

Contribution of Contraceptive Use on Fertility Reduction in Rwanda

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Research note

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Abstract

Objectives: In this study, the contribution of contraceptive use on fertility rate reduction in Rwanda was assessed using the data from RDHS 2014/2015 and the sample was constituted with 5,954 household respondents where the targeted population were male between 15-59 years and female between 15-49 years of age, multinomial logistic regression was used to prove the full contribution of contraceptive use to the fertility reduction in the country in order to improve Rwandan's welfare.

Results: Compared to the traditional method and modern method it was found that 48.54% of male use modern method, while 5.39% uses traditional method; otherwise, 33.70% of female use modern method while 1.24% of female use traditional method, finally sexual and reproductive health programs should be encouraged and the parents must teach their children about the sexual and reproductive health (SRH) which will reduce the adolescent fertility which is rising day to day.

Introduction

Worldwide, 922 million women of reproductive age (or their partners) are contraceptive users. Among the 1.9 billion women of reproductive age (15–49 years) living in the world in (2019), 1.1 billion have a need for family planning, that means they are current users of contraceptives, 842 million use modern methods of contraception and 80 million use traditional methods or have an unmet need for family planning while 190 million women want to avoid pregnancy and do not use any contraceptive method, [1].

In Rwanda, the statistics by United Nations on the estimated prevalence of contraceptive use among women of reproductive ages (15–49 years) shows that in 2014, the 3,283,000 women of reproductive ages, 32.3% prefer to use any method, male and female sterilization are 0.1% and 0.8% respectively, pills are used at a rate of 5%, male condom was at 2.3%, rhythm (1.6%), and withdrawal at 1.3%, [1]

Rwanda has shown a rise in the use of contraception from 17–52% between 2010 and 2015 due to the promotion of family planning. Despite, the increase in number of contraceptive use there still a high rate of fertility rate which is the increase of population growth in Rwanda,[2].

Most of the methods of contraception either modern or traditional are allowed in this country and we encourage people to use them to have families who they are able to feed and who they wish to have in the future at the right time. Those methods will help people to prevent unwanted pregnancies and some methods can reduce the possibilities of being affected by HIV/AIDS. Therefore, this study will help families and the government to stabilize the number of children born per year which will lead to a sustainable population growth and hence economic development,[3]. The problem we want to address in this research paper is about how we can increase the number of people using the modern contraceptive methods in order to reduce the fertility rate hence, stabilizing the population growth of the country.

The purpose of this research paper is to examine whether there is a contribution of contraceptive use on fertility rate reduction in Rwanda.

Methods

Multinomial Logistic Regression and STATA have been used to explain the variation and contribution of every explanatory variable.

The explanatory variables (gender, province, religion, place of residence, education level, and age) and the response variable (Contraception). Logistic regression is given by

$$\ln\left(\frac{\hat{p}}{(1-\hat{p})}\right) = b_0 + b_1x_1 + b_2x_2 + \dots + b_px_p$$

Study setting

Rwanda is a land-locked country in the Great Rift Valley with a total population of about 12,663,116 in 2019, and the majority lives in the rural area where 17.6 % of the population is urban residents. Its population is equivalent to 0.17% of the total world population and the population density in Rwanda is 525 per Km² where the median age is 20 years,[4]. Basic on recent researches, it is shown that the fertility rate in Rwanda was 3.9 births per woman in 2020, which is reduced a half than it was in 1980 where fertility was about 8.4 births per woman (**Macrotrends, Rwanda Fertility Rate 1950–2021, 2021**) shows that Rwanda is taking a good step to reach the replacement level of 2.1 children per woman.

