

**FACTORS INFLUENCING UPTAKE OF
CONTRACEPTIVE SERVICES AMONG
UNDERGRADUATE STUDENTS AGED 18-35 YEARS
AT JOMO KENYATTA UNIVERSITY OF
AGRICULTURE AND TECHNOLOGY, KENYA**

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KENYA**

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**A Thesis Submitted in Partial Fulfilment of the Requirements for the degree of
Masters of Science Degree in Public Health in the Jomo Kenyatta University of
Agriculture and Technology**

2016

DECLARATION

This thesis is my original work and has not been presented for a degree in any other university.

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This thesis has been Submitted for examination with our approval as the University supervisors.

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DEDICATION

I dedicate this research work to future scholars.

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LIST OF ABBREVIATIONS AND ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
AFY	Advocates for Youth
ARH	Adolescent Reproductive Health
BCC	Behaviour Change Communication
CBS	Central Bureau of Statistics
DRH	Department of Reproductive Health
ERC	Ethical Review Committee
FP	Family Planning
GOK	Government of Kenya
HIV	Human Immunodeficiency Virus
ITROMID	Institute of Tropical Medicine and Infectious Diseases
IUCD	Intrauterine Contraceptive Device
JKUAT	Jomo Kenyatta University of Agriculture and Technology
KAIS	Kenya AIDS Indicator Survey
KAP	Knowledge, Attitudes and Practices
KDHS	Kenya Demographic and Health Survey
KEMRI	Kenya Medical Research Institute
KES	Kenya Shilling

KHRC	Kenya Human Rights Commission
KII	Key Informant Interview
KSPA	Kenya Service Provision Assessment
MDG	Millennium Development Goals
MOH	Ministry of Health
NASCOP	National AIDS and STI Control Programme
NHPC	National and Housing Population Census
PID	Pelvic Inflammatory disease
PMTCT	Prevention of Mother to Child Transmission
RH	Reproductive Health
RHRA	Reproductive Health and Rights Alliance
STDs	Sexually Transmitted Diseases
STIs	Sexually Transmitted Infections
SPSS	Statistical Package for Social Science
SSC	Scientific Steering Committee
TL	Tubal Ligation
USAID	United States Agency for International Development
UN	United Nations
UNAIDS	United Nations Programme on HIV and AIDS

UNFPA	United Nations Fund for Population Activities
UNIFEM	United Nations Development Fund for Women
VCT	Voluntary Counselling and Testing
WHO	World Health Organization

DEFINITION OF TERMS AS USED IN THE STUDY

- Youth** World Health Organization (2006) defines youth or young adult as one who is 15-24 years.
- Uptake** This can be described as the use that is made of something that has become available (Wehmeier, 2010).It can also be defined as the acceptance or adoption of a new product or idea.
- Contraceptive** This is a method or device to prevent the fertilization of the human ovum (Pillitteri, 2007).
- Unsafe abortion** The termination of an unwanted pregnancy by persons lacking the necessary skills or in an environment lacking minimal medical standards, or both (WHO, 2010).

ABSTRACT

Contraceptives offer protection against unwanted pregnancy and some sexually transmitted infections including HIV. Interventions to promote contraceptive use are efforts to reduce complications and deaths from unwanted pregnancy and to slow the spread of HIV/AIDS transmission. This study sought to determine the prevalence and factors associated with uptake of contraceptives among undergraduate students at (JKUAT), given that majority of the students fall in 18-35 year's age bracket. A cross-sectional study design was used which adopted quantitative (through self-administered questionnaires) and qualitative (through KII) approaches. A sample size of 436 was used for the quantitative and 3 staff from the health center for the qualitative data. Quantitative data was entered into STATA v 9.2 (Strata Corp LP, Texas, and USA) and cleaned prior to analysis. Factors associated with contraceptive use were analyzed using both bivariate and multivariate analysis. The data from KII was subjected to a manual thematic content analysis using general purpose software tools using Microsoft Word. The findings of this study revealed that among 436 students, 55% (240) had experienced sexual intercourse. The overall level of contraceptives use was low 34.2% (149). The level of awareness on contraceptives was 96.1%. Contraceptive service provider attitude ($P=0.001$), affordability/accessibility/safety ($P=0.001$) and reason for use ($P=0.001$) were significantly associated with contraceptive uptake. Majority (72%) of students are involved in risky sexual behaviour practices. Condom was the most commonly used contraceptive (54.8%). Majority of students (60%) obtain contraceptives over the counter in pharmacies. It was concluded that the uptake of contraceptive remains relatively low (34%) despite the high level of awareness (96.1%). Contraceptive costs, availability, sources, provider's attitude and students' contraceptive attitude and practices play a great role in contraceptive uptake. It was recommended that more enhanced contraceptive information is required aimed at improving the attitude of students and health care providers for the purposes of contraceptive dissemination and use. Strategies to educate the university students on benefits of contraceptive use should be developed by university management and ministry of health to improve acceptability and utilization of the services.

