KNOWLEDGE AND ATTITUDE OF MARRIED MEN AND WOMEN ON VASECTOMY: A CROSS-SECTIONAL SURVEY OF A MISSION HEALTH CENTRE IN BURUNDI

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A Thesis Report Submitted to the Institute of Postgraduate Studies of Kabarak University in Partial Fulfillment of the Requirements for the Award of Master in Family Medicine

KABARAK UNIVERSITY

NOVEMBER 2020

DECLARATION

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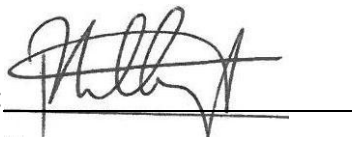
Signature:  Date: 22/11/2020

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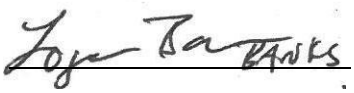
Signature:  Date: 22/11/2020

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ACKNOWLEDGEMENT AND DEDICATION

I would like to thank my supervisors, Dr Philip Blasto and Dr Logan Banks, for their great assistance throughout this project. My appreciation also goes to my sponsors and their immense generosity that allowed me to be following this program. I am quite thankful to the Department of Family Medicine and Community Health of Kabarak University for the expression of love, patience and Christ-like discipleship they manifested to me. I am immensely grateful to the program coordinator at Chogoria Mission Hospital for being more than a mentor to me and his moral support.

I dedicate this project to my family for being patient and loving. To the Almighty God, the Father, creator of all that is seen and unseen be all glory, honour and praise for giving me enough grace to see this project to completion.

ABSTRACT

Vasectomy is a safe, cheap, easy to perform a method of contraception. However, its uptake in Burundi is low. Moreover, matters of family planning are packaged as a female responsibility than male, and it is not clear what attitude and knowledge married men and women have towards vasectomy. The objective of this study was to assess the knowledge and attitude of married men and women towards vasectomy as well as demographic factors that influence vasectomy uptake. A cross-sectional survey design was carried out utilizing a questionnaire. Stratified and simple random sampling was used. The sample size consisted of 234 respondents, with 142 male respondents and 92 female respondents. Descriptive statistics, independent T-test and chi square for assessing association between variables using SPSS version 17 were used for data analysis. This study found that 51.2% of respondents had good knowledge about vasectomy. Knowledge did not correlate with acceptance of vasectomy: 92.6% of respondents with good knowledge, 96.2% of those with fair knowledge and 92.9% of those with poor knowledge did not accept vasectomy (P=0.787). In terms of attitude, the overall attitude Mean score was 47.1% signifying a negative attitude towards vasectomy. 95.6% of respondents agreed that vasectomy was not acceptable in the Burundian culture, and 90.1% of respondents stated that vasectomy was against their religious belief. 80% of respondents also agreed that there is not enough information available on vasectomy, 90.5% agreed that the irreversibility of vasectomy constituted a reason for not adopting it. In terms of acceptance of vasectomy, the study found that the majority of respondents was not willing to accept vasectomy: 91.6% of male respondents and 95.7% of female respondents. A significant association was noted between vasectomy acceptance and age (P=0.029) and the number of current children (P=0.012). No other significant association was noted with other socio demographic factors. Overall knowledge of married men and women about vasectomy was acceptable (52.1%), attitude towards vasectomy was poor, and acceptance was low. Myths and misconception about vasectomy were noted. There is a need for greater awareness of vasectomy knowledge as a potential vehicle to affect attitude change towards vasectomy.

Keywords: Vasectomy, Knowledge, Attitude, Contraception

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CHAPTER ONE

INTRODUCTION

1.1 Introduction

This chapter will touch on these specific areas: the study background information, the problem statement, the purpose of the study, the study objectives, the research questions, the research scope, study limitations and finally the study assumptions.

1.2 Background to the Study

Vasectomy is one of the permanent methods of contraception and it is unique in the sense that it offers men the capacity to not only be directly involved with matters related to fertility control but to be the primary driving force of these matters. As a radical form of contraception, it offers lifelong protection against undesired pregnancies. It is safe, cheap, and easy to perform and carries a very minimal risk for post-operative complications (WHO, 2002).

Reports from various studies have shown that vasectomy has several benefits to the general population and economic development being one of them. In some countries in Ethiopia for instance, the high fertility rate noted there (5.6) was in part due to the low knowledge of long acting family planning methods and especially vasectomy (Alemayehu et al. 2012 P. 1). Needless to say that Burundi is in such demographic conundrum whereby its density is the second highest in Africa and vasectomy usage remains low.

Talking about vasectomy requires having an idea of fertility rates. While evidence shows that compared to previous years, the fertility rate in Burundi is going down, it is still quite high. In 1987, the total fertility rate was estimated at 6.9, and it was 6.3 in 2010 and 5.5 between the period of 2016 and 2017 (TEDS, 2016-2017).

Fertility rate, according to various age groups, follows the trend observed in nations with high fertility. In Burundi, the rate is low between 15 and 19 years (58 per 1000 women) but reaches up to 261 per 1000 women in the age group between 25 and 29 years. Beyond this age group, a rapid decline in fertility is observed (Ministere de la Santé et de la Lute Contre le Sida au Burundi, 2010).

In matters related to fertility ideals, no recent data was available. However, one survey that was done between 1987 and 1993 on fertility ideals in different parts of Africa found that fertility ideals are influenced by multiple facets of life including age, polygyny, level of education, place of residence to name just a few. For example, In East Africa, Burundi ideal family size viewed from the male perspective notes that there is an increase based on age: less than thirty years, the ideal family size is 4.7 and it reaches seven at around sixty years. Rural men tend to want more children than urban men: 5.5 versus 4.3 and those with a formal education have smaller family sizes compared to those without a form of education: 4.1 versus 5.7 respectively. Viewed from a female perspective, the same concepts are right (Westoff, 1991).

Digging deep in the matter, studies have shown that the involvement of men in matters contraception still remains at its infancy state. These matters focus much more on the women than on the men and it has been shown in some studies that men consider vasectomy as a conduit to castration and other non-true beliefs in regards to the procedure of vasectomy: association of the procedure with lengthy hospital stays and it being a painful procedure (Owopetu et al. 2014. P. 4). This being stated, one can clearly see that there is an element of knowledge deficit on what vasectomy is truly is. This probes questions on the need for knowledge assessment as one of the basis of understanding its adoption.

Moreover, in Burundi, vasectomy is done for free in all public hospitals and most of the mission hospitals that are half governmental and half faith-based. The ministry in charge of health started encouraging hospital facilities to do vasectomy by paying around sixty thousand francs to the facility for every vasectomy done. This is in alignment with the Ministry of health policy of performance-based financing (Ministere de la Santé et de la Lutte Contre le Sida au Burundi, 2010). Compared to other forms of family planning and in particular radical methods (bilateral tubal ligation) there is no price difference since, in Burundi, family planning methods are offered for free in all public hospitals. There is a lack of data on how prices of these two procedures and other methods vary in the private sector. Nevertheless, in terms of safety and efficacy, and ease in surgery performance, vasectomy remains better and safer than tubal ligation. In addition to this, estimative data in Burundi suggest that if a vasectomy is combined with other modern methods of contraception at a 5% prevalence rate, this will result in a reduced cost per year for a couple's protection; that is from 5.17 dollars if a vasectomy is omitted from other modern contraceptive methods to 3.99 if it is included at just a 5% prevalence rate (Burundi FP2020, 2014).

In Haiti, vasectomy rendered protection cost to a couple per year is around 1.15 dollars compared to 3.60 dollars for condoms, 5.74 for implants, 6.37 for injectable, 1.37 for female sterilization (Burundi FP, 2020). This begs the question of why it remains underutilized and kind of sets the initial basis for this research which sets to understand what is known about vasectomy and what attitude respondents have on the matter as a foundation for understanding the current state of affairs on male permanent contraception.

As it stands, vasectomy is the only available long lasting Family Planning (FP) method that reinforces significantly the participation of men in the exercise of birth limitation. Szten, (2015) noted that vasectomy was and still is a known positive contributor in the reduction of the worldwide population increase. And population overgrowth has been identified to be one of the most significant obstacles to economic and social development of countries and unfortunately enough, third world countries suffer the most from this sad reality (United Nations, 2015).

On a worldwide scale, vasectomy rates are at around 2.4%, indicating a deficient uptake of the only long-acting method of male contraception (United Nations, 2015) compared to other methods of contraception. The use of vasectomy in the world varies from one nation to another. However, its uptake in Africa is the lowest in the world (about less than 0.1%) **(**WHO, 2012). In the UK, 14,142 vasectomies were performed in the year 2012-13 (NHS contraceptive services, 2014). In the United States, an estimate of 175.000 to 354.000 vasectomies were done from 1998 to 2002, while 546,000 to 789,000 tubal ligations were done in the same period attesting that female sterilization, even in developed countries is far ahead from its male counterpart. (Eisenberg, 2010). In Canada, about 22% of married women depend on their partners to have a vasectomy as a means for birth control (Jacobstein, 2015 P. 7).

In Burundi, the number of women who have undergone sterilization is slightly higher than the number of men who have adopted vasectomy. The difference seems to be increasing with age: 2.1% of women above 45 years and 0.7% of men above 45 years have undergone tubal ligation and vasectomy respectively (EDS, 2017).There is no proper explanation as to why there is this lack of active participation of males in matters of family planning and there is paucity of data on

the female perspective on the matter even though they have been traditionally to be the ones involved with contraception, at least as Burundi data is concerned since there is paucity of studies on the matter.

However, from other studies perspective, it has been noted that vasectomy is poorly understood by men who in most instances view the procedure as a potential cause of low libido and thus causing sexual dysfunction in couples (Kidzuga, 2012). Regardless of the safety profile of vasectomy, underutilization of this method has often been linked to the low interest of men in in FP. In addition to this, there is evidence that the inadequate awareness and understanding of vasectomy procedure is in correlation with its low acceptance (Perry et al., 2016. P. 10).

It is estimated in Burundi that by 2020 if 5% of married women aged between 30 and 49 years desiring to limit births could count on their male partners to consider vasectomy, this would result in a 14% price-efficiency ratio increase for the household in this category (Burundi FP2020, 2014). Also, calculated estimative data suggest that adding vasectomy to other standard methods of contraception or family planning would result in a decrease of undesired pregnancies by 42,924 per year and the avoidance of 925 maternal deaths. The use of vasectomy on just a 5% scale would lead to a decrease of up to 286 avoidable deaths from abortion compared to 220 if vasectomy is not used, 55,072 dangerous abortions could be avoided with the use of vasectomy compared to 42,298 abortions with other methods minus vasectomy, and 10,928 infantile deaths could be avoided with vasectomy use compared to 8,386 without a vasectomy. (Burundi FP2020, 2014). This shows how vasectomy uptake not only helps limit family size but promotes the health of mothers and infants.

As noted previously, there are factors contributing to the acceptance of vasectomy. However, there are very few studies that explored in-depth these factors that are believed to influence vasectomy uptake. While some studies have been conducted in Kenya on knowledge and attitude towards vasectomy, there are no known studies that have been conducted in Burundi on this subject. The ministry in charge of health in its division of family planning has two approaches towards vasectomy: planned vasectomy and non-planned vasectomy. The former is when a patient by his own decision comes to clinic desiring vasectomy, and the latter is through Ministry initiated campaigns where people are called in to respond at their initiative (Government of Burundi, 2018**).**

Regardless of the use of these two approaches, the number of vasectomies done from the year 2015 to the year 2018 in Burundi was still meagre. What is more interesting and curious to note is that the numbers do not follow a specific trend: there is more of a mixed picture of crescendo decrescendo of vasectomies done. In 2015, 517 vasectomies were performed. In 2016 there was a drop in the number of vasectomies performed: 370. The numbers picked in 2017 reaching up to 955 and dropped again in 2018 to 318 (Government of Burundi, 2018). This fluctuating numbers create a base of thinking whether there is fluctuation of knowledge of the procedure and whether attitude on the matter is also fluctuating. It would be easy to answer this question if there were studies exploring the reasons behind these fluctuating overall small cases of vasectomy in Burundi but there is paucity of data on the matter. It is in such a background of state of affairs on vasectomy that this study sought to understand the knowledge and attitude of married men and women towards vasectomy and social demographic factors that play a role in its acceptance. Not incorporating married women in such a study would make this study incomplete

and this has been noticed in various studies that focused more on males' knowledge and attitude on the matter. Bernard utoo (2010) noted that although most women approved of male contraception for fertility control they would not allow their spouse to use vasectomy pointing out to the need of having both married men and women knowledge and attitude on vasectomy explored.

In addition to this, religion and especially the catholic faith holds radical stands on contraception. As of July 2015, reports from The U.S. government on the population of Burundi estimated the total population to be at 11 million. Although there is paucity of accurate statistics, religious leaders and national data on religion distribution estimate approximately 60 per cent of the population to be Roman Catholic, 20 percent belongs to indigenous religious groups, and 15 per cent to Protestant denominations. Muslims constitute 2 to 5 per cent of the population they live mainly in the city.

Knowing the view that is held by the Roman Catholic Church on matters related to family planning and vasectomy, in particular, it would be of value to see if there is a correlation between knowledge and attitude that members of the Catholic Church have in regards to vasectomy. There is need to have an adequate representation of respondents of the Catholic Faith (International Religious Freedom Report for 2015 United States Department of State Bureau of Democracy, Human Rights, and Labor, 2016).Understanding the views of religion and culture would help understand men and women attitude on vasectomy and the influence of both religion and culture on vasectomy acceptance.

1.3 Problem Statement

Inadequate use of contraceptive methods is, by far responsible for the high fertility rates seen in Burundi (EDS, 2016-2017). In addition to this, the population of Burundi is estimated to be around 11 million on a surface not exceeding 27.000 km square. The density of 314 people per kilometre square constitutes the second highest density in Africa and puts Burundi in a tight demographic situation, crisis (World Population Review, 2019). This being the case, it is of the essence to note that humans already consume more than half of the world's renewable resources. And pressure on natural resources will continue to increase as UN experts revised their forecast for population growth. This means that by the end of the century there could be 11 billion people living on the planet. The current global population is 7 billion. (United Nations Population Fund, 2013).

The highest population growth occurs in poor countries. The population in Sub-Saharan Africa will quadruple by 2100, according to current estimates by the United Nations Population Fund (UNFPA). The jump in the projected population is due to fertility in certain countries not dropping as expected and Burundi being one of them. According to the report by the UN Population Fund, the countries with the fastest growth rates already have difficulties feeding their populations. Worldwide, key goods like water, energy and food are becoming increasingly scarce and more expensive. This is a heavy toll on countries like Burundi and the need for active promotion of family planning and vasectomy could help mitigate to this potential crisis.

Burundi as a member of the FP 2020 took the initiative of meeting Sustainable Development Goals (SDGs) among which, promotion of social and economic

development and a reduction of population growth. In matters related to Family planning, there is a commitment to increase the usage of long-acting and permanent methods of contraception.

Nevertheless, a good number of health indicators concerning family planning and family health are alarming, and of these, we can cite a few: Maternal mortality ratio as of 2015 in Burundi was estimated at 712 per hundred thousand live births. This number is quite high if compared to 2030 WHO target of less than 70 (WHO, 2018). One of the causes of this high burden is due to undesired pregnancies that lead to dangerous abortions; a situation that can be mitigated by the promotion of FP methods in general and vasectomy in particular. And vasectomy is still quite low in Burundi as already noted. It is not then surprising that the number of unintended pregnancies as of the year 2018 in Burundi was estimated at around 253,000 (FP2020, 2018).

The % of Women who received adequate information concerning reproductive health services was 26.7%. The percentage of men provided with information about family planning is not studied and remains unknown. This is a potential contributor to the low uptake noted of vasectomy by men in the sense that it is not known what they know about matters pertaining to family planning in general and vasectomy in particular. Thus the need to understand their level of knowledge on vasectomy cannot be overemphasized. While women have a certain level of understanding of family planning it is not clear how much they know about methods that concern primarily men (vasectomy for the sake of this study) and the need to increase awareness is thus great. The consequence of this paucity in knowledge points to the gap in contraceptive prevalence rate between men and women which can be linked to possible low level of knowledge and overall poor attitude on vasectomy

(Contraceptive Prevalence Rate among women is estimated at 16.6% while there is a lack of data on the contraceptive prevalence rate among men since there is no study conducted on that matter) (FP2020, 2014).

Several studies in different parts of Africa have shown that knowledge and attitudes of both men and women on vasectomy vary and that they have an influence on vasectomy acceptance.

However, in Burundi, no research has been conducted on the knowledge and attitude that married men and women have of vasectomy and its acceptance

It is known that vasectomy is among of the most effective and safe radical methods contraception. Moreover, adopting vasectomy and making it accessible would result in a positive influence on the noted health indicators (FP 2020, 2014). While all this is true, the reality is that in Burundi, vasectomy uptake is the lowest among all the methods of family planning with a rate of 0.1% (EDS, 2016- 2017).

In Sub Sahara Africa (SSA), men are usually the decision-makers, but most of them do not have factual knowledge about vasectomy. This knowledge gap warranties more research to seek to elucidate what married men and women know about vasectomy and what attitude they hold on the procedure.

In addition to this, despite the various factors that affect the uptake of vasectomy and the necessity of building a robust knowledge platform on vasectomy, there is limited research on the matter. There is no known study in Burundi that has been carried out in this angle; assessing married women and married men views and understanding of vasectomyand socio demographic factors that influence vasectomy acceptance. This has negatively impacted the success of vasectomy programs and direct involvement of men in family planning (EDS 2016-2017).

