Modern Contraceptive Use Among 15-34 Sexually Active Unmarried Young Females in Rwanda: Secondary Data Analysis of 2014-15 Rwanda Demographic and Health Survey

A dissertation submitted in partial fulfillment of the requirements for the degree of

Master of Public health

College of medicine and health sciences

School of Public Health

By

Jean Pierre NGANABASHAKA

Supervisor: Dr Laetitia NYIRAZINYOYE

Co-supervisor: Mr. Albert NDAGIJIMANA

Kigali, November, 2016

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DECLARATION

I, Jean Pierre NGANABASHAKA, hereby declare that the thesis has been written by me without any external unauthorized help, that it has been neither presented to any institution for evaluation nor previously published in its entirety or in parts. Any parts, words or ideas, of the thesis, however limited, which are quoted from or based on other sources, have been acknowledged as such without exception

Abstract

Background: This study aimed to determine current contraceptive prevalence rate as well as determinants of modern contraceptive use among 15-34 years old sexually active unmarried young females in Rwanda.

Methodology: This is a cross-sectional study that used secondary data analysis of 2014-15 Rwanda Demographic and Health Survey data. Univariate analysis was used to compute the modern contraceptive prevalence rate. Bivariate analysis and logistic regression (multivariate analysis) was used to determine factors associated with modern contraceptive methods use in young female Rwandans.

Results: The modern contraceptive prevalence rate among sexually active unmarried young females aged 15-34 years was found to be at 11.4%. Age of respondents (OR=5, 95% C.I:2.65-9.44), religious belief (OR=3.29, 95% C.I:1.58-6.8), employment (OR=1.37, 95% C.I:1.02-1.83) being visited by family planning worker (OR=1.59, 95% C.I.:1.2-2.5), and being told about family planning in last 12 months (OR=2.77, 1.8-4.23),were all significantly revealed to determine modern contraceptive use among sexually active unmarried young females aged 15-34 years.

Conclusions: The modern contraceptive use among sexually active unmarried young females aged 15-34 years is still low. Interventions aiming at improving the knowledge, the accessibility and attitudes to contraceptive methods use among unmarried young female are recommended.

Resume

Contexte: Cette étude visait à déterminer le taux actuel de prévalence contraceptive ainsi que les déterminants de la contraception moderne chez les filles âgées de 15 à 34 ans, sexuellement actives, non mariées ans au Rwanda

Méthodologie: Il s'agissait d'une analyse secondaire des données de l'enquête sur la démographie et la santé au Rwanda de 2014-15 qui est la cinquième série d'études transversales à l'échelle nationale. Une analyse univariée a été utilisée pour déterminer le taux de prévalence contraceptif moderne. Une analyse bivariée et régression logistique (analyse multivariée) a été utilisée pour examiner les déterminants contraceptifs modernes.

Résultats: on a constaté que le taux de prévalence contraceptive moderne chez les jeunes filles non mariées sexuellement actives âgées de 15 à 34 ans était de 11,4%. Age des répondants (OR = 5, valeur p = 0,000), croyance religieuse (OR = 3,29, p = 0,001), statut de travail (OR = 1,37, p = 0,032), visite par le travailleur de la planification familiale (OR = 1,59 , Valeur de p = 0,009), et être informés sur la planification familiale au cours des 12 derniers mois (OR = 2,77, valeur p = 0,000), ont été révélés de façon significative pour déterminer l'utilisation moderne des contraceptifs chez les jeunes filles non mariées sexuellement actives âgées de 15 à 34 ans.

Conclusions: L'utilisation moderne de contraceptifs chez les jeunes femmes non mariées sexuellement actives âgées de 15 à 34 ans est encore faible malgré son importance. Il est recommandé d'intervenir en vue d'améliorer l'utilisation de la contraception moderne chez les femmes non mariées et d'habiliter les jeunes filles à retarder les premières activités sexuelles chez les jeunes filles.

Dedication

This thesis is dedicated to almighty God, to my parents who taught me the best basic kind of knowledge that helps me achieve more.

My heartfelt special dedication goes to Dr Maestro A. Evans for his unconditional love, to Dr Samuel Malamba for his support and guidance and finally my brother Theogene BAHIGIRORA for his priceless interventions to achieve this work successfully.

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Dr Laetitia NYIRAZINYOYE and Mr. Albert NDAGIJIMANA have been ideal supervisors. Their sage advice, insightful criticisms, and most importantly patient encouragement aided the writing of this thesis in innumerable ways. I am also thankful to the University of Rwanda/College of medicine and health sciences, school of Public health for allowing and providing all requirements to achieve this.

List of abbreviations

AIDS : Acquire Immunodeficiency Syndrome

CBSE : Curriculum Based Sexuality Education

DHS : Demographic and Health Survey

HIV : Human Immunodeficiency Virus

IUD : Intrauterine Device

MOH : Ministry of Health

NISR : National Institute of Statistic of Rwanda

OR : odds ratio

RDHS : Rwanda Demographic and Health Survey

RPHC : Rwanda Population and Housing Census

SPSS : Statistical Package for Social Studies

STIs : Sexually Transmitted Infections

UN : United Nation

UNFPA : United Nations Population Fund (formerly United Nations fund for population _activities)

USAID : United States Agency for International Development

USD : United States Dollar

WHO : World Health Organization

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I. Background

0. Introduction

Rwanda is among developing countries with low income, approximately USD 701 per capital income with the highest population density in Africa (434 people /km2). The natural population growth of Rwanda is 2.79% and the total population of Rwanda is 10, 996,891millions, estimated to be 13.48millions in 2020 (1).

Several poverty reduction strategies in economic development and poverty reduction strategies have been implemented to improve wellbeing of the population (2). However, this cannot work as long as the population is growing faster overpowering the income rate of the population (3).

The government of Rwanda has remarked that family planning has a great impact towards addressing the high population rate that is seen as one of its biggest challenges to sustainable development and achieving not only the wellbeing of the population but also meeting the sustainable development goals specifically goal 1:no poverty, goal 2: zero hunger, goal 3: good health and wellbeing, goal 4: Quality education (4).

Family planning allows individuals and couples to anticipate and attain their desired number of children, spacing them and timing of their births, the target population is all women and men in reproductive age (15-49); Rwanda family planning strategic plan II includes also the prevention of early pregnancy among adolescent female population as well as benefits of modern contraceptive use among most-at-risk populations, such as sex workers, through contraceptives offering dual protection against pregnancy and HIV(5).

Rwanda has made dramatic gains in the use of modern contraception. As the results from Rwanda Demographic and Health Survey (RDHS) 2014-15 indicates, use of modern contraceptive methods among married women has increased from a base of just 4% in 2000 to 47.5% in 2015. Although, there was a remarkable increase in family planning over 15 years ago, it became stable since 2010 with 45% of contraceptive prevalence rate and this might have been

due to Rwandan socio-cultural and religious influences including the one that presumes the non-usage family planning among unmarried population (5) .

RDHS 2014-15 showed that Rwandan couples decide to use family planning services as the number of children increases, thus a need for earlier family planning education among not only couples but also youth so they may think of the needed children earlier(6).

Population projection reports done by National Institute of Statics of Rwanda (NISR) estimates 18% (2212199) of the total population (12,365,180) are female youth aged 15-34 years old in 2016 (7).
These are people who are at risk of reproductive health problems (unintended pregnancy, abortion, STIs) when they are not well protected and handled carefully.

Regardless of not desiring pregnancy among sexually active youth, their modern family planning methods adherence is low (8) which put them at high risk of undesired pregnancy and related consequences, sexual transmitted infection and HIV/AIDS included.

In Rwanda 6.8% of overall (male and female)youth reported to have their first sexual intercourse between 15-19 years old (6), despite this earlier engagement in sexual activity two-third overall and almost three-fourths of unmarried female sexually active in western province are not using any contraceptive methods (9).

The unmet need for family planning is highest among this group of women despite the serious socioeconomic burden caused by outside marriage sexual activities, unmarried women age 15-24 ranges from a low of 7.3 percent in Ukraine to a high of 69.5 percent in Senegal (10).

Countries in West and Central Africa and East and Southern Africa have on average the highest levels of contraception unmet need among unmarried women, at about 40%; East African countries' estimates for unmarried women age 15-24 were 54.4. About 33.4% for Rwanda in

2010, 47.1% for Kenya in 2008/9, 37.5% for DRC in 2005, 33.1% for Tanzania in 2010, 33.8% for Uganda in 2011and 62.2% Burundi in 2010 (10) .