CHAPTER ONE

INTRODUCTION

1.1 Background Information

Contraceptive use is a human right and is identified as a priority in the National Reproductive Health Policy (MOH, 2007). All individuals have the right to access the services, including all pertinent data regarding benefits and scientific progress made in the area of contraception. A rights based approach on the provision of contraceptives assumes a holistic view of clients, which includes taking into account client's sexual and reproductive health (RH) care needs. Appropriate eligibility criteria and practice recommendations in helping clients choose and use a contraception method need to be considered (WHO, 2006). There are several methods of contraception, which include oral contraceptives, injectables, emergency contraceptive pills and intra- uterine devices.

Study findings in Kenya indicate high percentage of sexually active students and a low percentage of contraceptive use (Mutungi, 2006). Some studies indicate high morbidity and mortality cases among this group that have been attributed to unsafe abortion, complications associated with child birth and HIV/AIDS (KDHS, 2003). NASCOP indicates higher levels of STDs cases among youth than adults. Youth are more at risk with respect to STIs and HIV/ AIDS (NASCOP, 2002). Kenya still has a large unmet need for contraceptive and family planning services generally, estimated at 25.6 percent in 2011.

Worldwide, the estimated total abortions range between 36-53 million yielding an annual rate of 32-46 million abortions per 1,000 women of reproductive age. In Africa alone, over 1.5 million abortions are procured annually, while in Kenya it is approximated that about 300,000 abortions are procured each year. Unsafe abortion is an important global public health issue. Globally, 20 million unsafe abortions take place every year, with predominance in developing countries (WHO, 2006).

According to a study in Nigeria (Lagos State University), abortion during adolescence and youth results in deaths and undesirable health consequences such as barrenness, sterility, infections of the womb, perforation of uterus amongst others (Ajuwon *et al.*, 2006). In the same country 50% of maternal deaths are adolescents and youth due to unsafe abortions while abortion complications account for about 72% of all deaths among the young girls (Ademola, 2001).

Unsafe abortion is a major public health problem in low and middle income countries. Young and unmarried women contribute a high risk group for unsafe abortions. It has been estimated that widespread use of emergency contraception may significantly reduce the number of abortion related morbidity and mortality among university students in Cameroon (Kongnyuy *et al.*, 2007).

In Kenya, complications of unsafe abortion contribute 30-40% of all maternal deaths, far more than the world wide average of 13%, making unsafe abortion a significant cause of maternal mortality in the country which stands at 486/100,000 live births (KDHS, 2010).

According to a study carried out by Innovations for Poverty Actions on the magnitude of unsafe abortion in Kenya, at least 2,600 women die from this problem and 21,000 more women are hospitalized annually with complications from incomplete and unsafe abortion. More than half of these are youth.

Globally about 50% of all new HIV infections are among youth. Estimated 33.1 million people aged 15-24 years were living with HIV in 2011 and 60% of this population is in the sub Saharan Africa (UNAIDS & WHO, 2007). HIV/AIDS is the leading cause of death for both men and women of ages 15-29 years in sub Saharan Africa (UNAIDS, 2007). In Kenya 1.3-1.4 million people are living with HIV, 76,000-104,000 newly infected 80,000 AIDS related deaths. 33% of the newly infected in Kenya are the youth (UNICEF, 2011)

Awareness of emergency contraceptive pills among university students in Kenya (39%) and Ghana (43.2%) is lower than in USA (86%) and Jamaica (84%) (Muia *et*

al., 2000). Hence, sexual health of youth in the university is a priority for Kenyans. The government and parents have put a lot of resources in the universities to educate the youth, so that they can be productive to the nation in future. This goal may not be achieved if sexual health is not addressed due to discontinuity, delay or even death related to delivery and unsafe abortion complications. Unwanted and early pregnancies, and infection with STIs, including HIV; are two of the most serious sexual reproductive health outcomes of early and unprotected sex (Askew, 2002; Mense *et al.*, 2001).