By studying what married men and women know and the attitude they have in regards to vasectomy, this will help set a foundation of reducing this knowledge and attitudinal gap. Incorporating married women will help have a global understanding of what is known by the people that are directly affected and involved in matters contraception. It would be impossible to promote contraception to both married men and women without having a strong base of what they know and the attitude they hold on vasectomy and this has been shown to be inadequate in the Burundian setting. This study sought to close this gap or vacuum of data on the matter.

The study aimed at developing a framework whereby fertility behavior is seen not only as of the outcome of effects of well-known intermediate and proximate determinants of fertility, but also as a result of the combined roles of the knowledge, attitude, and influence of attitude, e.g., spousal communication and social-cultural environment of the people, on uptake of vasectomy. These determinants indeed constitute the subsurface forces to which lot more attention needs to be considered (Kols and Lande, 2008).

1.4 Purpose of the Study

The purpose of this study was to assess the knowledge and attitude of married men and women towards vasectomy as a family planning method in Burundi specifically inKigobe Health Center and assess socio demographic factors that influence vasectomy acceptance. In order to achieve these goals, respondents' general characteristics were grouped into socio demographics (i.e. age, gender, religious status, level of education etc.) The examination of respondents' socio demographic features was important for this study in the sense that they served as a basis of establishing association with vasectomy acceptance, which helped to see whether a certain given set of the socio demographics accepted the procedure in comparison to

another and helped formulate recommendations going forward. In the attempt of assuring adequate representation of respondents based on the reality of religious status in Burundi (majority of the population being of the catholic faith: approximately 60%) stratification was done based on religion and gender and this very much so because the research was conducted at a facility owned by protestant missionaries from the Emmanuel congregation. There was thus potential of having more Protestants visiting the facility than Catholics. This was deemed necessary especially since the Catholic stand on contraception is a more radical one. Having adequate numbers of catholic participants helped assess the knowledge and attitude that they have on vasectomy in a more representative way. Moreover by doing the religion stratification this helped have Protestants representation that was in correlation to the reality of Protestants data in the country. Thus the findings of this study were well balanced and less skewed. In addition to religion stratification gender stratification was done to have a 60% male respondents and 40% female respondents in the sense that vasectomy is a typical male method which pushed the study to have more males than females.

In regards to the assessment of the knowledge of married men and women in regards to vasectomy, this was achieved using a knowledge based tool developed by experts who did similar research in the field of family planning and vasectomy in particular (Onasoga, 2013) and (Sezer, 2017). This tool helped assessed what the respondents knew and served as a basis of categorizing knowledge. Attitudinal data was assessed using a 5 points likert scale from the same tools and this helped establish the level of agreeableness and disagreeableness in correlation to statements that had a positive connotation in regards to vasectomy or a negative one.

1.5 Objectives of the Study

1.5.1 General Objective

To assess attitude and knowledge of married women and men on vasectomy in Kigobe Health Center as well as socio demographic factors that influence its acceptance. The respondents of this study were attendants of this health center that either came from the catchment area of the health center or anywhere from the country and that happened to come seek health at this facility.

1.5.2 Specific Objectives

i. Assess married men and women's knowledge of vasectomy as a contraceptive method.
ii. Assess the attitude of married men and women on vasectomy as a contraceptive method.
iii. Assess the socio-demographic factors that influence vasectomy acceptance as a contraceptive method.

1.6 Research Questions

The following are research questions that guided this study.

i. What is the knowledge held by married men and women on vasectomy as a permanent contraceptive method?
ii. What is the attitude of married men and women in regards to vasectomy as a permanent contraceptive method?
iii. What are the socio-demographic factors that influence the acceptance of vasectomy?

1.7 Justification of the Study

Male involvement in family planning is the desired end yet in our countries; there is still a lack of active participation of men in family planning. In Burundi, the use of vasectomy is among the lowest among modern methods of contraception with a percentage not exceeding 0.1. While some studies have been done in other nations on the factors affecting vasectomy acceptance, there is no study conducted in Burundi analyzing the attitude and knowledge of men and women who are married, towards vasectomy and socio-demographic factors that influence its acceptance. In this sense, this study could help understand what is known about vasectomy and what is misconceived and help guide policy-making in regards to vasectomy uptake. The study will also seek to address the sense of equity and choice in matters related to family planning by making vasectomy a routine method of contraception in relation to its female counterpart method.

Married men and women were considered for this study because they are the most involved with matters of family planning. In addition to this, most studies on male contraception have focused on analyzing just the men. At the same time, we know that a decision of contraception is usually carried out by two individuals. There is a certain level of couple's accountability in deciding on matters of contraception. This study decided to explore the understanding of both married men and women because it is believed that the two influence each other in matters of family planning decision. Ignoring the married women perspectives might give an unclear picture of the conception of male contraception, and it may not be known where the married women stand on the matter. To drive this idea more home, a ten-year review (2005-2015) by Shattuck and his collaborators provided a summary of facilitating factors and barriers of vasectomy and concluded that firstly, men and women have a

knowledge deficit when it comes to matters related to vasectomy and this affects attitude and acceptance. Secondly, couples selecting vasectomy are typically married, over the age of 30 years with four or more children and have a history of contraceptive use (Shattuck et al., 2016).

This study will be of benefit to health care workers in the family planning department that work with families considering long term contraceptive methods. The study will help bring to light the level of understanding or knowledge that married men and women have on the only male permanent method of contraception. The benefit of this study will be noticed through the fact that it will help point out the gaps in knowledge of vasectomy which will help in formulating methods of teaching and distributing knowledge awareness campaigns.

By going beyond the assessment of knowledge and seeking to establish the attitude of married men and women, this study will be a basis of starting robust policy formulation and strategies about vasectomy based on realities from the people directly concerned by the matter: what they know, they fear, misconceive and believe.

While Burundi is committed to promoting long term contraceptive methods, it would be difficult for this commitment to be fully materialized if the understanding and the attitude on these methods by the population remains unstudied. My study is thus relevant to start the processes needed for adoption of vasectomy because it tackles the core elements that constitute the backbone for successful policies: knowledge and attitude. And since no similar study has been conducted in Burundi, my study will help create awareness and also act as an incentive to other researchers to conduct similar studies and hopefully more in depth ones in an attempt to increase

the body of knowledge on contraception in general and vasectomy in particular. Finally, by assessing factors that are associated with vasectomy acceptance, this study will help be so useful in helping policy makers in family planning programs know where to focus their energy in the promotion of vasectomy awareness and adoption.

1.8 Scope of the Study

This study was conducted among married men and women who attended the outpatient department of kigobe health center and were coming from different parts of the country. Although the vast majority of our respondents lived in the neighborhood of the facility, they came from different provinces of Burundi. The population of this study consisted of 234 respondents among which 142 were male respondents and 92 were female respondents. The respondents had to be married as that was the criteria of the study. The purpose of this study was on one hand to assess the level of their knowledge on vasectomy, look at socio demographic factors that played a role in the knowledge of the respondents and assess whether the level of knowledge correlated with the acceptance of vasectomy. This was assessed using a knowledge validated tool developed by Onasoga. Being a purely quantitative study, this research did not look into exploring the reasons why some respondents had poor knowledge while others had good and fair knowledge. It did not focus on understanding the why but set to bring to light what is known by married men and women about this only long lasting male contraceptive method. On the other hand this study also assessed attitude towards vasectomy using a 5 items likert scale. Again, the study did not seek to explore the whys behind respondents responses to attitudinal statements as that would imply a quant/qualitative study which goes beyond the scope designed for this study.

1.9 Limitations of the Study

This study was done in a health centre situated in the rural part of the capital city of Burundi: Bujumbura. It did not include samples taken from other facilities and thus, the views obtained from the interviews conducted, and the numerical data therein cannot be generalized as a reflection of all Burundians views or all people living in Bujumbura. More extensive sample size studies on the matter are needed.

This study was designed and carried out from a quantitative method approach. A complementary qualitative study mainly focusing on the attitude of both married men and women in regards to vasectomy would shed more light and give more strength and meaning to the numerical findings of this study.

1.10 Assumptions of the Study

i. Religious, cultural, level of education, age are factors that influence knowledge and attitude towards acceptance of vasectomy.
ii. Knowledge of vasectomy is not sufficient to allow men and women to consider vasectomy as a family planning method actively.
iii. It is further assumed that participants in it will be willing to sign the consent forms and that they will agree to give their honest responses to questions that will be asked to them.

CHAPTER TWO

LITTERATURE REVIEW

2.1 Introduction

This chapter will bring about the review of the literature that touches on the attitude and knowledge of married men and women towards vasectomy as a contraceptive method. It will begin by analyzing the situation of family planning in Burundi, explore vasectomy as a contraceptive method and then touch on attitudes and factors that influence vasectomy acceptance, among other points.

Strategy Used in Research

Literature search relevant to this research was carried out using PubMed central, Google scholar and Hinari. The keywords and phrases were: knowledge, attitude, vasectomy, vasectomy acceptance, married men and women.

2.2 Family Planning in Burundi

The notion of family planning is not a new concept in Burundi. Like several countries in Africa, Burundi is a member of the Family Planning 2020 (FP 2020) initiative. This movement was initiated in 2012 in London to have contraceptives available to at least 120 million women from the poorest countries in the world (FP2020, 2014). In this initiative Burundi pledged itself towards the following goals:

- Ameliorate the quality of contraceptive services through health workers training in all public facilities by making services accessible to the larger population.
- Increase community mobilization on matters related to family and reproductive health and provides basic health training to the community health workers force.

- Attain a contraceptive prevalence rate (CPR) of 40% by 2015, an increase of 18 percentage points since 2010, aiming a CPR of 50% by 2020.
- Strive to see an increase in the number of people accepting a modern contraceptive method from 322,319 in 2012 to 644,628 in the year 2015 and beyond.
- Increase the annual government allocation for family planning and reproductive health to 10% yearly between 2015 and 2020.

While these initiatives are essential, it is high time that active male participation in family planning be encouraged and implemented. The prevalence of vasectomy in Burundi occupies the lowest rank with around 0.5% (Troisième Enquête Démographi que et de Santé au Burundi, 2016-2017).Male participation in contraceptive matters is of the essence. The reason behind this bold statement is found not just in a personal conviction but also in relevant literature on the subject. Odimegwu (2009) stated that striving to have male participation and unshakable support in matters of family planning in general and vasectomy in particular, can never be overemphasized in Africa especially with the high social status they hold in the African societies. In 1994, a conference held in Cairo, Egypt on population and development concluded that it was high time that men be actively involved in matters related to family planning (Levy, 2008). One of the ways men can participate in family planning is to take the first responsibility of limiting births by accepting vasectomy. However, in order for the first steps to be made in this angle, one has to assess their knowledge and attitude but also the women perspectives as contraception in a joint decision. In Nigeria, approximately two fifths of respondents stated that vasectomy and matters relating to family planning must be a joint decision (Federal Ministry of Health, 2003).

2.3 Vasectomy Knowledge and Family Planning

Vasectomy is a non-reversible, surgical method of family planning or contraception. It can be considered as the male equivalent of tubal ligation. It involves a surgical procedure wherethe surgeon cuts the vas deferens, which is a conduit that carries semen from the testicle. By obliterating this canal, sperm or semen can't reach the urethra, and thus, the ejaculate is seedless, making conception impossible. This procedure is cheap, safe, and easy to perform and carries few side effects (Kols and Lande, 2008).

Unfortunately, vasectomy knowledge is inadequate. Except for Asian Countries like Bhutan and Tajikistan, female sterilization is frequently used than vasectomy in the world. In Africa, Namibia boasts of the highest usage at 0.8%, with Kenya only having 0.1% (Kols and Lande, 2008). In Burundi, from 2016 to 2017, the prevalence of vasectomy was between 0.0 and 0.5% (Troisième Enquête Démographique et de Santé au Burundi, 2016-2017). In high income countries, the level of knowledge of vasectomy seems to be adequate; explaining why in the United States of America (USA), Canada, New Zealand, more than 20% of married women count on vasectomy for their family planning approach. This being said it is noted that in Africa the level of understanding of vasectomy and thus its adoption is still at its infancy.

George (2010) stated that the low level of knowledge and the negative attitude towards vasectomy were mainly the grounded in misconceptions and myths around the procedure. While this observation was noted in Country not far from Burundi (Tanzania), it would be hazardous to conclude that it is entirely applicable in Burundi. Nevertheless, this finding paints the need for knowledge and attitude study in my country to assess to what extent there are similarities with other studies. Not

far from Burundi, Ntakarutimana et., al (2019) noted that more than 70% on men would adopt vasectomy and that their knowledge about vasectomy was good. This leaves the question of whether their findings can be anticipated in this study and the great need to assess if the level of knowledge of married men and women correlates with the level of acceptance of the procedure. The need for such assessment finds its roots in the fact that one Nigerian study noted that increased level of education among men towards vasectomy, does not necessarily correlate to vasectomy acceptance (Tijani et al., 2013). Thus, the need to conduct a study on married men and women in regards to vasectomy proves more than necessary to help bridge the possible gap between married men knowledge and attitude and that of married women.

Another point that has been noted in correlation to knowledge about vasectomy is a large number of knowledge misconceptions that has contributed to the overall poor acceptance of vasectomy. In a study conducted in Ghana assessing married men views on vasectomy from a qualitative stand point, majority of men believed that vasectomy led to impotence and believed that it should not be promoted in any way. Most respondents were not willing to accept the method and were even willing to be the core de-motivators to other men who would want to consider the method (Appiah et al., 2018). There is great need in the context of Burundi to establish to what level these misconceptions could be present not only in men but also in women so as to pave the way to possible solutions of promoting vasectomy. The novelty of this study again can't be overemphasized in the sense that married men and women views will be presented together; something that very few studies have focused on. In a study conducted in Nigeria, focusing solemnly on women awareness and attitude towards their spouse's use of vasectomy, it was reported that only 24.5% of

women were aware of vasectomy which points out to a low level of understanding of the sole male permanent contraceptive method. Moreover, while the vast majority of respondents were in favor of contraception usage (89.75%) it was also noted that 81.25% of respondents were against their partners' usage of vasectomy. Reason advanced for this stand being mainly fear of sexual dysfunction (43.1%), religious stand against the method (24.6%) and cultural opposition (19.05%) (Utoo, 2010). This study is a reminder of the need of assessment of women views on vasectomy. Leaving them behind would give a skewed picture on contraception matters. It is a true basis for the need of my study in a country where the density is the second highest in Africa and where no studies on vasectomy have been conducted.

2.4 Attitude Towards Vasectomy

Several misconceptions around vasectomy have been mentioned in studies carried out in different parts of Africa. Vasectomy is one of the least known and the least popular modem Family Planning (FP) methods in sub- Saharan Africa mainly due to cultural beliefs. Vasectomy is often associated in the minds of the respondents with loss of manhood and decreased libido; it is thought to be castration which can only be suitable for animals, not human beings (kidzuga, 2012).

Kols and Lande (2008) found that some men had a fear that if they get a vasectomy, it will increase their likelihood of getting prostate cancer. What is known is that recent research has not established this to be true. This widespread of misconception has been at the forefront of the poor acceptability of this method as it has been demonstrated in a good number of studies. Onasoga (2013) noted that majority of respondents in his study had a negative attitude towards vasectomy and were of the opinion that women should be the only ones responsible of contraception but that decision on the choice of the method to be used should be exclusively left in the

hands of the men. In addition to this, Utoo (2010) noted that majority of women's attitude towards vasectomy was negative in the sense that they did not want their partners to get a vasectomy and their reasons were more founded on myths and misconceptions. However this being said, the same women agreed that contraception decision should be made together. This approach creates an opposition to vasectomy uptake in the sense those women who want to be involved in contraception decision making have an overall negative attitude towards the procedure. This reality creates a strong basis to assess whether in Burundi, married men and married women have similar views on contraception: joint decision or whether it is the man who has the final say on the matter. While we can speculate, we can't say that an accurate answer can be provided without a study like the one I have undertaken. However, one thing remains true, attitude plays a great role in acceptance or refusal of vasectomy and at the core of refusal lie misconceptions and myths around vasectomy.

2.5 Barriers to Vasectomy Uptake: Religious Factors

Contraception beliefs of Christians derive from ecclesiastic teachings rather than from direct biblical teachings. For this very reason, contraception teachings are subjected to different forms of interpretation of what sex, marriage and family mean.

Believers' acceptance of contraception is not old; matter of fact, it is only in the 20th century that questions related to contraception were approved for discussion in various denominations. This being the case, it is not astonishing to note that Christians and Christian churches have polarizing views on what is right and wrong as far as contraception is concerned.

The Anglican Church affirms the role of parents in family planning in the sense that they believe that it is the parent's responsibility to decide how many children they

desire to have, and this responsibility is God-given. In England, the church accepted contraception in the 1930s (Meyendroff, 1975).

The Lutheran church in the USA has mixed views on contraception. Some members believe it to be a sin while others think that there are situations where it is acceptable to consider family planning; for example, if couples do not want to care for a child or if a woman's life might be at risk (Meyendorff, 1975). This makes room to argue that not all believers of the same church follow what is considered to be the norm in the church.

The Presbyterian Church (USA), however, is for the use of contraception and affirms that unintended pregnancies are leading to infant and maternal mortalities (Gordon B, Hinkley, 2002).

From the Roman Catholic Church's perspective, only 'natural' birth control methods are deemed acceptable and non transgression of divine law on marriage. (VI, P. P. 1968).

