

Levels, Trends and Determinants of Contraceptive Use in Rwanda, 2005

By

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I. INTRODUCTION

In developing countries, unintended fertility fuels a rate of population growth that is outpacing the countries' efforts to meet the social needs of the citizens and achieve national development goals. By the mid-1990s, population increase had outpaced economic gains and food production, leaving the average African 22 percent poorer than in 1975 (UNFPA, 2000). Helping people to prevent unintended pregnancies and births also reduces the need for households and government expenditures on such services as treatment of post abortion complications and care for maternal orphans while contributing to healthier families who can earn more and save more—a primary goal of poverty eradication plans and essential to economic development. Improving status of girls and women and ensuring the right of couples to freely determine the size and spacing of their families while providing them the means to do so is of prime importance nowadays. Unintended fertility locks girls and women into a cycle of early childbearing and poverty, and governments' failure to address family planning needs ignores individual rights. Addressing the contraceptive use need and family planning, provides an opportunity for policymakers in all sectors to respond to the expressed fertility preferences of their populations while simultaneously improving health, slowing the rate of population growth, and contributing to achievement of national goals.

1.1 Statement of the Problem

Rwanda remains a society marked by high fertility and low levels of contraceptive use. According to the RDHS 2005 (Rwanda Demographic and Health Survey), the total fertility rate was 6.1 lifetime births per woman. Although organized and modern family planning activities have for over 20 years been provided, studies show that there is a gap between knowledge and practice of contraceptive methods. About 97.9 percent of currently married women had knowledge of any method of contraception; at the same time 97.5 percent of married women had knowledge of at least one modern method of contraception while 79.7 percent had knowledge of at least one traditional method. The contraceptive prevalence rate among married women in 2005 was 17 percent for any method and yet only 10 percent of them were currently using a modern method of contraception (RDHS 2005).

The environment for family planning in Rwanda has been quite difficult. Factors which are generally associated with high fertility rates worldwide also pertain in Rwanda: high illiteracy and low educational attainment (particularly among the females), poverty, high infant and child mortality, high maternal mortality, poor access to health facilities, low socioeconomic status of women and ignorance. These factors reinforce one another in maintaining high fertility rate in the country and lead to a high population density that the country is facing nowadays of about 321 inhabitants per square kilometer (among the highest in Africa, according to Rwanda

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general population and housing census, RGPHC, 2002) and a population growth rate of about 2.8 percent per year.

Most contraceptive methods in Rwanda are designated for use by women as a result; most family planning programs target their information, counseling and services to women of reproductive age. However, this limited focus ignores an important reality in women's lives; often, women are not the decision makers about contraceptive use. A few make decisions about family planning and contraceptive use in collaboration with their husbands while others have little or no autonomy as mostly their husbands decide for them. Unmet need for family planning in Rwanda is often attributed to lack of family planning services yet the problem persists in urban areas with responsible access to services. One of the causes could be lack of communication between partners, low female education, desire for more children etc. Men in Rwanda have more power to decide whether and when to use contraception or to produce children and this partner's opposition reduces female contraceptive use.

The level of use of modern methods of family planning has declined sharply since the first RDHS in 1992, with the proportion of married women users having dropped from 13 percent to 4 percent (RDHS 2000) probably due to the Genocide of 1994 and rose to 10 percent in 2005 (RDHS 2005), where prevalence rate is among the lowest in the world. It is estimated that more than a third of married women, about 38 percent have an unmet need for family planning in Rwanda which is among the highest in the world. If that need were satisfied, the contraceptive prevalence rate would reach 55 percent among married women, approximately three times as much as the current level. The total potential demand for family planning would for the most part be for spacing births (32 percent) than limiting births (23 percent). Today, only slightly more than a half of the total potential demand among married women is satisfied, 31 percent (RDHS, 2005).

This research highlights two key issues regarding the use of family planning services. First, there exist important sociodemographic variations within the country population in relation to their use of family planning services and barriers faced in service utilization. Second, although most women in Rwanda are both economically and physically disadvantaged in access to services, the socioeconomic and cultural factors are the greatest barrier to family planning service use. This study is an attempt to obtain a broader understanding of the socioeconomic and cultural factors which affect the use of contraception in Rwanda. In this study, the role of selected background characteristics, which have affiliation with use of contraception, is analyzed to assess their potential impact on the family planning program.

Therefore, this study aims at identifying the barriers that contribute to the use of contraception among married women in Rwanda, in order to frame recommendations for strategies that will help the family planning program to address this issue.

1.2 Objectives of the Study

- (i) To examine the recent levels and trends of contraceptive use among married women,
- (ii) To identify the major socioeconomic and demographic differentials of contraceptive use,
- (iii) To identify the net determinants of contraceptive use among married women.

I. 3 Sources of Data and Limitations

The study relies mainly on raw data obtained from the 2005 Rwanda Demographic and Health Survey (Sample Size: 11500) and also the one of 1992 (Sample Size: 7149) and 2000 (Sample Size: 10421). Other sources are from the United Nations publications, reports and data sheets and any other source of information on Rwanda. With regard to time, this study covers the period 1992 to 2005.

1.4 Methodology of the Study

This study first of all follows a simple descriptive analysis to examine the levels, trends and differentials in contraceptive use according to the background characteristics of Rwandese women by using tables (Rates are expressed in percentages) as well as to clarify the interrelationship between contraceptive use and selected variables through a chi-square test. The second stage is the in-depth analysis which deals with the net effect of determinants of contraceptive use through a logistic regression analysis where the dependent variable is the "women currently using and intention to use (among currently married women) contraceptives coded (1) or otherwise coded (0)". This technique is preferred for dealing with dependent dichotomous variables which are more appropriate than any other statistical model. The study's aim is to identify to what extent the independent variables change the odds or probability of using contraceptives. The logistic regression model used in this study may be stated in terms of log odds ratios of an event occurring. The term odds ratio or Exp (β) refers to the ratio of probability of occurrence of a specific event to the probability of its nonoccurrence. The odds ratio below "1" means a negative effect of an independent variable while the odds ratio above "1" means a positive effect. The model fitted for this study takes the form:

$$\text{Ln}\left(\frac{1}{1-P}\right) = Z = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k$$

- Where: Ln : is the natural logarithm to the base e ($e = 2.718$)
- P : is the probability of the women under reference to use or intend to use Contraceptive methods.
- β_0 : is the constant which means that when the independent variables are all equal zero, the log odds equal the constant.
- $\beta_1, \beta_2, \dots, \beta_k$: are the logistic regression coefficients related to each category of the independent variables.
- X_1, X_2, \dots, X_k : are a collection of independent variables
- Z : is the linear combination of independent variables

The probability can be calculated using the following equation:

$$P = \frac{e^z}{1 + e^z} \dots \dots \dots (2)$$

Where P is the probability of an event:

$$e^z = \frac{P}{1-P} \quad (\text{Source: John, et al, 1990})$$

1.5 Literature Review

Studies on contraceptive method choice in countries of sub-Saharan Africa are few, probably due to the generally low contraceptive prevalence or lack of interest.

Contraceptive prevalence is lower in sub-Saharan Africa than in other parts of the world. The contraceptive prevalence rates estimated in all African countries were less than 15 percent in 1990 except in Zimbabwe, Botswana and Kenya (Rutenberg et al., 1991; Robey et al., 1996). Moreover, the reason given for using contraceptives in many African societies is birth spacing rather than limiting the number of children. It can therefore be argued that low contraceptive prevalence is partly responsible for the high fertility levels in sub-Saharan Africa except in Central African countries with a low contraceptive prevalence rate and low fertility due to pathological sterility. However, the higher rates of contraception to be anticipated in Africa are likely to reduce fertility. Indeed the recent DHS conducted in sub-Saharan Africa has shown an increase in the contraceptive prevalence rate in various countries. For instance in Tanzania, the second and third phases of the DHS show that the contraceptive prevalence rate doubled from 10 (1991/92) to 22 (1994) percent in less than 3 years (Weinstein et al., 1995).

A United Nations (UN, 1998) publication "Levels and Trends of Contraceptive Use", stipulates that sub-Saharan African countries consistently stand out as a different group from countries in the other regions when it comes to contraceptive prevalence and use. For one thing, desires to space births rather than limit family size are far more prevalent in this region. This results into a higher fraction of unmet need being for spacing purposes. Moreover, substantially smaller fractions of women in sub-Saharan Africa implement their fertility preferences in contraceptive use than in the norm in other regions. Entry in union is relatively early in sub-Saharan Africa as compared to Asia and Latin America countries. Late entry into union delays child bearing and every thing else being equal, relieves pressure to prolong intervals between births. It is therefore plausible that this feature of the reproductive regimes partially explains why contraception for birth spacing is less common in these regions as compared to sub-Saharan Africa.