According to a study at JKUAT, prevalence of condom use among the students was 72.8%. Majority of students (94.6%) were single and 66.2% had experienced sexual intercourse (Kithuka, 2012). Majority of students used condoms to prevent pregnancies. Use of condoms alone may not prevent unintended pregnancies and hence unsafe abortions which is a public health concern (WHO, 2006). There is need therefore to carry out a study on other contraceptive methods which can be combined with condoms to prevent the pregnancies, HIV and STIs.

The study, (Kithuka, 2012) also stated that students had adequate knowledge of HIV (79.8%) and on ways in which HIV/AIDS and other STIs are interlinked (70.9%), but knowledge on unintended pregnancies and unsafe abortions was not reported. Hence need to determine level of awareness and utilization of contraceptives and difficulty students may be having in accessing reproductive health services, particularly contraceptives.

1.2 Statement of the Problem

Unsafe abortion is an important global public health issue. Globally, 20 million unsafe abortions take place every year, with predominance in developing countries (WHO, 2006). In Kenya, complications of unsafe abortion contribute 30-40% of all maternal deaths, far more than the world wide average of 13%, making unsafe abortion a significant cause of maternal mortality in the country which stands at 486/100,000 live births (KDHS, 2010).

There are recorded reproductive health challenges experienced by youth in Kenya. Preliminary results of the 2010 Kenya Service Provision Assessment (KSPA) revealed that youth in need of sexual and reproductive health care do not access the existing services because the providers are often biased, unfriendly, or not adequately trained to serve sexually active youth. The proportion of facilities with youth friendly services was found to be 12% only (NCAPD, 2010).

Despite the challenges experienced by youth in Kenya, there is limited access to reproductive health services. The majority of the sexually active youth are not using contraception. This predisposes youth to a wide range of reproductive health problems, which include sexually transmitted infections including HIV/AIDS, teenage pregnancy, unsafe abortion practices and college dropout among others (NCAPD, 2010).

According to a study on attitudes towards abortion among university undergraduate students in Kenyatta and Nairobi University, factors that motivate female university students to procure abortion included fear of humiliation, fear of discontinuing studies and financial constraints (Nthangi, 2012). There is need to address these by establishing factors associated with contraceptive uptake.

Uptake of condoms in JKUAT is still low and uptake of other contraceptives is not known (Kithuka, 2012). The source of condoms is not known despite the university having a health centre that provides contraceptives. Due to the risks and health/social problems of unprotected sexual intercourse and failure to use contraceptives among students, there is need to determine rate of uptake of contraceptives and factors associated with this. There is also need to address the issues of students who may be sexually active and not using any contraceptive.

1.3 Justification

In recognition of the reproductive health challenges facing the youth, there is need for a study to establish the utilization of contraceptive services among youth in Jomo Kenyatta University (main campus) in Juja. This kind of study has not been carried

out before. The study helped to assess the magnitude of contraceptive services need for undergraduate students at JKUAT and their difficulties in accessing the same.

The factors that facilitate clients to use contraceptives are very important in providing satisfaction to consumers of services as well as prevent risk, which may occur if services were not provided. Exploring these factors would help the policy makers and all stake holders involved in provision of contraceptives or youth reproductive health services in improving the services and attract youth to use them. As a result, reproductive health problems such as unwanted pregnancy, complications of pregnancy, unsafe abortions and HIV/AIDS among the youth would be reduced.

The results of the study will enable identification of service needs of young people with respect to contraceptive services. Results will also provide information on level of awareness; utilization and difficulty undergraduate students may be having in accessing reproductive health services. The results will help to assess the quality of information students are having on contraceptives which often contribute to their attitude toward its use. The findings of the study will assist achieve millennium development goals (4, 5 and 6). These include reducing child mortality, improving maternal health and combating HIV/AIDS, malaria and other diseases.

1.4 Research Questions

1. What is the rate of uptake of contraceptive services among undergraduate students aged 18-35 years at Jomo Kenyatta University of Agriculture and Technology Juja, Thika?
2. What are the factors associated with uptake of contraceptive services among undergraduate students aged 18-35 years at Jomo Kenyatta University of Agriculture and Technology, Juja, Thika?

1.5 Objectives

1.5.1 General Objective

To establish the rate of uptake of contraceptive services and factors influencing the same among undergraduate students aged 18-35 years at Jomo Kenyatta University of Agriculture and Technology Juja, Thika.