According to this predisposition, couples from the catholic faith can only rely on the natural methods of reproduction to space their births. However, a good number of practicing Catholics do not follow this recommendation, creating a form of disconnect between the clergy and the congregants. (British Broadcasting Cooperation, 2014).

This being said, it is of essence to note that for instance, Onasoga (2013) noted that religion constituted one of the reasons why Nigerian men had negative attitude towards vasectomy and thus a low acceptance of the procedure. This reality was not only noted in men it was also noted in Women. Utoo (2010) noted that majority of women said that their religion was against vasectomy. To drive this point home,

only a meager 17.3% of Muslim women would accept their spouse to get a vasectomy. However, 80.74% of Protestants would consider vasectomy. This reality sets ground to interrogate ourselves on what the reality in Burundi could be given the fact that the majority of the population is of the Catholic faith and this faith has a radical stand against vasectomy. Moreover, in Nigeria, 16.2% of men surveyed viewed vasectomy as a sin against God, while 30.8% of men did not consider it being a reliable contraception method to be considered. (Adeyimika et al., 2016). This is a vivid representation that beliefs play a major role in decision making especially decisions related to family planning and creates a need to assess to what extent religion in Burundi contribute to vasectomy acceptability.

However, religion is not the sole factor influencing vasectomy understanding and acceptance. In a Ugandan study on obstacles hindering men to be involved in contraception, five themes emerged: negative effects of female family planning methods that interfere with sexual activity, reduced number of male contraceptive options, fear related to the procedure of vasectomy, contraception perception as a strict female responsibility, the desire for many children and the fear of rampant extramarital sexual encounters due to the fact that no pregnancy will be involved (Kabagenyi, 2014). These barriers help to explain why vasectomy's uptake is stagnant in our countries in comparison to other nations in general and of the west in particular. By focusing on the level of knowledge of married men and women as well as their attitude, this study will bring to light responses that could be in acceptance with these other studies and the findings will surely help shape the course of policy making in vasectomy.

2.6 Spousal Influence on Vasectomy

In a research study done in Tanzania, it was noted that men and women had an abysmal communication on matters related to reproductive health, especially family size since this was a decision left for men to make (Bruce, 2007). Moreover, women who did not have adequate communication with their spouses about reproductive health had a low rate of contraceptive usage (Osiro, 2001).

In Nigeria, Adegbola (2016) in a study on the influence of male partners on contraception found that men who had received counselling on matters of family planning were more prone to allow their wives to use contraceptives. In Burundi, 94 percent of men surveyed approved contraceptive usage; however, only a meagre 48 percent of them had discussed with their wives in the preceding year (UNFPA, 2000). From these findings, it can be argued women should have much more freedom to discuss with their partners about contraception, and men should be equally involved. This also comes to show that in order for vasectomy programs to be implemented, the need for assessing both male and female views on the matter is paramount. The deficit in many studies as noted previously is found in the fact that they either focused on men alone (for the large part) or on women alone (few studies as mentioned previously).

2.7 Education Level in Relation to Vasectomy

Knowledge and approval rates of vasectomy method have been observed to vary considerably by various demographic and socioeconomic characteristics (Posner and Mbodji, 2009). Consistent with findings from female interviews, both knowledge and approval rates have been observed to be highest among the younger, higher parity, better-educated men and those in professional/skilled occupations (Posner and Mbodji, 2009). In a study conducted in Rwanda, it was noted that there was

significant association between low level of education and poor knowledge, pointing out to the fact that knowledge of vasectomy increases with the level of education (Ntakarutimana et al., 2019). The finding of this study is in agreement with other similar studies conducted in Nepal (Dayanand, 2014) and India (Nair et al., 2017)

However, this being so, it is also important to note that some studies brought about results that showed that the increase in the level of education does not automatically correlate to positive attitude towards vasectomy. Thus, good knowledge may increase the likelihood of vasectomy acceptance but that does not necessarily bring about positive attitude towards the procedure (Otovwe & Okandeji, 2018). This findings are a reminder that matters pertaining to contraception are not viewed in one simplistic way and require studies to unveil the complexity behind the commitment to choose vasectomy even among people who have adequate understanding about the procedure.

It is not only the level of education that seems to influence the choice and attitude towards vasectomy. Age seems to be playing a key role in the matter. In a Study conducted in Nepal on vasectomy knowledge and attitude, it was noted that young respondents were less knowledgeable about vasectomy and less susceptible to accept the procedure. However older men and those in their prime were more prone to accept vasectomy (Dayanand, 2014). In addition to this, while one may think that men who have attended the desired family size will be more prone to accept vasectomy, it was not the case in a Nigerian study where by the number of children did not play a role in vasectomy acceptance (Tijani et al., 2013). This again points out to the need for a study in Burundi and evaluate if the findings found in these Nigerian men are the same with the men in Burundi and particularly the women, who are usually the forgotten in such studies

2.8 Theoretical Framework

The theory of planned behaviour (TPB) set guidance for this study. The initiator of this theory that is more than 30 years old is called Azjen, who introduced it in 1985.

TPB affirms that the individual behaviour is motivated by the intentions behind the need to pose a given behaviour. These intentions are heavily linked to the attitude that the individual holds in regards to the concerned behaviour, the subjective norms related to the behaviour performance and finally, the level of ease with which the given behaviour can be put in motion. This ease of behaviour performance called in other words, behavioural control is assumed to not only have a direct influence on the behaviour but also an indirect influence through the intention of posing the behaviour (Azjen and Fishbein, 2005).

Behavioural attitude can be defined as positive or negative emotions that the individual carries in relation to the performance of the behaviour. It can't be determined (attitude) without an assessment of what the individual holds as core beliefs, the consequences that can arise from the behaviour and the level of willingness to handle the given consequences (Conner and Sparks, 1995).

2.9 Theory of Planned Behavior

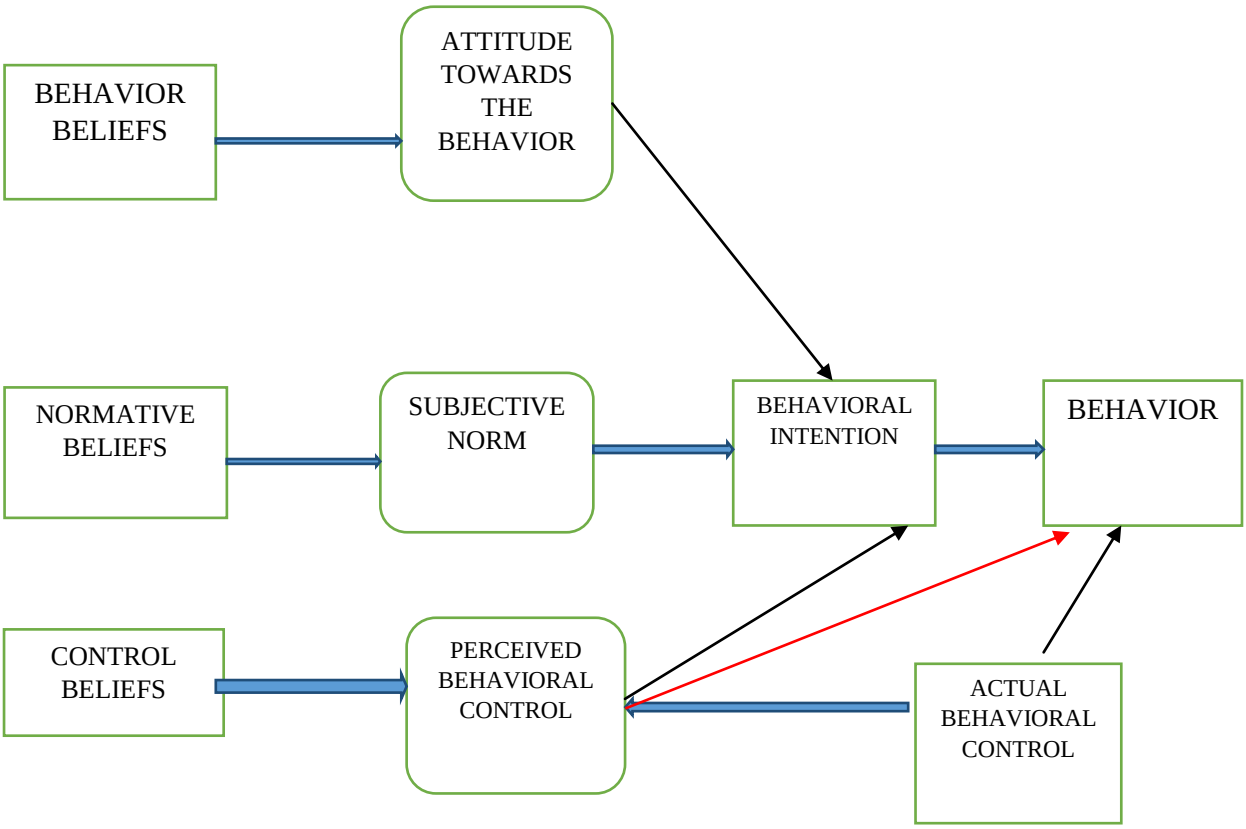

Figure 1: Theory of Planned Behaviour

In this model, the intention of the behavior is influenced by several factors. In addition, the determination of attitude carried in regards to the behavior is linked to consequences that will arise from the performance of the behavior and the value that the individual gives to these consequences.

Secondly, are the subjective norms or the belief in whether other relevant persons will approve one's behavior, plus the personal motivation to fit in with the expectations of others.

Another factor is the perceived behavioral control, determined by the belief about access to the resources needed to act successfully, plus the perceived success of these resources (information, abilities, skills, dependence or independence from others, barriers, opportunities etc.).Lastly are the socio-demographic variables and

personality traits which condition attitudes, subjective norms, and perceived behavioural control.

Strengths and Limitations of the Theory

Strengths: The advantages of the TPB include its taking into account the motivational aspects of personal control in decision making and taking responsibility for one's reproductive health. Also by adding "perceived behavioral control," theory of planned behavior can explain the relationship between behavioral intention and actual behavior since an individual's behavioral intention cannot be the exclusive determinant of behavior where an individual's control over the behavior is incomplete.

Limitations: Unfortunately, Theory of planned behavior is based on cognitive processing and level of behavior change; overemphasizing on psychological factors, while under-valuing structural factors like limited access or availability of resources.

It also overlooks emotion variables such as threat, fear, mood and negative or positive feeling and assessed them in a limited fashion. In the health-related behavior situation, given that their emotion and affect-laden nature influence most individuals' health behaviors, this is a particular drawback for predicting health-related behaviors (Dutta-Bergman, 2005).

2.10 Relevance of the Theory to the Study

Theory of Planned Behavior is essential in this study because it specifies the nature of relationships between beliefs and attitudes. Because adopting modern family planning methods often involve profound changes in both personal behaviour and cultural norms. The model is thus a potent and predictive model for explaining human behaviour. According to these models, people's evaluations of, or attitudes

toward behaviour are determined by their accessible beliefs about the behaviour, where a belief is defined as the subjective probability that the behaviour will produce a particular outcome. From the literature review, men are reluctant to take vasectomy because of the outcome and its implication in the future. These attitudes a man has determined whether he will accept or reject vasectomy as a family planning method. It is important to note is that the social environment also influences behaviour, that is, the community or society in which one lives or regards as essential.

To understand why a family adopts or do not adopt a method of family planning requires knowledge of their social-cultural background, their socialization and how their attitudes have formed. For a long time, the role of family planning was left to women, but at the same time, men have control over reproduction issues, including the number of children in a household. This makes TPB relevant because of its encouragement of feelings of self-control, which would be useful in the case of men choosing vasectomy as a family planning method. The theory promotes feelings of control and self-efficacy in negotiating with partners.

To drive the point home and make this theory easy to understand practically, note that a person's intention is influenced by three factors or constructs that are interrelated and in constant interaction: attitude, subjective norm and perceived behavioral control. In this study, defined attitude will be what married men and women hold as attitude, perceptions towards vasectomy, be it positive or negative.

Subjective norm is related to external factors like peers attitude and family attitudes and the respective influence these have on vasectomy. Perceived behavioral control analyses how easy or hard it is for married men and women to adopt vasectomy.

There are internal factors to this point like what is already known by married men and women on matters vasectomy and external factors like national campaigns, myths and misconceptions around vasectomy, etc

2.11 Conceptual Framework

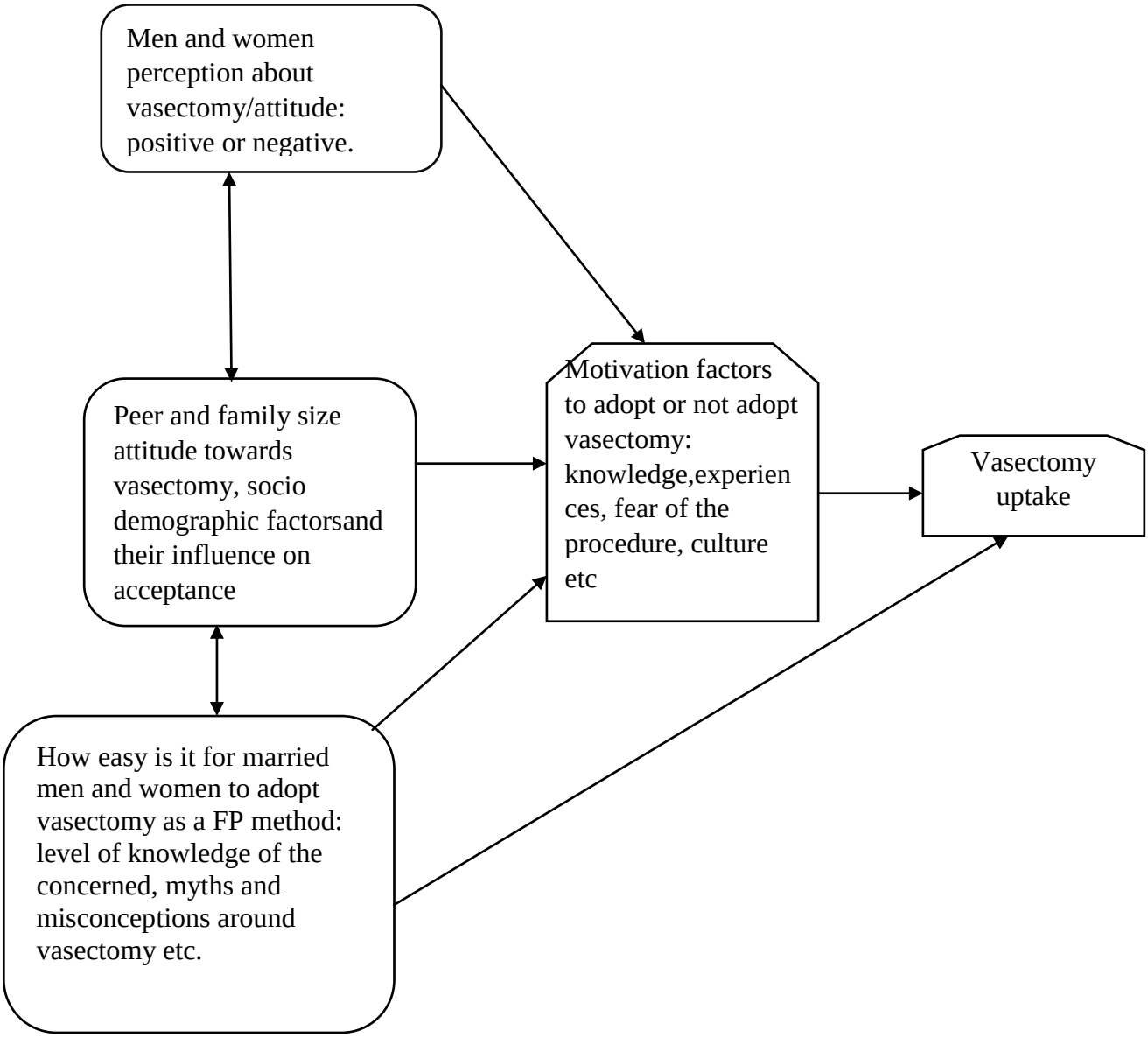

Figure 2: Conceptual Framework

CHAPTER THREE

RESEARCH DESIGN METHODOLOGY

3.1 Introduction

This section will touch on the design of the research, the site of the study, the study population, sample and procedures of sampling, collection of data and procedures used in this exercise, analysis of the data and matters related to ethical clearance and review.

3.2 Research Design

This study was a cross sectional descriptive survey in which a interviewer administered questionnaire was utilized. This study design is used to gather data that relates to a given phenomenon and to bring to light "what exists" in correlation with conditions or variables of a specific situation. According to USC Libraries (2018), cross- sectional study design provides a clear snapshot of the outcome and the characteristics associated with it, at a specific point in time.

The aim of this study was the assessment of the level of knowledge of married men and women as well as their attitudes in regards to vasectomy and socio demographic factors that influence vasectomy acceptance in Kigobe Health Center in Burundi.

3.3 Study Site

This study was conducted in Kigobe Health Center located at the periphery of the Province of Bujumbura and in the commune of Ntahangwa, a zone of Gihosha. Ntahangwa is one of the three communes that are in the province. The commune as of 2019 had a population of 498,547. The commune coverage area is 68 kilometres square.

The Kigobe health centre, a health centre funded by the Emmanuel churches of the United States of America, is a well-equipped health centre that is graduating soon to have the status of a hospital. It has a patient coverage of about 76,137 people. (Ministère de la Santé Publique et de Lutte Contre le Sida, Burundi, 2016).