The 2010 Rwanda Demographic and health survey data showed that there were 56% overall and 69% in western province of single sexually active women aged 15-24who have had unmet family planning need (11). In their study on cost and benefits of investing in family planning, Singh et al stated that three out of four induced abortions could be prevented by fully meeting family planning need (12).

It has been found that though they still small in absolute number the 15-24years old unmarried females in Rwanda have increased by more than a half from 2000 to 2010 and two third of them are not enrolled in any contraceptive methods making them vulnerably exposed to unintended pregnancy and related problems (9).

Unmarried female still face social stigma against sexual activities outside marriage discouraging them to ask for family planning services which in turn increases their unmet needs in family planning (9) thus exposing them to unintended pregnancies.

Generally unintended pregnancy is a worldwide problem with Rwanda no exception.

Estimated 16 million teenage girls become mothers every year worldwide and sub-Saharan Africa representing the highest number, where 20%–40% of teenagers are mothers or currently pregnant (13); 11% of teenagers participated in a research done in Kenya (n=306) reported to have had pregnancy and 76% of them claimed their pregnancy to be unintended (14) .

There were 114 unintended pregnancies per 1000 women in Rwanda in 2008 which is quite equal to Eastern African rate of 118 cases per 1000 women in the same year (9);

Unintended pregnancy results in unplanned births which associated with many other socio economic burdens especially in unmarried female this implies the need to escape from this problem and the most preferred way is an induced abortion.

No woman or sexually active unmarried female ever intends to abort her pregnancy but when they face unintended pregnancy, many women, unmarried females in particular see no choice out except abortion (9).

There is increase in unsafe abortions globally to 21.6 million in 2008 from 19.7 million in 2003 while these were between 19 and 20 million during 1990 -2000 period. Worldwide one over 10 pregnancy ends in unsafe abortion; 1 in 8 maternal death were due to unsafe abortion in 2008 and 47000 women died from unsafe abortion complications; 62% of all death (29000) due to unsafe abortion occurred in Africa (15) , There were an estimated 36 abortions per 1000 women in Tanzania (16), these estimates are not specific to unmarried female but this category have no exception considering their low contraceptive use and their sexual activities.

The number of unsafe abortions will most likely continue to increase unless measure to safe abortion, contraceptive use and women empowerment (including their freedom to decide on family planning) are put in place and further reinforced (15), in this study we only focused on the contraceptive use as one of the three mentioned above measure proposed by World health organization.

In Rwanda the annual abortion rate was estimated to be 25 per 1000 women in 2009. The low and high estimates ranged from 18 to 32 per 1000 women varying across the provinces (17).

Most of the abortions are done unsafely mainly due to stigma and legal restriction in most of developing countries; this unsafe abortion results in deaths and other physiological complications not forgetting the socioeconomic burden (17).

Globally the abortion-related deaths have decreased significantly other than Oceania, where no significant change occurred, and sub-Saharan Africa, where the number of deaths increased significantly after abortion (18).

In Rwanda, there is not precise number of abortion related morbidity, the only published study done in four health districts in Rwanda was in 2004 estimated 50% of obstetric complications to be induced and spontaneous abortion (17)

Teenagers who give birth at age before 15 are five times more likely to die during pregnancy or delivery as in their 20s, partly as a result of physical immaturity. Adolescent mothers are vulnerable and suffer more during and after pregnancy (19) .

Addressing the low family planning usage in young unmarried women will resolve most of the problem faced by unmarried young female namely unintended pregnancy, unsafe abortion, unplanned birth and other related socioeconomic problems.

There is no published study done on modern family planning usage among 15-34unmarried female in Rwanda. This study aimed to investigate the current usage of modern family planning in 15-34unmarried young females as well as determinants of family planning use among unmarried young females

1. Problem statement

Today's world population is dominated by adolescent s and youth in general with an estimation of a quarter of the whole world population; these people are mostly not married and are sexually active, in many of African countries' culture, sexuality out of marriage is prohibited and family planning is also strange when it comes to its practices in unmarried people especially adolescent and youth (20) . These cultural attitudes block the compliance of family planning in unmarried youth.

It has been evidenced that today's youth are not ready for abstinence until marriage , their engagement in sexual behavior without contraceptive use and other reproductive health information results in different problems mainly unwanted pregnancies and births, earlier motherhood, unsafe abortions, maternal and child mortality rise among other related complications (21).

This means that policy makers need to carefully design different programs to care and satisfy about their needs mainly in sexual reproductive information and services otherwise the world may face a great burden of overpopulation which brings many socioeconomic problems mainly poverty, maternal and child mortality rate increase.

Researchers have evidenced the low use of family planning among unmarried young female despite their sexual activity being higher exposing them to several problems that do not only burden themselves but also their families and their countries (22). This shows a need for quick interventions targeting this group of population to avoid those issues.

In Rwanda specifically there is a scarcity of evidence in contraceptive use among unmarried female aged 15-34 years old. This study aimed to find out the current use of modern contraceptive use among 15-34unmarried females as well as the factors determining the modern contraceptive use in this age category.

2. Aim of the study

The aim of this study was determine the current usage of modern contraceptive use among 15-34 unmarried young females as well as determinants of modern contraceptive use in this category of population.

3. Objective of the study

1. To determine the current prevalence rate usage of modern contraceptive use among 15-34 unmarried young females in Rwanda
2. To identify the determinants of modern contraceptive use among 15-34 unmarried young females

II. Literature review

1. Overview of family planning in young female

The today's word is largely dominated by a cohort of young population estimating 1.8 billion people aging from 10 to 24 which represents a quarter of the total world population (20). This population dominated by youth goes alongside the great needs in terms of sexual and reproductive health information and services, for example there will be great needs of preventing adolescent unintended pregnancies, abortions, HIV infections, earlier motherhood of the young girls, high school dropout due to motherhood and pregnancy. Apart from these health related challenges, countries will experience socio economic problems due to this population. Most these problems affect girls

The united nations population fund estimated 16 million girls aged 15-19 and some 1 million under 15 years old give birth every year and most of them are from middle and low income countries, in the same report the WHO stated that the complication during pregnancy and child birth are the second cause of death for 15-19 years old girl globally(23).

In 2008, 13 % of all maternal death were due to unsafe abortion and estimated 47000 women die due to complication of unsafe abortion(15).

Young girls especially unmarried in reproductive age are likely to resort to unsafe abortion when they come across with an unplanned pregnancy. When the laws for safe abortion are restricted or not applicable at all, the only option available is to do it unsafely which lead to several complications and death included.

In response to these youth sexual and reproductive health related problems the WHO published guidelines in 2011 with the United Nation Population Fund (UNFPA) on preventing early pregnancies and reducing poor reproductive outcomes where to increase contraceptive use in adolescent was among the 6 recommendations for action that countries could take to prevent these problems(23).

These guidelines recommend countries to facilitate adolescent and youth accessing and using sexual and reproductive health information and services through formulating laws and policies to

increase adolescent access to contraceptive information and services, including emergency contraceptives, undertake interventions to influence community members to support access to contraceptives for adolescents, improve health service delivery to adolescents as a means of facilitating their access to and use of contraceptive information and services and strengthening the curriculum-based sexuality education (CBSE), to increase contraceptive use among adolescents.

Despite these recommendations, in some countries parents and teachers are not willing or able to discuss about sexuality in unmarried population (21), some health providers are restricting contraceptive use in unmarried (24)

Sexual and reproductive health education is still a challenge in youth compliance with contraceptive use.

Many female youth in developing countries are sexually active and want to avoid, delay or limit pregnancy, but many do meet their needs mostly due to both socio-cultural and structural barriers, this is greater among unmarried adolescents than among married adolescents as evidenced by recent study of trends (25).

The DHS comparative estimates of unmet need for family planning as well as current use of Contraception in 15-24 years young girls shows that the unmet need among sexually active, unmarried women age 15-24 ranges from a low of 7.3 percent in Ukraine to a high of 69.5 percent in Senegal (25).

Countries in West and Central Africa and East and Southern Africa have, on average, the highest levels of unmet need among unmarried women, at an average of about 40 percent compared to 15.4 percent in Eastern Europe and Central Asia and 24.9 percent in Latina America.

Contraceptive use among unmarried sexually active young female is generally low not only in developing countries but in in developed countries too(25).

For example in United States a study done investigating the contraceptive methods among adolescents and young women has revealed that at last sex, only 20.7% of them used contraceptive method(26).

A study done in china on contraceptive use among female university students revealed that only 28.3% have ever tried to used family planning in their sexual activity (27), whereas a study done in Pakistan on determinants of contraceptive revealed the female youth engagement in

contraceptive use is lower at 21% (28) and Malaysian young female students reported to have used contraceptive at 37% in a study on Determinants of sexual activity , awareness , and use of contraception (29).