1.5.2 Specific Objectives

1. To determine the rate of uptake of contraceptive services among undergraduate students aged 18-35 years at Jomo Kenyatta University of Agriculture and Technology Juja.
2. To establish the factors associated with uptake of contraceptive services among undergraduate students aged 18-35 years at Jomo Kenyatta University of Agriculture and Technology Juja.

CHAPTER TWO

LITERATURE REVIEW

2.1 Contraception

Contraception is defined as the facilitation of pregnancy prevention by providing information about the physiology of reproduction and methods to control conception. These include all the decisions an individual or couple make about having children. These usually are whether and when to have children, how many and their spacing. The term "family planning" is often used as a synonym for "birth control." Family planning, however, does not only involve contraception but also takes into account planning your child's birth for specific times (possibly by spacing births a few years apart from one another) and planning for a child when you have challenges conceiving one. While there is no ideal method of contraceptive, there is a safe and effective method for every woman. Contraception methods vary according to their convenience, cost, effectiveness, side effects, risks and benefits for the individual. Contraception provides confidential, low-cost, preventative health care to both females and males to help with their sexual and reproductive health needs. (Pillitteri, 2007).

2.2 Importance of Contraception

An analysis of the contribution of contraception and family planning to the Millennium Development Goals (MDGs) by Moreland and Talbird (2006) showed that satisfying unmet family planning needs in Kenya would avert 14,040 maternal deaths and 434,306 child deaths by the MDG target date of 2015. In a study carried out by USAID/HPI (2007), it was noted that the cost savings in providing services to meet MDGs outweigh the additional costs of contraception and family planning by a factor of almost 4 to 1. Specifically, the total cost of contraception and family planning estimated at \$7 million, which implies that total savings will be \$200 million (Moreland & Talbird, 2006).

Contraception and family planning services offer various economic benefits to the household, country and the world at large. Family planning permits individuals to influence the timing and the number of births which is likely to save lives of children. Secondly, by reducing unwanted pregnancies, contraceptive service can reduce injury, illness and deaths associated with child birth, abortions and sexually transmitted infections (STIs) including HIV/AIDS (Walker, 2008). The greatest impact of contraception on maternal mortality is for those women who are <20 years of age. While it is a sensitive issue in many cultures, delaying pregnancy by increasing contraception use among both married and unmarried women <20 could save many lives (Santeli, 2007).

Contraception reduces deaths from AIDS. The consistent and correct use of condoms can significantly reduce the rate of new infections (NASCO, 2002). Many HIV-positive women and couples want to avoid becoming pregnant and many effective methods are available to assist them. By averting unintended and high-risk pregnancies, contraception reduces mother to child transmission of HIV (PMTCT) and the number of AIDS orphans, whose life chances are seriously diminished because they have lost a parent, particularly the mother (Smith *et al.*, 2009).

2.3 Contraception Methods

2.3.1 Barrier Methods

They prevent the sperm from gaining access to the upper reproductive tract and making contact with the egg. The methods include male and female condoms, spermicides, diaphragms and cervical caps (MOH, 2007).

2.3.2 Natural Methods

Natural contraception involves learning to achieve or avoid pregnancy by applying proper sexual behaviour during the fertile and infertile phases of the menstrual cycle. The methods include Billing's method, Basal body temperature, Symptom-thermal method; Calendar method, Standard day's method and Coitus interrupt us. The

mechanism of action is abstinence during the fertile period so that the sperm and egg do not meet (MOH, 2007).

2.3.3 Voluntary Surgical Intervention

This is surgical contraception by permanently terminating fertility voluntarily. The methods include tubal ligation (TL) and vasectomy. Voluntary surgical intervention is permanent and irreversible and is recommended to those families who are sure they have the desired family size (MOH, 2007).

2.3.4 Intrauterine Contraceptive Devices (IUCDs)

The IUCD is a flexible device that is inserted into the uterine cavity by a trained service provider. This is a safe and highly effective, long acting contraceptive method. The IUCD does not affect breastfeeding, interfere with sexual intercourse or have hormonal side effects. The most important considerations for clients choosing a method are effectiveness and safety (MOH, 2007).

2.3.5 Emergency Contraception

Emergency contraception prevents pregnancy after unprotected sex. Emergency pills contain the same hormones used in oral contraceptives. They can be obtained by using higher doses of regular packets of pills or by buying pills designed for that purpose. They are not intended to be used as a regular contraceptive method, but can help a woman avoid pregnancy if used up to five days after having unprotected sex (Smith *et al.*, 2009)

2.4 Contraception and the young people

Young people often have no access to the contraceptive services and the education they need (Bankole, 2007). Some findings in Kenya indicate high percentage of sexually active students and a low percentage of condom use among the sexually active students (Mutungi, 2006). Some of the biggest barriers are cultural taboos about young people's sexuality. To address population issues, combat maternal death and give young people a good health start on their lives, their right to

reproductive health and contraception information and services must be promoted and change in policies and regulations encouraged (UNAIDS, 2007).