On the ground data suggests their monthly outpatient and inpatient patients seen to be around 4100, making a total average of around 48.100 patients seen within a year. This site was chosen because it is in the rural part of Bujumbura setting where the vast majority of the Burundian population resides and where there is evidence of high fertility rates. Thus it constitutes a suitable site to conduct this study. In addition to this, it is a site that the researcher is familiar with and that facilitated ease of data collection. The Health center usually represents the community. The researcher chose to conduct the research in this health center as it is frequented by the population that constituted the researcher interest. Moreover, the researcher did not seek to go into households as this research was not aiming at attaining couples views, which conducting interviews among couples could be a potential for increase bias (desirability bias especially). By targeting married men and women that were coming for routine outpatient visit, the researcher saw it fit because he would get unbiased views from the married women apart and the married men apart and thus have a less biased sample of respondents.

3.4 Population of the Study

Before defining the population of the study, it is relevant to have a clear definition of what a population is. According to Polit and Beck, (2008), a population constitutes the sum total of cases that interest the individual carrying the research. Equally so, the study population can be defined as a clearly defined group with specific characteristics. This group can be made of individuals, materials or sequence of

events (Lobiondo and haber, 2002). In this study, the researcher is, of course, interested in people as a population.

When conducting research, defining a population is relevant, but more relevant is the definition of accessible population. Pilot and Beck (2008) have a concise way of defining this concept whereby they state that the accessible population constitutes a sum of cases that fit a certain criteria pre-established by the researcher and is available as respondents accessible to the researcher.

In this research, accessible population was married men and women who visit the outpatient department of Kigobe Health Center. The respondents were aged between 18 years and 45 years for the women, had to be married and were from different denominations and social background. The married men recruited for this study were aged between 22 years old and 65 years old, from different denominations and background (educated, non-educated, Catholics, protestants).

3.5 Inclusion and Exclusion Criteria

3.5.1 Inclusion Criteria

Married men of 21 years old and above attending the outpatient clinic at Kigobe Health Center and who consented to the study. Reason for this selection is based on the fact that in Burundi, the legal age to be married is 21 years.

Married women of 18 years to 49 years attending the outpatient clinic of Kigobe Health Center and who consented to the study. This is because 18 years is the legal female age to be married in Burundi.

3.5.2 Exclusion Criteria

Excluded in the study were married men and women who were not conversant in, French, Swahili and Kirundi. Married men and women who were critically ill as they presented to either the outpatient department or the family planning clinic.

Divorced men and women, those whose spouses have died, single men and women were excluded in the study. The reason for not considering them was based on the sole purpose that my study was set to assess knowledge of men and women from a marital context.

Respondents who did not finish the interview were also excluded to avoid incompleteness of data and potential bias.

3.6 Sampling Procedure and Sample Size

3.6.1 Sampling Procedure

In quantitative research, sampling is paramount in the sense that it is impossible to whole population because of financial constraints and time factor. Because of this specific reason, a representation of the population must be brought out and it constitutes the core of the research. Results found can be considered as accurate and generalizable to the community of the study (Polit and Beck, 2008).

The procedure of sampling can be divided into two entities: non- probability and probability techniques of sampling. In probability sampling, each member gets an equal opportunity to be drafted in the sample. As for non- probability sampling technique, elements are selected based on methods that are not random. For this specific reason, there is a potential for bias and having inaccurate and sometimes non generalizable findings.

Even with such limitations, it is important to note that most researchers conducted in the field of medicine use this technique mainly due to its simplicity. In this study, however, married men and women were selected by probability sampling following proper stratification and then simple random selection in each strata.

3.6.2 Sample Size

According to hospital records that were obtained after permission from the administrators of Kigobe Health Center, taking the month of January 2019 as a reference, a monthly average of 298 male patients from 18 years to 50 years and above visited the health center, and an average of 287 female patients attended the outpatient clinic of Kigobe Health Center. This gives a total average of 586 men and women. (Average/mean numbers were obtained using Microsoft excel based on the January outpatient records). The average number was extended to 600 to allow ease of sample size estimation from the table provided in the appendix section

This total population size was subjected to an online tool of sample size generation, and it gave a sample of 234 respondents. The tool used took a confidence level of 95% with a 5% margin of error to generate such a sample size (Survey Monkey, 2019). The sample size obtained using this online module tool for sample size generation is following the table for determining sample size from a given population as described by the NEA Research Bulletin (1960, page 99).

Using the formula and the table of **Robert Krejcie and Daryle Morgan**, the sample size was 234 cases. (The table is included in the Appendix section). To assure adequate representation of the population in matters religion, stratified sampling based on religion was used. Knowing the fact that the Catholic Church is the vast majority of the Burundian population (60% average) and knowing its stand on

contraception, the researcher judged it imperative to make sure that 60% of the sample size was to be of catholic respondents. This is why stratification by religion was done in order to make sure that their views as well as the views odf other religions are captured in this research. the sample size was stratified as follows: 60% of the sample size was of the Catholic religion. This was achieved by putting into stratification the number of Catholics that visit the outpatient department daily for two months and by simple random sampling selecting about 141 (60% of the sample size) patients from the total of patients of the catholic faith seen within two months. From the 141 total selected, 60% were male and 40% female. Caution was taken to include all ages of the participants and also all socio classes. This was done by the registering nurse who made sure the confirmation of marital status was done and that the respondents were coming from different places of the territory of Burundi. 35% of the sample size was of the Protestant religion and was be stratified in the same manner. Finally, 5% was other religions and the same principle of stratification then the simple random selection was applied.

3.7 Instrumentation

The data collection instrument that was utilized was a questionnaire. The questionnaire was designed from two other tools from similar studies that had been validated. Attitudinal as well as knowledge related questions derived from these two studies and were adapted to the context on the ground after (Sezer, 2017; Onasoga et al., 2013).

The first study is a study conducted in Turkey, and this study was dealing with opinions and attitude of married couples living in Turkey. Although Turkey and Burundi are two different nations, they have some similarities in the sense that vasectomy rates are very low. The rate rarely exceeds 0.1%, and there has been no

increase in the last 20 years (TDHS, 2013). The tool used in this study was validated in 2015. (Sezer, 2017)

The second study from which the questionnaire derived is a study conducted in Nigeria, and it was looking at the attitude and knowledge of men on vasectomy. The study was published in 2013 in International Research Journals. The tool used in this study was validated after extensive literature research on vasectomy and family planning (Onasoga et al., 2013)

Permission was requested from the authors before the questionnaire was finalized. And they granted permission for modification of the questionnaire to fit the context of this study. The questionnaire contains three main sections.

The first section of the questionnaire is the respondents' background information to mention: age, gender, marital status (married for this study), number of children, years in marriage, religion, level of education to mention just a few. These were the independent variables.

The second part of the questionnaire deals with questions related to the level of knowledge on vasectomy and covers questions like: is vasectomy a contraceptive method, what type of family planning method is vasectomy, after a vasectomy procedure a man loses his sexual urge and desire for sexual activity, just to mention a few. Eight questions were assessing the level of knowledge on vasectomy. The questions were formulated to allow the respondent to answer as "yes" or "no" or choose one variable that the respondent felt was right. The author then assessed the provided answers and classified them as correct and incorrect as a means of assessing the level of knowledge.

The third part or section of the questionnaire had 14 attitudinal questions that were designed to assess the attitude of men and women in regards to vasectomy. They touched on religion, culture, sexuality, to assess attitudes.

Attitudinal statements were assessed and measured through a likert scale tool that contained five items (5= Strongly agree, 4= agree, 3= uncertain, 2= disagree and 1= strongly disagree.) four statements among the 14 carried a positive connotation in regards to vasectomy and ten were worded negatively or carried a negative connotation in regards to vasectomy. The statements that were worded positively were scored in the following manner: from strongly agree (5 points) to strongly disagree (1 point). Statements that were worded negatively were scored in a reverse manner, meaning that if a respondent strongly agreed with a negative statement they scored less than if they disagreed. This reflected a negative attitude towards vasectomy. On the other hand, respondents who agreed with positive statements in regards to vasectomy had a higher score reflecting positive attitude. The researcher took a cut off of 50%. A total attitudinal score of less than 50% was considered as a negative attitude reflection of married men and women towards vasectomy while an above 50% score reflected positive attitude.

The possible scores to be obtained were 14/70 to 70/70, equivalent to 20% and 100% respectively. This attitudinal analysis was adapted based on similar studies especially the study by Onasoga in Nigeria whereby he used statistical approach to analyze attitudinal data. Based on respondents' scores, Averages scores for each respondent were tabulated using SPSS and the means were verified using an independent T test. And comparison between attitudinal scores and respondents' demographics was achieved using an Independent T test. The same method of analysis of attitudinal data was also inspired from a Masters thesis written and

presented in international conferences by one of the Senior Family medicine Residents at Kabarak University.

3.8 Pilot of the Research Tools

A pilot of the research tools was conducted at a satellite Health Center of Kigobe Main Health Center after obtaining approval from the administrator of the centre. The questionnaire was administered to 10 married men and ten married women, and they were asked to give feedback on questions they felt were not clear. Their inputs were considered in the finalization of the questionnaire. Their responses were not analyzed in the final report to avoid risks of bias.

3.9 Validity and Reliability of the Research Instruments

Validity is a key component of research. It represents the ability of research findings to be replicated and generalized in other similar research contexts. Validitiy correlates to the ability of the research instrument to truly measure that which it sets to measure (Oso and Onen, 2009).

The interview guide tool was designed by incorporating questions and statements from validated questionnaires in two other studies similar to this one:

- The first tool used in this study for attitudinal assessment was adapted from a Turkish study that was dealing with opinions and attitudes about the vasectomy of married couples living in Turkey. This questionnaire was designed and validated in Turkey after deep and rich research in the field (Altay & Gonener, 2009; Anderson et al., 2010; Dahal et al., 2008; Eisenberg et al., 2009; Odu, Jadunola & Parakoyi, 2005; TDHS, 2013; Tuloro et al., 2006). Also, five experts in the field of Nursing, Sociology and

anthropology developed it, reviewed and revised the tool for content validity. It was pilot tested for feasibility and clarity.

- The other tool in this study from which knowledge and attitude questions were derived from is a knowledge and attitude questionnaire of a study conducted in Nigeria. The questionnaire was put together by a team of experts and was validated in 2013 (Onasoga, 2013).
- This tool was pre tested in other studies especially a study conducted in Rwanda by (Ntakarutimana et. al, 2019).

In order to ensure validity in the context of this study, these steps were initiated and taken:

- The elements figured in the questionnaire were selected after obtaining expert consult. The first expert was a medical doctor who worked in the sector of reproductive health of the Burundi Ministry of Health and who also had a Masters degree in Epidemiology. The questionnaire also was submitted to the research supervisors: one a family physician with a background of research and the other one a General surgeon who is well conversant with research.
- The questionnaire was pretested and piloted on a sample of 20 respondents: 10 married men and ten married women. They were not included in the final report of the study to prevent the risk of bias. Feedback from the pilot participants was obtained on questions they believed were either ambiguous, redundant and those that were not clear. Following the feedback obtained, in conjunction with the research supervisors, some adjustments were made on the questionnaire after

agreement from both the researcher and the research supervisors. Chronbach alpha was calculated and was 0.8 and it showed the internal consistency of the tool.

- The tool was translated in Kirundi, which is the national language of Burundi.

3.10 Data Collection Procedure

The proposal obtained ethical clearance from Kabarak Univerisity. The Burundi National Ethics committee also approved the proposal. Representatives of the satellite health centre of Kigobe and Kigobe Health Center were approached, and written authorization to carry the pilot study and collect the data was obtained.

The researcher recruited one assistant, explained the core goals of the study and trained to collect data through the questionnaire that was translated into Kirundi. A trained linguist proofread the translated questionnaire before it was finalized.

Patients that fit the inclusion criteria (married men and women) were identified at the first point, which is the registration point for outpatient services. At the registration area, all files had the following labels:

i. Age of the patient
ii. Gender of the patient: this was marked on the top cover of the file
iii. Marital status: participants, of course, were married men and women. It was confirmed that they were all married through asking them their marital status. While we could not fully verify the claim we believed their word and took it as it was.
iv. The religious affiliation (Catholics, Protestant and other non-catholic and non-protestants denominations if available)

A recruited Nurse in the registration area was assigned to help in this process of identification. The target was a minimum of 40 married men and women from the ages of 18 years to 45 for the women and from 21 years to 65 for the men; which were the criteria that fulfill the stratification criteria. Being a well-grounded facility, the average number of visits per day in the outpatient department was about 98 adults. This target of 40 respondents was grouped according to religious affiliation, and gender and 12 were selected randomly from each stratum: that is 6 participants from the catholic group among which 4 were males and two females, 5 participants from the protestant group among which three were male and two female and when available a male or a female participant from the other religious affiliation. After stratification, the first male participant in the Catholic group was selected randomly until all four were interviewed, and the same process was done for the two women by random selection. The same process was done for the other religion categories until 12 participants were interviewed within a day of data collection. The Selected respondents were explained the objectives of the research and written, and well explained consent was obtained before administering the questionnaire.

Consenting subjects of the research were taken in private rooms that were allocated for the study. All data collected on a day of collection of data was kept in allocated files and kept in secure draws to only the researcher had access. In addition to this, the same collected data was put in an electronic database by the researcher and was accessible only to the researcher. Data collection took about two and a half months: from beginning February to Mid April 2020.

3.12 Data Analysis

Bowling and Ebrahim (2006), in their handbook of research methods state that statistical analysis permit to make inferences that are numerical in nature to the

larger population from which the sample came from. Quantitative data requires statistical analysis (Beck, 2008).

Data obtained from the questionnaire was analyzed in correlation to research respondents' general characteristic: age, gender, level of education, religious affiliation, number of children, years in marriage and number of desired children.

Assessment of knowledge about vasectomy was analyzed in a two-folded approach: For ease and convenience of analysis, married men and married women knowledge scores were classified into three groups based on the correct score on the eight knowledge questions. Responses on each question were ranked according to the following criteria:

i. Poor knowledge: Number of married men and women who had a percentage score of less than 50% correct answers on the eight questions asked on vasectomy. These were married men and women who scored from 0 to 3 out of 8 possible answers.

ii. Good Knowledge: Number of married men and women who had a percentage score of equal or above 75 correct answers of the eight questions asked on vasectomy. These respondents had 6 to 8 out of 8 possible scores.

iii. Fair Knowledge: Number of married men and women who had a percentage score going from 50 to less than 75% on the eight questions asked about vasectomy: That is to say that they had an absolute score ranging from 4 to 5 out of 8. This approach was adapted from a knowledge assessment tool by (Onasoga et al., 2013), Tijani et al., 2013).

Secondly, knowledge scores were compared to respondents' socio-demographics, and the researcher used parametric statistics involving a chi-square test to establish

association significance between knowledge and the respondents' demographics.A p-value of less than 0.05 was considered significant.

Attitude scores were compared with respondent's general characteristics (gender, level of education, religious affiliation, number of children in the family, number of desired children, years in marriage and age of the respondents) and are presented as averages. An independent-samples t-test was utilized to compare mean attitudinal scores with respondents' demographics.

Socio demographic factors that influence vasectomy were analyzed, and a comparison between them and vasectomy acceptance or refusal was made. A Chi-square test was used to establish the level of association.

Socio-demographic findings were presented with simple statistics with the use of percentages, frequencies and tables.

For a long time, debates on whether Likert data, which is ordinal data, can be analyzed using parametric statistics have been happening (Sullivan, 2013). Extensive literature review done states that parametric tests not only can be used with ordinal data, such as data from Likert scales but also, parametric tests are generally more robust than nonparametric tests (Norman, 2010).

The results were coded and interpreted using a computer software tool, SPSS version 17. Assessment of attitudinal data required the utilization of an independent student T test to assess association between different components of demographics. Knowledge scores were measured and presented as frequencies. Comparison of knowledge scores with respondents socio demographic factors was assessed using A chi-square test. All analysis and results were expressed at the $p<0.05$. Data was written in text as prose and tables.

3.11 Ethical Considerations

Before initiating the study, ethical approval was granted by the Institution Review Board (IRB) of the university. An information sheet was made available, and the respondents signed consent forms before being taken through the questionnaire. On the information sheet the following items were present: the right of the respondent to withdraw from the study at any time without any consequences imposed on them, the assurance that the questionnaire was anonymous and upon completion, was put in a sealed and safe box and retrieved only by the researcher for data analysis purposes.

In addition to the University ethical approval, because the study was conducted in Burundi, ethical approval from the research board of Burundi was obtained after the process of University IREC was processed. Authorization to conduct the study at the Kigobe Health Center was obtained.

In order to assure respect of persons, each participant in this study was encouraged to make their own decision as to whether they wanted to be part of this study. In addition to this, every participant before answering to the questions was explained the goal and objectives of the study to full satisfaction and this led to consent giving.

In addition to this, this study did not aim to administer the questionnaire to respondents who were not in their sound mind: mainly participants that were critically unwell and those who felt uncomfortable during the exercise of the research were provided a safe place to rest and recover and their responses were not considered in the analysis section of this research.

In terms of beneficence, after the collection of data was done, each individual was explained the correct answers to the knowledge questions and where there was

lacking of knowledge, the researcher closed the gap by providing accurate information pertaining to vasectomy.

Finally the principle of justice was achieved in this study in the sense that the participants in this study were not marginalized subjects and moreover the questions that this research was raising are questions that involve family planning and these are matters that are relevant to the community in general and also to the respondents of this research.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSION

4.1 Introduction

In this section, the researcher presents research findings and analysis, discussion of the results in the light of the research objectives highlighted in the first chapter.