The African countries represent no exception to the low contraceptive use among sexually active unmarried female, the demographic and health survey comparative study done in 2014 showed that the contraceptive use among the sexually active unmarried young females in Burundi was at 16.7% in 2010, Kenya at 44.3% in 2008/9 and Uganda at 49.8% in 2011 (25). In Rwanda the current Rwanda Demographic and Health Survey (2014-15) showed that current contraceptive use in this age category was 36% compared to 53% of the total population.

Several other studies have been conducted to see the contraceptive prevalence rate in different age category and found different rates, for example studies done in Kenya, Ghana and three countries at the same time (Burkina Faso, Ethiopia and Nigeria) on Contraceptive Use among sexually adolescents aged 15 – 19 showed that the contraceptive prevalence rates was at 8.6%, 14.6%, 11.2%, 24,1%, 7,8% respectively (30) , (31), (8)

Understanding the determinants of contraceptive use among sexually active unmarried young females will help design different programs to empower and facilitate young female to achieve their ambitions through prevention of unwanted pregnancy and related complications.

These above mentioned prevalence rates represent the sexually active unmarried females' use of contraceptive method generally in different categories married ones including and this study used data from RDHS 2014-15 to find out the prevalence as well as the determinant of contraceptive use in unmarried young female aged 15-34 years old in Rwanda.

II.2. Determinants of family planning in youth

2.0. Introduction

Despite the socio economic problems related to high density family planning is still taken as a very sensible topic discuss not only in youth but in the whole population especially in sub-Saharan African countries. In this part we discussed different factors influencing positive behaviour towards family planning acceptance and uptake in youth.

Literature review showed a great number of determinants of family planning in youth. Young Female family planning determinants may include the individual characteristics of the young person; the people with whom they interact; the families and adults in the community; institutions, such as schools, workplaces, and religious organizations; and communities' norms, sexual behaviour, marriage and child bearing attitudes(32). It is important to know that there is an interdependence of different level of determinants namely individual level, family level and societal/community level.

1. Determinants of youth modern contraceptive use in at individual level

This include individual socio-demographic characteristic of young female that can determine family planning use, these include the age of the young female, education level, working status, knowledge of their ovulatory cycle and visits by a reproductive health worker or visit a health facility.

The low knowledge about sexual and reproductive health in young female is sometime associated with misunderstanding and dangerous sexual behaviour, for example, in a study carried out in Nigeria, adolescent females believed that they could not get pregnant if they washed their sex or jumped up and down after intercourse, in this study they also stated that contraceptive have a long term fertility negative impact whereas they think abortion is an immediate solution to an unplanned pregnancy with limited negative impact on future fertility (33).

In his study on Prevalence and correlates of contraceptive use among female adolescents in Ghana, Nyarko found that the younger age female adolescent were less likely to use contraceptive compared to their old female colleagues with 3.49 odd ratio, he also found the significant different in family planning uptake in female who have formal education compared to their colleagues with no formal education with 7.39 odd ratio. In the same study was evidenced that contraceptive uptake in employed female adolescent were 2.99 time more than the non-employed counterparts. There was also significant difference in family planning uptake in female adolescent who have at least visited a health facility and having knowledge about their ovulatory cycle (31).

In their studies on talking about sex in India McDougall et all (2011) found that having more years of education, knowledge of contraception and reproductive health through reproductive health /family planning worker visits and family life education classes attendance are strong determinants of young female family planning use (34).

Understanding these individual factors of family planning in this age group will help the planners to specify their target group knowing their needs and how to address them.

3. Determinants at family and Community level

Family planning uptake and success in unmarried young female is multifaceted involving different factors; do not only depend on individual level (young female themselves) only but also their families' behavior and attitude to sexual activities among the unmarried female, the families flexibility and willingness to discuss with their children about sexual and reproductive health contribute a lot in family planning use in unmarried female.

Many adolescent female in developing countries are sexually active, An estimated 250 million adolescent girls aged 15-19 live in developing countries, this accounts for about one-sixth of all women of reproductive age (15-49).this age category have special sexual and reproductive health needs compared to adults, and they are often more vulnerable, have less sexual and reproductive

health knowledge, and face more obstacles to accessing sexual and reproductive health services, including family planning (35).

Actually family has responsibility to provide the education, protection and other basic human rights including reproductive health education to their children however different s norms, cultural beliefs and myths may significantly affect their children knowledge of sexual and reproductive health which impact their uptake in family planning despite its importance to their wellbeing and to the country development as well.

The Young female family planning decision are greatly influenced by social norms and gender balance attitudes of the family around her, the belief that girls' primary value and role in the society is being just a wife or a caregiver may negatively affect their right to sexual and reproductive health services family panning included (35).

Some societies prefer their sons' education than their daughter, reviewing girls' education, skills building and spending in girls as a waste of wealth and times which come out with female low school enrolment these results in poor or no reproductive health knowledge. In his study, Lloyd in 2006 on Schooling and adolescent reproductive behavior in developing countries, found that girls with no education have more than four times birth rate of those with a certain education level. This shows how worth is the families to invest in their daughters' education. The study has evidenced that each year added to girls' education increases contraceptive used and reduce the unintended birth by ten percent (36).

It is through education that not only young girls but also their counterpart boys get knowledge about gender balance, sexual and reproductive health, different contraceptives and their use therefore removing different myths, misconception and other incorrect understandings of contraceptives use.

Religious belief of some communities assuming that people should always accept what God have given to them and never pretend to control their fertility this lead to unintended pregnancy and low family planning use in both married and unmarried girls. In study done in Nigeria on high

fertility in Islamic community women reported intentionally giving birth to many children in order to prevent men's tendency to divorce or engage in plural marriage (37) . Thought this study was done in Nigerian women; It is reasonable to think about this attitude and their influence on their youth female which are the future women. In other study about Barriers of Modern Contraceptive Practices among Asian Women showed that Muslims women have a great resistance to contraceptive use (38).

Further the fear of relationship break up for girls pushes them to just have sex without any contraceptive use believing that having a child will secure a relationship and further financial assistance from the partner (39)

This contribute more to low the family planning use in mainly unmarried females leading to several social economic problem related to out of marriage births.

Young girls might want to limit, prevent or delay their pregnancy to their desired time of marriage but encounter many barriers impeding them from choosing different contraceptive methods even when they are available just due to their community stigma based on adolescent and out of marriage sexuality, It makes it hard for them to get information and services about reproductive health (40).

With this stigma it is even more difficult to the adolescents in these communities to discuss with their parents about sexuality leaving them unable to express their sexual and reproductive desires.

In many communities, adults, from parents to medical practitioners, are frequently uncomfortable with adolescent sexuality and clearly prefer that teenage girls remain abstinent until marriage. This a part of their cultural taboos that block parents and teachers from talking about sexuality and reproductive health to unmarried youth mostly driven by the incorrect belief that providing this information will make their youth more exposed to prostitution, However, the evidence is increasingly clear that as the transition reveals adolescents are less likely to care the 'abstinence only' message thus a back-up plan involving contraceptive use is vital (21)

In his study done in Nigeria Izugbara For instance, found that only 39 percent of parents surveyed had at least talked sex issues with their children in the year before the study (41).

It is clear that these youth when engaged in sexual activity without any knowledge or guidance will doubtfully face several problems including Sexually transmitted diseases and unplanned pregnancy related problems.

It is easily understood that girls in the communities where sexual and reproductive health services and information are restricted to adults will experience fear and embarrassment due to stigma encountered when looking for those services.

In some societal system gender equality often gives little or no power to in their relationship and may feel they have to sacrifice for their partner desires, with this power imbalances young girls have a limited self-esteem to take action and think about contraceptive use leading to unplanned pregnancy most of the time, this is often seen in "sugar daddy" type of relationship (21)
Other studies revealed that despite youth's effort in seeking family planning services, they may still face many other challenges including poor quality services that do not respond to their specific needs or if available are inappropriate to them as youths (21)

Many other youth, especially those in rural area and non-educated one do not even know where to find the contraceptive, a study done in Burkina Faso, Ghana, Malawi and Uganda found that 22 to 49 percent of females and 25 to 41 percent of males adolescents aged 12-19 were not aware of any source to seek for contraceptive services (42).
The economic barriers also play a great role in the contraceptive use in youth as shown in study done in Uganda where Nalwada et al found that cost of the travel going for family planning seek as well as for the method itself hinder the youth family planning use (40).