Data description

In this section of data description, the investigator will use the secondary data from Rwanda Demographic Health Survey (RDHS) 2014/2015 secondary data undertaken by National Institute of Statistics of Rwanda (NISR). The 2014–2015 Rwanda Demographic and Health Survey (RDHS) is a national sample survey directed at offering up-to-date information on the population of Rwanda, family planning, maternal and infant health, child survival, HIV/ AIDS and sexually transmitted diseases (STIs), reproductive health, and nutrition. RDHS 5 main objective is to obtain current information on demographic and health indicators including nutrition status of mothers and children, prenatal care, delivery and postnatal care, childhood diseases, pediatric immunization, and many others,[5].

The fifth RDHS targeted women aged 15–49 and men aged 15–59 from randomly selected households across the country and collected information about children under 5 years. The RDHS 2014–2015 is a nationally representative survey of 12,699 households, 13,497 women age 15–49, and 6,217 men age 15–59. A total of 12,793 households have been selected, 12,717 of which were occupied at the time of the survey. 12,699 of these households completed the household questionnaire, resulting in a reaction rate of 99.9 percent. In the 12,699 households surveyed, 13,564 women aged 15 to 49 were identified as eligible for an individual interview; interviews with 13,497 of these women were completed with a 99.5 percent reaction rate. Male interviews have been conducted in each second family. A total of 6,249 men aged 15–59 years were acknowledged in this household subsample. Of these men, 6,217 individual interviews were completed, with 99.5 percent reaction rate, [6]

Target Population

This research is mainly targeted by male and female of the ages between 15–49, as well as their families. The research used the sample of 5,954 household respondents which included the data on the target population, [7]. There are more variables and outcomes in the RDHS 2014/2015 set of data. The primary component evaluation was developed and established. The information about family planning, the various ways or methods that a couple can use to delay or avoid a pregnancy are listed in the questionnaires of RDHS 2014–2015 and questions about some characteristics of households including the method male or female use to prevent pregnancy such as male or female sterilization, IUD, Injectables, implants, pill, male or female condom, Lactational Amenorrhea Method (**LAM**), Rhythm Method, Standard Days Methods (SDM), Withdrawal, and Emergency Contraception.

Results

Table 1, shows the distribution of respondents according to the current use by method type;

In a sample of 5954 household responded 2,133 are male. 46.08% they do not use any method compare to female 980(65.08%). Modern method is used more compare to traditional method. 48.54% of male use modern method while 5.39% use traditional method, 33.70% of female use modern method while 1.24% of female use traditional method.

Table 1
Distribution of respondents according to current use by method type and their characteristics

Dependent variable		Contraception			
		No method	Traditional	Modern Method	Total
Independent variables					
Gender	Male	2133(46.08%)	247(5.39%)	2226(48.54%)	4586
	Female	980(65.08%)	17(1.24%)	461(33.70%)	1368
Province	Kigali	345(48.18%)	26(3.63%)	345(48.18%)	716
	South	789(53.24%)	44(2.97%)	649(43.79%)	1,482
	West	779(55.60%)	69(4.93%)	553(39.47%)	1,401
	North	373(43.07%)	45(5.20%)	448(51.73%)	866
	East	717(48.15%)	80(5.37%)	692(46.47%)	1,489
Religion	Catholic	1,048(47.23%)	105(4.73%)	1,066(48.04%)	2,219
	Protestant	1,523(54.45%)	114(4.08%)	1,160(41.47%)	2,797
	Adventist	329(45.82%)	38(5.29%)	351(48.89%)	718
	Muslim	59(41.26%)	5(3.50%)	79(55.24%)	143
	Jehovah witness	25(59.52%)	2(4.76%)	15(35.71%)	42
	No religion	17(58.62%)	0(0.00%)	12(41.38%)	29
Place of residence	Urban	629(47.76%)	56(4.25%)	632(47.99%)	1,317
	Rural	2,374(51.20%)	208(4.49%)	2,055(44.32%)	4,637
Education level	No	459(54.51%)	48(5.70%)	335(39.79%)	842
	Primary	623(47.89%)	64(4.92%)	614(47.19%)	1,301
	Secondary	100(40.32%)	18(7.26%)	130(52.42%)	248
	Tertiary	61(38.61%)	7(4.43%)	90(56.96%)	158
Age group	15–19	99(66.44%)	3 (2.01%)	47(31.54%)	149
	20–24	624 (56.42%)	25(2.26%)	457(41.32%)	1,106
	25–29	768(46.38%)	56(3.38%)	832(50.24%)	1,656
	30–34	734(48.32%)	52(3.42%)	733(48.26%)	1,519
	35–39	452(49.34%)	66(7.21%)	398(43.45%)	916