The objectives of this study were the following: to assess married men and women level of knowledge of vasectomy as a contraceptive method, to assess the attitude of married men and women on vasectomy as a contraceptive method and finally, to explore socio demographic factors that influence vasectomy acceptance as a contraceptive method.

4.2 General and Demographic Information

4.2.1. General Information

Out of the aimed sample size, the researcher managed to collect the needed sample size with a response rate of 100%. Two hundred thirty-four married men and women were the targeted sample, and all were interviewed using the questionnaire designed for the study.

4.2.2. Demographic Data

Data from the socio demographic factors of the respondents are summarized in Table 1. In terms of gender, most of the respondents were male: 60.6%. In terms of age, the majority of the respondents were less than 40 years old (57.3%). For the religious affiliation, the majority of the respondents were of the catholic religion: 60.2% while in terms of the number of children, those who had less than five children were dominating the sample with 55.1%. In matters related to the level of education, most of the respondents had a primary level of education with 35%. In

terms of years in marriage, 51.7% of the respondents had been married for less than ten years. Finally, 53.0% of respondents desired more than five children.

Table 1: Socio-demographics (N=234)

Characteristic		**N**	**%**
Age (Years)	≤ 40	134	57.3
	> 40	100	42.7
Gender	Male	142	60.7
	Female	92	39.3
Religion	Catholics	141	60.3
	Protestants	81	34.6
	Muslims	12	5.1
Level of education	No formal ed	51	21.8
	Primary	82	35.0
	Secondary	53	22.6
	Tertiary	48	20.5
Years in marriage	≤ 10 years	121	51.7
	>10 years	113	48.3
Desired children	≤ 5 children	110	47.0
	>5 children	124	53.0
Current children	≤ 5 children	129	55.1
	>5 children	105	44.9

4.3 Married Men and Women Level of Knowledge of Vasectomy

A summary of married men and women knowledge scores and their corresponding percentages is found in the following Tables.

Table 2: Married Men Knowledge Scores (N: 142)

Questions/statement	Correct expected answer	Number Correct	Percentage Correct
Is Vasectomy expensive	False	91	64.08%
What kind of men should get a vasectomy	Any Man Desiring It	75	52.8%
Is vasectomy a contraceptive method	True	114	80.2%
If so, what Kind of contraceptive method is it?	Permanent	102	71.8%
Does vasectomy prevent sexually transmitted diseases?	False	112	78.8%
Does a man lose his sexual drive/libido after a vasectomy	False	66	46.4%
How is vasectomy performed	Surgery	103	72.5%
Can a man impregnate his partner after vasectomy	False	88	61.9%

In regards to married men knowledge on vasectomy, the question asking whether vasectomy was a family planning method received the highest percentage score (80.2%) while the lowest percentage score was observed on the question of whether a man loses his sexual drive after vasectomy with a percentage score of 46.4%.

Table 3: Married Women Knowledge on Vasectomy (N: 92)

Questions/statement	Correct expected answer	Number Correct	Percentage Correct
Is Vasectomy expensive	False	61	63.3
What kind of men should get a vasectomy	Any Man Desiring It	37	40.2
Is vasectomy a contraceptive method	True	76	82.6
If so, what Kind of family planning method is it?	Permanent	68	73.9
Does vasectomy prevent sexually transmitted diseases?	False	49	53.2
Does a man lose his sexual drive/libido after a vasectomy	False	27	29.3
How is vasectomy performed	Surgery	57	55.4
Can one impregnate his partner after vasectomy	False	48	52.1

Among the married women knowledge assessment on vasectomy, the question with the highest percentage score was the question asking whether vasectomy was a family planning method (82.6%). In contrast, the lowest percentage score was observed on the question of asking whether a man loses his sexual drive after vasectomy (29.3%).

In terms of classification of the level of knowledge, most of the respondents' level of knowledge of vasectomy was good. (More than half of the participants, both married men and married women combined with a percentage of 52.1, those with poor knowledge were 36.3% while the respondents with fair knowledge on vasectomy were 11.5%. These findings are summarized in the following Table.

Table 4: Overall Classification of Respondents Level of Knowledge (N: 234)

	Frequency	Percentage
Good Knowledge	122	52.1
Fair Knowledge	27	11.5
Poor Knowledge	85	36.3

4.4 Comparison of Knowledge Scores with Respondents Demographics

Comparison of knowledge scores on vasectomy with respondent's demographics is presented in the following Table.

Table 5: Comparison of Knowledge Scores on Vasectomy with Respondents' Demographics (N: 234)

Variable		Good (%)	Fair (%)	Poor (%)	P-value
Gender	Male	82 (57.7)	16(11.2)	44 (30.9)	0.081
	Female	40 (43.4)	11(11.9)	41 (44.5)	
Level of education	No Ed	12 (23.5)	7 (13.5)	32 (62.7)	0.000
	Primary	24 (29.2)	12(14.6)	46 (56.09)	
	Secondary	45 (84.9)	3 (5.6)	5 (9.4)	
	Tertiary	41 (85.4)	5 (10.4)	2 (4.1)	
Religion	Catholic	45 (32)	19(13.4)	77 (54.6)	0.061
	Protestant	70 (86.4)	5 (6.1)	6 (7.4)	0.000
	Muslim	7 (58.3)	3 (25)	2 (16.7)	
No. of Children	<Five	76 (58.9)	14 (10.8)	39 (30.2)	0.000*
	>Five	46 (43.8)	13 (12.3)	46 (43.8)	
Age	<40	50 (37.3)	19 (14.1)	65 (48.5)	0.000
	>40	72 (72)	8 (8)	20 (20)	
Desired Children	<Five	74 (67.2)	7 (6.3)	29 (26.3)	0.000
	>Five	48 (38.7)	20 (16.1)	56 (45.1)	
Years in Marriage	<10 years	56 (46.2)	14 (11.5)	51 (42.1)	0.136
	>10 years	66 (58.4)	13 (11.5)	34 (30.08)	

This table illustrates that in terms of knowledge scores based on gender, 82 married men out of 142 had a good level of knowledge representing 57.7%. Married women scored less on the category of good knowledge 40 out of 92, which corresponds to 43.4%. There was no positive association between Gender (married men and married women) and level of knowledge overall with a P-value of 0.081.

In terms of the level of education, married men and women who had a low level of education (meaning no education and primary education) had a high percentage on the poor spectrum of knowledge with 62.7% and 56.09% respectively. Those with a higher level of education (Secondary school education and tertiary) had a high score on the spectrum of good knowledge: 84.9 per cent which represents 45 respondents out of a total of 53 married men and women with a secondary level of education. 85.4% of respondents with a tertiary level of education had a good knowledge of vasectomy representing 41 respondents out of 48 respondents with tertiary education. There was a significant association between the level of education and knowledge on vasectomy with a p-value of <0.001.

In terms of religion, the results in the table indicate that protestant respondents were more knowledgeable about vasectomy. 70 out of the 81 respondents had good knowledge (that is 86.4%) compared to 58.3% and 32% of Muslim and Catholics respondents respectively. Catholic respondents had a higher percentage score on the poor knowledge spectrum (54.6% representing 77 respondents out of the 141) compared to Protestants and Muslims who had fewer respondents with poor knowledge: 6 out of 81 Protestant respondents representing 7.4% and 2 out of 12 Muslim respondents, representing 16.7%. There was a significant association between religion and the level of knowledge with a P-value of <0.001.

Concerning the comparison between the level of knowledge and the number of children, the findings in this table show that there was no significant association between the level of knowledge and the number of current children. The P-value was 0.061. Nevertheless, those with less than five children were more knowledgeable than those with more than five children: 76 respondents versus 46 respondents of those with more than five children, representing 58.9% and 43.8% respectively.

In terms of age, the study found that those who were beyond 40 years were more knowledgeable than those who were less than 40 years with a significant P value of<0.001; that is 72% versus 37.3%.

In terms of knowledge scores in comparison with the number of desired children, respondents who desired less than five children were more knowledgeable about vasectomy than the respondents who desired more than five children: 67.2% versus 38.7%. The P-value was significant at <0.001.

Finally, concerning the years spent in marriage, the study did not find a significant difference between respondents who had been married for less than ten years and those who had been married for more in terms of their level of knowledge with a p-value of 0.136.Nevertheless, those who had been married for more than ten years had a higher score on the good knowledge spectrum than those with less than ten years in marriage: 58.4% representing 56 respondents out of 113 compared to 46.2% which represents 56 patients out of 121.

4.5 Comparison of Level of Knowledge and Vasectomy Acceptance

Comparison of knowledge scores of respondents with acceptance of vasectomy is summarized in the following table.

Table 6: Comparison of level of Knowledge with Vasectomy Acceptance (N 234)

Characteristics		**Not Accept**	**Accept**	**P-value**
Knowledge on	Good	113 (92.6%)	9(7.3%)	
Vasectomy	Fair	26 (96.2)	1 (3.7%)	0.787
	Poor	79 (92.9%)	6 (7.05%)	
	Total	218 **(93.1%)**	16 **(6.8%)**	

This table shows that the majority of respondents with good knowledge on vasectomy: 122 respondents did not have a strong association with acceptance of vasectomy. Among these, 92.6% did not accept vasectomy, while 7.3% accepted vasectomy. The trends are also observed for those with fair and poor knowledge with 96.2% of those with fair knowledge not accepting vasectomy and 92.9% of those with poor knowledge not accepting vasectomy as well. There was no significant positive association between the level of knowledge and vasectomy acceptance as the p-value is 0.787.

4.6 Married Men and Women attitude Scores Towards Vasectomy

A summary of the overall attitude scores for both married men and women is presented in the following Table.

Table 7: Response numbers and frequencies for attitude scores (N 234)

Characteristics	Agree (4,5)	Uncertain (3)	Disagree (1,2)
Vasectomy is not acceptable in the Burundian culture	W 82 (89%) M 142(100%) T 224 (95.6%)	W 0 M 0 T 0	W 10 (10.8%) M 0 T 10 (4.2%)
Vasectomy results in loss of manhood status in the society	W 65 (70.6%) M 134 (94.3%) T 199 (85.04%)	W 4 (4.3%) M 3 (2.1%) T 7 (2.9%)	W 23 (25%) M 5 (3.5%) T 28 (11.9)
Men Should be responsible for contraception *	W 15 (16.2%) M 10 (7%) T 25 (10.6%)	W 1 (1.08%) M 5 (3.5%) T 6 (2.5%)	W 76 (82.6%) M 127 (89.4%) T 203 (86.7%)
Vasectomy makes men more promiscuous	W 71 (82.6%) M 121 (85.2%) T 192 (82.05%)	W 2 (4.3%) M 10 (7.0%) T 12 (5.1%)	W 19 (20.6) M 11 (7.7%) T 30 (12.8%)
Vasectomy is a safe method of family planning *	W 8 (8.6%) M 23 (16.1%) T 31 (13.2%)	W 8 (8.6%) M 5 (3.5%) T 13 (5.5%)	W 76 (82.6%) M 115 (80.9%) T 191 (81.6%)
It's against my religious belief for a man to practice vasectomy	W 76 (82.6%) M 135 (95.1%) T 211 (90.1%)	W 5 (5.4%) M 5 (3.5%) T 10 (4.2%)	W 11 (11.9%) M 2 (1.4%) T 13 (5.6%)
Vasectomy is castration and thus should be avoided	W 59 (64.1%) M 84 (59.1%) T 143 (61.1%)	W 10 (10.8%) M 3 (2.1%) T 13 (5.5%)	W 23 (25%) M 55 (38.7%) T 78 (33.4%)
Vasectomy should not be practised because God is the one to decide the number of children	W 73 (79.3%) M 95 (66.9%) T 168 (71.7%)	W 0 M 9 (6.3%) T 9 (3.8%)	W 19 (20.6%) M 38 (26.7%) T 57 (24.3%)
Having a vasectomy make women unfaithful to their husbands	W 17 (18.4%) M 25 (17.6%) T 42 (17.9)	W 0 M 11 (7.7%) T 11 (4.7%)	W 75 (81.5%) M 105 (73.9%) T 180 (76.9%)
Information on vasectomy is not enough to allow adequate decision making *	W 75 (81.5%) M 112 (78.9%) T 187 (80%)	W 8 (8.6%) M 5 (3.5%) T 13 (5.5%)	W 9 (9.7%) M 25 (17.7%) T 36 (15.3%)
Vasectomy should only be done if someone has more than five children	W 33 (35.8%) M 104 (73.2%) 137 (58.5%)	W 9 (9.7%) M 3 (2.1%) T 12(5.1%)	W 50 (54.3%) M 35 (24.6%) T 85 (36.3%)
A man should have many children. Thus vasectomy is prohibited/sin	W 42 (45.6%) M 80 (56.3%) T 122 (52.1%)	W 3 (3.2%) M 12 (8.4%) T 15 (6.4%)	W 47 (51.1%) M 50 (35.2%) T 97 (41.4%)
Tubal ligation is what should be done, not vasectomy	W 52 (56.5%) M 40 (28.1%) T 92 (39.3%)	W 0 M 16 (11.2%) T 16 (6.8%)	W 40 (43.4%) M 86 (60.5%) T 126 (53.8%)
Because vasectomy is irreversible, it constitutes a factor of consideration for adoption *	W 5 (5.4%) M 16 (11.2%) T 21 (8.9%)	W 1 (1.08%) M 0 T 1 (0.4%)	W 86 (93.4%) M 126 (88.7%) T 212 (90.5%)

5 = Strongly agree, 4 =Agree, 3 =Uncertain, 2 =Disagree, 1 =Strongly disagree

M: Married Men
W: Married Women
Total of Married Men: 142
Total of Married Women: 92

***Positive Attitude Statement towards Vasectomy**

The overall attitudinal mean score for all respondents in regards to vasectomy was 47.1%. The majority of respondents agreed with most negative statements towards vasectomy and disagreed with most positive statements towards vasectomy.

95.6% of respondents (224) agreed that vasectomy was not acceptable in the Burundian culture while 4.2%, representing ten respondents disagreed with this statement.

85.04% representing 199 respondents agreed that vasectomy resulted in the loss of manhood status in the society while 11.9% representing 28 respondents disagreed. 2.9% or seven respondents were uncertain about this statement.

In terms of male involvement in contraception, 10.6% of respondents agreed that men should be responsible for contraception, while 86.7% disagreed with this statement.

82.05% of respondents agreed that vasectomy makes men more promiscuous, and 12.08% of respondents disagreed to this statement.

In terms of safety of vasectomy, 13.2% of respondents agreed that vasectomy was a safe contraceptive method while 81.6% disagreed with this.

In matters religion, 82.6% of the respondents agreed that is was against their religious beliefs for a man to practice or undergo a vasectomy. 5.6% disagreed to this statement, and 4.2% were uncertain.

61.1% of respondents agreed that vasectomy was castration and that it should be avoided while 33.4% of respondents and 5.5% disagreed and were uncertain respectively.

71.7% of respondents agreed that God should be the one to determine the number of children, and thus vasectomy should be avoided. 24.3% disagreed with this statement.

In terms of availability of information on vasectomy, 80% of respondents agreed that information about vasectomy was not enough to allow adequate decision making about vasectomy while 15.3 % disagreed to this statement.

58.5% of respondents agreed that vasectomy should only be done if someone has more than five children, while 36.3% disagreed to this statement.

Concerning the need for a man to have many children, 52.1% agreed that a man should have many children and 41.4% disagreed to this statement.

In terms of tubal ligation being better than vasectomy, 39.3% agreed that tubal ligation should be done instead of vasectomy and 53.8% disagreed to this statement.

Concerning the irreversibility of vasectomy, 8.9% of respondents agreed that because vasectomy is irreversible, this constitutes a factor for its adoption. 90.5% of respondents did not agree with this statement.

4.7 Vasectomy Acceptance

In terms of vasectomy acceptance, a separate question from the knowledge questions was that of assessing vasectomy acceptance and was framed as follows: "*Would you accept vasectomy as a family planning method*"? This question was asked at the very last portion of attitudinal questions as a wrap up of the questionnaire. The

majority of respondents were not in favor of accepting vasectomy with a refusal percentage of 93.2 which represents a total number of 218 respondents among the 234, making those who accepted vasectomy 6.8% representing 16 respondents among which 12 were male and four female.

4.8 Comparison of attitude scores with Respondents Demographics

The following table gives a summary of the attitude scores in comparison to some demographics of the respondents.

Table 8: Comparison of respondent's demographics with attitude scores (N=234; *p <0.05)

Characteristic		**N**	**Attitude means score (%)**	**Std. Dev**	**p-value**
Age (Years)	≤ 40	134	0.476 (47.6)	0.059	0.425
	> 40	100	0.464 (46.4)	0.155	
Gender	Male	142	0.448 (44.8)	0.115	0.000
	Female	92	0.506 (50.6)	0.095	
Religion 1	Catholics	141	0.475 (47.5)	0.058	0.262
	Protestants	81	0.492 (49.2)	0.155	
Religion 2	Catholics	141	0.475 (47.5)	0.058	0.000
	Muslims	12	0.276 (27.6)	0.007	
Number of kids	≤ 5 Kids	129	0.500 (50)	0.095	0.000
	>5 Kids	105	0.435 (43.5)	0.118	
Desired kids	≤ 5 Kids	110	0.484 (48.4)	0.127	0.093
	>5 Kids	124	0.459 (45.9)	0.093	
Years in Marriage	≤ 10 years	121	0.499 (49.9)	0.012	0.062
	>10 years	113	0.440 (44.0)	0.122	
Level of education 1	No education	51	0.522 (52.2)	0.059	0.003
	Primary	82	0.446 (44.6)	0.038	
Level of education 2	Secondary	53	0.519 (51.9)	0.118	0.000
	Tertiary	48	0.403 (40.3)	0.168	

This table shows that there was a significant association between attitude mean scores towards vasectomy and the following demographics: level of education, religion, number of current children and gender.