The role of family planning program effort in influencing individual behaviour remains a point of debate. One side argues that such propels can legitimize preferences for smaller families and help meet latent demand for fertility regulation in high fertility societies. According to an analysis by family planning use in sub-Saharan Africa, improved availability of services was generally associated with higher levels of current method use. On the other side of the debate is the idea that a country's socioeconomic development will be the ultimate factor in fertility decline and contraceptive prevalence. The case of Brazil is often cited as an example in this argument; that country experienced rapid fertility decline over the last decades in the absence of a national family planning program, but in the presence of a rapid urbanization and industrialization (*International Family Planning Perspective*, 2003).

Contraceptive use and fertility rates vary substantially among developing countries. In a few countries of Asia and Latin America, at least three fourths of married women use contraception. In contrast, in some sub-Saharan African countries, fewer than 10 percent of married women use contraception. Although

fertility is high and contraceptive use is less common in sub-Saharan Africa than elsewhere, surveys suggest that parts of Africa have started down paths already taken in other regions. Around the world, over 600 million married women are using contraception. Among married women, contraceptive use rose in all but two developing countries surveyed more than once since 1990. For contraceptives, injectables and IUDs are the most widely used methods among married women in developing countries. A growing share of married women surveyed since 1990 want to end child bearing. As new child reproductive attitudes spread, the family sizes that women consider ideal are falling (John Hopkins Bloomberg School of Public Health, 2003).

Kiragu K. et al.,(1996) found that people recalling the most campaign materials about family planning in some parts of Uganda were the most likely to be using family planning, regardless of their age, gender, education, parity, attitudes towards family planning, socioeconomic status and place of residence. Respondents with the highest campaign exposure were three times likely to be using contraception than were those with no exposure, and were also three times more likely to be using a modern method. Nearly 40 percent of the respondents covered by the study wished to have no more children, but of these, one half were using any form of family planning. Among contraceptive users who do not desire any more children, one fourth were not using modern methods. More than 80 percent of the people not using contraception would like to use contraception in future, while about 58 percent of respondents had ever discussed with their spouses the number of children they would like to have. Respondents with no education were the least likely to have discussed their fertility goals compared with 77 percent of those with post secondary education. Nearly all respondents knew at least a method of family planning. There was an increase among those using modern methods before the campaign, the number rose to 74 percent by the end of the campaign.

Mc Devitt Thomas et al., (1996) noted that knowledge of family planning methods, knowledge of source of a modern method, proximity to or density of sources, and the financial cost of contraception are alternative indicators of effective "access" to family planning in a population. Relationship between these kinds of variables and levels of current use of modern contraception across populations suggest how resources devoted to family health services might be more efficiently utilized at least among adolescents. The relationship between contraceptive use (of any modern method) and knowledge is positive: countries with higher percentages of married adolescent women with knowledge of a source of a modern method are more likely to have higher levels of contraceptive use. However, the relationship is more curvilinear than linear, reconfirming evidence from numerous sources of the relationships between motivation and contraceptive use: knowledge is necessary but not a sufficient condition for users. The causes of the substantial increase in contraceptive prevalence in developing countries since 1960 have been intensely debated. An important unresolved issue concerns the relative contributions of changes in fertility preferences (such as increases in the proportion of women who want no more children) versus improved implementation of established preferences (such as increased contraceptive use among women who do not want another child).

1.6 Organization of the Study

This study is organized into four sections. The first section is an introductory one discussing the research problem, the objectives of the study, the data source, the methodology used, the country background, the literature review and the organization of this study. The second section provides levels, trends and socioeconomic and demographic differentials of contraceptive use. Section three analyses the net effect of determinants of contraceptive use with different socio-demographic variables. The last section comprises the conclusion and policy recommendations.

2. LEVELS, TRENDS AND DIFFERENTIALS OF CONTRACEPTIVE KNOWLEDGE AND USE

This section presents levels, trends of knowledge and ever use, and in addition the differentials of current use and intention to use of any method of contraception according to selected background characteristics of currently married women in Rwanda. Moreover, it aims to show the picture of knowledge, attitude and behavior of currently married women towards contraceptive use. The differences of knowledge, use and intention to use contraceptive methods across subgroups of currently married women are focused on this section. This study deals with traditional and modern methods of contraception but with particular emphasis on modern contraceptive methods (like Pill, IUD, Injectables, Diaphragm, foam/jelly, female and male sterilization, implants, female and male condom, etc..) as they are the most efficient and effective means of contraception.

2.1 Knowledge of Contraceptive Methods

Usually, knowledge of contraceptive methods refers to whether the respondent had heard of or knows of family planning methods. Knowledge of at least one method (either traditional or modern) by married women decreased slightly from 99 percent in 1992 to 97 in 2000 and then it increased slightly to almost 98 percent in 2005, which level is almost universal.

Table (2.1) presents the knowledge of currently married women regarding different methods of contraception and its trends since 1992 to 2005 except for some which was not mentioned in the two previous RDHS as can be seen in the table (2.1). It shows a decreasing trend in knowledge of different methods of family planning from 1992 to 2000 due to the tragic events of Genocide which took place in 1994, and then an increasing trend from 2000 to 2005.

The most widely known modern method in 1992 by married women was Injectables (97 percent) followed by Male Condom (90 percent) and the least known was Male Sterilization (38 percent); for 2000 the most known was Male Condom (90 percent) followed by Injectables (88 percent) and the least known was Male Sterilization (18 percent); while in 2005, the most known was Injectables like in 1992 (92 percent) followed by Male Condom (91 percent) and the least known was Diaphragm (5 percent). For traditional methods, the most known method by married women was Rhythmic or Periodic Abstinence (77 percent) in 1992 and it was the same method in 2000 and 2005 at the rate of 62 and 69 percent respectively.

Table (2.1)
Percentage of Currently Married Women who know any Contraceptive Method
by its Types, 1992-2005

Contraceptive Methods	Knowledge of Contraceptive Methods		
	1992	2000	2005
Any Method	99.0	97.4	97.9
Any Modern Method	98.8	96.5	97.5
Female Sterilization	75.2	61.1	71.1
Male Sterilization	37.6	17.8	30.1
Pill	96.7	83.3	89.4
IUD	69.7	38.4	39.7
Injectables	97.3	87.7	92.0
Implants	-	41.7	49.7
Male Condom	89.7	90.0	91.0
Female Condom	-	28.0	40.6
Diaphragm	-	5.4	5.0
Foam/ Jelly	-	-	6.3
Emergency Contraception	-	-	9.3
Standard days Methods/ Beads	-	-	42.9
Any Traditional Method	84.4	78.3	79.7
Rhythm or Periodic Abstinence	77.2	61.6	68.9
Withdrawal	62.1	58.9	63.3
Lactational Amenorrhea	-	43.4	47.2
Local Traditional Method	-	-	0.3
Number	3785	5052	5510

Source: Computed by the researcher using RDHS 1992, 2000 and 2005
 IUD= Intra Uterine Device

2.2 Current Use of Contraceptive Methods

The term "Current Use" refers to the method that was being used by an individual client at the time of the survey. Thus, any respondent (or her spouse) using a family planning method at the time of survey was regarded as current user (Jain A.K., 1989). The percentage of married women of reproductive age currently using a contraceptive method is the most used measure of level of family planning in a population and is one of the most useful indicators in family planning policy. Actual use of contraception may be considered as function of interest of motivation in delaying, spacing or limiting child bearing within a population and accessibility of contraceptive services to that population in terms of awareness or knowledge of methods and sources of family planning or social barriers. Contraceptive prevalence can also be considered as a measure of final stage in the process of adoption of contraceptive use.

Within less developed countries like Rwanda, use of contraception by married women of reproductive age varies substantially from region to region as well as between different subgroups of the population. The overall contraceptive prevalence rate for all methods was 21 percent in 1992 and decreased to 13 percent in 2000 and after that it increased slightly to 17 percent in 2005 (RDHS, 2005). The contraceptive prevalence rate of modern methods among currently married women decreased dramatically from 13 percent in 1992 to 4 percent in 2000 probably due to the Genocide and civil war which took place in 1994, and increased to 10 percent in 2005, while the rate for traditional method was 8 percent in 1992 and increased

slightly to 9 percent in 2000 and then decreased steadily to 7 percent in 2005. As the data above show, there was an increase in modern contraceptive use from 2000 to 2005, but which might not have had impact on the fertility levels (TFR) which slightly increased from 5.8 to 6.1 births per woman (RDHS 2005). The most frequently used modern methods were injectables (5 percent) and the pill (2 percent). Periodic abstinence (4 percent) and withdrawal (3 percent) were the most frequently used traditional methods.