Currently, many societies disapprove premarital sex and consider reproductive health care for young people inappropriate. As a result, parents, educators and health care providers often are unwilling to give young people the information and services needed about contraception. Young women consistently report less contraceptive usage than men, evidence of their unequal power in negotiating safer sex or restrictions on access to services such as lack of information, shame, laws, health provider attitudes and practices or social norms (Nare *et al.*, 2007).

According to United Nations Fund for Population Activities (UNFPA), young people may hesitate to visit contraception/ family planning clinics because of lack of usual consent. Inconvenience locations and hours, high costs of some methods, limited contraceptive choices and supplies, and negative or judgmental provider attitudes. Laws and policies also may restrict youth's access to information and services, for example, by limiting contraceptive and family planning services to married people or those over 16 years, or requiring parental or spousal consent (Santelli, 2007).

2.5 Myths and Misconceptions about Family Planning

2.5.1 Oral Contraception

Pills are believed to cause weight gain and infertility which is not true. The progesterone in the pill can increase appetite which may result in weight gain (Rajaseker & Bigriggs, 2000). Pills do not cause infertility. A woman (or her partner) may have always had a fertility problem but it was never realized before because they were not trying to get pregnant. It may take a few months for cycles to return to normal for women who were on the pill.

2.5.2 The Intra-Uterine Contraceptive Device

There is a myth that indicates that intra-uterine contraceptive devices prevent pregnancy by causing an abortion. The devices might cause a miscarriage if accidentally inserted in a pregnant woman, or in the highly unlikely event of a woman getting pregnant with an IUCD in place. However, because the IUCD is highly effective in preventing fertilization, risk of abortion is almost non-existent if pregnancy is ruled out in all clients prior to insertion. IUCDs are very safe; they do not cause pelvic inflammatory disease (PID) in low-risk couples. Risk of infection is very low when the IUCD is inserted using the "no-touch" technique in women who have no cervical infection. Client who already has gonorrhoea or Chlamydia at the time of insertion, or if the service provider inserts the IUCD without maintaining sterility, there is a small risk of pelvic infection in the first four weeks after insertion. Prophylactic antibiotics are generally not recommended for IUCD insertion unless the risk for cervical, gonococci and chlamydia infections is high and facilities for STI screening are inadequate. In these cases, such prophylaxis might be considered. In any case, clients in these circumstances should be counselled on symptoms of PID, especially during the first month of insertion, and to return immediately if symptoms develop (MOH, 2007).

2.6 Young peoples' Reproductive Health

People under the age of 25 years represent nearly half of the world's population, giving them a powerful role in the world's health and future (Coley & Chase, 2009). Every year about 14 million young women give birth. Among the adolescent and young girls living in the developing world; there are 2.7 million unintended pregnancies in South Central and Southeast Asia, 2.2 million in Sub Saharan Africa and 1.2 million in Latin America and the Caribbean. Young people's sexual and reproductive health affects their lives and the health of the global community (Coley & Chase, 2009).

2.7 Youth, STIs and HIV/AIDS

The UNAIDS and UNICEF (2011), indicate that 34 million people are living with HIV/AIDS globally. Out of the population newly infected with HIV, 65% occurred in the sub-Sahara Africa region. Sub Saharan region also harbours 60% of the total population (33.2 million) of people living with HIV (UNICEF, 2011).

About 50% of all new HIV infections are among youth. Globally, an estimated 12 million people aged 15-24 years were living with HIV in 2007 and 60% of this population is in sub Saharan Africa. HIV/AIDS is the leading cause of death for both men and women of ages 15-29 years in sub Saharan Africa (UNAIDS, 2011). Even though the health of the youth in developing countries is improving and they are making the transition to adulthood with better chances of surviving into old age, HIV/AIDS and maternal mortality and morbidity continue to threaten youth's sexual and reproductive health (UNAIDS and UNICEF,2011).

