDs remains suboptimal. There is a need for more individualized health education and counselling to support reproductive aged women with NCDs in making informed decisions about FP. Such efforts are essential to empower these women and promote their overall well-being.

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Keywords: Family planning, non-communicable diseases, women of reproductive age, contraceptive methods, Rwanda

Introduction

Family planning (FP) and non-communicable diseases (NCDs) remain priority at global and regional health agendas. In East Africa NCDs accounts for 40% of all deaths, where in Rwanda, mortality related to NCDs increased from 44% in 2017 and 45% in 2020.[1] Women with NCDs are at increased risk of pregnancy-related complications across all maternal age.[2] NCDs contribute to maternal morbidity and mortality.[3] Pregnancy complications attributable to of NCDs include preeclampsia, stillbirth, preterm delivery, small for gestational age, cesarian delivery and fetal malformation, macrosomia.[2,4]

Globally, by the year 2023, one in five women reported unmet need for FP and a 40% discontinued FP program within the first year of usage.[5] Additionally, a study done in New Zealand, nearly a half of the pregnancies that occur in women with chronic conditions were unintended.[6] Effective FP use is essential for minimizing pregnancy related complications and enabling women to conceive when their health is stable.

FP is an important intervention for controlling birth, limiting, and timely pregnancy planning. This intervention is more significant in women with chronic diseases, who face maternal and neonatal complications due to the high-risk pregnancies. An Australian study reported that one in five women of reproductive age has been diagnosed with at least one chronic condition that could lead to adverse health outcomes and pregnancy complications.[7] In India, pregnant women with NCDs demonstrated a high level of adherence to medication to control their chronic diseases to offer an opportunity for their babies to grow normally.[8] Women with chronic kidney disease experience reduced fertility rates; however, a study revealed that their use of FP methods remains low, despite the fact that pregnancy poses significant complications.[9]

In chronic heart diseases cases, pregnancies are contraindicated or pose high-risk. The main reasons being the teratogenic effect associated with common medications for heart disease, such as angiotensin converting enzyme inhibitors.[10] On the other side, women with heart failure contraindication to estrogen-containing contraceptives because of increased risk of developing thrombo-embolic disease.[10] Understanding contraceptive choices and related factors are the key to design FP services for women with NCDs.

Evidence from the United States, revealed that the majority of women with chronic health conditions used any form of contraception, those cardiovascular diseases used highly effective methods as compared to the ones with diabetes.[11] However, use of contraceptives remains low in women with chronic kidney diseases, and those on dialysis, though their fertility is affected by hormonal changes, still their pregnancies involve high-level complications.[9,12] Similar findings exist in Australia, indicating that young women with chronic diseases use contraception at the same rate as healthy women, but opt more for low-efficiency forms.[7] In Ethiopia, women with chronic diseases had a higher level of unmet needs in FP compared to their peers in the general population.[13] The same study revealed that lack of health education on contraception, perceived low risk of pregnancy, fear of side effects and drug interactions, need for husband's approval and never using contraception before were the reasons behind poor contraception use.[13] An effective FP can contribute positively to the quality of life of females with NCDs.

Rwanda has made significant progress in FP uptake since 2000s as part of its economic development plan.[14] According to the Rwanda Demographic and Health Survey (RDHS), 64% of married women use FP methods.[15] The same literature reported that women in rural areas had increased level on the use of FP as compared to their peers in urban areas.[15]

However, FP methods among women with NCDs remain unexplored. Therefore, this assessed the prevalence of FP use and its determinants among women with NCDs in urban areas in Rwanda.

Methods

Study design

A quantitative cross-sectional study was undertaken to assess FP prevalence and factors influencing the utilisation among women with NCDs. Cross-sectional design is a non-experimental research design which allows for gathering data that permits description and relationship assessment between variables.[16] This design was chosen as it is sufficient and suitable for getting one-time data in the form of self-reports on the use of FP and associated factors among women with NCDs.