2.2.1 Current Use of Contraception According to Background Characteristics

Current use of contraception is usually expected to be low among young women who have small families and still desire children, increases among women in their thirties who want to prevent or space births, and declines among women over 40 years who may perceive less need for contraception because of reduced fecundity. As table (2.2) shows, the use of any contraceptive methods was the lowest (3.2 percent) among married women of age group 15-19 because the desire to have more children is usually higher in lower age groups. The current use was the highest (20.4 percent) among married women aged 35-39, and decreased to 14.1 percent for women in age group 45-49.

There is a strong relationship between contraceptive use and number of living children. Contraceptive use increases with the number of living children as it is expected that once the couples produced their desired number of children, they are motivated to use family planning methods. The table (2.2) shows that the current use of any contraceptive method increased from 12.1 percent among those married women who had less than 3 children to 20.9 percent for those with 3 children and more.

Large differences were observed in the rate of contraceptive use between urban and rural areas. About 31.6 percent of currently married women living in urban areas reported currently using any method of contraception compared to 15.2 percent for those who were living in rural areas. This may be explained by the fact that in urban areas women prefer small family size due to social conditions that allow them to pursue professional careers, which may make them desire small families.

Contraceptive prevalence rate varies by region / province of residence. The highest contraceptive use among currently married women was seen in Kigali City (42.3 percent) as it is more urbanized than other regions, then followed by Eastern province (19.3 percent) and the lowest contraceptive use was seen in Western province (14.6 percent).

There are large differentials in current use of contraceptive methods by level of education as women who are educated usually differ in many ways from their uneducated counterparts, because they are often wealthier and share better access to family planning services. Women who had no education registered the lowest contraceptive prevalence rate, 10.8 percent compared to 20.2 percent for those who are educated. Current contraceptive use also rises with the educational level of the husbands. About 12.7 percent of currently married women whose husbands are not educated are currently using a contraceptive method compared to 19.2 percent of those whose husbands are educated.

Table (2.2)
Percentage of Currently Married Women by Current Use of Contraceptive Methods According to Background Characteristics, 2005

Background Characteristics	Current Use of Contraceptive Methods		Number of Cases	Measure of Association (χ^2 -test)
	Not Using	Currently Using		
Age Groups				$\chi^2 = 43.370^*$ P= 0.000
15-19	96.8	3.2	65	
20-24	87.3	12.7	980	
25-29	82.7	17.3	1254	
30-34	79.7	20.3	1112	
35-39	79.6	20.4	807	
40-44	80.3	19.7	739	
45-49	85.9	14.1	554	
Total	82.6	17.4	5510	
Number of Living Children				$\chi^2 = 71.078^*$ P= 0.000
Less than 3	87.9	12.1	2210	
3 +	79.1	20.9	3300	
Total	82.6	17.4	5510	
Place of Residence				$\chi^2 = 120.739^*$ P= 0.000
Urban	68.4	31.6	744	
Rural	84.8	15.2	4766	
Total	82.6	17.4	5510	
Region/ Province				$\chi^2 = 155.792^*$ P= 0.000
Kigali City	57.7	42.3	309	
Northern	85.2	14.8	1091	
Southern	85.2	14.8	1411	
Eastern	80.7	19.3	13.45	
Western	85.4	14.6	1354	
Total	82.6	17.4	5510	
Woman's Educational Level				$\chi^2 = 69.380^*$ P= 0.000
Not educated	89.2	10.8	1640	
Educated	79.8	20.2	3871	
Total	82.6	17.4	5510	
Husband's Educational Level				$\chi^2 = 31.804^*$ P= 0.000
Not educated	87.3	12.7	1465	
Educated	80.8	19.2	3981	
Total	82.5	17.5	5446	
Women's work Status				$\chi^2 = 1.535$ P= 0.215
Not Working	83.6	16.4	1548	
Working	82.2	17.8	3958	
Total	82.6	17.4	5506	

Source: Computed by the researcher using RDHS 2005

Note: * Chi-square significant at the level of $P < 0.05$.

The total number of cases in the table above which is not equal to the total number of currently married Women (N=5510) is due to missing values.

Generally, differences exist in pattern of current contraceptive use and women's work status. Women who work demonstrate a much higher use of contraception than those who do not work. The table (2.2) indicates that in Rwanda, women's work status has little impact on current use of contraception, 17.8 percent for currently married women who were working compared to 16.4 percent for those who were not working.

The chi-square tests show significant association between current use of a contraceptive method with almost all the selected background characteristics of currently married women ($P=0.000$), except for women's work status.

2.2.2 Current Use of Contraception According to Exposure to Mass Media

The exposure to mass media is also a source of information that can motivate women to adopt the use of family planning methods as the media can heighten awareness, promote new ideas and encourage healthier behaviors. Therefore, women who are exposed to media are more likely to use contraceptive methods than those who are not exposed and as table (2.3) shows, the percentage of women currently using contraception was higher among married women who were exposed to any media source.

**Table (2.3)
Percentage of Currently Married Women by Current use of Contraceptive Methods According to Exposure to Mass Media, 2005**

Exposure to Family Planning Message	Current Use of Contraceptive Methods		Number of Cases	Measure of Association (χ^2 -test)
	Not Using	Currently Using		
Heard FP on the Radio				$\chi^2 = 154.607^*$ $P= 0.000$
No	88.4	11.6	2985	
Yes	75.7	24.3	2522	
Total	82.6	17.4	5507	
Watched FP on the TV				$\chi^2 = 72.158^*$ $P= 0.000$
No	83.4	16.6	5326	
Yes	58.1	41.9	167	
Total	82.6	17.4	5492	
Read FP in Newspapers				$\chi^2 = 67.416^*$ $P= 0.000$
No	83.5	16.5	5259	
Yes	62.6	37.4	234	
Total	82.6	17.4	5492	

Source: Computed by the researcher using RDHS 2005

Note: * Chi-square significant at the level of $P < 0.05$

F.P: Family Planning, T.V: Television

The total number of cases in the table above which is not equal to the total number of currently married Women (N=5510) is due to missing values.

About 24.3 percent of currently married women who had heard about family planning on the radio for the last 12 months were reported currently using any contraceptive method compared to 11.6 for those who have never heard it. The television has great role in motivating couples to use any contraceptive method in Rwanda. About 41.9 percent of currently married women who watched any message about family planning for the last 12 months were reported currently using any method of contraception compared to 16.6 for those who have never watched it. Those who read any message of family planning in the newspapers for the last 12 months were reported currently using any contraceptive method (37.4 percent) compared to (16.5 percent) for those who did not read about family planning through this source.

The table (2.3) shows that the relationship between current use of any method of contraception and exposure to family planning message through media was significant ($P=0.000$).

2.2.3 Current Use of Contraception According to Exposure to Interpersonal Communication

Knowledge and information about family planning from exposure to interpersonal communication can also motivate women to adopt contraceptive use. One way which is used in Rwanda to create awareness about family planning is by family planning field workers who visit couples in homes and motivate couples to adopt contraception. Therefore women who get in contact with family planning field workers or visit health facilities offering family planning services are likely to use any contraceptive methods than those who do not.

Table (2.4)
Percentage of Currently Married Women by Current use of Contraceptive Method According to Exposure to Interpersonal Communication, 2005

Interpersonal Communication	Current Use of Contraceptive Methods		Number of Cases	Measure of Association (χ^2 -test)
	Not Using	Currently Using		
Visited by FP worker last 12 months				$\chi^2 = 2.522$ P = 0.112
No	82.7	17.3	5184	
Yes	79.1	20.9	292	
Total	82.5	17.5	5477	
Visited health facility last 12 months				$\chi^2 = 64.114^*$ P = 0.000
No	86.1	13.9	3181	
Yes	77.7	22.3	2304	
Total	82.6	17.4	5485	

Source: Computed by the researcher using RDHS 2005

Note: * Chi-square significant at the level of $P < 0.05$

The total number of cases in the table above which is not equal to the total number of currently married Women (N=5510) is due to missing values.

As table (2.4) indicates, about 20.9 percent of currently married women who were visited by a family planning worker in the last 12 months were currently using a contraceptive method compared to 17.3 percent of women who were not visited. Likewise, 22.3 percent of currently married women who visited a health facility offering family planning services in the last 12 months are currently using a method of contraception compared to 13.9 percent who did not. The chi-square test indicates that the relationship between current use of contraception and visited by a family planning worker in the last 12 months was not significant which is quite different from what was expected, while current use and visited health facility for the last 12 months was significant ($P=0.000$).