Additionally the providers' technical competence in delivering reproductive services in general and more specific to youth can determine the family planning adherence in this age category, providers may bias what methods to offer to youth, what to talk to them and how private and confidential is the services delivery rooms (43).

Providers may create a kind of discourage and stigma to youth contraceptive use by creating unnecessary restriction such age marital status or ask for parental consent before delivering services (21).

In some cases provider may create restrictions or simply refuse youth contraceptive use basing just on their moral judgement of what is appropriate for youth (21), In studies done in Senegal on role of providers in young women access to contraceptive almost half of providers indicated that they were unwilling to provide any contraceptives to adolescents (24).

Deep understanding of the different factors determining the contraceptive and reproductive health services use in unmarried young female will clear out the target group for interventions, how, when and where to focus more and this will improve the young female wellbeing and the nations as well.

4. Role of family planning in young female

Worldwide, more than 16 per cent of people are adolescents, among them 1.2 billion aged 10-19 and an estimated 250 million adolescent girls aged 15-19 live in developing countries, and account for about one-sixth of all women in reproductive age (44).

Adolescent girls are sexually active and they need a special sexual and reproductive health needs when compared to adults, they are more exposed different sexual and reproductive health related problems, in many countries especially developing countries out of marriage sexuality is considered promiscuous. In fact sexual activity is for married people and out of marriage is taken as taboo and many programs implemented are targeting married women contraceptive use; however the unmarried young female who are very sexually active are often neglected(35)

Sexually active young girls especially those who are unmarried experience a serious stigma to seeking for family planning services exposing them mainly to sexual and reproductive health problems (21); unintended pregnancies is more likely to be faced by them.

These unintended pregnancies results in unplanned births which have a great social economic burden not only to the girls but also to their families and to country generally. Other consequences may include the unsafe abortion which may result in death or other physiological

complications, experiencing earlier and unplanned motherhood limit the girls' development ambitions, drop schools to care about children, face social pressure and cultural stigma.

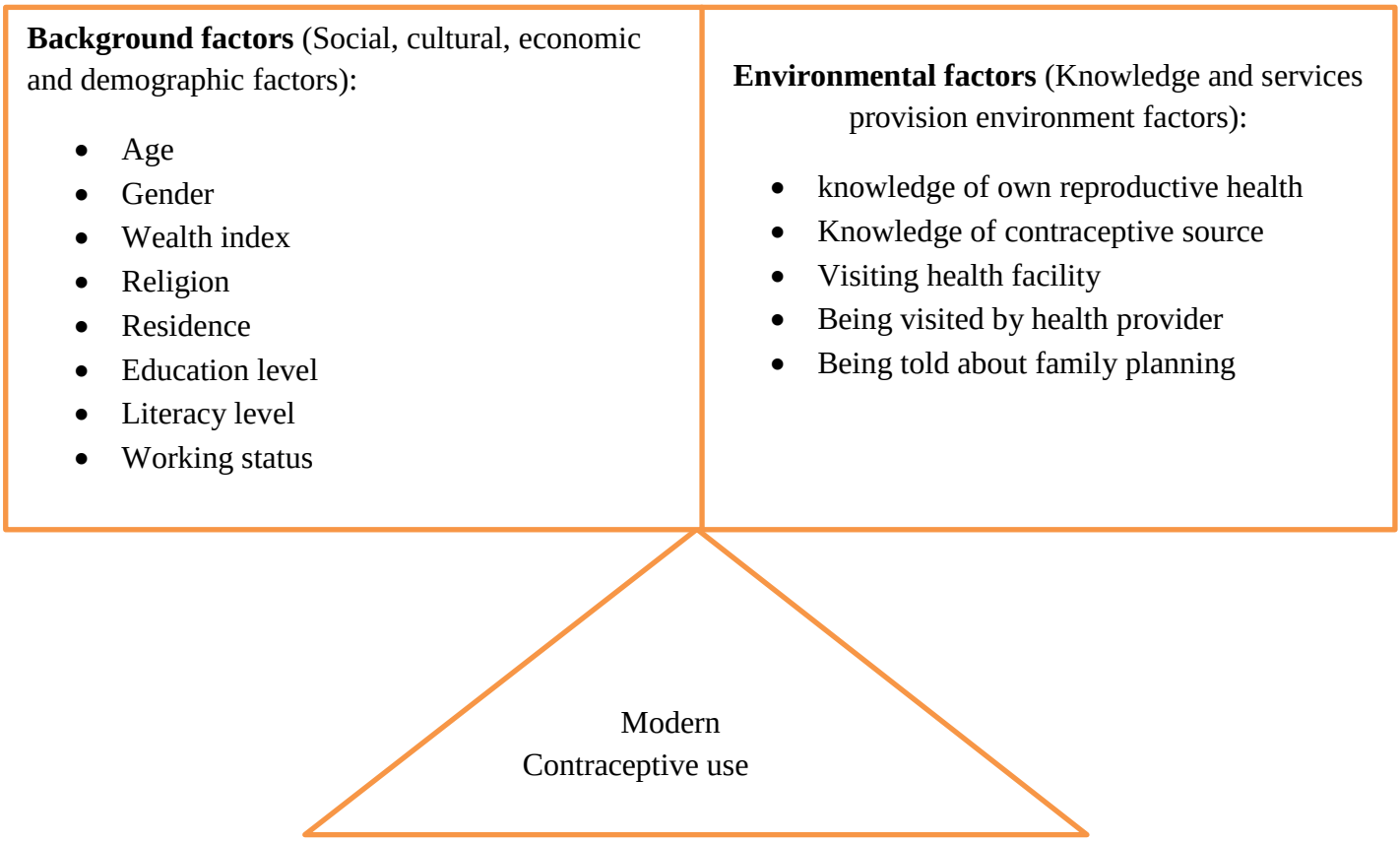
Studies have revealed that through promotion of family planning in countries with high birth rates, there is a potential to reduce poverty and hunger and avoid 32% of all maternal deaths and nearly 10% of childhood deaths (45).

It is now evident that nations need to consider investing more in family planning especially in youth who are sexually active to fight against not only poverty and hunger but also diminishing or preventing maternal and children deaths towards the country development and wellbeing of the whole population.

5. Conceptual framework of family planning among unmarried youth

The below conceptual framework demonstrates the evidence on different factors that youth, both females and males face in demanding, accessing and using family planning .This serves the policy makers, researchers and other concerned people to know which programmatic approaches to successfully overcome these barriers to youth family planning use.

Figure 1: Conceptual framework



III. Methodology

1. Study design

This was a secondary analysis of 2014-15 Rwanda Demographic and Health survey. It is the fifth series of cross-sectional studies which are nationally based. It is conducted as part of global demographic and health survey that provide data to monitor population health.

2. Study setting

This study used the dataset for Rwanda Demographic and health survey (RDHS) which is a nationally representative survey done each 5 to ten years. The sampling frame used for the 2014-15 RDHS was the 2012 Rwanda Population and Housing Census (RPHC). The sampling frame consisted of a list natural village or its part as provided by National institute of during 2012 RPHC. The 2014-15 RDHS followed a two-stage sample design: The first stage involved selecting sample points (clusters) consisting of enumeration areas or villages and the second stage involved systematic sampling that of consisted of listing the households within the selected villages**.**

3. Description of the participants

The data for this study were extracted from the RDHS 2014-16 dataset. Only unmarried sexually active female youth aged 15-34 were selected from the entire Dataset.

4. Study data

Data for the study were extracted from the 2014-15 Rwanda demographic and health survey (RDHS). The 2014-15 survey is the fifth survey in the series of national level population and health survey conducted as part of the global Demographic and Health Survey program. It is designed to provide data to monitor the population and health situation in Rwanda especially this survey aimed mainly at collecting data at the national level to calculate essential demographic indicators, especially fertility and infant and child mortality, and analyze the direct and indirect factors that relate to levels and trends in fertility and child mortality, measure levels of knowledge and use of contraceptive methods among women and men, collect data on family health, including immunization practices; prevalence and treatment of diarrhoea, acute upper respiratory infections, and fever among children under age 5; antenatal care visits; assistance at

delivery; and postnatal care, collect data on knowledge, prevention, and treatment of malaria, in particular the possession and use of treated mosquito nets among household members, especially children under age 5 and pregnant women, collect data on feeding practices for children, including breastfeeding, collect data on the knowledge and attitudes of women and men regarding sexually transmitted infections (STIs) and HIV and evaluate recent behavioral changes with respect to condom use, collect data for estimation of adult mortality and maternal mortality at the national level, take anthropometric measurements to evaluate the nutritional status of children, men, and women, assess the prevalence of malaria infection among children under age 5 and pregnant women using rapid diagnostic tests and blood smears, estimate the prevalence of HIV among children age 0-14 and adults of reproductive age, estimate the prevalence of anemia among children age 6-59 months and adult women of reproductive age, collect information on early childhood development and to collect information on domestic violence.