The HIV/AIDS prevalence rate in Kenya is 7.4% among adults aged 15- 64 years (KAIS, 2007). The HIV/AIDS prevalence rate among youth aged 15 to 19 years is 2% while the prevalence rate for those aged 20-24 years is 5.8%. Females are the most vulnerable, with the prevalence rate among women aged 15-24 years higher (6.1%) as compared to men (1.5%); (KAIS, 2007). The study also indicates higher levels of STDs among youth than adults.

2.8 Youth and risky sexual behavior

Sexual activity is widespread among adolescents and youth in Kenya (Kibiru & Ezeh, 2007). In a study carried out among university students by Mutungi (2006), results showed that no changes in behaviour were evident with respect to either abstinence or number of sexual partners. According to the KDHS, over 80% of the adolescents aged 15-19 years do not believe they are at risk of contracting AIDS (KDHS, 2003).

In Ghana, students did not use condoms consistently and were not likely to use condoms when the relationship was considered stable because of trust (NASCO, 2002). High proportions of students in Kenya use condoms inconsistently. Consistent condom use with partners of unknown HIV status was higher in non-marital partnership such as boyfriends, girlfriends or casual partners (NASCO, 2002).

In Sub-Saharan Africa, a study by Santelli, (2007) indicated that by age of 20 years, at least 80% of the continent's youth have become sexually active. Poverty can force young girls to trade sex for money to supplement family income and/or pay school fees. The "sugar daddy" phenomenon that is characterized by older men engaging in sexual relations with younger girls who are presumed to be disease free is of particular concern. In some countries in Africa, the popular belief that sex with a virgin cures AIDS has led many older men to seek out younger female sex partners (NACC, 2010).

Despite the many recorded reproductive health challenges experienced by adolescents and youth in Kenya, there is limited access to reproductive health services. The majority of sexually active adolescents are not using contraception (MOH, 2007). This predisposes adolescents to a wide range of reproductive health problems, which include sexually transmitted infections including HIV/AIDS, teenage pregnancy, unsafe abortion practices and school dropouts among others. Kenya still has a large unmet need for FP services, estimated at around 25% in 2007 (MOH, 2008).

2.9 Unsafe abortions

Unsafe abortion is a major cause of maternal mortality and morbidity in the world (Bateman, 2007). Most of these abortions occur in developing countries where modern contraceptives are unavailable or not used. About one in eight pregnancy-related deaths worldwide is associated with unsafe abortion (Nour, 2008).

WHO reports that each year nearly 42 million women faced with unintended pregnancies have abortions, of which 20 million are unsafe, mostly in countries where abortion is illegal? According to WHO, approximately 68,000 women die annually as a result of complications of unsafe abortion; and between two million and seven million women each year survive unsafe abortion but sustain long-term damage or disease (UNDESA, 2006). WHO also report that in developed regions, nearly all abortions (92%) are safe, whereas in developing countries, more than half (55%) are unsafe. Worldwide, 48% of all induced abortions are unsafe (Chaudhuri, 2007).

A study by KHRC and KHRA (2010) in Korogocho slums, Nairobi indicates that abortion is an issue that has a real and dangerous impact on the lives of young women. Young women will continue to procure abortions as a solution to unwanted pregnancies. Information about contraception is scanty and poorly disseminated. Reproductive health facilities are not youth friendly and are therefore avoided by sexually active youth (KHRC and KHRA 2010).

2.9.1 Methods of unsafe abortion

The methods include breaking the amniotic sac with a sharp object or wire. This method can result in infection and injury to internal organs resulting in death. Pumping toxic mixtures like chili peppers and chemicals like alum or plant poison into the body of a woman .This can lead to toxic shock and death. Another method is self-administering of abortifacient drugs obtained illegally or by using drugs not indicated for abortion but known to result in miscarriage and/or uterine contraction (Walker, 2008).

2.9.2 Health risks of unsafe abortion

Unsafe abortion is a major cause of injury and death among women worldwide. It is estimated that approximately 20 million unsafe abortions are performed annually, with 97% taking place in developing countries. Unsafe abortion is believed to result in approximately 69,000 deaths and millions of injuries annually (Jewkes *et al.*, 2007). WHO have advocated a public –health approach to addressing unsafe abortion, the training of medical personnel, and ensuring access to reproductive-health services like contraceptives and family planning (Barer, 2006). Other risks include social stigma and economic burden to the individual, family, community and the country at large.

2.10 Reproductive health services in Kenya

Kenya has approximately 600 health facilities. However, not all offer comprehensive sexual reproductive health care (MOH, 2007). Even though there are significant gains achieved in Kenya’s health indicators, high maternal morbidity and mortality levels still persist, particularly those associated with prolonged and obstructed labour, unsafe abortion, haemorrhage, hypertensive disease of pregnancy, sepsis, anaemia, malaria, STDs and HIV/AIDS (KDHS, 2011).