2.2.4 Current Use of Contraception According to Couple's Attitude towards Family Planning

Use of effective contraceptive methods is facilitated when the attitude of couples towards family planning is positive. Therefore, for couples to adopt the use of any contraceptive method, a positive attitude is one of the factors that can enable them to use the methods of their free will and choose the contraceptive methods they feel are convenient for them. Positive attitude by a couple towards contraception may also lead to a joint decision on the timing of using contraception and what type of method to use.

As table (2.5) shows, about 19.6 percent of currently married women who were reported current users approve of family planning use compared to 3.7 percent who disapprove, while 26.1 percent of women whose husbands approve of family planning method use are currently using compared to 3.5 percent of women whose husbands disapprove. Both respondents' attitude and husbands' attitude are significantly associated with current use of any method of contraception ($P=0.000$).

Table (2.5)
Percentage of Currently Married Women by Current Use of Contraceptive Methods According to Couple's Attitude towards Family Planning, 2005

Couples' Attitudes	Current Use of Contraceptive Methods		Number of Cases	Measure of Association (χ^2 -test)
	Not Using	Currently Using		
Women's Attitude on FP				$\chi^2 = 115.296^*$ $P=0.000$
Disapproves	96.3	3.7	769	
Approves	80.4	19.6	4737	
Total	82.6	17.4	5506	
Husbands' Attitude on FP				$\chi^2 = 452.122^*$ $P = 0.000$
Disapproves	96.5	3.5	2075	
Approves	73.9	26.1	3314	
Total	82.6	17.4	5389	

Source: Computed by the researcher using RDHS 2005

Note: * Chi-square significant at the level of $P < 0.05$

F.P: Family Planning

The total number of cases in the table above which is not equal to the total number of currently married Women (N=5510) is due to missing values.

2.2.5 Current Use of Contraception According to Fertility Preference

It is assumed that the fertility preference of couples motivate them to act in such a way as to achieve their preferred family sizes. In many developing countries, those couples who use contraceptive methods do so to limit or terminate childbearing if the necessary family planning services are available, accessible and affordable.

Table (2.6) shows that current married women who preferred small ideal family size were reported the most contraceptive users. About 24.5 percent of currently married women who preferred the ideal number of children to be less than 4 were reported using any contraceptive method compared to 16.2 percent for those who preferred 4 children and more.

The most important factor, which is the hurdle in the use of contraception in Rwanda, is the desire for more children. As seen in the table (2.6), those currently married women who wanted more children were reported less contraceptive users (14 percent) compared to those who wanted no more children (21.7 percent).

Regarding the husbands' desire for children, women whose husbands wanted the same number of children as them were reported to be 12.5 percent current users, while those whose husbands wanted more children were 22.3 percent current users and finally those whose husbands wanted fewer children were 22.1 percent. The relationship between current users of a method of contraception and fertility preference for all the selected characteristics was significant ($P=0.000$).

Table (2.6)
Percentage of Currently Married Women by Current Use of Contraceptive Methods According to Fertility Preference, 2005

Fertility Preference	Current Use of Contraceptive Methods		Number of Cases	Measure of Association (χ^2 -test)
	Not Using	Currently Using		
Ideal Number of Children				$\chi^2 = 39.733^*$ P= 0.000
Less than 4	75.5	24.5	1037	
4 +	83.8	16.2	4284	
Total	82.2	17.8	5321	
Woman's Desire for Children				$\chi^2 = 54.577^*$ P= 0.000
Wants no more	78.3	21.7	2525	
Wants more	86.0	14.0	2873	
Total	82.4	17.6	5398	
Husband's Desire for Children				$\chi^2 = 34.490^*$ P= 0.000
Both want same		12.5	718	
Wants more	87.5	22.3	2028	
Wants fewer	77.7	22.1	1017	
Total	79.7	20.3	3763	

Source: Computed by the researcher using RDHS 2005

Note: * Chi-square significant at the level of $P < 0.05$

The total number of cases in the table above which is not equal to the total number of currently married Women (N=5510) is due to missing values.

2.3 Intention to Use Contraceptive Methods Among Non-Users

An important indicator of changing demand for family planning is the extent to which women who are not using contraception intend to use in the future. About six in ten (59 percent) of currently married women non-users in Rwanda intended to use in the future, while 7 percent were not sure, and 34 percent had no intention to use (RDHS 2005), while 53 percent and 64 percent were those who had intention to use in 2000 and 1992 respectively. The proportion of couples intending to use especially the timing of use is determined by the prevailing socioeconomic and demographic factors like knowledge of contraceptive methods, number of living children, place of residence, age of a woman, women's education and working status of women may be the main factors that enable non-users to adopt any method of contraception in future.

2.3.1 Intention to Use Contraception According to Background Characteristics

Intention to use a contraceptive method in the future provides a forecast of potential demand for family planning services and represents a summary indicator of attitudes towards contraception among currently married women non-users. Table (2.7) presents the distribution of currently married women who were not using any contraceptive method by intention to use in the future according to their background characteristics.

According to the age of women, intention to use any family planning method was the highest (83.4 percent) among currently married women aged 15-19 followed by those aged 20-24 (75 percent) and the lowest level (12.9 percent) for those aged 45-49. In general the intention to use a contraceptive method and the age of women is negatively related. The chi-square test indicates significant association between the intention to use and the age of women ($P = 0.000$).

The proportion of women intending to use any contraceptive method varies with the number of living children. As the table (2.7) indicates, 64 percent of currently married women who had less than 3 children intended to use a method of contraception in the future compared to 54.5 percent for those who had 3 children and more. The relationship between intention to use and the number of living children was found significant ($P=0.000$).

**Table (2.7)
Percentage of Currently Married Women Non-Users of Contraceptives by
Intention to Use According to Background Characteristics, 2005**

Background Characteristics	Intention to Use Contraceptive Methods		Number of Cases	Measure of Association (χ^2 -test)
	No Intention	Intend to Use		
Age Groups				
15-19	16.6	83.4	63	$\chi^2 = 689.574^*$ $P = 0.000$
20-24	25.0	75.0	856	
25-29	28.7	71.3	1035	
30-34	36.4	63.6	885	
35-39	41.5	58.5	639	
40-44	60.7	39.3	592	
45-49	87.1	12.9	475	
Total	41.4	58.6	4545	
Number of Living Children				
Less than 3	36.0	64.0	1941	$\chi^2 = 41.620^*$ $P = 0.000$
3 +	45.5	54.5	2605	
Total	41.4	58.6	4545	
Place of Residence				
Urban	39.2	60.8	508	$\chi^2 = 1.177$ $P = 0.278$
Rural	41.7	58.3	4037	
Total	41.4	58.6	4545	
Region/ Province				
Kigali City	31.7	68.3	179	$\chi^2 = 142.487^*$ $P = 0.000$
Northern	31.2	68.8	929	
Southern	43.8	56.2	1202	
Eastern	35.5	64.5	1083	
Western	54.2	45.8	1153	
Total	41.4	58.6	4545	
Women's Educational Level				
Not educated	50.8	49.2	1459	$\chi^2 = 78.689^*$ $P = 0.000$
Educated	37.0	63.0	3086	
Total	41.4	58.6	4545	
Husband's Educational Level				
Not Educated	46.8	53.2	1277	$\chi^2 = 22.160^*$ $P = 0.000$
Educated	39.2	60.8	3210	
Total	41.3	58.7	4487	
Women Work Status				
Not Working	44.0	56.0	1290	$\chi^2 = 5.088^*$ $P = 0.024$
Working	40.4	59.6	3252	
Total	41.4	58.6	4542	

Source: Computed by the researcher using RDHS 2005

Note: * Chi-square significant at the level of $P < 0.05$

The total number of cases in the table above which is not equal to the total number of currently married Women (N=5510) is due to missing values.

The relative level of intention to use any method of contraception among currently married women according to place of residence does not show a big difference. About 60.8 percent of currently married women living in urban areas compared to 58.3 percent of those living in rural areas showed their future intention for using any method of contraception. The chi-square tests show no significant association between intentions to use a contraceptive method and the place of residence.

Differentials in region / province of residence showed higher level of intention to use any contraceptive method among currently married women in Northern Province (68.8 percent) followed closely by Kigali City (68.3 percent), while it was the lowest in Western Province (45.8 percent). This higher level of intention to use contraceptive methods in Northern Province may be due to higher density in this part of the country compared to other provinces. The table (2.7) also indicates significant association between intention to use a contraceptive method and a region/province of residence of women ($P=0.000$).