The 2014-15 RDHS is the fifth survey of its kind following standard DHS surveys conducted in 1992, 2000, 2005, and 2010 and it was implemented by the National Institute of Statistics of Rwanda (NISR) in collaboration with the Ministry of Health (MOH) and the Rwanda Biomedical Centre (RBC) under the guidance of a steering committee. The Demographic and Health Survey (DHS) Program of ICF International provided technical assistance through its contract with the United States Agency for International Development (USAID). Funding for the 2014-15 RDHS was provided by the Government of Rwanda and by development partners including USAID; United Nations agencies (One UN); the Global Fund to Fight AIDS, Tuberculosis, and Malaria; World Vision International; Partners in Health and Suisse Agency for Development and Cooperation.

5. Data processing

RDHS Dataset were cleaned and processed to get the desired data using SPSS 20 and Stata /SE 13.

6. Study variables

6.1. Dependent variable

The dependent (main variable of interest) variable for the study was current modern contraceptive; this was a dichotomous denoting users and nonusers of modern contraceptive methods. Modern contraceptive methods refer to the usual method provided in different know settings by health professionals and or other trained personnel; they are known to be safe effective and legally accepted to avoid pregnancy, these are like pills, condoms, intrauterine device and injectable.

6.2. Independent variables

In this study family planning predictors (independent variables) selected basing on the study objectives, literature review and their availability in the survey were age of the respondent, residence (rural against urban), education level, religion of the respondent(Christians and Muslims), literacy level(can read ,cannot read), wealth index of the respondent's family(poor, middle and rich), knowledge of own reproductive health (know against don't know , visit or being visited by health worker, health facility or family planning worker, being told or taught about family planning and working status of the respondent(employed against not employed). Some of these above mentioned variables were recoded to better fit the study purpose and other others were used like are recorded in the original dataset.

7. Data analysis

Descriptive statistics have been performed using STATA to explore the characteristics of the study participants. Weighting adjustment for survey data analysis using SVY command in Stata has been used to ensure the representativity of the sample.

Bivariate analysis involving cross tabulation have been used to determine the prevalence of the family planning use among unmarried female aged 15-34, Logistic regression analysis (full and reduced model) was used to study the determinants of family planning use in unmarried female youth aged 15-34years old in Rwanda. The significance level was set at 5% at 95% confidence interval; collinearity was controlled among the independent variables.

8. Ethical consideration

The dataset have been requested from the Measure DHS program and the approval was granted on February 23rd, 2016 to download and use the datasets (appendices 1). There was no other ethical approval needed in this kind of study. The study protocol was approved by University of Rwanda College of medicine and health science-school of public health under department of community health.

IV. Results

1. Background characteristics and contraceptive prevalence among Single-sexually active women aged 15 to 34 in Rwanda

Using the recent Rwanda demographic and health survey (RDHS 2014-15) dataset, considering our inclusion criteria we had a sample of 1498 single sexually active youth age from 15-34 The mean age was 22 years old (standard deviation 4.6). The overall modern contraceptive prevalence rate in the sample of 1498 women was 11.4 %.

As indicated in Table 1, forty point three percent (40.3 %) of the single-females were aged 20 to 24, thirty point three percent (30.3 %) were aged 15 to 19 and nineteen point seven percent (19.7%) were aged 25 to 29 while only nine point seven percent (9.7%) were aged 30 to 34.

It was found that the prevalence of contraceptive use was higher among female aged 20 to 24 (4.8%), 3.3% of single-females aged 25 to 29, 2.0% of single-females aged 30 to 34, and 1.3% aged 15 to 19. Considering the education level, it is revealed that 57.3 % had primary education, 33.4 % had secondary education, 5.0 % had no formal education and only 4.3% had higher education.

In terms of contraceptive use, It was seen among single-females with primary education 7.5 % used modern contraceptive methods, secondary education with 3.1%, zero point seven percent 0.7% for those who are not educated while contraceptive use among females with higher education was found to be at 0.1 %. With regard to working status, 72.4 % reported to be employed while 27.6 % were not. Contraceptive use was 9.8% among those who are employed and with 1.5% among those who were not employed. As indicated in table 2, 94.4% of our sample reported to have known their ovulatory cycle with 0.5% modern contraceptive use while their counterpart contraceptive use was at 10.5%. Fifty seven percent of our study population visited the health facility 12 months ago, only 11.8% were visited by health or family planer worker and only 28.9% were told about family planning at health facility 12 months prior to the study. As regards to the place of residence, our sample was distributed in sixty one point seven percent (61.7%) living in rural while thirty eight point three were from urban area. It was revealed that contraceptive use was7.9% from rural area while 3.5% were from the urban area. Christian's religion was represented at 97.5% with the corresponding 10.55% of modern contraceptive use.

Table 1: Background characteristics and contraceptive prevalence among Single-sexually active women aged 15 to 34 in Rwanda

Characteristic		Frequency (n)	Percent distribution (%)	Percent using contraceptive (%)
Age	15-19	454	30.3	1.3
	20-24	603	40.3	4.8
	25-29	295	19.7	3.3
	30-34	146	9.7	2.0
	Total	1498	100	11.4
Educational level	No educated	75	5.0	0.7
	Primary	858	57.3	7.5
	Secondary	500	33.4	3.1
	higher	65	4.3	0.1
	Total	1498	100	11.4
Working status	Employed	1081	72.4	9.8
	No employed	412	27.6	1.5
	Total	1493	100	11.4
Place of residence	Urban	573	38.3	3.5
	Rural	925	61.7	7.9
	Total	1498	100	11.4
Religious belief	Christians	1457	97.26	10.55
	Muslims	41	2.74	0.80
	Total	1498	100	11.4
Wealth index	Poor	464	31.0	4.6
	Middle	216	14.4	1.5
	Rich	818	54.6	5.3
	Total	1498	100	11.4

Table 2: contraceptive related characteristics and contraceptive use

Characteristics		Frequency (n)	Percent distribution (%)	Percent using contraceptive (%)
Knowledge of ovulatory cycles	Yes	1414	94.4	0.5
	No	84	5.6	10.9
	total	1498	100	11.4
Visited . by family planning worker last 12 months	Yes	178	11.8	3.1
	No	1320	88.2	8.3
	Total	1498	100	11.4
At health facility told of family planning	Yes	247	16.5	4.1
	No	607	40.5	3.7
	Missing	644	39.4	3.6
	Total	1498	100	11.4
Visited health in last 12 months	Yes	854	57.0	7.8
	No	644	43.0	3.6
	Total	1498	100	11.4
Source of contraceptive methods	Hospital level	3	1.8	0.2
	Health centre level	119	69.6	7.9
	Community level	48	28	3.3
	Others	1	0.58	0.066
	Total	171	100	11.4

Regarding the contraceptive use by methods, this study showed that most of our participants used injections, implant/Norplant and pills with 60.82%, 18.71% and 10.53% respectively (table 3).

Table 3: frequency of modern contraceptive methods used by study participants

Contraceptive methods	Frequency	(%)	Percentage
Injections	**104**		**60.82**
Implant/Norplant	**32**		**18.71**
Pills	**18**		**10.53**
Condom	**10**		**5.85**
IUD	**6**		**3.51**
Female sterilization	**1**		**0.58**
Total	**171**		**100**

2. Bivariate analysis of determinants of sexually active unmarried young females

Performing bivariate analysis we found the total of 9 variables identified as predictor of contraceptive use among sexually active unmarried female namely age of the respondent, using 15-19 age category as a reference, we compared females aged 20-24, 25-29 and 30-34 and it has been proven that as girl get older she is more likely to use contraceptive methods with odds ratio of 2.94, 4.32 and 5.61 respectively. Comparing non educated females to educated one in different level it was revealed that higher educated females are less likely to uptake contraceptive use (OR=0.09). The same applies to females wealth index, the rich category females were found to less likely use modern contraceptive method compared to the poor (OR=0.612, p value=0.005). We also compared the females from Christians to that of muslins church and found that muslins are 3.37 times more to use modern contraceptive methods than Christians. We found that employed females were more likely to use contraceptive methods than no employed (OR=2.6), females from rural area were1.43 times more likely to use contraceptive than urban ones. Visiting Health facility, being told of family planning and being visited by family planning worker in last 12 months were all statistically associated with modern contraceptive use among sexually active unmarried females with Odds ratio of 3.35, 3.36 and 1.73 respectively, However visiting health facility in last 12 months despite being significant, It was collinear therefore will not be used in the next step of multivariate analysis (table 4).