Mean attitude score for females was 50.6% compared to 44.8% of male respondents with a P-value of <0.001.

In terms of religion, there was a significant association between attitude mean score for respondents of the Catholics faith and the Muslims (47.5 for Catholics versus 27.5% for the Muslims with a P-value of <0.001). There was no positive association between the attitude mean scores of Protestant respondents and Catholics.

In terms of the number of current children, the overall attitudinal mean score for those with less than five children was 50% compared to 43.5% of those with more than five children. The P-value was significant at <0.001

Concerning the level of education, there was a significant association in attitudinal mean scores for respondents with no formal education and those with primary education (52.1% and 44.6% respectively with a P-value of 0.003). The same was noticed between attitudinal mean scores of respondents with secondary education and tertiary education (51.9% and 40.3% respectively, with a P-value of <0.001).

4.9 Comparison of Demographics with Vasectomy Uptake

The summary of vasectomy uptake scores in comparison to respondent demographics is found in the following Table 9.

Table 9: Comparison of Acceptance of vasectomy with respondents' demographics (N: 234)

Characteristics		**Not Accept**	**Accept**	**P-Value**
Gender	Male	130(91.6%)	12(8.4%)	
	Female	88(95.7%)	4(4.3%)	**0.225**
Religion	Catholic	132(93.7%)	9(6.3%)	
	Protestant	74(91.3%)	7(8.7%)	**0.512**
	Muslim	12(100%)	0 (0%)	
Number of Children	<Five	124(96.9%)	4(3.1%)	***0.012**
	>Five	93(88.6%)	12(11.4%)	
Level of Education	No ED	51(100%)	(0%)	**0.061**
	Primary	77(93.9%)	5(6.1%)	
	Secondary	46(86.8%)	7(13.2%)	
	Tertiary	44(91.7%)	4(8.3%)	
Age	</=40	129(96.2%)	5(3.8%)	
	>40	89(89%)	11(11%)	
Desired Kids	Less than 5	105(95.4%)	5(4.5%)	***0.029**
	More than 5	113(91.1%)	11(8.9%)	
				0.191
Years in Marriage	Less than 10	114(94.2%)	7(5.7%)	
	More than 10	104(92.03%)	9(7.9%)	
				0.509

This table shows that in terms of gender and vasectomy uptake, there was no significant association. 8.4% of male respondents would accept vasectomy compared to 4.3% of female respondents. This difference is not statistically significant, with a P-value of 0.225.

There was no significant association between religion and vasectomy uptake. 6.3% of Catholic respondents would adopt vasectomy compared to 8.7% of Protestants and 0% of Muslims. The P-value was 0.512.

There was a significant association between age and vasectomy uptake. 3.8% of respondents aged less than 40 years would adopt vasectomy compared to 11% of those with more than five children who would accept vasectomy with a P-value of 0.029.

There was no significant difference between respondents who had been married for more than ten years and those who had been married for less than ten years in terms of their acceptance of vasectomy: 7.9% and 5.7% would adopt vasectomy respectively.

No significant association was also noted for respondents who desired more than five children and those who desired less in terms of their acceptability of vasectomy: 8.9% versus 4.5% with a P-value of 0.191.

In terms of the level of education and vasectomy uptake, there was no significant association. Respondents with no education would not adopt vasectomy, compared to 6.1% of those with primary education who would. 13.2% of those with secondary education and 8.3% of those with Tertiary education would adopt vasectomy. However, the P-value in this category is not significant: 0.061.

Finally, there was a significant association between the number of children and vasectomy uptake with 3.1% of respondents with less than five children being favourable to vasectomy uptake compared to 11.4 of those with more than five children. P-value was 0.012.

4.10. Discussion

To the best of the researcher's understanding and knowledge, this is one of the very few studies that assessed the level of knowledge and attitude of married men and women towards vasectomy and socio-demographic factors that influence vasectomy

acceptance. A good number of studies in different parts of the world and Africa, in particular, have analyzed attitude and knowledge on vasectomy but a vast majority of them have focused mainly on men (Onasoga, 2013; Kidzuga, 2012; Akpamu, 2010).

Family planning involves both the man and the woman. In most cases, this has been left to the women to deal with, and even family programs in Burundi insist more on female methods more than they do on males. This has been one of the reasons why men's participation is behind.

To attempt to reverse this dynamic in Burundi and promote male involvement in family planning, it would be futile if an inclusive approach of understanding what is known by married men and women on vasectomy is not implemented. This study had this goal: to understand what is known and what attitudes married men and women have towards vasectomy and socio demographic factors influencing its acceptance.

In this discussion portion of the research findings, results are discussed in the light of the three objectives of this study, which are: knowledge of married men and women of vasectomy, attitude towards vasectomy and socio-demographic factors that influence vasectomy acceptance.

4.10.1 Married Men and Women Knowledge of Vasectomy

The objective primo of this study was to assess the level of knowledge of married men and women on vasectomy. This research found that most respondents had overall good knowledge of vasectomy however there were areas where by their knowledge was scanty especially when asking specific questions in relation to vasectomy. While majority of the respondents knew that vasectomy was a family

planning method, most of them did not know that a man did not lose his sexual drive after vasectomy. Only 46.4% of married men knew that a man does not lose his sexual drive and a meager 29.3% of married women. This points to a fact that while they knew that vasectomy was a contraceptive method, there was still persistence of ignorance in what the method confers. This could be further explained by the non-positive attitude that both married men and married women hold on this method. Similar findings in terms of knowledge were noted in other studies. For example, in a study conducted in Rwanda, the authors found that majority of respondents were aware that vasectomy was a family planning method (about 80% of respondents) yet misconceptions about the procedure were noted (Ntakarutimana et al., 2019). It is possible that this knowledge gap noted in this study could stem from a culture that values having more children and thus there is no interest from men to get information about vasectomy or other methods of contraception.

This study also noted that the majority of respondents who were older (40 years and above) were more knowledgeable than young respondents. This finding was also noted in other studies. For example, in a study conducted in Nepal, 69% of male respondents who had moderate knowledge were older, had a tertiary level of education. My study noted that 72% of respondents who were 40 years old and above had good knowledge about vasectomy compared to 37.3% of respondents who were less than 40 years with a significant p value of <0.001. In a study conducted in Rwanda, a neighboring country to Burundi, it was noticed that majority of respondents who had good knowledge about vasectomy were older (Ntakarutimana et al., 2019). The findings of my study seem to be in agreement with other studies. One of the reasons in my opinion that could explain this association of adequate knowledge with age could be that the more people age, the more the need

for wanting to space births become felt in the sense that they are aware that every pregnancy comes with health related risks. Moreover there is a possibility that at advanced age, people have already achieved their family size and are looking into ways to limit births.

However, not all studies agree with my findings. For instance, a study conducted in Nigeria revealed that majority of men (62.5%) did not have adequate knowledge about vasectomy, showing that old age and adequate knowledge about vasectomy is not an absolute given.

My study found that the more the respondents were educated, the more knowledgeable they were. For instance majority of respondents with a tertiary level of education (85.4%) had good knowledge, compared to 29.2% of respondents with a primary level of education. This finding was also noted in other studies in India (Nair et al., 2017) and in Nepal (Dayanand, 2014). In contrast to this finding that seem to be self-explanatory, some studies in Nigeria showed no association between the level of education and knowledge and attitude towards vasectomy (Onasonga et al., 2013) and (owopetu et al., 2014). This finding is a testament that knowledge is not enough to affect change of behavior and attitude in regards to vasectomy. In other words, while high level of education may be associated with an increased chance of knowing more about vasectomy, it is not necessarily associated with good attitude towards vasectomy.

In addition to this my study also noted that knowledge level did not have a positive association with acceptance of vasectomy since the vast majority of respondents who were knowledgeable and those who were not, all were not in favor of accepting vasectomy. This finding is a strong testament that knowledge is not enough to bring

about change of attitude and behavior that could lead to vasectomy acceptance and adoption. However, a study conducted in Rwanda revealed that about 63.5% of respondents would consider adopting vasectomy. While their finding contradict the findings of this study, it is interesting to note that if Burundi puts much more efforts in contraceptive campaigns that are not only championed by the government but also the clergy and the society as a whole, attitude towards vasectomy could change as it was noted in Rwanda (Ntakarutimana et al., 2019).

One other factor that was noted in other studies to influence knowledge about vasectomy is religion. My study found that Catholic respondents were less knowledgeable than protestant respondents. (32% versus 86.4% with a significant p value of <0.0001). This finding did not come as a surprise in the sense that the Catholic Church has radical stands against contraception that is not natural. It will not then be unreasonable to assume that Catholics would not draw attention on a method that seems to be against their core beliefs. In a Rwandan study by (Ntakarutimana et al., 2019), it was noted that 53.8% of Catholic respondents stated that their religion was against the practice of vasectomy and because of that, they could not adopt the method. This finding comes to point out an important element that in order to affect change and promote vasectomy acceptance there is going to be a great need for the government to find ways to work with the clergy and find middle ground. As things stand, negative attitude towards vasectomy could partially find explanation in religious factors.

4.10.2 Married Men and Women attitude towards vasectomy

On the second objective of this study which was to analyze the attitudes of married men and women towards vasectomy, this study found that the overall attitude score (married men and women combined) was 47.1%, which is a reflection of an overall

negative attitude towards vasectomy. One of the factors that have been identified to influence attitude towards vasectomy is culture (Kidzuga 2012). This study found that 95.6% of respondents; that is 89% of women and 100% of men agreed that vasectomy was not acceptable in the Burundian culture. This finding could be further explained by the fact that children are considered as wealth and God's given gifts. Children are seen as an investment for the future as one proverb suggests: "the greatest sorrow is to have no children to mourn for you". Thus any measure that would come to block the "blessings" is less likely to be acceptable. In a Turkish study assessing opinions and understanding of married couples towards vasectomy, most of the respondents were in agreement that vasectomy was not appropriate to the Turkish culture and was viewed as an imposition of the western countries (Kisa, Zeyneloglu, and Delibas, 2013). This strong cultural belief that is against vasectomy could be one of the explanations of the low mean attitudinal average score. Culture is a strong component of the society. Results from my study and in correlation with other studies done in various parts of the world show that in order for vasectomy to be adopted, a deep understanding of cultural beliefs and norms that seem to be against contraception will need to be investigated as all the studies conducted on vasectomy, especially in the African setting have strongly suggested this to be o hindrance to implementation of vasectomy.

In addition to the cultural beliefs, this study also noted that 66.9% of men and 79.3% of women; that is 71.1% of all respondents agreed that God should be the only one determining the number of children pointing out that vasectomy would come to interfere with such a plan. This finds an explanation in the fact that Burundian beliefs insist on God being the decider of everything good or bad. Everything is

determined or set in motion by the hands of “Imana” meaning God, the author of all things.

Still, in the same chain of thought, this study found that 90.1% of respondents that is 95.1% of male respondents and 82.6% of female respondents agreed that it was against their religious belief for a man to get a vasectomy. This shows that religion has a strong influence on vasectomy uptake. This finding is in agreement with Onasonga (2013), who found that religion influenced attitude towards vasectomy to up to 72.1% of respondents similar findings were noted in a study conducted in Rwanda (Ntakarutimana et al, 2019). This being the case, attitude towards vasectomy can’t change if there is no deep religious involvement in facilitating contraceptive measures. Rwanda has managed to reverse this tendency in the sense that church ministers are encouraged to talk about contraception in general and vasectomy in particular in order to help push the government plan of limiting births (Ntakarutimana et al., 2019)

Another factor that has been associated with an overall negative attitude towards vasectomy is myths and misconceptions that are around this contraceptive method. In this study, 59.1% of married men and 64.1% of married women considered vasectomy as castration. This finding has also been noted in a good number of various studies (Tijani et al., 2013, Sezer, et al., 2017, Hyginus and Jamike, 2009, Oyamo, 2010, Onasoga, 2013). This widespread misconception could find an explanation in the fast widespread of misinformation as most men and women tend to get information from their friends and neighbours who are not well equipped nor knowledgeable enough to give accurate information on vasectomy as was noted in a Nigerian study (onasonga et al., 2013). Most married men and women do not get information from credible sources, but they get it from friends whose knowledge

about vasectomy is usually not adequate. In Rwanda, (Ntakarutimana et. al, 2019) found that 53.8% of respondents were of the belief that vasectomy was the same things as castration. Their findings emphasize on the persistence of misconceptions about vasectomy. Moreover, the Catholic Church and Muslims strict restriction of contraception could further explain why there might be rampant misconceptions about contraception and vasectomy in particular.

Concerning the number of children, the study found that respondents who had less than five children had an overall attitudinal mean score towards vasectomy, superior to those who had more than five children. (50% versus 43.5% with a P-value of <0.001). This finding could be explained by the fact that vasectomy could be seen as a tool that would prevent from having many children. Owoputu, Chuchwuma & Nwozichi, (2015) found that the need for more children was the major factor influencing vasectomy refusal. In addition to this, Burundian culture gives more value to having many children. This could explain why overall those who had more than five children had a lower mean attitudinal score towards vasectomy.

In terms of knowledge about vasectomy, and attitude towards it, while the majority of respondents knew that vasectomy was a family planning method, it was noted that only 13.2% of respondents agreed that it was a safe contraceptive method. These findings are different from the findings of a Turkish study that found that 81% of the respondents agreed that vasectomy was a safe method of contraception (Sezer et al., 2017). This difference could be explained by the fact that the culture states to be against vasectomy, religious beliefs the same.

In terms of vasectomy consideration and adoption, 90.5% of respondents agreed that because vasectomy is irreversible, that constitutes a reason for not considering its

adoption. This finding was also noted in a Nigerian study that was comparing attitudes and acceptance of vasectomy by married men and women. The study found that irreversibility was the highest reason for the negative attitude towards vasectomy and its refusal by married men and women (Tijani et al., 2013). From my opinion, I believe that this was a big issue because most respondents kept on saying that although it is good to limit births, there was great fear that the person who underwent vasectomy could desire more children in the future and will be unable to have them.

4.10.3 Socio Demographic Factors that Influence Vasectomy Acceptance

The ultimate goal of a study on understanding the knowledge and attitude of men and women towards vasectomy can't be complete without examining the factors that play a role in either acceptance or refusal of vasectomy. This study has pointed out some of the factors that influence vasectomy acceptance: level of education, gender, religion, number of children, knowledge of vasectomy, number of desired children, age and the number of years in marriage.

This study did not find a statistically significant association between the level of knowledge and vasectomy acceptance bringing out the idea that knowing much about vasectomy does not warranty acceptance and in parallel, knowing less about it does not warranty refusal. 100% of respondents with no formal education, 93.9% of respondents who had gone to primary school, 86.8 of those with secondary education and 91.7% of those with tertiary education were not favourable to vasectomy acceptance. The p-value was 0.061. This finding was different from the findings of Tijani et al. (2013), who found that 49.1% of men and 19% of women with good knowledge on vasectomy would accept vasectomy. The percentage trend

was down going as the level of knowledge went down with those who had poor knowledge of vasectomy being less susceptible to accepting it.

In terms of the level of education, while it was noted that those with a good level of education had good knowledge of vasectomy, it was also found that their level of education did not correlate with the level of acceptance of vasectomy. This is illustrated by the fact that 86.8% of those with secondary education and 91.7% of those with tertiary education would not accept vasectomy while they have good knowledge about it. The same trend was observed for those with no formal education and those with primary education. These findings are in agreement with the findings of Hyginus and Jamike (2009). They found in their study on the attitude of men in Nigeria to vasectomy that the increase in educational attainment does not lead to vasectomy acceptance. Hygenus and Jamike argued that attitude and culture are stronger than people's knowledge and that in order to affect change and acceptance of vasectomy; one needs to dive into religion, culture, two entities that strongly antagonize vasectomy acceptance. Interesting enough, (Ntakuritimana et al, 2019) in their study in Rwanda found that respondents with secondary education were three fold more susceptible to accept vasectomy, those with tertiary education four times more. Ntakarutimana and collaborators argued that the vast campaign initiated by the government in its quest to promote long lasting contraceptive methods brought about change in the way of life of many Rwandans and the educated were at the forefront in helping close the knowledge gap that seem to have negative attitude on vasectomy. It would be a worthy venue to explore in Burundi.

In matters religion, this study found that there was no statistically significant association between religion and vasectomy acceptance. But it is of the essence to note that while the Catholic Church is strictly against vasectomy and most protestant

churches are liberal on the matter this study found that the percentage of vasectomy refusal based on religion was quite similar. 93.7% of Catholics, 91.3% of Protestants and 100% of Muslims would not accept vasectomy. This shows that in a sense religion does influence strongly the decision to accept or refuse vasectomy as much as it influences attitudes towards vasectomy. In a Turkish study (Kisa, Zeyneloglu, and Delibas, 2013) found that 2 out of 3 men believed that vasectomy was sin and thus should not be adopted. A Nigeria study found that no single Muslim respondent would adopt vasectomy (Akpamu, Nwoke, Osifo, Igbinovia & Adisa, 2010). These findings are in agreement with the findings of this study. (Ntakarutimana et al, 2019) had similar findings too. Kisa, Zeyneloglu and Delibas, (2013) noted that most muslim men were much afraid of the repercussion that they would have if they went against the teaching of Islam and accept a method that the holy Quran condemned. This could be the same argument for the Muslims in this study.