Educational level of women shows a positive relationship with future intention to use any contraceptive method, as it increased from 49.2 percent for those currently married women with no education to 63 percent for those who were educated who showed their future intention to use any method of contraception. The relationship between intention to use a contraceptive method and the educational level of women was significant ($P=0.000$).

Decisions by the couples to use contraceptive methods and the size of the families in Rwanda are largely made by husbands; partners are expected to influence their wives' intention to use contraceptives in future. About 53.2 percent of women whose husbands were not educated intend to use contraceptives in future compared to 60.8 percent of those whose husbands were educated. As the table (2.7) indicates, the educational level of husbands is positively and significantly associated with their wives' intention to use contraceptive method in the future ($P=0.000$).

Women who were working were more likely to use contraceptives than those who were not working. However, the above table shows that currently married women, irrespective of whether they were working or not, had no big difference in percentage of who intended in future to use contraceptive methods in Rwanda. Women who were working had 59.6 percent of intention to use a contraceptive method compared to 56 percent of those who were not working. The chi-square test shows significant association between intention to use a contraceptive method and the work status of women ($P=0.024$).

2.3.2 Intention to Use Contraception According to Exposure to Mass Media

The intention of currently married women non-users to use contraceptives in the future depends, among other things, on the exposure to the media for information about family planning methods and motivation for use. Women who are exposed to the media are expected to be intending to use contraceptives than those who are not. As indicated in table (2.8), 65.1 percent of currently married women non-users who heard of family planning on the radio intended to use any contraceptive method compared to 53.8 percent who did not hear of it through this source but showed their intention to use any method in the future. The chi-square test shows significant association between intention to use a contraceptive method and hearing of a family planning message on the radio ($P=0.000$).

About 60 percent of currently married women who had watched family planning messages on the television reported their future intention to use any contraceptive method compared with 58.5 percent who had not watched it but showed their future willingness to use any method of contraception. The chi-square test shows no significant association between intention to use a contraceptive method and watching family planning message on the television.

Print media has also a positive impact on intention to use contraceptive methods by women, as seen in the table (2.8); 68 percent of currently married women non-users who had read about family planning in newspapers intended to use any method in future compared to 58.2 percent who had not read it. The relationship between intention to use a contraceptive method and reading family planning message in newspapers was significant (P=0.000).

Table (2.8)
**Percentage of Currently Married Women Non-Users of Contraceptives by
Intention to Use According to Exposure to Mass Media, 2005**

Exposure to Family Planning Message	Intention to Use Contraceptive Methods		Number of Cases	Measure of Association (χ^2 -test)
	No Intention	Intend to Use		
Heard of FP on the Radio				$\chi^2 = 57.824^*$ P= 0.000
No	46.2	53.8	2638	
Yes	34.9	65.1	1905	
Total	41.4	58.6	4543	
Watched FP on the TV				$\chi^2 = 0.142$ P= 0.706
No	41.5	58.5	4435	
Yes	40.0	60.0	96	
Total	41.5	58.5	4531	
Read FP in Newspapers				$\chi^2 = 5.340^*$ P= 0.021
No	41.8	58.2	4386	
Yes	32.0	68.0	145	
Total	41.5	58.5	4531	

Source: Computed by the researcher using RDHS 2005

Note: * Chi-square significant at the level of P< 0.05

F.P: Family Planning, T.V: Television

The total number of cases in the table above which is not equal to the total number of currently married Women (N=5510) is due to missing values.

2.3.3 Intention to Use Contraception According to Exposure to Interpersonal Communication

Women who were visited by family planning field workers or who have visited a health facility usually get information about contraceptive methods and such contacts may motivate non-users to adopt methods of family planning. Table (2.9) shows that, currently married women who were visited by a family planning worker in the last 12 months (65.4 percent) intended to use contraceptive methods more than those who were not visited (58.3 percent).

Intention to use also increases with visits to a health facility as about 69.5 percent of currently married women non-users who visited a health facility in the last 12 months intended to use contraceptive methods compared to 51.5 percent who did not. The relationship between intention to use a contraceptive method in the future and both visited by a family planning worker in the last 12 months (P=0.033) and visited a health facility in the last 12 months was found significant (P=0.000).

Table (2.9)
Percentage of Currently Married Women Non Users of Contraceptives by
Intention to Use According to Exposure to Interpersonal Communication, 2005

Interpersonal Communication	Intention to Use of Contraceptive Methods		Number of Cases	Measure of Association (χ^2 -test)
	No Intention	Intend to Use		
Visited by FP worker last 12 months				$\chi^2 = 4.527^*$ P= 0.033
No	41.7	58.3	4283	
Yes	34.6	65.4	231	
Total	41.4	58.6	4514	
Visited health facility last 12 months				$\chi^2 = 145.864^*$ P= 0.000
No	48.5	51.5	2734	
Yes	30.5	69.5	1787	
Total	41.4	58.6	4521	

Source: Computed by the researcher using RDHS 2005

Note: * Chi-square significant at the level of $P < 0.05$

The total number of cases in the table above which is not equal to the total number of currently married Women (N=5510) is due to missing values.

2.3.4 Intention to Use Contraception According to Couple's Attitude towards Family Planning

The intention of non users to use contraceptive methods largely depends on their attitude towards contraceptive methods with couples who approve of family planning intending to use more than those who do not approve of family planning. As table (2.10) indicates, there was a big difference between the proportion of women who approve of family planning and those who disapprove regarding their intention to use family planning in future.

Table (2.10)
Percentage of Currently Married Women Non-Users of Contraceptives by
Intention to Use According to Couple's Attitude towards Family Planning, 2005

Couples' Attitudes	Intention to Use Contraceptive Methods		Number of Cases	Measure of Association (χ^2 -test)
	No Intention	Intend to Use		
Women's Attitude on FP				$\chi^2 = 802.566^*$ P= 0.000
Disapproves	88.4	11.6	739	
Approves	32.3	67.7	3804	
Total	41.4	58.6	4544	
Husbands' Attitude on FP				$\chi^2 = 675.444^*$ P= 0.000
Disapproves	62.0	38.0	2000	
Approves	23.5	76.5	2446	
Total	40.8	59.2	4446	

Source: Computed by the researcher using RDHS 2005

Note: * Chi-square significant at the level of $P < 0.05$

F.P: Family Planning

The total number of cases in the table above which is not equal to the total number of currently married Women (N=5510) is due to missing values.

About 67.7 percent of currently married women who approved of family planning intended to use any contraceptive method in the future compared to only 11.6 percent who disapproved of family planning. Husbands' positive attitude plays a very important role for future contraceptive use behavior of women. The table (2.10) shows that, 76.5 percent of those married women whose husbands approve of family

planning showed willingness for future use of any contraceptive method compared to 38 percent whose husbands disapprove of family planning. The chi-square test shows significant association between intention to use a contraceptive method and the couple's attitude towards family planning ($P=0.000$).

2.3.5 Intention to Use Contraception According to Fertility Preference

Future intention to use family planning depends upon fertility preference of couples with most of these intending to use after attaining their desired family size. However, table (2.11) shows that, intention to use contraception in the future varies with ideal number of children. About 63.4 percent of married women who preferred less than 4 children showed their future intention of contraceptive use compared to 59.1 percent who preferred 4 children and more and, showed their intention to use contraceptives in the future. About 63.7 percent of women who wanted more children showed their intention to use contraceptives in the future compared to 53.5 percent who wanted no more children but had the intention to use any method in the future.

Currently married women non-users whose husbands wanted the same number of children as their wives showed 55.5 percent of intention to use contraceptives in the future, while those whose husbands wanted fewer children showed 64.6 percent intention to use, and for those whose husbands wanted more children it was 70.3 percent intention to use. The chi-square test shows significant association between intention to use a contraceptive method and all the selected fertility preference characteristics, for ideal number of children ($P=0.026$) while with women and husbands' desire for children ($P=0.000$).

Table (2.11)
Percentage of Currently Married Women Non-Users of Contraceptives by Intention to Use According to Fertility Preference, 2005

Fertility Preference	Intention to Use Contraceptive Methods		Number of Cases	Measure of Association (χ^2 -test)
	No Intention	Intend to Use		
Ideal Number of Children				$\chi^2 = 4.960^*$ $P = 0.026$
Less than 4	36.6	63.4	781	
4 +	40.9	59.1	3589	
Total	40.2	59.8	4370	
Woman's Desire for Children				$\chi^2 = 47.194^*$ $P = 0.000$
Wants no more	46.5	53.5	1972	
Wants more	36.3	63.7	2469	
Total	40.9	59.1	4442	
Husband's Desire for Children				$\chi^2 = 44.829^*$ $P = 0.000$
Both want same	44.5	55.5	629	
Wants more	29.7	70.3	1576	
Wants fewer	35.4	64.6	790	
Total	34.3	65.7	2995	

Source: Computed by the researcher using RDHS 2005

Note: * Chi-square significant at the level of $P < 0.05$

The total number of cases in the table above which is not equal to the total number of currently married Women (N=5510) is due to missing values.