Dependent variable	Contraception			
	No method	Traditional	Modern Method	Total
40–44	246(52.34%)	42(8.94%)	182(38.72%)	470
45–49	80(57.97%)	20(14.49%)	38(27.54%)	138

However, eastern province has a higher percentage of using the three types of method compare to other province and followed by southern province. 48.15% of people in Eastern province use traditional method, 5.37% use traditional and 46.47% use modern method. Northern Province has a lower percentage of using the three types of method where 43.07% of people in Northern Province use traditional method, 5.20% use traditional method and 51.73% of modern method, and it is the first province in using modern method compare to other province. Catholic and Protestant have a higher percentage of using the three type of method compare to other Religion. 47.23%, 4.743%, 48.08% for Catholic and 45.82%, 5.29% and 48.89% for Protestant respectively. The people with secondary school and tertiary level of education have a higher percentage of using the three method types of contraception compare to with those no education and Primary. 56.96% of people with tertiary education use modern method and 52.42% with secondary education use modern method compare with no education where it is 39.79%. The people between 25–29 age-groups have a higher percentage of using the three types of method compare to other age Group. 46.38%, 3.38%, 50.24% for age group 25–29 compare to age group of 45–49 where it is 57.97%, 14.4% and 27.54%. Finally, Table 2 shows, the logistic regression model constructed to evaluate how each independent variable affects a dependent variable.

$$Y (\text{contraception or use births control}) = -0.7310383X_1 - 0.1199391X_2 + 0.0602394X_3 + 0.152743X_4 + 0.1164763X_5 + 0.0096711X_6$$

Table 2

Logistic regression effects of selected independent variables on current contraceptive method

Variables	Coef.	Odds ratios	Std.Err	Z	P> Z	[95%Conf.interval]
Gender	-0.7310383	0.4527733	.0638205	-11.45	0.000	-.8561241 - -.6059524
Place of residence	-0.1199391	0.8736547	.0683653	-1.75	0.079	-.2539326 - .0140544
Province	0.0602394	1.077169	.0197987	3.04	0.002	.0214347 - .099044
Religion	0.0152743	1.01366	.0154084	0.99	0.322	-.0149256 - .0454742
Education level	0.1164763	1.130147	.0244533	4.76	0.000	.0685488 - .1644038
Age	0.0096711	1.047073	.0190742	0.51	0.612	-.0277137 - .0470559
Constant		1.795913				
Number of obs = 5,950						
LR chi2(6) = 172.24						
Prob > chi2 = 0.0000						
Log likelihood = -4926.7981						
Pseudo R2 = 0.0172						

For every unit added to gender by male and female, a -0.7310383 decrease the current contraceptive method used by male and female holding other variable constant. For every unit added to place of residence, a 0.1199391 decrease the current contraceptive method used in rural and urban area holding other variable constant. For every unit added to Province a, 0.060239 increase the current contraceptive method used in provinces holding other variables constants For every unit added to Religion, a, 0.152743 increase the current contraceptive method used in Religion holding other variable constant. For every unit added to education a, 0.1164763 increase the current contraceptive method used holding other variable constant. Finally, for every unit added to age a, 0.0096711 increase the current contraceptive method used holding other variables constant.