Table 4: Bivariate analysis of the determinants of sexually active unmarried young females aged 15-34

Variables		Odds ratio	95% C.I
Age			
20-24		**2.94*** **	**1.76-4.90**
25-29		**4.32*** **	**2.51-7.44**
30-34		**5.61*** **	**3.07-10.24**
Education level			
Primary		**0.873**	**0.447-1.706**
Secondary		**0.603**	**0.297-1.223**
Higher		**0.090***	**0.011-0.725**
Religious belief			
Muslims		**3.37****	**1.68-6.75**
Working status			
Employed		**2.6*** **	**1.68- 4.2**
Knowledge of ovulatory			
Yes		**1.44**	**.65-3.18**
Place of residence			
Rural		**1.43***	**1.01-2.02**
Visited by FP provider	Yes	**3.35*** **	**2.28-4.92**
Visited HF	Yes	**1.73*** **	**1.234-2.437**
Told of FP	Yes	**2.7*** **	**1.78-4.16**
	missing	**1.023**	**0.68-1.54**
Wealth index			
Middle		**0.682**	**0.412-1.127**
Rich		**0.612*** **	**0.433-0.864**
Literacy			
Can read		**0.714**	**0.493-1.0364**

*** $p < 0.001$, **$p < 0.01$, *$p < 0.05$.

3. Multivariate analysis

In multivariate analysis all significant variables in bivariate analysis were taken into the full model to detect the true determinants of contraceptive use among sexually active unmarried females' youth (15-34).

Table 5: Multivariate analysis of determinants of sexually active unmarried young females

Full model				**Adjusted model**	
variable		**Odds ratio**	**Confidence interval**	**Adjusted Odd ratio**	**Confidence interval**
Age	15-19®	**1**			
	20-24	**2.85****	1.68- 4.84	**3.9*****	**1.68-4.84**
	25-29	**4.35*****	**2.46-7.6**	**5.1****	**2.47-7.7**
	30-34	**5*****	**2.64-9.44**	**5*****	**2.65-9.44**
Working status	Employed	**1.29**	**1.048-1.59**	**1.37***	**1.02-1.83**
Religious belief	Muslims	**3.68*****	**1.73-7.82**	**3.29****	**1.58-6.8**
Visited FP provider	Yes	1.55**	**1.10-2.19**	**1.59****	**1.12-25**
Told of FP at HF	Yes	**2.75*****	**1.80-4.19**	**2.77*****	**1.8- 4.23**
	missing	**1.02**	**0.68-1.54**		
Residence	Rural	**1.12**	**0.73-1.71**		
Education level	primary	**2.23**	**0.60- 2.51**		
	Secondary	**1.06**	**0.48-2.32**		
	Higher	**0.13**	**0.016-1.12**		
Wealth index	Middle	**0.53**	**0.27-1.04**		
	Rich	**0.74**	**0.44-1.26**		

*** $p < 0.001$, **$p < 0.01$, *$p < 0.05$.

As it is detailed in table 5, after performing the multivariate analysis, five variables (age of the respondent, religious belief, working status of the respondent, visited by family planning worker and being told about family planning in last 12 months prior to the study) were significant and selected for the final model as shown in table 3.

V. Discussion

1. Specific results

Contraceptive use in sexually active unmarried youth is still low despite its benefits in sorting out the overpopulation burden. Contraceptive use helps improving maternal and child wellbeing. This study used 2014-15 Rwanda demographic and health survey data to find out the modern contraceptive prevalence rate among sexually active unmarried female youth in Rwandan as well as its determinants. The results of this study revealed that the modern contraceptive prevalence rate among the sexually active young unmarried female was at 11.4% this is higher comparing to the one found in Burkina Faso and Nigeria with 11.2% and 7.8% respectively though the age category are not the same (8). Comparing with other African countries like Ghana (14.6%), Senegal (27%) and Ethiopia (24.1%) this rate looks lower. The contraceptive use in Rwanda context has been improving since 15 years ago with now modern contraceptive prevalence rate for the whole population reaching 47.5% and specifically 36% for all unmarried sexually active female. However this study showed that despite the strategies targeting unmarried category the contraceptive use compliance among the 15-34 young unmarried females is still too low and need to be improved. We can attribute this low contraceptive use to the sensitivity of the topic, it is guessable that many youth may prefer to report not ever had sex to prove their integrity; this is linked to the stigma related to sociocultural belief against contraceptive use out of marriage in Rwanda. In During this study we found 5003 unmarried females age 15-34 but only 30% (1498) of them reported to be sexually active in 4 weeks or ever have sex prior to the survey which were eligible to be part of this study; this small sample size might have also affected the results of this study.

Among 30% who were eligible to our study only 11.4 % were using modern contraceptive methods and 0.6% were using traditional methods this shows that almost 18% of our participants were not using any contraceptive methods, this is great gap in modern contraceptive use among unmarried females aged 15-34 in Rwanda.

Most of the females sampled in this study were from the rural area (61.7%) where accessibility to contraceptive method especially for unmarried people is so hard due to stigma against out-marriage sexuality. Recently in Rwanda there was a big discussion whether or condoms should

be availed to school youth but there was parents' pressure against that proposition arguing that providing condoms to youth in school would be like allowing them prostitution this shows that contraceptive use in unmarried is still stumbled by community resistance and misconceptions about contraceptive use in this category.

The results from this study disclosed the role of age in determining the use of contraceptive use among our sample; It was statistically proven that old female are more likely to use contraceptive more than the younger female the more a young female grow up there is a significant chance of up taking modern contraceptive use; It is similar to several other studies done elsewhere(31) (46) (8) this may be attributed to the immaturity and naivety of younger girls to look for contraceptive methods, It may be explained also by the maturity and independence of the old female to take their own decision towards their reproductive needs.

Education was surprisingly found to not be a one of the determinants of family planning , where there was no significant in contraceptive use in among different education levels(OR=0.45, p value=0.67).

This is different from what Nyarko found in Ghana where education was found to determine the contraceptive use among 15-19 aged sexually active young females (31), education play a big role in sharpening the broad understanding of the life skills as whole which help educated young females to take the proper decision in their best including contraceptive use in need. With education a young female is able to know the available method and able to inform about the appropriate method and their respective requirement to use, However the effort made in Rwanda to avail and decentralize the contraceptive methods, accessibility and affordability does not require someone to be educated or wealthier to access contraceptive methods because It is available at the community level free of charge or at low cost.

Additionally being visited by family planning and being told about family planning in last 12 months prior to the survey were all found significant determinants of sexually active unmarried females' contraceptive use in this study. In their studies Hounton et al about Patterns and trends of contraceptive use among sexually active adolescents in Burkina Faso, Ethiopia and Nigeria found that visiting to health facility not necessary looking for family planning or being visited by

a health provider at home or during an outreach were influencing the contraceptive use (8), in the same study, young women who attended four standard antenatal care were more likely to use contraceptive methods than those who did not, this can be explained by the fact that normally people have general health education session that include teaching about health tips including contraceptive use. It is evident that sexually active unmarried females will only use modern contraceptive methods when they are aware of them. Furthermore working status was identified to play a significant role in determining the young females compliance with modern contraceptive use, this confirm the findings in study done in Ghana (31) and similar to other study done in Uganda (46) all of them found that employed, wealthier young female is open to use contraceptive use more than the non-employed and poorer one. This is can be explained that a wealthier and working young girl is much concerned with her future and always want to achieve more thus use contraceptive preventing the unwanted pregnancy and any other related burdens, it is evident that when she is wealthier and working she will be not exposed to temptation from fellow boys or older men like in sugar daddy relations. However in this study wealth index didn't appear to be a determinant of modern contraceptive use among sexually active unmarried young females in Rwanda (OR=0.74**,** p value=0.27). This may be explained by the free or low cost contraceptive methods availability in Rwanda where accessibility requires more willing than wealth some.

It is important to also discuss about family planning worker visits and talk about family planning to sexually active unmarried female youth.

Despite Rwanda initiation of family planning decentralization to community level where community health workers and health centre staff provide modern contraceptive methods and reproductive health services directly to the community members and through different outreaches, It was shown that most young females in this study were neither visited by family planning worker (88.2%) nor told about family planning (71.1%) regardless their importance in determining modern contraceptive use among sexually active unmarried female's youth.