However, our finding is different from the finding of Oyamo (2010) who noted in her study on knowledge and attitude of men and women towards vasectomy that only 2.5% of participants said that religion influenced their decision on vasectomy. However it is relevant to note that her study had more Protestants than muslims and catholics and protestants are known to have less strict measures on contraception. Bakibinga et al., (2015) found that religion did not play a significant statistical importance in approval of family planning. These findings attest that religion is not an absolute antagonist of vasectomy and that if there is collaboration between the clergy and the government, maybe vasectomy could become readily acceptable by Burundian married men and women.

In terms of age and acceptance or refusal of vasectomy, this study found a significant association between the two. Respondents who were less than 40 years

were more likely to refuse vasectomy than those with more than 40 years. That is 99.2% versus 89% with a p-value of 0.029. These findings are different from the findings of Tijani et al., who found that age did not play a significant role in the predisposition of respondents towards vasectomy (P-value:0.602 for the males and 0.511 for the females). This finding could be explained by the fact that the more people age, the riskier it is to have children and thus there is an inclination towards contraceptive methods.

4.10.4 Limitations of the Study

This study focused its analysis on one health center. Although the health center is the mirror of the community, the findings obtained may not be necessarily generalizable to the whole country of Burundi. There is also a possibility that some participants in the study might have felt rushed to answer to the questions that were being asked by the researcher since they were in a hospital setting. There is also possibility of distortion from the data obtained through the likert scale in the sense that the participants could have easily agreed to statements as stated by the researcher conducting the interview (acquiescence response bias). Also, respondents might have succumbed to the temptation of presenting themselves in a positive way (social desirability bias) or avoid extreme terms such as “strongly agree and strongly disagree (central tendency bias)

CHAPTER FIVE

SUMMARY, CONCLUSIONS ANDRECOMMENDATIONS

5.1 Introduction

In this chapter, the researcher will touch on the summary of findings, overall conclusion and draw recommendations to various sectors.

5.2 Summary

The objectives of this study were the following: to assess the level of knowledge of married men and women in regards to vasectomy, to assess the attitude of married men and women towards vasectomy and to assess socio demographic factors that influence vasectomy acceptance.

Respondents in this study demonstrated good knowledge in the sense that the vast majority knew that vasectomy was a family planning method. There was still some gaps identified in the knowledge of vasectomy as the vast majority believed that vasectomy is associated with decreased libido. Moreover, good knowledge about vasectomy did not necessarily impact acceptance and respondents who were educated and more knowledgeable were not for the vast majority of them, in favor of accepting vasectomy. A good number of socio demographic factors were implicated in explaining the low acceptance rate of vasectomy. Respondents had a negative attitude towards vasectomy and this hindered its acceptance. There was a persistence of misconceptions and myths around vasectomy. Socio demographic factors like culture and religion were noted to play a negative role in acceptance of vasectomy.

5.3 Conclusion

This study focused on assessing men and women in marital relationship knowledge of vasectomy and attitude. It also assessed the socio demographic factors that

influence vasectomy acceptance. The study found that the level of knowledge was predominantly good, with 52.1% of respondents having good knowledge of vasectomy. The study noted that the more educated the respondents were, the more they were knowledgeable about vasectomy. However, the acceptance of vasectomy was not correlated to the level of education, nor was it correlated to the knowledge about vasectomy.

In terms of attitude, this study found that the overall attitude towards vasectomy was negative. Religion and culture were the most influencers of attitude towards vasectomy.

Finally, in terms of acceptance of vasectomy and socio demographic factors that influence acceptance, the study found a weak acceptance of vasectomy from all demographics. Catholics, Muslims and Protestant respondents were not in favor of accepting vasectomy. The same was noticed with gender, level of education, the desired number of children and years in marriage

5.4 Recommendation

i. Health workers working in a family planning clinic should be actively encouraged to actively share information about vasectomy with their female and male clients and have if possible weekly vasectomy campaigns at their facility to decrease the knowledge gap.

ii. Community Health workers should be trained in reaching out to their respective communities and share adequate and correct information about vasectomy to help narrow the myths around the procedure.

5.4.1 Policy Recommendation

i. The government of Burundi should put in place policies that teach about vasectomy to reach more people with the right information about vasectomy and help close the knowledge gap since the more people are knowledgeable, the likely they will be prone to accept vasectomy.

ii. The government should help identify those who have had vasectomy in conjunction with health care workers and community workers and have them share their experiences with vasectomy as a means to reduce reluctance towards its acceptance and also alleviate the myths around it.

iii. Finally, the government should encourage and take the leading role in doing more studies to help understand the overall negative attitude towards vasectomy and its causes to develop adequate measures that would warranty its uptake. Also, the government needs to work hand in hand with religious leaders to find agreement and support from the clergy in matters concerning contraception

iv. There is need for a collaboration between the ministry of education and the ministry of health in setting strategies to implement curriculum changes that would lead to teaching of matters related to contraception in general and vasectomy in particular in classroom settings not just in family planning clinic. This will help spread accurate information in a more diversified way.

5.4.2 Recommendation for Further Research

i. There is a need for carrying similar research in other parts of Burundi to help widen the scope of what is known about vasectomy and attitude held by the

population on the matter. This would help guide policymaking about vasectomy

ii. Qualitative research would be beneficial to help explain the reasons behind the negative attitude towards vasectomy and why adequate knowledge and positive attitude do not necessarily result in acceptance of vasectomy.

iii. A study that would be both quantitative and qualitative but focusing on each gender separately would help understand more about the reasons that guide attitude towards vasectomy and the obstacles to its implementation.

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APPENDICES

Appendix I: Interview Guide

Hello, my name is Gad IGIRANEZA _____I am a Masters Student in Family Medicine and Community Health at Kabarak University. I am conducting a research on Knowledge and attitude of married men and women on vasectomy.

Background/preliminary information:- There are multiple advantages of family planning among which we can name: having a family size of your desire, avoiding undesired pregnancies, having better spacing of births. While these advantages can't be denied, what seems to be true is that men and married men in particular are less active in matters related to contraception. The aim of this research is first to explore the attitudes and level of knowledge that married men and women have in regards to vasectomy. The study will also asses factors that influence acceptance of vasectomy.

The purpose of the research study:-As part of an academic requirement, I seek to assess the level of knowledge that married men and women have of vasectomy, their attitude towards vasectomy and socio demographic factors that play a role in acceptance of vasectomy. To achieve this, I purpose to interview married men and women so as to establish what they know about vasectomy, their attitude and what influences the decision to accept of refuse vasectomy.

Request to participate:- This is to request you to give me your time so that I can ask you a number of questions that will permit to understand what you know about vasectomy as well as where you stand. I will also assess whether you would accept vasectomy as a contraceptive method

The interview will take between 15 and 30 minutes.

Your rights:-In the course of the interview, your name will not be used. In addition to this any time you feel like not continuing with the interview you can opt out without any problem or consequence. Your information will not be traced back to you throughout the whole interview exercise. This means that we will not use your name in this study. Instead, we will attribute a number to your name, and only the research team will know this number. Although we do not plan to pay you money for your participation in this study, we would like you to know that the information

you provide can be of assistance to others who are considering family planning and vasectomy in particular.

For queries at this particular moment, please find no hesitation to state them. If you have questions, later on, you can contact me at any time. My number is +254708177912.

Also included here is the contact for the secretariat of the Ethical Review Board of Kabarak University: +254724887431.

Relevence of this study: -The responses you will share with me will help understand the level of what is known about vasectomy and opinions help around it in Burundi. Also, your information will help us assess to what extent vasectomy can be accepted. The end goal is to share this relevant information with the reproductive health policymakers in order to find sustainable ways of making contraceptive methods accessible and acceptable by married men and women in Burundi.

If you have taken time to fully read all this information above and you are willing to take part in this research, please fill the following part:

Certificate of Consent

I have been invited to participate in the study of understanding knowledge, attitude and of married men and women towards vasectomy.

I have taken time to read and understand the above information. I have been given ample time to state my concerns and questions, and all have been answered fully. For these reasons I willingly give you the permission to interview me.

Name: _____

Signature: _____

Date: _____

Name of researcher: _____

Signature: _____

Date:_____

Appendix II: Questionnaire

Good Morning_____ my name is Gad IGIRANEZA, a student at Kabarak University pursuing a Master's Degree in Family Medicine and Community Health to fulfil the requirements of the program, I am undertaking a study on "Knowledge and attitude of men and women towards vasectomy as a Family Planning method" The findings of this study will contribute to knowledge in this area; opening up this area for further research.

Part I: Demographics/Background Information

What is your Name (optional)..... Date.....

1 What is your Age? ☐

2. What is your gender: Male ( ) Female ( )

3. How long have you been married?

- 1 to 5 years
- 6 to 10 years
- 11 to 15 years
- 16 to 20 years

4. How many children do you have?

- None
- 1 to 2 children
- 3 to 4 children
- 5 and above children

5. What is your Religion: Catholic ( ) Protestant ( ) Muslim ( ) None ( )

Other Specify ……

6. What is your Residence?

7. What is your level of education completed? None ( ) Primary ( ) Secondary ( ) Tertiary ( )

Degree ( ) others, (Specify).....

8. What is your

Occupation.....?

9. How many children do you desire to have?

- None
- 1 to 2 children
- 3 to 4 children
- 5 and above children

Part II: Questions on Knowledge about Vasectomy and Family Planning

1. Is Vasectomy expensive? • True • False	2. What kind of men should get a vasectomy? • Men with many children • Men with no Children • Any man desiring it
3. Is vasectomy a family planning method? • True • False	4. If so, what kind of family planning method is it? • Permanent • Temporary?
5. Does vasectomy prevent sexually transmitted diseases? • Yes • No	6. Does a man lose his sexual drive after a vasectomy? • True • False
7. How is Vasectomy performed? • Medication • Surgery	8. Can a man impregnate his partner after a vasectomy? • Yes • No

Would you accept vasectomy?

- Yes
- No

Part III: Questions Assessing Attitude towards Vasectomy/ Factors That Influence Vasectomy: Religion/Culture, Age, Culture, Education Level

With the following measurement scale please indicate by circling your response on the following statements (5=strongly agree, 4=agree, 3=uncertain, 2=disagree, and 1=strongly disagree)

	Strongly Disagree	**Disagree**	**Uncertain**	**Agree**	**Strongly Agree**
1. Vasectomy is not acceptable in the Burundian culture	1	2	3	4	5
2. Vasectomy results in loss of manhood status in the society?	1	2	3	4	5
3. Men should be responsible for contraception and get a vasectomy	1	2	3	4	5
4. Vasectomy makes men more promiscuous	1	2	3	4	5
5. Vasectomy is a safe method of family planning	1	2	3	4	5
6. It's against my religious belief for a man to practice vasectomy	1	2	3	4	5
7. Vasectomy is castration and thus should be avoided	1	2	3	4	5
8. Vasectomy should not be practised because God is the one to decide the number of children.	1	2	3	4	5
9. Having a vasectomy make women unfaithful to their husbands.	1	2	3	4	5
10. Information on vasectomy is not enough to allow adequate decision making	1	2	3	4	5
11. Vasectomy should only be done if someone has more than five children	1	2	3	4	5
12. A man should have many children. Thus, vasectomy is prohibited/sin	1	2	3	4	5
13. Tubal ligation is what should be done, not vasectomy	1	2	3	4	5
14. Because vasectomy is irreversible, it constitutes a factor of consideration for adoption	1	2	3	4	5

Appendix III: Interview Guide: Kirundi Version

Urupapuro Rumenyesha uburenganzira bw'uwubazwa.

Ndabaramukije. Nitwa Muganga Gad IGIRANEZA. Ndi umunyeshure mu gisata c'ubuvuzi kuri Kaminuza yitwa Kabarak University. Ndiko ndondera urupapuro bita Masters mu gisata c'ubuvuzi mu miryango irico twita Family Medicine mu rurimi rw'icongengereza.

Hariho ubushakashatsi ndiko ndakora bwerekeye kumenya ibi bikurikira: " gutahura ibizwi hamwe n'inyifato y'ababagabo n'abagore bubatse kuvyerekeye kwiyugarisha burundu ku bagabo".

Intangamarara: Uburyo bwo gutandukanya imvyaro buri n'ingirakamaro ku muvyeyi, ku bibondo, ku muryango eka ndetse no mu kibano. Ariko, naho gutandukanya imvyaro ari ivyakamaro kadasanzwe, biraboneka ko abagabo batavyitabira neza bivuye ku mvo zitandukanye.

Ihangiro y'ubu bushakashatsi: Ugutahura ibizwi kuvyerekeye kwiyugaza burundu ku bagabo, uburyo bumwe mu buryo butandukanye bwo gutandukanya imvyaro arivyo twita mu gifaransa planning familial, hamwe n'inyifato abagabo n'abagore bubatse bafise kuri buno buryo bwo gutanduknya imvyaro.

Ivyipfuzwa gushikwako: Buno bushakashatsi buzotuma nshobora kuronswa urupapuro rw'umutsindo rwa masters mugisata twita mucongereza Family medicine. Nipfuza gutrahura imvo zoba zituma kwiyugarisha burundu ku bagabo bititabirwa cane. Ndipfuza kumenya ico abagabo hamwe n'abakenyezi bubatse bazi kuvyerekeye ubu buryo bwo gutandukanya imvyaro.

Ico musabwa: Mwatowe kugira ngo mushobore kuba muri kino cigwa mukwishura ibibazo bijanye n'ubu buryo bwo gutandukanya imvyaro. Ariko kugira ngo tubashe kubabaza bino bibazo, tubanza kubasaba kugiti canyu bwite muduhe uburenganzira.

Ibibazo twipfuza kubababaza muri buno bushakashatsi bishobora gufata hagati y'iminota 20 na 30.

Uburenganzira canke amateka yanyu:

Ntituzokwandika amazina yanyu ku mpapuro zizoba ziriko ibibazo. Twizera ko bibafasha gushikiriza ivyiyumviro vyanyu neza ata bwoba. Bishitse mukumva mutipfuza kubandanya mwishura ibibazo, murafise uburenganzira bwo guhagarika aho mushakiye. Ariko turizera ko bitazokenerwa.

Muri buno bushakashatsi, nta mafaranga tuzobaronsa. Ariko twipfuza kubamenyesha ko ivyiyumviro muza gushikiriza bizofasha cane gutahura ibizwi hamwe n'inyifato abubatse bafise kuvyerekeye buno buryo bwo gutandukanya imvyaro twita vasectomie mu rurimi rw'igifaransa.

Nimba hari ibibazo mufise muri kano Kanya, murashobora kubimbaza. Murashobora kunyakura ku muhora wa telephone kuri izi numero: +25779881775.

Nimba mwasomye canke mwasomewe neza ibiri hano mukaba mwipfuza guterera ivyiyumviro vyanyu muri buno bushakashatsi mukwishura ibibazo tuza kubabaza, ni mwuzuze ibikurikira:

- **Certificat yo gutanga uruhusha bwo gutanga ivyiyumviro muri buno bushakashatsi**

Natumiwe guterera ivyiyumviro muri buno bushakashatsi bwerekeye gutahura ibizwi hamwe n'inyifato y'abagabo n'abakenyezi bubatse kuvyerekeye kwiyugarisha burundu ku bagabo arivyo twita mu rurimi rw'igifaransa, vasectomie.

Nasomye neza ibisabwa kandi naronse n'akanya gahagije ko kubaza ibibazo kandi vyishuwe neza. Kubw'ivyo, ndatanze uburenganzira bwo kwishura ibibazo biri muri buno bushakashatsi.

Amazina:

Umukono:

Itariki:

Izina ry'umushakashatsi:

Umukono:

Itariki:

Appendix IV: Questionnaire: Kirundi Version

Ndabaramukije. Nitwa Dr. Gad IGIRANEZA. Ndi umunyeshure muri Kabarak University mu gisata c'amagara y'abantu citwa mu rurimi rw'icongereza, Family medicine and community health. Kugira ngo nshitse ibisabwa kugira ndonmswe urupapuro rw'umutsindo rwa Masters, Ndiko nkora icigwa cerekeye gutahura ibizwi n'inyifato y'abagabo n'abakenyezi bubatse kuvyerekeye ukwiyugarisha burundu ku bagabo arivyo twita mu gifarasa, vasectomie. Ibizova muri Kino cigwa bizofasha gutahura ibizwi kuvyerekeye buno buryo bwo gutandukanya imvyaro biciye mu kwiyugarisha burundu. Bizofasha n'igisata c'ubuvuzi kumenya aho bakwiye gushira inguvu gusumba mu mugambi w'irondoka rijanye n'amagara meza. Bizonafasha abandi bashakashatsi kubandanya banonosora ivyerekeye buno buryo bwo gutandukanya imvyaro.

Igice Ca Mbere: Umwidondoro W'uwubazwa

Amazina yanyu (optional)..... Date.....