Study setting

This study was carried out in three urban areas of Rwanda. Those are Kigali city, Huye district (Southern province), and Musanze district (Northern province) between August and September 2022. Rwanda is composed of 4 provinces and the capital city, Kigali. Each of these 4 provinces has a city which supports Kigali in terms of infrastructures and services. Kigali city and 2 more cities were randomly selected to represent urban women with NCDs vis a vis to FP. In each city, one health center and one district hospital were selected as study sites. We excluded faith-based health institutions as they only provide natural methods of FP.

Study population

The study population were women of reproductive age having any NCD and attending monthly follow-up care at the selected sites: Remera, Muhoza and Rango Health Centers, Kabutare Hospital, Kibagabaga and Ruhengeri Level 2 Teaching Hospitals. Inclusion criteria consisted of women aged 15-49 years, who were not pregnant and who attended a follow-up visit during the data collection period. In Rwanda, the right to get FP methods

starts at 18 years old. Besides this structure, teenage pregnancy was reported to be high, especially in low-income families.[17] The study was inclusive enough to recruit any female who had an NCD and who could conceive. Exclusion criteria included women who refused to consent to this study. We also excluded pregnant women as they could not provide their current practical experience on FP use.

Sample and sampling approach

As no previous studies had estimated the prevalence of PF use among women with NCDs, Cochran formula of unknown population was used and generated a sample size equal to 384.[18] At the study sites, the sampling frame of the eligible women was 244 participants. They all became the participants in this study.

Data collection process

A structured questionnaire adapted from an equivalent study carried out in Ethiopia on contraceptive use among women with diabetes and hypertension.[19] Unrelated variables to Rwandan context such as ethnicity were removed. A trained data collector placed at every study site collaborated with the NCD nurse. After clinical follow-up, eligible women were sent to the next room to complete the questionnaire. The data collection tool was a printed questionnaire, which was filled out by the data collector as per the participant's response. Information collected was on the age of women, religion, place of residence, educational background, employment status, type of NCD, duration of follow-up, counselling from healthcare providers, number of children and contraceptive practices. Operational definitions were applied to the specified variables. The FP practice was defined as natural and modern methods, such as hormonal, barrier, or sterilization methods. A woman was classified as a current FP user if she was utilising one of these methods, otherwise, she was considered as a non-user.

Data quality check and management

The adapted questionnaire was translated in Kinyarwanda, and subsequently translated

back into English to assess its consistency. Pretest was done to 10 individuals of similar characteristics to the study participants. The given feedback helped for variables adjustment and clarification. Data collectors were trained on the use of the questionnaire. All the 6 sites had a separate data collector to focus on accuracy and timely data collection. In addition, study coordinators visited sites a very week and collect already completed questionnaires.

Data analysis

The data was analyzed using IBM SPSS Statistics for Windows version 25.0 (IBM Corp, Armonk, NY, USA). Descriptively, frequencies and percentages were used to show the sample characteristics. The simple logistic regression was carried out to assess the effect of each independent variable (age, religion, province, marital status, level of education, employment, and the type of NDC) on the dependent variable (use of FP). The significance level set at $p < 0.05$ and a 95% confidence level to demonstrate the influence of the independent variable on the use of FP. In multivariable analysis, multinomial logistic regression was used to measure the strength of the identified association between both modern and natural FP methods.

Ethical considerations

Prior to commencing data collection, ethical approval was obtained from the University of Rwanda Institutional Review Board

No. 322/ CMHS IRB/2022, Kibagabaga Level 2 Teaching Hospital: No. 836/HOP. KIBAG/2022; Kabutare Hospital: No. 312/08/HOP. KAB/2022 and Ruhengeri Level 2 Teaching Hospital: NO. 666/ RRH/ DG/2022. Those approvals from hospitals also gave us the right to collect data from the health centers of that catchment area. Participants were informed of the study objectives, expectations, and the voluntary nature of their participation in addition to anonymity and data privacy being strictly maintained. To confirm their voluntary participation, they signed a consent form.