3. DETERMINANTS OF CONTRACEPTIVE USE

The demographic and socioeconomic variables expected to be strongly

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labels are recoded into categorical variables. Table (3.1) explains how the variables are entered in the models and presents detailed information of the operational definition of the used independent variable

**Table (3.1)
Description and Categories of the Variables Labels entered to Each Model
for Determinants of Contraceptive Use**

Independent Variables	Code	Description and Categories
Age of Woman	X1	Categorical variable
Number of Living Children	X2	Countable or categorical variable
Place of Residence	X3	Two categories were identified (0=Rural, 1= Urban) and represented by one binary variable: X3=1 if Urban, otherwise=0 Rural (R.C)
Region / Province of Residence	X4	Five categories were identified (0=Kigali City, 1=Northern,2=Southern,3=Eastern, 4=Western) and represented by four binary variables: X4,1= 1 if Northern, otherwise=0 X4,2= 1 if Southern, otherwise=0 X4,3= 1 if Eastern, otherwise=0 X4,4= 1 if Western, otherwise=0 Kigali City (R.C)
Woman's Educational Level	X5	Two categories were identified (0=Not educated, 1= Educated) and represented by one binary variable: X5= 1 if Educated, otherwise=0 Not educated (R.C)
Husband's Educational Level	X6	Two categories were identified (0=Not educated, 1= Educated) and represented by one binary variable: X6= 1 if Educated, otherwise=0 Not educated (R.C)
Woman's work status	X7	Two categories were identified (0=Not working, 1= Working) and represented by one binary variable: X7=1 if Working, otherwise=0 Not working (R.C)
Heard of FP Message on the Radio	X8	Two categories were identified (0=Not heard, 1=Heard) and represented by one binary variable: X8 = 1 if Heard, otherwise=0 Not heard (R.C)
Watched FP Message on the Television	X9	Two categories were identified (0=Not watched, 1=Watched) and represented by one binary variable: X9 = 1 if watched, otherwise=0 No watched (R.C)
Read about FP Message in the Newspapers	X10	Two categories were identified (0=Not Read, 1=Read) and represented by one binary variable: X10 = 1 if Read, otherwise=0 Not Read (R.C)
Visited by a FP Worker last 12 months	X11	Two categories were identified (0=Not visited by FP worker, 1=Visited) and represented by one binary variable: X11 = 1 if Visited, otherwise=0 Not visited (R.C)
Visited a Health Facility last 12 months	X12	Two categories were identified (0=Not visited a health facility, 1=Visited) and represented by one binary variable: X12 = 1 if Visited, otherwise=0 Not visited (R.C)

Independent Variables	Code	Description and Categories
Women's Attitude towards FP	X13	Two categories were identified (0=Woman disapproves, 1=Approves) and represented by one binary variable X13 = 1 if Approves, otherwise=0 Woman disapproves (R.C)
Husbands' Attitude towards FP	X14	Two categories were identified (0=Husband disapproves, 1=Approves) and represented by one binary variable: X14 = 1 if Approves, otherwise=0 Husband disapproves (R.C)
Ideal Number of Children	X15	Countable or categorical variable
Woman's desire for children	X16	Two categories were identified (0=Want no more, 1= want more) and represented by one binary variable: X16 = 1 if want more, otherwise=0 Want no more (R.C)
Husband's desire for children	X17	Three categories were identified (0=Want more, 1= Both want same, 2= Want fewer) and represented by two binary variables: X17=1 if Both want same, otherwise=0 X17=1 if Want fewer, otherwise=0 Want more (R.C)

Note: R.C: Reference Category
F.P: Family Planning

Due to the fact that, the knowledge of methods of contraception is widely spread and almost universal in Rwanda (97.9), there is no need to look for its determinants in the in-depth analysis.

3.1 Determinants of Current Use of Contraceptive Methods

The definition of determinants of current use of contraceptive methods is shown in table (3.2). The table also explains how the variables are entered in the logistic regression model and presents only the significant variables from all the explanatory variables in table (3.1).

Table (3.2)
Description and Categories of Variables of Current Use of Contraceptive Methods which enter the Model

Variables	Code	Description and Categories
Dependent Variable		
Current Use of Contraceptive Methods	Y	Two categories were identified (0= Not Using, 1= Currently Using) and represented by one binary variable: Y1= 1 if Currently Using, otherwise=0 Not Using (R.C)
Independent variables		
Number of Living Children	X2	Countable Variable
Place of Residence	X3	Two categories were identified (0=Rural, 1= Urban) and represented by one binary variable: X3=1 if Urban, otherwise=0 Rural (R.C)
Region / Province of Residence	X4	Five categories were identified (0=Kigali City, 1=Northern, 2=Southern, 3=Eastern, 4=Western) and represented by four binary variables: X4,1= 1 if Northern, otherwise=0 X4,2= 1 if Southern, otherwise=0 X4,3= 1 if Eastern, otherwise=0 X4,4= 1 if Western, otherwise=0 Kigali City (R.C)

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Independent Variables	Code	Description and Categories
Women's Educational Level	X5	Two categories were identified (0=Not educated, 1= Educated) and represented by one binary variable: X5= 1 if Educated, otherwise=0 Not educated (R.C)
Husbands' Educational Level	X6	Two categories were identified (0=Not educated, 1= Educated) and represented by one binary variable: X6= 1 if Educated, otherwise=0 Not educated (R.C)
Heard of FP Message on the Radio	X8	Two categories were identified (0=Not heard, 1=Heard) and represented by one binary variable: X8 = 1 if Heard, otherwise=0 Not heard (R.C)
Read about FP Message in the Newspapers	X10	Two categories were identified (0=Not Read, 1=Read) and represented by one binary variable: X10 = 1 if Read, otherwise=0 Not Read (R.C)
Visited a Health Facility last 12 months	X12	Two categories were identified (0=Not visited a health facility, 1=Visited) and represented by one binary variable: X12 = 1 if Visited, otherwise=0 Not visited (R.C)
Woman's Attitude towards FP	X13	Two categories were identified (0=Woman disapproves, 1=Approves) and represented by one binary variable X13 = 1 if Approves, otherwise=0 Woman disapproves (R.C)
Husband's Attitude towards FP	X14	Two categories were identified (0=Husband disapproves, 1=Approves) and represented by one binary variable: X14 = 1 if Approves, otherwise=0 Husband disapproves (R.C)
Ideal Number of Children	X15	Countable variable

Note: R.C: Reference Category
F.P: Family Planning

Table (3.3) shows the logistic regression results of the likelihood of the current use of contraceptive methods. The fitted model is good as the percentage of correctly classified cases is 79.7 percent. This percentage means that if data on any group of women with characteristics analyzed in this study is put in the equation with an aim of studying factors determining the current use of contraceptive method, about 79.7 percent of them will be correctly classified according to these characteristics.

Based on the results in table (3.3), the logistic regression results of the likelihood of current use of at least a method of contraception can be written as follows:

$$\begin{aligned} \ln (P_i/1-P_i) = & -5.266 + 0.151X_2 + 0.404X_3 + 0.638X_{4,1} + 0.374X_5 + 0.329X_6 \\ & + 0.384X_8 + 0.436X_{10} + 0.258X_{12} + 0.587X_{13} + 1.894X_{14} \\ & - 0.016X_{15} \end{aligned}$$

Note: The equation contains the significant variables only.

There is a positive relationship between the number of living children of a woman and current use of a contraceptive method. Expectedly, as the number of living children of a woman increases by one child, the likelihood of current use of a contraceptive method increases by 1.16 times and the probability of current use is 0.53.

Women who stay in urban areas are more likely to be using a method of contraception than those in rural areas. Some notable factors in urban areas like the

cost of bringing up children, educational aspirations for children, the probability of shared decision making by women with their partners, and a high number of working women who can afford the cost of contraception, lead to a high probability of contraceptive use. Current use of contraceptive methods and place of residence are significantly associated and women living in urban areas are 1.49 times more likely to be currently using a contraceptive method than those in rural areas with a probability of 0.59.