1 Mufise imyaka ingahe? ☐

2. Igitsina canyu : Umugabo ( ) Umugore ( )

3. Mumaze imyaka ingahe mwubatse?

- 1 kugeza 5
- 6 kugeza 10
- 11 kugeza 15
- 16 kugeza 20

4. Mufise abana Bangahe?

- None
- 1
- 2
- 3
- 4
- 5
- Abarenga batanu ( )

5. Idini ryanyu ni iryahe?:

Umukatolika ( )

Umuporotestant ( )

Umu islam ( )

Nta dini ( )

6. Mutuye hehe?

- ✓ Mu gisagara ( )
- ✓ Hagati mu gihugu ( )

7. Mufise amashure angina gute?

Ntimwagiye mwishure ( )

Mwize amashure y'intango ( )

Mwize amashure y'isumbuye ( )

Kaminuza ( )

9. Mwipfuza kuvyara abana bangahe?

- 1
- 2
- 3
- 4
- 5

1. Mbega Kwifungisha Burundu Birazimvye?	2. N'abagabo abahe bakwiye kwiyugarisha burundu
• Ego • Oya	• Abagabo badafise abana • Abagabo bafise abana benshi • Umugabo uwariwe wese ivyipfuza.
3. Mbega ukwifungisha ku Bagabo ni uburyo bwo gutandukanya imvyaro?	4. Ukwifungisha kubagabo ni ubuhe buryo bwo gutandukanya imvyaro?
• Ego • Oya	• Burundu • Ubwo igihe gito
5. Umugabo abazwe akagirirwa ukwipfungisha burundu, (vasectomie) arashobora gutera inda umukenyezi wiwe?	6. Mbega ukwipfungisha burundu ku bagabo arivyo twita vasectomie mu gifaransa, birakingira indwara zifatira mu bihimba vy'irondoka?
• Ego • Oya	• Ego • Oya
7. Umugabo yiyugarishije burundu aca atakaza inguvu z'ubugabo?	8. Mbega Kwiyugarisha burundu ku bagabo bikorwa gute?
• Ego • Oya	• Umuntu aranywa imiti • Bica mu kubarwa • Ntavyo nzi

Murakoze cane ku nyishu mutanze.

Part III: Ibibazo vyerekeye inyifato kuvyerekeye ukwiyugarisha burundu ku bagabo n'imvo zituma ubu buryo bwemerwa canke butemerwa.

Mukoresheje iki capa gikurikira, shirako umuzingi kuvyo mwemera kubimenyeshwa bikurikira(5=Ndavyemeza cane, 4=Ndavyemeza, 3=Ndakekeranya, 2=Ndabihakana, and 1=Ndabihakana cane)

	Ndabihakana Cane	**Ndabihakana**	**Ndakekeranya**	**Ndavyemeza**	**Ndavyemeza cane**
1. Kwiyugarisha burundu ku bagabo vyagenewe abazungu, ntivyemewe mu mico y'abarundi.	1	2	3	4	5
2. Kwiyugarisha burundu ku bagabo, bituma umugabo atakaza "ubugabo" mu kibano	1	2	3	4	5
3. Iyo abubakanye bafashe ingingo yo kutabandanye kuvyara, umugabo akwiye kuba ari we yiyugarisha burundu apana umukenyezi.	1	2	3	4	5
4. Kwiyugarisha burundu ku bagabo, bituma abagabo baja mu ngeso z;ubusambanyi	1	2	3	4	5
5. Kwiyugarisha burundu ku bagabo, ni uburyo bwo gutandukanya imvyaro mushigikiye	1	2	3	4	5
6. Ingingo y'ugutandukanya imvyaro ikwiye gufatwa n'umugabo gusa.	1	2	3	4	5
7. Idini ryawe ntirishigikiye ukwiyugarisha burundu ku bagabo.	1	2	3	4	5

8. Abagabo biyugarishije burundu nta jambo basubira kugira mu rugo rwabo	1	2	3	4	5
9. Kwiyugarisha burundu ku bakenyezi bituma baja mu busambanyi	1	2	3	4	5
10. Inkuru zivyerekeye ukwiyugarisha ku bagabo ntizihagije	1	2	3	4	5
11. Kwiyugarisha Burundu Bikwiye gukorwa umuntu amaze kuvyara abana 5	1	2	3	4	5
12. Umugabo akwiye Kuvyara abana benshi. Kubwivyo kwiyugarisha ni icaha	1	2	3	4	5
13. Ukwiyugarisha ku bakenyezi, Nivyo Bikwiye	1	2	3	4	5
14. Kubera Kwiyugarisha burundu bidasubirwamwo ntibikwiye gukorwa	1	2	3	4	5

Murakoze cane ku ntererano yanyu.

Appendix V: Timelines

Activities	Oct 19	Nov 19	Dec 19	Jan 20	Feb 20	March 20	April 20	May 20	June 20	Jul 20
Submission of the proposal to KABUIREC and forward of the proposal to the Institute of Postgraduate studies										
KABU-IREC approval and										
Burundi research permit issued and presented to the study sites										
Discussion, conclusion and recommendations										
Submission of the thesis to IPGS and Preparation for the defense										

Appendix VI: Kabarak University IREC Clearence Letter

KABARAK UNIVERSITY

INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE

P.O. Private Bag – 20157 Kabarak M: +254 724 887 431 F: +254 51 343529

www.kabarak.ac.ke/irecsecretariat.html E: irecsecretariat@kabarak.ac.ke

16th December 2019

Reference: KABU01/IREC/012/VoL1/2019

Formal Approval Number: KABU/IREC/012

Dr Gad Igiraneza GMMF/M/1346/09/16, Department of Medicine (Family Medicine)
School of Medicine and Health Sciences, Kabarak University

Dear **Dr Igiraneza**

FORMAL APPROVAL OF RESEARCH PROPOSAL

The Institutional Research and Ethics Committee reviewed your research proposal on 7th October 2019 titled:

"Knowledge and Attitude of Married Men and Women on Vasectomy Uptake: A Survey of a Rural Mission Hospital in Burundi."

I am pleased to inform you that your proposal has been granted a Formal Approval, Number:**KABU/IREC/012** on 16th December 2019 following the corrections addressed satisfactorily. You are therefore permitted to start your study.

Note that this approval is for 1 year; it will thus expire on 15th December 2020. If it is necessary to continue with this research beyond the expiry date, a request for continuation should be made in writing to KABU IREC secretariat two months prior to the expiry date.

You are required to submit progress report(s) regularly as dictated by your proposal. Furthermore, you MUST notify the committee of any proposal change(s) or amendment(s), serious or unexpected outcomes related to the conduct of the study, or study termination for any reason. The committee expects to receive a final report at the end of the study.

Yours faithfully,

Prof. Wesley Too, PhD, MPH
Chairman,Institutional Research and Ethics Committee.

Cc Registrar- Academic Affairs and Research
Dean School of Medicine and Health Sciences
Director, Institute of Post Graduate Studies

Kabarak University Moral Code

As members of Kabarak University family, we purpose at all times and in all places, to set apart in one's heart, Jesus as Lord. (1 Peter 3:15)

Kabarak University is ISO 9001:2015 Certified

Appendix VII: Research Permission from Kigobe Health Center

Centre de Santé Kigobe
Gihosha Q. Muyaga
Avenue Bukiriro numero 7
Telephone: +25722233680
PO BOX: 122 Bujumbura
In charge: Mr. NTAKIYIRUTA Phinées.
Email : ntakiphis@gmail.com
Phone : +25779051222

Gihosha, 27th/1/2020

Object: Approval for Data Collection

Dear Dr. Gad IGIRANEZA, Student of Kabarak University Kenya.

Doctor Igiraneza, this letter is a follow up from our initial discussion concerning your request of obtaining authorization to conduct data collection for a thesis study entitled: ***Knowledge and attitude of married men and women on vasectomy uptake : a cross sectional survey of a mission hospital in Burundi.***

Sir, after receiving letter of the following reference: **Ref : KABU01/SMHS/011/VOL1** of Dr. Pamela KEMUNTO, Ag. Dean School of Medicine and Health Sciences at Kabarak University requesting us to grant you the permission to collect data at our facility, we analyzed the request embodied in the letter and decided to grant your request for data collection.

With this letter, we wish to inform you that you are granted official approval and authorization to conduct data collection for you research for a period not exceeding two months.

Receive Dr. our sincere congratulations and appreciation

The Administrator of Kigobe Health Center,

Mr. Phinées NTAKIYIRUTA

COMMUNAUTE DES EGLISES
CENTRE DE SANTE KIGOBE
Tél. 22 23 36 80
B.P. 122
BUJUMBURA
EMMANUEL

Appendix VIII : Burundi Ethical Committee Approval Letter to conduct Research (translated Version

NATIONAL ETHICS COMMITTEE FOR THE PROTECTION OF HUMANS PARTICIPATING IN BIOMEDICAL AND BEHAVIORAL RESEARCH.

Dear Dr. Gad IGIRANEZA

Student/ Master's degree.

Re: DECISION CNE/10/2020 OF NATIONAL ETHICS COMMITTEE.

The national ethics committee for the protection of humans participating in biomedical and behavioural research has analysed the study protocol entitled 'Knowledge and attitude of Married Men and Women on vasectomy: a cross sectional survey of a Mission Health Centre in Burundi'

The National Ethics Committee of Burundi has approved this study protocol in accordance to international regulations pertaining to research in this field.

This approval is renewable, and valid from March 30, 2020 to March 29, 2021.

Any modifications to this protocol must be submitted to this committee prior to their application.

Translation Done By
Lens Afrik Translator
Web: www.lensafrik.group.com
Email: translation.lensafrik@gmail.com

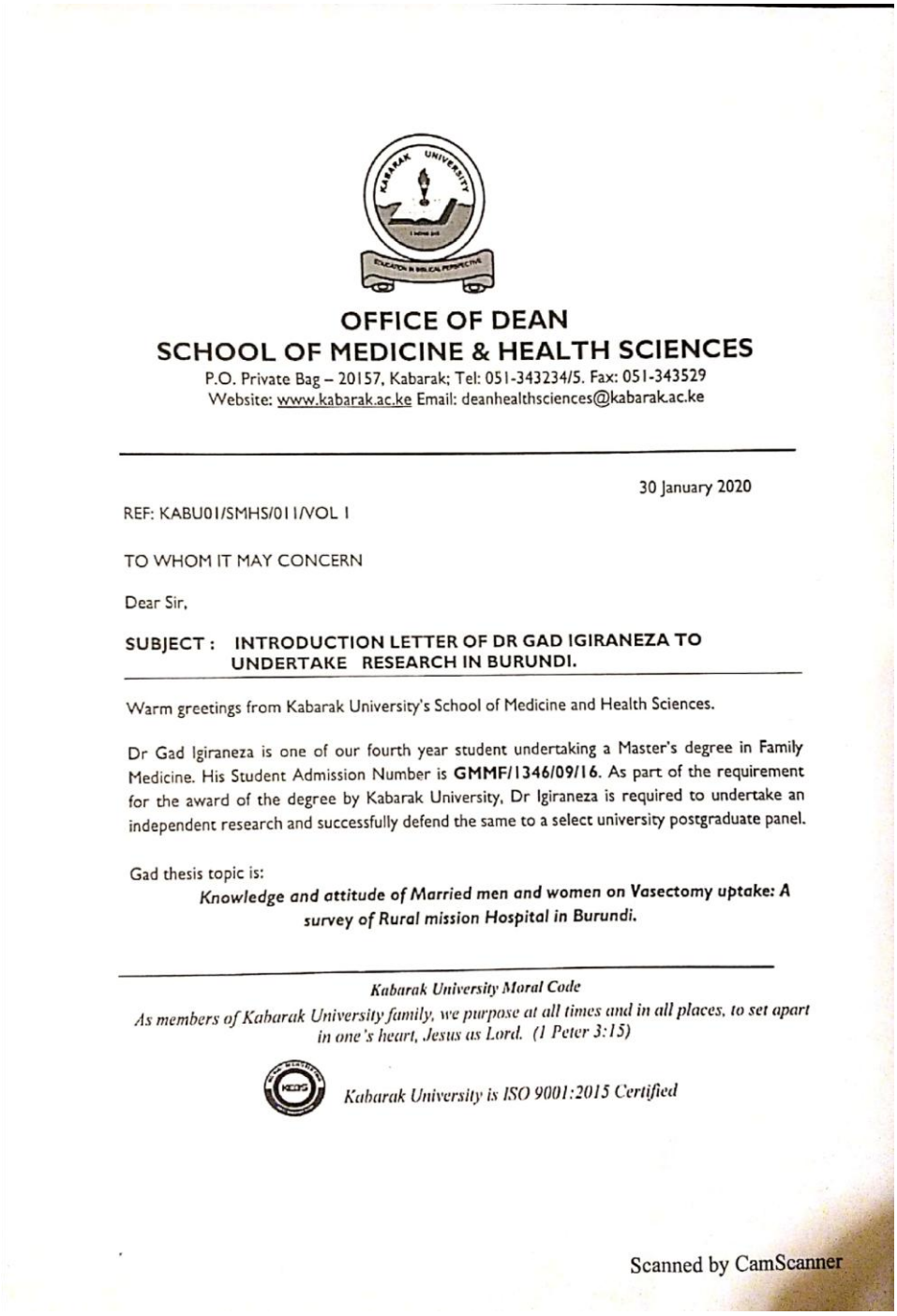
Regards,

President, National Ethics Committee

(signed)

Dr. Nyandwi Sylvain

Appendix IX: Introduction Letter of Dr. Gad IGIRANEZA to Undertake Research in Burundi



OFFICE OF DEAN
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30 January 2020

REF: KABU01/SMHS/011/VOL I

TO WHOM IT MAY CONCERN

Dear Sir,

SUBJECT : INTRODUCTION LETTER OF DR GAD IGIRANEZA TO UNDERTAKE RESEARCH IN BURUNDI.

Warm greetings from Kabarak University's School of Medicine and Health Sciences.

Dr Gad Igiraneza is one of our fourth year student undertaking a Master's degree in Family Medicine. His Student Admission Number is **GMMF/1346/09/16**. As part of the requirement for the award of the degree by Kabarak University, Dr Igiraneza is required to undertake an independent research and successfully defend the same to a select university postgraduate panel.

Gad thesis topic is:

Knowledge and attitude of Married men and women on Vasectomy uptake: A survey of Rural mission Hospital in Burundi.

Kabarak University Moral Code

As members of Kabarak University family, we purpose at all times and in all places, to set apart in one's heart, Jesus as Lord. (1 Peter 3:15)

Kabarak University is ISO 9001:2015 Certified

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This topic is relevant both to Kenya and Burundi and he has elected to conduct the research in Burundi with the help of both a Kenyan supervisor (Dr Blasto Ooko) and Burundian Supervisor (Dr. Logan Banks- from Kibuye Hospital).

This letter is to request your support and direction to Dr Igiraneza so he can achieve his required research goals.

Thank you.

Yours sincerely

Dr Pamela Kimeto; PhD, RN, FDS.
Ag. Dean School of Medicine and Health Sciences

Appendix X: Burundi Ethical Committee Approval letter: original copy

Comité National d'Ethique pour la protection des êtres humains sujets de la recherche biomédicale et comportementale

Bujumbura, le 30 Mars 2020

Au Docteur Gad IGIRANEZA

Etudiant/Master

DECISION CNE/10/2020 DU COMITE NATIONAL D'ETHIQUE

Le Comité National d'Ethique pour la protection des êtres humains sujets de la recherche biomédicale et comportementale a analysé votre protocole d'étude « CONNAISSANCE ET ATTITUDE DES HOMMES ET FEMMES MARIES SUR L'ADOPTION DE LA VASECTOMIE : ENQUETE TRANSVERSALE D'UN HOPITAL MISSIONNAIRE AU BURUNDI».

Après avoir analysé les aspects éthiques du protocole conformément aux réglementations internationales dans ce domaine, le Comité Nationale d'Ethique du Burundi a approuvé le protocole.

Cette approbation est valable pour une année renouvelable du 30 Mars 2020 au 29 Mars 2021.

Toutefois, si des modifications du protocole devraient y être apportées, une demande préalable devra être adressée au Comité National d'Ethique avant application.

Veuillez agréer, Docteur, l'expression de ma considération distinguée.

Président Comité National d'Ethique

Pr Joseph NYANDWI

Appendix XI: Table of Sample Size Estimation

EDUCATIONAL AND PSYCHOLOGICAL MEASUREMENT
1970, 30, 607-610.

DETERMINING SAMPLE SIZE FOR RESEARCH ACTIVITIES

ROBERT V. KREJCIE
University of Minnesota, Duluth

DARYLE W. MORGAN
Texas A. & M. University

The ever increasing demand for research has created a need for an efficient method of determining the sample size needed to be representative of a given population. In the article "Small Sample Techniques," the research division of the National Education Association has published a formula for determining sample size. Regrettably a table has not bee available for ready, easy reference which could have been constructed using the following formula.

$$s = X^2NP(1-P) \div d^2(N-1) + X^2P(1-P).$$

s = required sample size.

X^2 = the table value of chi-square for 1 degree of freedom at the desired confidence level (3.841).

1.96 x 1.96 = 3.8416

N = the population size.

P = the population proportion (assumed to be .50 since this would provide the maximum sample size).

d = the degree of accuracy expressed as a proportion (.05).

No calculations are needed to use Table 1. For example, one may wish to know the sample size required to be representative of the opinions of 9000 high school teachers relative to merit pay increases. To obtain the required sample size enter Table 1 at N = 9000. The sample size representative of the teachers in this example is 368. Table 1 is applicable to any defined population.

The relationship between sample size and total population is illustrated in Figure 1. It should be noted that as the population increases the sample size increases at a diminishing rate and remains relatively constant at slightly more than 380 cases.

REFERENCE

Small-Sample Techniques. *The NEA Research Bulletin*, Vol. 38 (December, 1960), p. 99.

TABLE 1
Table for Determining Sample Size from a Given Population

N	*S*	*N*	*S*	*N*	*S*
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Note.—*N* is population size.
S is sample size.