Results

Social demographic information of the study participants

The study participants were 244 allocated from 3 main urban areas in Rwanda which are Kigali city, Musanze city (Northern province) and Huye city (Southern province). Among them, the majority were aged 35 and above. Additionally, most of the participants were Christians. A large proportion of our participants had at most a primary education. A great percentage of participants reported that they lived with their partners. Regarding the employment status, farming and being housewife covered a three quarter of the occupations. The main NCD in this group of participants was hypertension, followed by diabetes mellitus, Table 1.

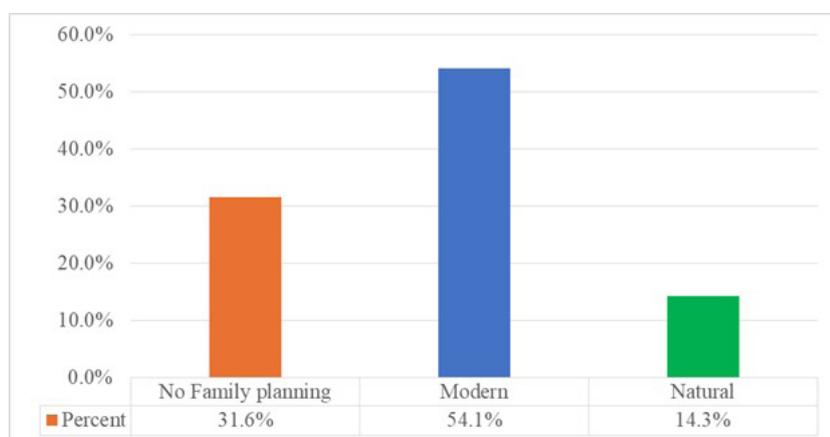
Table 1. Description of study participants (N=244)

Variables	Use of family planning		No Family planning	
	Total	Modern n(%)	Natural n(%)	n(%)
Age				
Less than 25	8 (3.3)	1 (0.8)	1 (2.9)	6 (7.8)
25-34	51 (20.9)	29 (22.0)	4 (11.4)	18 (23.4)
35 and more	185 (75.8)	102 (77.3)	30 (85.7)	53 (68.8)
Religion				
Christian	223 (91.4)	125 (94.7)	30 (85.7)	68 (88.3)
Muslim	15 (6.1)	5 (3.8)	4 (11.4)	6 (7.8)
Others	6 (2.5)	2 (1.5)	1 (2.9)	3 (3.9)

Table 1. Continued

Variables	Use of family planning		No Family planning	
	Total	Modern n(%)	n(%)	
Level of education				
No formal education	22 (9.0)	11 (8.3)	4 (11.4)	7 (9.1)
Primary	155 (63.5)	88 (66.7)	20 (57.1)	47 (61.0)
Secondary	53 (21.7)	24 (18.2)	9 (25.7)	20 (26.0)
University	14 (5.7)	9 (6.8)	2 (5.7)	3 (3.9)
Province				
Kigali City	63 (25.8)	38 (28.8)	12 (34.3)	13 (16.9)
Southern Province	78 (32.0)	45 (34.1)	4 (11.4)	29 (37.7)
Northern Province	103 (42.2)	49 (37.1)	19 (54.3)	35 (45.5)
Marital status				
Living with partner	197 (80.7)	115 (87.1)	32 (91.4)	50 (64.9)
Living without partner	47 (19.3)	17 (12.9)	3 (8.6)	27 (35.1)
Employment status				
Housewife	78 (32.0)	45 (34.1)	15 (42.9)	18 (23.4)
Farmer	98 (40.2)	52 (39.4)	12 (34.3)	34 (44.2)
Employed	41 (16.8)	23 (17.4)	3 (8.6)	15 (19.5)
Others	27 (11.1)	12 (9.1)	5 (14.3)	10 (13.0)
Types of NCDs				
Cancer	20 (8.2)	12 (9.1)	0 (0.0)	8 (10.4)
Diabetes	95 (38.9)	49 (37.1)	18 (51.4)	28 (36.4)
Heart failure	19 (7.8)	11 (8.3)	3 (8.6)	5 (6.5)
Hypertension	110 (45.1)	60 (45.5)	14 (40.0)	36 (46.8)