Discussions

Rwanda's fertility rate declined slowly up to 2005 when the country initiated one of the fastest fertility declines in human history over a five-year period. The total fertility rate fell markedly from 6.3 to 4.6 children per woman between 2005 and 2010, lifted by an impressive increase in contraceptive use. However, the rate of decline decelerated between 2010 and 2015, with the fertility rate dropping by less than half a child to 4.2 births per woman. Between 2005 and 2010, Rwanda recorded one of the fastest increases in the contraceptive prevalence rate globally, from 10.3–45.1%. However, the progress stalled between 2010 and 2015, with the percentage of married women using modern contraception increasing slightly from 45.1–47.5%

Consequently, the country did not achieve its 2012 target of increasing contraceptive use to 70% as set in the FP strategic plan 2012–2016 by increasing access to contraceptive use to all women in all reproductive age group between 15 up to 49 years and increase source of information to sexual and reproductive health and contraceptive use, by increasing contraceptive facilities like hospital and educate people about use of contraceptive method will reduce fertility and vice-versa.

Conclusion

The most commonly used method among currently married women is injectable 24%, the pills 8% and the implants with 8%. However, the use of contraception among current married women varies by age gradually rising from 35% among women age 15–19 to peak of 58% among women age 35 to 39 before dropping to 42% women age to 45 to 49 most women who have been sterilized are age 35 or old while young women are more likely to use non-permanently methods of contraception such injectable and pills. Therefore, Modern method is used more compare to traditional method where 48.54% of male use modern method while 5.39% use traditional method, 33.70% of female use modern method while 1.24% of female use traditional method. Moreover, the people between 25–29 age groups have a higher percentage of using pills compare to other method of contraception and the people who have completed secondary school have a higher percentage of using pills compare to other level of education. Finally, Policy makers should consider programs to keep girls in schools, at least up to secondary level. Furthermore, sexual and reproductive health programs should be encouraged in the adolescents.

Limitations

In 2010, Rwanda Demographic Health survey showed that 26% of women stated that the distance to the hospitals is a problem for family planning use. Therefore, Rwanda is trying to distribute the family planning services all over the country, in all districts in order to solve the issue so that people in all villages can access those facilities through the community-based provision of Family planning. Some facilities are expensive like injectable contraceptives, intrauterine devices, pills but others are free provided in all hospitals like condoms. Therefore, there is a need for advocacy on how many contraceptive facilities can be distributed around the communities and to provide the information to people about the use of contraception.

Abbreviations

WHO: World Health Organization

NISR: National Institute of Statistics of Rwanda

RMOH: Rwanda Ministry of Health

FP: Family Planning

ICPD: International Conference on Population and Development

TFR: Total Fertility Rates

UN: United Nations

RDHS: Rwanda Demographic and Health Survey

SRH: Sexual and Reproductive Health

SRHR: sexual and reproductive health and rights

IUDs: Intra-uterine Devices

SDGs: Sustainable Development Goals

MDGs: Millennium Development Goals

HIV: Human Immunodeficiency Virus

AIDS: Acquired Immunodeficiency Syndrome

UNESCO: United Nations Educational, Scientific and Cultural Organization

UNFPA: United Nations Population Fund

WEF: World Economic Forum

UNDESA: United Nations Department of Economic and Social Affairs.

CPR: Contraceptive Prevalence Rate

Declarations

Authors' contributions

Mutabazi David contributed to the Conception and study design, Data analysis and interpretation, Roger Muremyi participated in Manuscript revision and final approval. All authors approved final version of the manuscript.

Competing interests

The authors declare that they have no competing interests.

Ethics approval and consent to participate

A cooperation agreement between the University of Rwanda and National Institute of Statistics of Rwanda follows the rules of joint controlling the distribution of the data, and the data can be found online at www.statistics.gov.rw . All head of households whom were interviewed have agreed to conduct a survey to get these data.

Availability of data and materials

Not applicable.

Consent for publication

Not applicable.

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