We cannot say they were not in need of contraceptive use or any other reproductive health service but there might be a fact that family planning worker, community health workers and those providing sexual and reproductive health in general don't care much about unmarried

population. This was similarly found in others studies (21) where providers restrict unmarried from accessing reproductive health information and services.

Religious belief was found to be a good predictor of modern contraceptive use among sexually active unmarried females in Rwanda, we compared the females youth from Christian churches(catholic, protestants, Adventists,..) against those from Muslim church; contrarily to other studies in north Nigeria and India (38) (37), Muslim youth were 3.29 times more likely to use modern contraceptive methods than Christians.

Given that in Rwandan more than 90% are Christian and most of them especially catholic don't accept modern contraceptive use, it is evident that they will influence their children to deny modern contraceptive use. When church leaders are not accepting modern contraceptive methods use, It is more likely that their members will be influenced to don't use contraceptive methods(47) so this low contraceptive use among sexually active unmarried young females in Christians church may be linked to this church leaders influence.

2. Conclusions

Modern contraceptive use among sexually active unmarried young females age 15-34 years old is still low at 11.4%. Age of the girl, her working status, her religious belief and her knowledge of modern contraceptive were all revealed as determinants of modern contraceptive use among this category. Young females are still facing obstacles to contraceptive use and should be targeted to increase their knowledge of modern contraceptive methods, empowering them with life skills; contraceptive use included, community acceptability of modern contraceptive methods use among unmarried are highly recommended mainly among church leaders specifically Christians to positively influence their members to comply with modern contraceptive use.

3. Recommendations

Contraceptive use among sexually active unmarried young females require multiple partnership of different actors and ministries, for example ministry of health for contraceptive methods provision, ministry of education for curriculum based sexuality education, ministry of gender and family promotion for females empowerment and other governmental and non-governmental partners for contraceptive methods awareness, acceptability and provision .

Base on the finding from our study the mains determinants that positively influence the contraceptive use among the sexually active young females can be resolved through the following recommendations:

Focus on community acceptability and behavioural change about contraceptive use among sexually active unmarried youth especially females.

Both informational and mass media programs can be successful in both providing adolescents and community members with information regarding adolescent reproductive health and family planning methods

The school-based educational programs that aim at informing youth about different modern contraceptive methods and other reproductive health information, this can have a positive impact if there should be a specific teachers training to suitably feel comfortable with contraceptive use education material among schooling females youth.

These programs should target mainly young females, unemployed and non-educated females, they should try to deliver messages through multiple media channels, including the internet, social media and through mobile phones, messages given through these media should be targeting the modern contraceptive methods knowledge, sources and acceptability by the community. Use youth forum that combine different churches' youth to provide messages about contraceptive methods use among unmarried sexually instead of doing it in the churches.

Include youth (peer to peer) in family planning and reproductive services provision

Informational programs that specifically use peer-to-peer interventions will be successful assisting by increasing their communication and negotiation skills to discuss their reproductive desires. Training fellow female's youth providers both technically and socially to be able to respond to their colleagues' needs, ensure privacy, confidentiality and respect for fellow clients, and have a consistent supply of multiple methods.

Peer-to-peer programs allow youth addressing social norms, expectations and pressures within their own social and economic context. It is easy for youth to interact with a fellow peer educator, this may help also young female to feel more comfortable sharing their feelings and

discussing taboo topics, eventually contributing to increased knowledge and empowerment towards improving her reproductive wellbeing. If there is a mothers' evening where the mother specific problems are dealt why not a youth evening where youth specific problems mainly contraceptive and reproductive health related are dealt.

Focus on empowering non-employed, no educated and poor sexually active female youth

This category is more vulnerable not only on lacking basic knowledge of sexual and reproductive health but also the lack of financial capacity to empower themselves which may expose them to sexuality temptation where they don't option to choose contraceptive.

We recommend the further studies to find out the factors associated with low contraceptive use among sexually active unmarried young female.

4. Study limitations

Due to the nature of study we couldn't find out the causal relationship of the low contraceptive use among sexually active unmarried young females age 15-34years old. Some of the important variables influencing contraceptive use among sexually active unmarried young females like role of providers, teacher and parents were not questioned in DHS dataset therefore we were unable to include as many variables as possible as mentioned in conceptual framework in our study.

References

1. Rwanda National Institute of Statistics of Rwanda. Yearbook National Institute of Statistics of Rwanda National Institute of Statistics of Rwanda. 2015;

2. Rwanda ministry of finance and economic planning. The republic of rwanda economic development and poverty reduction strategy 2. 2013.

3. United Nations Development Program (UNDP). Rwanda Turning Vision 2020 into Reality: From Recovery to Sustainable Human Development, Kigali, Rwanda: UNDP Rwanda, 2007. 2007.

4. Ministry Of Health R. Family planning policy. 2012;(December).

5. Ministry Of Health R. Family planning strategic plan 2012-2016. 2016.

6. National Institute of Statistics of Rwanda (NISR) [Rwanda], Ministry of Health (MOH) [Rwanda], and ICF International. 2015. Rwanda Demographic and Health Survey 2014-15. Rockville, Maryland, USA: NISR, MOH,and ICF International.

7. National Institute of statistics of Rwanda. NATIONAL POPULATION PROJECTION 2007-2022. 2009. p. 20–6.

8. Hounton S, Barros AJD, Amouzou A, Shiferaw S, Maı A, Akinyemi A. Patterns and trends of contraceptive use among sexually active adolescents in Burkina Faso, Ethiopia, and Nigeria: evidence from cross-sectional studies. Glob Health Action. 2015;1(October):1–11.

9. Basinga P, Moore AM, Singh S, Remez L, Birungi F, Nyirazinyoye L. Unintended Pregnancy And Induced Abortion In Rwanda,causes and consequences. new york Guttmacher Inst. 2012;

10. WHO. Meeting report The sexual and reproductive health of young adolescents in developing countries : 2010.

11. National Institute of Statistics of Rwanda (NISR) [Rwanda], Ministry of Health (MOH) [Rwanda], and ICF International. 2010. Rwanda Demographic and Health Survey 2011. Rockville, Maryland, USA: NISR, MOH,and ICF International

12. Susheela Singh, Jacqueline E. Darroch, Lori S. ashford MV. the costs and benefits of investing in family planning and maternal and newborn health. new yorkGuttmacher Inst. 2009;

13. Atuyambe L, Mirembe F, Tumwesigye NM, Annika J, Kirumira EK, Faxelid E. Adolescent and adult first time mothers ' health seeking practices during pregnancy and early motherhood in Wakiso district , central. Biomed Cent. 2008;11(5):1–11.

14. Okigbo CC, Speizer IS. Determinants of Sexual Activity and Pregnancy among Unmarried Young Women in Urban Kenya : A Cross-Sectional Study. 2015;1–17.

15. WHO. Information sheet Unsafe abortion incidence and mortality Global and regional levels in 2008 and trends Information sheet. 2008. p. 1–8.

16. Keogh SC, Kimaro G, Muganyizi P, Philbin J. Incidence of Induced Abortion and Post-Abortion Care in Tanzania. 2015;1–13.

17. Basinga P, Moore AM, Singh SD, Carlin EE, Birungi F, Ngabo F. Abortion Incidence and Postabortion Care in Rwanda. 2012;69(1):29–38.

18. Wang H, , Chelsea A Liddell, Matthew M Coates, Meghan D Mooney CE, Levitz AES. Europe PMC Funders Group Global , regional , and national levels and causes of maternal mortality during 1990 – 2013 : a systematic analysis for the Global Burden of Disease Study 2013. Lancet. 2014;384(9947):980–1004.

19. Ankomah A. Experiences of pregnancy and motherhood among teenage mothers in a suburb of Accra , Ghana : a qualitative study. Int J Womens Health. 2013;773–80.

20. Engelman R, Rosen JE, Wong S. UNFPA state of worls population. 2014.

21. Presler-marshall E, Jones N. Charting the future Empowering girls to prevent early pregnancy. 2012;(July).

22. Sexton M, Petroni S, Kanesathasan A, Edmeades J, Warner A, Stoebenau K, et al. Understanding the Adolescent Family Planning Evidence Base July , 2014. 2014;1–68.

23. WHO&UNFPA. Preventing Early Pregnancy and Poor Reproductive Outcomes. 2014.

24. Sidze BEM, Speizer IS, Faye CM, Mutua MM, Sidze EM, Speizer IS. Young Women ' s Access to and Use of Contraceptives : The Role of Providers ' Restrictions in Urban Senegal. 2011;176–83.