Types of Family Planning Methods Used by Women with Non-Communicable Diseases



Majority of the participants reported using different FP methods, with preponderance of modern over natural FP. About a third of the study participants did not use any contraceptive method for different reasons, Figure 1.

Figure 1. Types of Family Planning Methods Used by Women with Non-Communicable Diseases (N=244)

Reasons for not Using Family Planning Methods

Enquiry about plausible reason why 31.6% of women did not use any FP method shed some light on that problem. The reasons mentioned included the desire for pregnancy, fear of adverse effects, absence of or infrequent sexual relations, and prohibition by husband or religious beliefs.

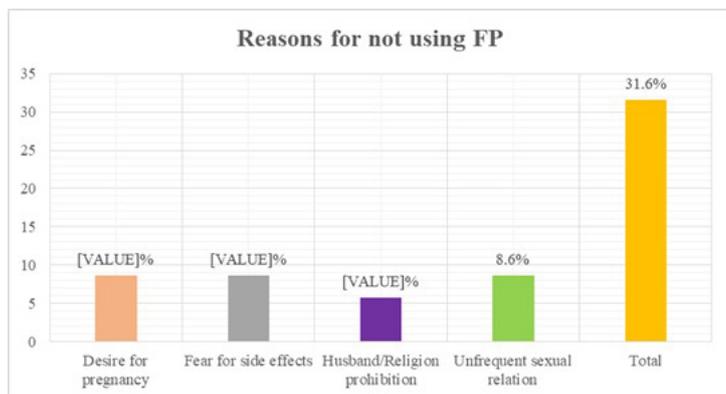


Figure 2. Reasons for not using Family Planning

Association of social demographic factors to FP use in the study participants

The following table illustrates the significant variables from bivariate analysis. The significant variables were age less than 25, living in southern province, living with a partner, and employment status.

Table 2. Unadjusted model of bivariate logistic regression between use of FP and sociodemographic characteristics

Variables	Use of family planning					
	Modern			Natural		
	COR	CI [95%]	P-value	COR	CI [95%]	P-value
Age						
Less than 25	0.087	0.010 - 0.738	0.025	0.294	0.034 - 2.563	0.268
25-34	0.837	0.426 - 1.645	0.606	0.393	0.122 - 1.268	0.118
35+	1			1		
Religion						
Christians	2.757	0.450 - 16.906	0.273	1.324	0.132 - 13.248	0.812
Muslim	1.25	0.146 - 10.699	0.839	2	0.150 - 26.734	0.6
Other	1			1		
Education						
No formal education	0.524	0.104 - 2.631	0.432	0.857	0.098 - 7.510	0.889
Primary	0.624	0.161 - 2.417	0.495	0.638	0.099 - 4.117	0.637
Secondary	0.4	0.095 - 1.680	0.211	0.675	0.096 - 4.766	0.693
Higher	1			1		
Province						
Kigali City	2.088	0.972 - 4.485	0.059	1.7	0.649 - 4.455	0.28
Southern	1.108	0.586 - 2.096	0.752	0.254	0.078 - 0.831	0.023
Northern	1			1		
Marital status						
Living with partner	3.653	1.829 - 7.295	<0.001	5.76	1.613 - 20.565	0.007
Living without a partner	1			1		
Employment status						
Housewives	2.083	0.765 - 5.672	0.151	1.667	0.466 - 5.956	0.032
Casual labor	1.275	0.496 - 3.276	0.615	0.706	0.200 - 2.487	0.588
Employed	1.278	0.442 - 3.695	0.651	0.4	0.078 - 2.062	0.273
Others	1			1		

COR: Crude Odd Ratio, CI: Confidence Interval, was at 95%, P-value < 0.05

The factors independently associated with the use of FP are shown in the table 3. The results indicate that participants aged 25–34 years had lower odds of using natural FP compared to those aged 35 years and above (AOR = 0.264; 95% CI: 0.076–0.913; P- = 0.035). Additionally, participants from the Southern Province had reduced odds of using natural FP compared to those from the Northern Province (AOR = 0.233; 95% CI: 0.068–0.795; P- = 0.020).