Table (3.3)
Summary of Logistic Regression Results for the Determinants of Current Use of a Method of Contraception

Variables	Beta	Standard Error	Significance Level	Odds Ratio	Probability
Number of Living Children Countable variable	.151	.027	.000**	1.163	.537
Place of Residence Rural (R.C)					
Urban	.404	.128	.002*	1.498	.599
Region/Province of Residence Kigali City (R.C)					
Northern	.638	.197	.001*	1.893	.654
Southern	-.199	.148	.179	.820	.450
Eastern	-.200	.139	.149	.818	.449
Western	.207	.134	.122	1.230	.551
Women's Educational Level Not Educated (R.C)					
Educated	.374	.118	.002**	1.454	.592
Husbands' Educational Level Not Educated (R.C)					
Educated	.329	.117	.005*	1.390	.581
Heard of FP Message on the Radio No (R.C)					
Yes	.384	.096	.000**	1.468	.594
Read about FP Message in the Newspaper No (R.C)					
Yes	.436	.209	.037*	1.547	.607
Visited Health Facility last 12 Months No (R.C)					
Yes	.258	.090	.004*	1.295	.564
Women's Attitude on FP Disapproves (R.C)					
Approves	.587	.271	.300*	1.798	.642
Husband's Attitude on FP Disapproves (R.C)					
Approves	1.894	.192	.000**	6.648	.869
Ideal Number of Children Countable	-.016	.008	.034*	.984	.495
Constant	-5.266				
Percentage of correctly classified cases	79.7				

Source: Computed by the researcher from RDHS 2005

Note: R.C: Reference Category, F.P: Family Planning

*- Significant at P < 0.05

**- Significant at P < 0.001

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Region / province of residence has a significant influence on current use. Women from Northern Province are 1.89 times more likely to be currently using a contraceptive method than those from Kigali City and the probability is 0.65.

Current use of contraceptive methods and women's educational level show positive and independent association. Currently married women who are educated are 1.45 times more likely to be currently using a contraceptive method than those who are not educated with a probability of using of 0.59. Women who are exposed to education may be more likely to perceive that they have greater autonomy. They may have greater ability to make decisions, to move freely, to earn and control their earnings and thus bring autonomy into other areas of their lives like having better rapport with their husbands, particularly in child bearing decisions. Education also has positive effects on attitudes towards family planning and knowledge of contraception.

The same positive and significant relationship was observed between husbands' educational level and current use of contraceptive method. Women whose husbands were educated were 1.39 times more likely to be using contraceptive method than those whose husbands were not educated with a probability of being current users of 0.58.

The media motivates couples into adopting contraceptive use as through the media, service providers encourage couples by emphasizing the benefits of family planning use like healthy, small and spaced families. As seen in table (3.3) above, heard of family planning message in the media has a significant influence on current use of contraception. Women who have ever heard or read family planning message in the media have more odds of current use than those who have never heard or read about it, 1.46 and 1.54 respectively, and have the probability of current use of about 0.59 and 0.60 respectively.

Current use of contraception, as the table indicates, has significant association with visited a health facility last 12 months. Currently married women who visited a health facility last 12 months have a higher probability of being current users of a contraceptive method (0.56) and are about 1.29 times more likely to be currently using a contraceptive method than those who did not visit a health facility. Such visit may stimulate women who are opposed to contraceptive use to understand its importance especially for the health of the children and themselves.

The relationship between current use and women's attitude towards family planning is significant and currently married women who approve of family planning are 1.79 times more likely to be currently using than those who do not and have a probability of 0.64 of using. A positive attitude towards family planning is an important factor for one to adopt contraception as it may create a situation in which women can use contraception willingly and choose which suitable methods they prefer.

Approval of family planning by the husbands as seen in the table has a significant influence on current use. Currently married women whose husbands approve of family planning are 6.64 times more likely to be currently using contraceptive methods than those whose husbands' disapprove of it and the probability of current use is 0.86. Couples in some cases base their understanding of what they want on assumption or indirect communication such as over-heard talk and therefore, direct communication may make couples understand each other's attitude towards contraceptive use

Current use of contraception and ideal number of children of a woman are negatively related. As the ideal number of children to have by a woman increases, the likelihood of currently using a contraceptive method decreases and the probability is 0.49.

3.2 Determinants of Intention to Use Contraceptive Methods

The way determinants of intention to use contraceptive methods by non users and how variables are entered in the logistic regression model are shown in table (3.4), and only the significant variables are presented from all the ones presented in table (3.1).

Table (3.4)
Description and Categories of Variables of Intention to Use Contraceptive Methods which enter the Model

Variables	Code	Description and Categories
Dependent Variable		
Intention to Use Contraceptive Methods	Y	Two categories were identified (0=do not intend to use, 1=intend to use) and represented by one binary variable: Y1= 1 if Intend to use, otherwise=0 Do not intend to use (R.C)
Independent variables		
Age of Women	X1	Three categories were identified (0=15-24, 1=25-34 and 2=35-49) and represented by two binary variables: X1,1= 1 if age 25-34, otherwise=0 X1,2= 1 if age 35-49, otherwise=0 Age 15-24 (R.C)
Number of Living Children	X2	Two categories were identified (0= Less than 3 Children, 1= 3 Children +) and represented by one binary variable: X2=1 if 3 children +, otherwise=0 Less than 3 Children (R.C)
Place of Residence	X3	Two categories were identified (0=Rural, 1= Urban) and represented by one binary variable: X3=1 if Urban, otherwise=0 Rural (R.C)
Region / Province of Residence	X4	Five categories were identified (0=Kigali City, 1=Northern,2=Southern,3=Eastern, 4=Western) and represented by four binary variables: X4,1= 1 if Northern, otherwise=0 X4,2= 1 if Southern, otherwise=0 X4,3= 1 if Eastern, otherwise=0 X4,4= 1 if Western, otherwise=0 Kigali City (R.C)
Visit a Health Facility last 12 months	X12	Two categories were identified (0=Not visited a health facility, 1=Visited) and represented by one binary variable: X12 = 1 if Visited, otherwise=0 Not visited (R.C)
Women's Attitude towards FP	X13	Two categories were identified (0=Woman disapproves, 1=Approves) and represented by one binary variable X13 = 1 if Approves, otherwise=0 Woman disapproves (R.C)
Husbands' Attitude towards FP	X14	Two categories were identified (0=Husband disapproves, 1=Approves) and represented by one binary variable: X14 = 1 if Approves, otherwise=0 Husband disapproves (R.C)

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Independent Variables	Code	Description and Categories
Ideal Number of Children	X15	Two categories were identified (0= less than 4 Children, 1= 4 Children +) and represented by one binary variable: X15=1 if 4 children +, otherwise=0 Less than 4 children (R.C)
Husband's desire for children	X17	Three categories were identified (0=Want more, 1= Both want same, 2= Want fewer) and represented by two binary variables: X17,1=1 if Both want same, otherwise=0 X17,2=1 if Want fewer, otherwise=0 Want more (R.C)

Note: R.C: Reference Category
F.P: Family Planning

The results of logistic regression showing the likelihood of intention to use contraceptive methods by non users are seen in table (3.5). The fitted model is good as the percentage of correctly classified cases is 78.4 percent. This percentage means that if data on any group of women with characteristics analyzed in this study is put in the equation with an aim of studying factors determining the intention to use contraceptive methods, about 78.4 percent of them will be correctly classified according to these characteristics.

Based on the results from table (3.5), the logistic regression results of the likelihood of intention to use at least a contraceptive method can be written as follows:

$$\begin{aligned} \ln (P_i/1-P_i) = & -4.341 + 2.297X_{1,1} + 1.466X_{1,2} + 0.448X_2 - 0.292X_3 + 1.004X_{4,1} \\ & + 0.721X_{4,2} + 0.587X_{4,4} + 0.533X_{12} + 2.564X_{13} + 1.388X_{14} \\ & - 0.300X_{15} + 0.497X_{17,1} \end{aligned}$$

Note: The equation contains the significant variables only.

Intention to use a contraceptive method and age of women are significantly associated. Currently married women aged 25-34 were 9.94 times more likely to intend to use than those aged 15-24 with a high probability of intention to use of 0.90. Women aged 35-49 were also 4.32 times more likely to have an intention of use in future than those aged 15-24 with a probability of intention to use of 0.81. The intention to use contraception in the future was high among young women who may not have produced their desired number of children and still have a longer reproductive span compared to older women whose likelihood of intention to use may be low because of reduced fertility as a result of old age.

Intention to use contraceptive methods was significantly influenced by the number of living children. As the number of living children increases the likelihood of currently married women of intending to use contraceptive methods increases also. Currently married women who had 3 living children and more were 1.56 times more likely to be intending to use a contraceptive method than those who had less than 3 living children, with a probability of intention to use of 0.61. One of the reasons why most women intend to use in future was to terminate child bearing after producing their desired family size.