25. Macquarrie KLD. UNMET NEED FOR FAMILY PLANNING AMONG YOUNG WOMEN : LEVELS AND TRENDS DHS COMPARATIVE. 2014.

26. Tyler CP, Ph D, Whiteman MK, Ph D, Kraft JM, Ph D, et al. Dual Use of Condoms With Other Contraceptive Methods Among Adolescents and Young Women in the United States. J Adolesc Heal [Internet]. Elsevier Ltd; 2014;54(2):169–75. Available from: http://dx.doi.org/10.1016/j.jadohealth.2013.07.042

27. Wang H, Long L, Cai H, Wu Y, Xu J, Shu C, et al. Contraception and Unintended Pregnancy among Unmarried Female University Students : A Cross-sectional Study from China. journal.pone. 2015;10(6):1–11.

28. Nishtar NA, Sami N, Alim S, Pradhan N. Determinants of Contraceptives Use amongst Youth : An Exploratory Study with Family Planning Service Providers in Karachi Pakistan. Glob J Heal Sci. 2013;5(3):1–8.

29. Renjhen P, Low WY, Tong WT, Government S, College M. Determinants of sexual activity , awareness , and use of contraception among Malaysian college students What this study adds : Australas Med J. 2016;9(5):78–86.

30. Kinaro J, Kimani M, Ikamari L, Ayiemba EHO. Perceptions and Barriers to Contraceptive Use among Adolescents Aged 15 - 19 Years in Kenya : A Case Study of Nairobi. 2015;(January):85–97.

31. Nyarko SH. Prevalence and correlates of contraceptive use among female adolescents in Ghana. BMC Womens Health [Internet]. BMC Women's Health; 2015;4–9. Available from: http://dx.doi.org/10.1186/s12905-015-0221-2

32. James-Traore, T., Magnani, R., Murray, N., Senderowitz, J., Speizer, I., & Stewart L. Intervention Strategies that Work for Youth. Arlington, VA Fam Heal Int. 2009;

33. Otoide BVO, Oronsaye F, Okonofua FE. Why Nigerian Adolescents Seek Abortion Rather than Contraception : Evidence from Focus-Group Discussions. Int Perspect Sex Reprod Health. 2001;27(2):77–81.

34. McDougall, J., Edmeades, J., & Krishnan S. (Not) Talking About Sex: Couple Reports of Sexual Discussion and Expression in Bangalore, India. Cult Heal sex. 2012;13(2):141–56.

35. UNFPA. Universal Access to Reproductive Health. 2016.

36. Lloyd CB. Schooling and Adolescent Reproductive Behavior in Developing Countries in

Developing Countries. Millennium Project. New York: UN Millennium project. 2006.

37. Chimaraoke O, Izugbara ACE. Women and High Fertility in Islamic Northern Nigeria. Stud Fam Plann. 2010;41(3):193–204.

38. Najafi-sharjabad F, Zainiyah S, Yahya S, Rahman HA, Hanafiah M. Barriers of Modern Contraceptive Practices among Asian Women : A Mini Literature Review. Can Cent Sci Educ. 2013;5(5):181–92.

39. Williamson LM, Parkes A, Wight D, Petticrew M, Hart GJ. Limits to modern contraceptive use among young women in developing countries : a systematic review of qualitative research. Biomed Cent. 2009;12:1–12.

40. Nalwadda G, Mirembe F, Byamugisha J, Faxelid E. Persistent high fertility in Uganda : young people recount obstacles and enabling factors to use of contraceptives. Biomed Cent. 2010;

41. Izugbara CO. Home-Based Sexuality Education Nigerian Parents Discussing Sex With Their Children. J Sex Educ. 2007;4:63–79.

42. Moore AM, Biddlecom AE, Zulu EM. Prevalence and meanings of exchange of money or gifts for sex in unmarried adolescent sexual relationships in sub-Saharan Africa. Afr J Reprod Health. 2008;11(3):44–61.

43. Wood K& Jewkes R. Blood blockages and scolding nurses: barriers to adolescent contraceptive use in South Africa. Reprod Health Matters. 2006;14(27):109–18.

44. UNFPA. ADOLESCENT PREGNANCY : A Review of the Evidence ADOLESCENT PREGNANCY : A Review of the Evidence. 2013.

45. Cleland J, Bernstein S, Ezeh A, Faundes A, Glasier A I. Family planning: the unfinished agenda. Lancet. 2006;368(18):10–27.

46. Asiimwe JB, Ndugga P, Mushomi J, Patrick J, Ntozi M. Factors associated with modern contraceptive use among young and older women in Uganda ; a comparative analysis. Biomed Cent. 2014;

47. JennyTrinitapoli SEY&. Beyond Denomination: The Relationship between Religion and Family Planning in Rural Malawi. Demogr Res. 2010;19(55).

APPENDICES

Appendices 1

Author approval to use DHS dataset

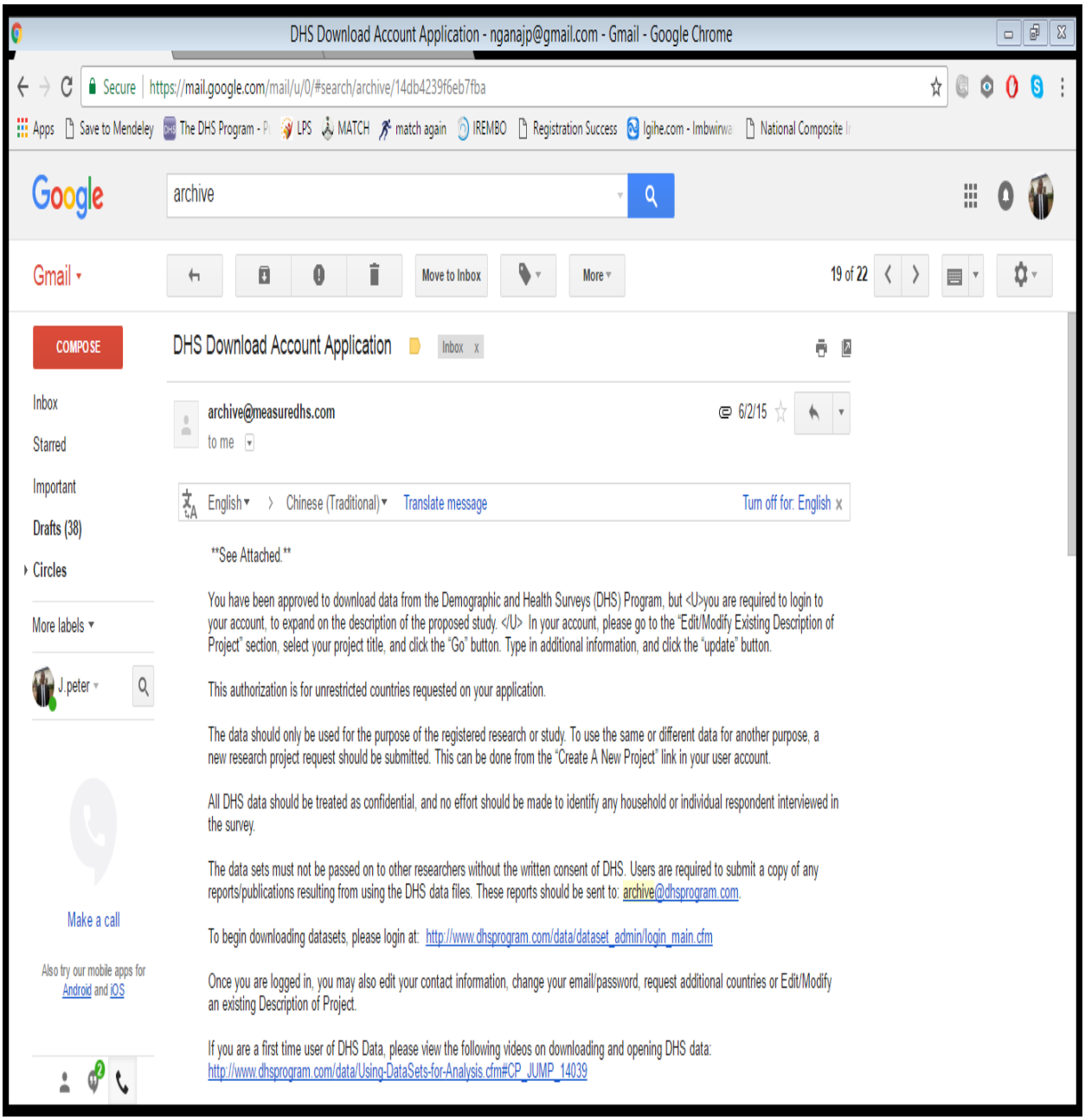


Figure 2: Author approval to use DHS dataset