Furthermore, participants living with a partner were significantly more likely to use FP methods. The odds of using modern FP methods were 3.29 times higher in women living with their partners as compared to women living without partners (AOR = 3.293; 95% CI: 1.549–7.000; P- = 0.002). The odds of using natural FP methods were 6.7 times higher (AOR = 6.740; 95% CI: 1.662–27.336; P- = 0.008) in women living with their partner compared to those not living with a partner.

Table 3. Regression analysis of demographic factors associated with FP use

Variables	Use of family planning					
	Modern			Natural		
	AOR	95% CI	P-value	AOR	95% CI	P-value
Age						
Less than 25	0.121	0.012 -1.190	0.070	0.856	0.072 -10.244	0.903
25-34	0.684	0.328 - 1.423	0.309	0.264	0.076 – 0.913	0.035
35+	1			1		
Provinces						
Kigali City	1.784	0.749 - 4.246	0.191	1.576	0.505 - 4.921	0.434
Southern	1.163	0.582 - 2.322	0.669	0.233	0.068 – 0.795	0.020
Northern	1			1		
Marital status						
Living with partner	3.293	1.549 -7.000	0.002	6.740	1.662 – 27.336	0.008
Living without aapartner	1			1		
Employment status						
Housewives	2.951	0.979 – 8.901	0.055	2.053	0.503 – 8.381	0.316
Casual labor	1.352	0.499 – 3.659	0.553	0.847	0.217 – 3.313	0.811
Employed	1.299	0.425 -3.974	0.646	0.366	0.065 – 2.070	0.256
Others	1			1		

AOR: Adjusted Odd Ratio, CI: Confidence Interval; P-value<0.05

Discussion

This study aimed at presenting the prevalence and factors associated with FP use in women with NCDs in urban areas of Rwanda. The majority reported using FP, either modern or natural methods. The common NCDs observed in this group were: hypertension, diabetes mellitus, cancer, and heart failure. Women aged 24-35 years and the inhabitants of the Southern Province were less likely to use natural FP methods.

Additionally, using both methods of FP was more likely to happen in married or women living with their partners compared to the ones living without partners.

The overall prevalence of use of FP among those with NCDs in our study was 68.4%. This finding is low compared with 87% of US women with chronic diseases reported to use any method of FP.[11]

This discrepancy can be linked to the literacy level of women, health infrastructure, and overall living standard of a developing to a developed country. A mapping review done on 3 African countries during the period of 2000 to 2020 have shown the trend of FP use at 13.2% - 38.9% in Burkina Faso, at 0.4% - 76.3% in Kenya and at 0.9% - 31.8% in Nigeria.[20] Rwanda Demographic and Health Survey (RDHS) 2019-20 stated the use of contraceptives was at 64% for married women aged 15-49 in the general population.[21] Additionally, in Rwanda, contraceptive use is higher in rural areas than in urban areas, 65% to 61% respectively.[15] The observed increase of FP use over that in the general population could be linked to the perceived burden associated with NCDs on pregnancy.

In our study, the predominant NCDs identified were hypertension, diabetes, cancer, and heart failure. A study done in India reported eight common NCDs in reproductive aged women; these were: anemia, obesity, diabetes, hypertension, thyroid disease, asthma, heart disease and cancer.[22] The later study captured comprehensive data as it used the National Family Health Survey. Our study was done on few health institutions with a limited package of activities. A comparable study done in Australia reported asthma, depression, anxiety, heart failure and diabetes respectively as the main NCDs in reproductive age women.[6] The discrepancy with regard to depression and anxiety which is not reported in our study is attributable to the fact that in Rwanda these conditions are managed under the mental health units, therefore they do not appear within the so-called NCDs clinics.