There is adequate evidence both in the developed and developing world that voluntary counselling and testing (VCT) for HIV/AIDS leads to behaviour change. Despite this evidence, access to VCT services is limited to urban areas. Further, only a few existing VCT centres are youth friendly. Ministry of health emphasizes the need to target this group with behaviour change communication (BCC) to sustain delay in initiation of sexual activity and also provide a link to services.

2.11 Policies on reproductive health

Kenya has adopted the first ever National Reproductive Health Policy. This policy seeks to enhance the reproductive health through provision of a framework for equitable, efficient, and effective delivery of quality reproductive health (RH) services throughout the country. The policy also puts emphasis on reaching those in

greatest need and most vulnerable, like the university students. This provides a platform to address key emerging issues such as RH commodities, the prevention of mother to child transmission of HIV, emergency obstetric care, adolescent RH services, gender based violence, RH needs of persons with disabilities and RH/HIV integration (MOH, 2007).

Financing policy identifies resource mobilization, resource-pooling and purchasing of services and commodities that need to be considered in adapting WHO global reproductive health strategy at the country level. Integrating sexual and reproductive health care services is a policy that elaborates on action in WHO global reproductive health strategy, raising issues for consideration when integrating the component of sexual and reproductive health services in a broader health care context. Supportive legislative and regulatory framework is a policy that covers three aspects: developing national laws and policies that respect human rights, ensuring that national regulations and policies meet international standards and removing policy and regulatory barriers and restrictions (WHO, 2006).

CHAPTER THREE

MATERIALS AND METHODS

3.1 Study Site

The study was conducted at Jomo Kenyatta University College of Agriculture and Technology, main campus, a public university in Kenya, situated in Juja. This is in Thika district, 36 kilometres North East of Nairobi, along Thika superhighway. It offers courses in Technology, Engineering, Science, Architecture and Building sciences. The university has a strong research interest in the areas of biotechnology and engineering.

3.2 Study population

The study population consisted of undergraduate students aged 18-35 years from JKUAT main campus in Juja, Thika District.

3.3 Inclusion and Exclusion Criteria

3.3.1 Inclusion criteria

All undergraduate students who consented to participate in the study at JKUAT.

3.3.2 Exclusion criteria

All undergraduate students who did not consent to participate in the study at JKUAT.

3.4 Study design

A cross-sectional study design was used which adopted both quantitative (through self-administered questionnaires) and qualitative (through key informants) approaches.

3.5 Sampling

Simple random sampling was used to obtain the required number of respondents from the sampling frame (Targeted population- total number of all undergraduate students at JKUAT main campus which was 10,000) using computer generated random numbers. A sample size of 436 was used for the quantitative and 3 staffs from the health center for the qualitative data. The randomly selected students were traced through their Faculties / Departments / Courses using an internal memo.

3.6 Data Collection Tools

All the students who consented were issued with pretested self-administered questionnaire (Appendix I) and the key informants from the health center were interviewed (Appendix II). Pretested self-administered questionnaires (Appendix I) were used. The questionnaire had two parts which asked respondents about their background information (socio demographic characteristics) and factors associated with contraceptive uptake. KIs (Appendix II) were used to get information of the subject matter from the experts.

3.7 Sample Size determination

The quantitative sample size was determined using Fischer *et al.* (Mugenda1999) formula.

$$n = \frac{Z^2 pq}{d^2}$$

d²

Where n=Desired sample size

Z =Standard Normal deviation (1.96 for a 95% confidence level)

P = the proportion of the population having the characteristic being measured. (The proportion is known, 22%). Contraceptive prevalence rate among the youth in Kenya was 22% (KDHS)

$$P = 0.22$$

q = contact usually set at 1-p (0.78)

d=degree of accuracy will be set at 0.05

$$n = \frac{Z^2 pq}{d^2}$$

$$d^2$$

$$Deff=1.5$$

(Population was grouped in clusters reflecting faculty/depts.)

$$n = 1.96 \times 1.96 (0.22) (0.78) (1.5) / (0.05) (0.05)$$

$$= 395.531136$$

$$= 396 + (10\% \text{ non-response})$$

$$= 436$$

3.8 Data Analysis

Quantitative data was entered into STATA v 9.2 (Strata Corp LP, Texas, and USA) and cleaned prior to analysis. Qualitative data was analyzed by descriptive statistics using frequencies, percentages, cross-tabulations, medians, and modes. Factors associated with contraceptive use were analyzed using both bivariate and multivariate analysis. In bivariate analyses, Odds ratios (OR) and 95% confidence intervals (CI) for the association between contraceptive use and demographic or behavioral characteristics was calculated using Poisson regression method. In multivariate analyses, a manual backward elimination approach was utilized to reach

the most parsimonious model, including factors that were independently associated with contraceptive use at the significance level of $P \leq 0.05$. The data from KIs were subjected to a manual thematic content analysis using general purpose software tools using Microsoft Word (La Pelle, 2004).