Intention to use and place of residence were negatively and significantly related. Women living in urban areas were 0.74 time less likely to have intention to use a contraceptive method than those in rural areas, with a probability of 0.42. This may be due to the fact that women living in urban areas were more likely to be using contraception compared to their counterparts living in rural areas.

Table (3.5)
**Summary of Logistic Regression Results for the Determinants of Intention to Use
 a Method of Contraception**

Variables	Beta	Standard Error	Significance Level	Odds Ratio	Probability
Age of Women					
15-24 (R.C)					
25-34	2.297	.192	.000**	9.943	.908
35-49	1.466	.125	.000**	4.333	.812
Number of Living Children					
Less than 3					
3 +	.448	.134	.001*	1.565	.610
Place of Residence					
Rural (R.C)					
Urban	-.292	.149	.050*	.747	.427
Region/Province of Residence					
Kigali City (R.C)					
Northern	1.004	.285	.000**	2.728	.731
Southern	.721	.164	.000**	2.057	.672
Eastern	.129	.138	.350	1.138	.532
Western	.587	.143	.000**	1.798	.642
Visited Health Facility last 12 Months					
No (R.C)					
Yes	.533	.104	.000**	1.704	.630
Women's Attitude towards FP					
Disapproves (R.C)					
Approves	2.564	.200	.000**	12.983	.928
Husbands' Attitude towards FP					
Disapproves (R.C)					
Approves	1.388	.122	.000**	4.007	.800
Ideal Number of Children					
Less than 4 (R.C)					
4 +	-.300	.136	.027*	.741	.425
Husband's Desire for more Children					
Wants more (R.C)					
Both want the same	.497	.153	.001*	1.644	.621
Wants few	.202	.117	.085	1.224	.550
Constant	-4.341				
Percentage of correctly classified cases			78.4		

Source: Computed by the researcher using RDHS 2005

Note: R.C: Reference Category

F.P: Family Planning

* - Significant at P < 0.05

** - Significant at P < 0.001

Province/Region of residence has a significant influence on intention to use. Women from Northern Province were 2.72 times more likely to intend to use a contraceptive method than those from Kigali City (which is the most urbanized area in the country, and the reason why they have less intention to use is because many among them were using) and the probability of intention to use was 0.73. Northern Province is one of the densely populated areas in the country and programs to space or limit child bearing have been going on for some time but still the prevalence rate is very low in this province. Women from Southern Province were 2.04 times more

likely to intend to use contraceptive methods than those in Kigali City and the probability of intention to use was 0.67. Currently married women who live in the Western Province were 1.79 times more likely to intend to use a contraceptive method than those residing in Kigali City and the probability of intention was 0.64.

Many health centers in Rwanda offer family planning services among other things and women who visit such centers, especially for reproductive health issues are told about the use of contraception. Such interpersonal communication makes women get information about family planning directly which may make them consider adopting contraceptive use in future. As the table shows, visited health facility in the last 12 months has a significant influence on intention to use in future. Currently married women who visited a health facility were 1.70 times more likely to intend to use contraceptive methods in future than those who did not, and the probability of intention to use was 0.63

Approval of family planning is an incentive of contraceptive use and currently married women who have a positive attitude are those expected to be intending to use in future. As results in the table show, intention to use in the future and women's approval of family planning are positively and significantly associated. Currently married women who approved of family planning were 12.98 times more likely to have an intention to use in future than those who did not and with a high probability of intention to use of 0.92.

Currently married women whose husbands approve of family planning may be motivated to adopt contraceptive use in future because of their husbands' positive attitude since men are the main decision makers on matters concerning childbearing. As the table shows, intention to use and husbands' approval of family planning are significantly associated. Women whose husbands approved of family planning were 4 times more likely to have an intention of using a contraceptive method in future than those whose husbands did not and with a probability of 0.80 of intending to use.

Intention to use contraceptive methods is negatively and significantly influenced by the ideal number of children a couple would like to have. Women whose ideal number of children was 4 and more were 0.74 time less likely to have intention to use a contraceptive method than those whose ideal number of children was less than 4, with a probability of 0.42 of intention to use.

There is positive and independent association between intention to use a contraceptive method and husbands' desire for children. Currently married women whose husbands, both of them, desire the same number of children were 1.64 times more likely to have intention to use contraceptive methods in the future than those who wanted more children, with a probability of intention of 0.62.

4. CONCLUSION AND RECOMMENDATIONS

4.1 Conclusion

The aim of this study is to examine the levels, trends and differentials of methods of contraceptive use among currently married women, and also to analyze the determinants of contraceptive use. The main data used in this study were from the Rwanda Demographic and Health Survey 2005 for analysis, but also the ones of 1992 and 2000 for comparison. The study uses the chi-square test to measure the association between the response variables (current use and intention to use contraceptive methods) and the predictor variables, while the logistic regression

model is used to analyze the determinants of contraceptive use. Following are the main findings, which were observed influencing contraceptive use in Rwanda:

- The study shows that the prevalence rate of contraceptive methods among currently married women was 17 percent in 2005 including 10 percent for modern methods and 7 percent for traditional methods.
- It shows that, the level of knowledge of contraceptive methods in 2005 was very high for any method (97.9 percent) among currently married women; it was 97.5 percent for modern methods and 79.7 percent for traditional methods.
- After examining the current use of contraceptive methods, the study shows that, the level of current use is very low (17 percent) despite the high level of knowledge of the methods. The highest prevalence rate of current use of contraception was seen among those women living in Kigali City (42 percent), those who live in urban areas (32 percent), those women with 3 living children and more (21 percent) and those who are educated (20 percent) while the lowest level of current use was seen among women aged 15-19 years with about 3 percent. It was also high among those women who were exposed to mass media, those exposed to interpersonal communication, those who had a positive attitude towards family planning use and those whose fertility preference was low. The chi-square test of association indicates that there is a relationship between almost all the selected variables and current use of contraceptive methods, except with women's work status and visited by a family worker for the last 12 months before the survey.
- The intention to use contraceptive methods among currently married women non users was slightly high in Rwanda, 59 percent compared to 41 percent who do not want to use methods of contraception in the future. The intention to use contraceptive methods was high among young women, those with less than 3 living children, those living in urban areas, those living in Northern Province, those who were educated, those who were working, those who were exposed to any mass media, those who were exposed to interpersonal communication, and those whose fertility preference was low. Clear differentials of intention to use contraceptive methods were seen among married women and husbands who approve of family planning (68 and 77 percent respectively) compared to those who do not approve (12 and 38 percent respectively).
- The logistic regression results of likelihood of current use of contraception model show that women living in urban areas, those living in Northern province, those educated women, those whose husbands were educated, those who heard of family planning message on the radio and read about it in the newspaper, those who visited health facility last 12 months, those women and their husbands who approved of family planning use were the strongest predictors of current use of contraception in Rwanda. Also the number of living children and the ideal number of children of a couple influenced the likelihood of current use of contraception.
- Results based on regression model reveal for intention to use in future that, women aged 25-34 and 35-49, those with 3 living children and more, those living in urban areas, those living in Northern, Southern and Western

provinces, those who visited a health facility in the last 12 months, those women and their husbands who approved of family planning use, those whose ideal number of children were 4 and more and those women whose husbands desired the same number of children like them were more likely to have future intention to use contraceptives. All the above predictors have shown positive and strong significance impact on intention to use contraceptive methods except for the ideal number of children and the place of residence (urban/rural) which showed less strong significance.

4.2 Recommendations

In order to increase the prevalence rate of contraceptive use, so as to reduce fertility in Rwanda, the following recommendations are suggested:

- Given that women's education was found to be a strong predictor throughout this study, the government policies have to promote more efforts to enforce compulsory education to implement large scale adult education in order to eradicate illiteracy on a national basis. This will not only help to reduce the gap between the knowledge and practice of contraception but also the demographic and socioeconomic development goals can be easily achieved.
- Given that there is a gap between the knowledge and practice of family planning as it is obvious from this study, policy initiatives require an IEC strategy and media campaigns, which will ensure that local-level interpersonal efforts to provide regular feed back to the programme of family planning at the national level about the realities on the ground and the sociocultural conditions that are hindering the delivery of services.
- Given that the attitude of couple towards family planning plays an essential role in the use of contraception, the interpersonal communication strategies should take into consideration the influence of spouses, both male and female in affecting reproductive choices and decisions at household level. In this regard, qualitative research on interpersonal communication should be undertaken to improve understanding of the process of family decision making, the attitudes and concerns of people in different social situations and their effects on fertility behavior.
- Given that the rural population represents the major population with low contraceptive use, the provision of doorstep family planning services through effective and well trained community based health workers, mobile service units in far rural areas appears to be appropriate and practical for expanding outreach services to rural women.

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