This study identified the prevalence of modern contraception at 54.1% which is almost similar to 53.8% of females with diabetes and hypertension in Ethiopia.[19] An overall prevalence of modern FP use among females in 9 East African countries is at 45.68%.[23] This supports the assertion that most in this group of women apply effective contraceptive methods

such as IUD and implants control childbearing.[24] Contrary to a study done in Australia, women with chronic diseases use more low efficacy contraceptive and condom than their peers in the general population even though they both share equal prevalence in the use of FP.[7]

Furthermore, women aged 25-34 were less likely to use natural FP. The same as in other studies, young women prefer to use modern contraceptives.[19] This may be linked to the high effectiveness and reduced precaution while using modern FP methods which seems more feasible to young ladies. In fact, natural methods of FP require strict rules as well as physiological criteria such as the length of menstrual cycles which is not applicable to all women.[23] More importantly, contraceptive methods have various options such as hormonal and non-hormonal forms which benefit a variety of women.

Our study finding revealed that women inhabitants of Southern Province are less likely to use natural FP as compared to Northern Province inhabitants. Probably, social economic disparities, where Southern province has little agricultural production as compared to Northern province could have an influence on their choice. Our results bring insights that as agriculture production is low in Southern province, this may lead the inhabitants of this region to opt for effective or modern methods of FP as compared to natural ones. Additionally, the culture of having larger families as a sign of power can influence the dwellers of Northern Province not to stick much on long acting and strict methods of FP.

Living with a partner influenced positively the use of both natural and modern FP. This can be linked to high perceived risks associated to conception when it superimposes any NCD. Both the husband and wife can decide together to control or limit births.

In this study, 31.6% of the respondents were not using any FP method. Among the non-users of FP, the main reasons were the desire for pregnancy, fear of side effects, infrequent sex as well as husband or religious prohibition. In the 2019/20 RDHS, the stated discontinuation reasons for FP were at 30% for side effects, 28% wanted to become pregnant and 14% of them preferred a much stronger method,[15] which is largely consistent with our results. Similar results have been reported in Ethiopia.[19] The FP should be an integral part of care especially in women with NCDs to be able to make an informed decision before pregnancy.

Strengths and Limitations

The present study aimed to determine the prevalence and associated factors for the use of FP in women with NCDs. It maximized investigating through the available sample frame which reduces selection bias. More importantly, it was done in different urban areas of Rwanda to the level of representing FP use in female with NCDs. Some of the limitations were to gather only quantitative data of this special population. In addition to relying only on self-reported information which can have some differences with the real clinical situation of the participants.

Conclusion

The findings of this study report the prevalence of FP use among women with NCDs at 68.4%. The common NCDs in this group were hypertension, diabetes, cancer, and heart failure. The factors associated with FP use are age, area of residency and marital status. Whereas the reason for not using FP were desire for pregnancy, fear of side effects, religious believes and infrequent sexual activities. Therefore, there is a need to continue health education on FP topics. Individualized health education of FP may be more beneficial. To enable reproductive aged women with NCDs for informed choice and promote their wellbeing. A mixed method looking at rural and urban women with NCDs will be preferred to capture comprehensively the challenges and possible resolutions.

Authors' contribution

VD drafted the title of the study, manuscript writing, ethical clearance request, manuscript writing and review of journal's feedback. RN, SN, VD, FB, RD, JM, CU, CG, MN, DM, TM, MLT, GK, MLIB manuscript writing and data collection. TCU adjusted to title, revised the manuscript, JDH made data analysis and review of journal's feedback.

Conflict of interest

The authors declare no conflict of interest.

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