3.9 Ethical considerations

Approval to carry out the study was sought from the Scientific Steering Committee (SSC) and Ethical Review Committee (ERC) (Appendix VII) through Center for public health research (CPHR) at KEMRI. Confidentiality was maintained.

CHAPTER FOUR

RESULTS

4.1 Characteristics of the study population

A total of 436 respondents consented and enrolled into the study, slightly over half of them (53.4%) were female and 46.6% male ($\chi^2 = 180.826$; $df = 1$; $P = 0.0001$) (Table 4.1).

The mean age of the 436 respondents was 21.59 years (range 18–29 years) with the majority (72%) aged 21 to 25 years, 27.1% aged 18 to 20 years and 0.9% aged 26 to 30 years ($\chi = 338.33$; $df = 2$; $P = 0.0001$).

90% were Christian compared to 10% who were either Muslims or from other religions. Majority (47.9%) were protestants, 40.6% were roman catholic, 6.2% Muslims and only 5.3% had undisclosed religious affiliation ($\chi^2 = 263.706$; $df = 3$; $P = 0.0001$). Majority (90.6%) were single, 5.7% married, 3.7% separated, 3.2% or divorced, 0.5% ($\chi^2 = 1002.99$; $df = 2$; $P = 0.0001$).

Only 9.2% of the respondents were pregnant or had given birth compared to 90.8% who were currently not pregnant or had not given birth ($\chi^2 = 290.68$; $df = 1$; $P = 0.0001$). For those who had given birth or become pregnant about 7.8% had 1 to 2 children and only 1.4% had 3 or more children ($\chi^2 = 651.21$; $df = 2$; $P = 0.0001$).

Most of the respondents (42.7%) were in the second year of study followed by (30.3%) in the third year, (15.4%) in the first year of study, (9.4%) in fourth year while (2.3%) were in the fifth and beyond years of study ($\chi^2 = 232.46$; $df = 4$; $P = 0.0001$).

Most of the respondents (67.9%) resided off campus and only (32.1%) resided on campus ($\chi^2 = 55.817$; $df = 1$; $P = 0.0001$). Most of these respondents (42.7%) resided alone, (39.7%) with fellow students, (13.8%) with parents, (2.1%) and (1.8%) with guardian and siblings respectively ($\chi^2 = 342.329$; $df = 4$; $P = 0.0001$).

Table 4.1: Characteristics of study population at JKUAT

Socio-Demographic characteristics	Sample size	
	No	%
Gender		
Male	203	46.6
Female	233	53.4
Age Group		
18-20	118	27.1
21-25	314	72.0
26-30	4	.9
Religion		
Catholic	177	40.6
Protestant	209	47.9
Muslim	27	6.2
Others	23	5.3
Marital status		
Married	25	5.7
Single	395	90.6
Divorced	2	.5
Separated	14	3.2
Given Birth		
Yes	40	9.2
No	396	90.8
Number of children		
None	396	90.8
1-2	34	7.8
3 and above	6	1.4
Year of Study		
1st year	67	15.4
2nd year	186	42.7
3rd year	132	30.3
4th year	41	9.4
>4 years	10	2.3
Residence		
On campus	140	32.1
Off campus	296	67.9
Reside With		
Parents	60	13.8
Guardian	9	2.1
Older brother/sister	8	1.8
Alone	186	42.7
Colleague	173	39.7

No - Number; % - Percentage;

4.2 Course of study among respondents

Majority of the respondents (20.4%) were pursuing Bachelor of commerce followed by (16.3%) Bachelor of mass communication, (15.8%) BSc engineering, (10.6%) Bachelor of purchasing and supply, (4.6%) Bachelor of Human Resource, (4.4%) Graduate studies and the least (0.7%) and (0.2%) pursuing Bachelor of Architecture and Law respectively as shown in figure 4.1

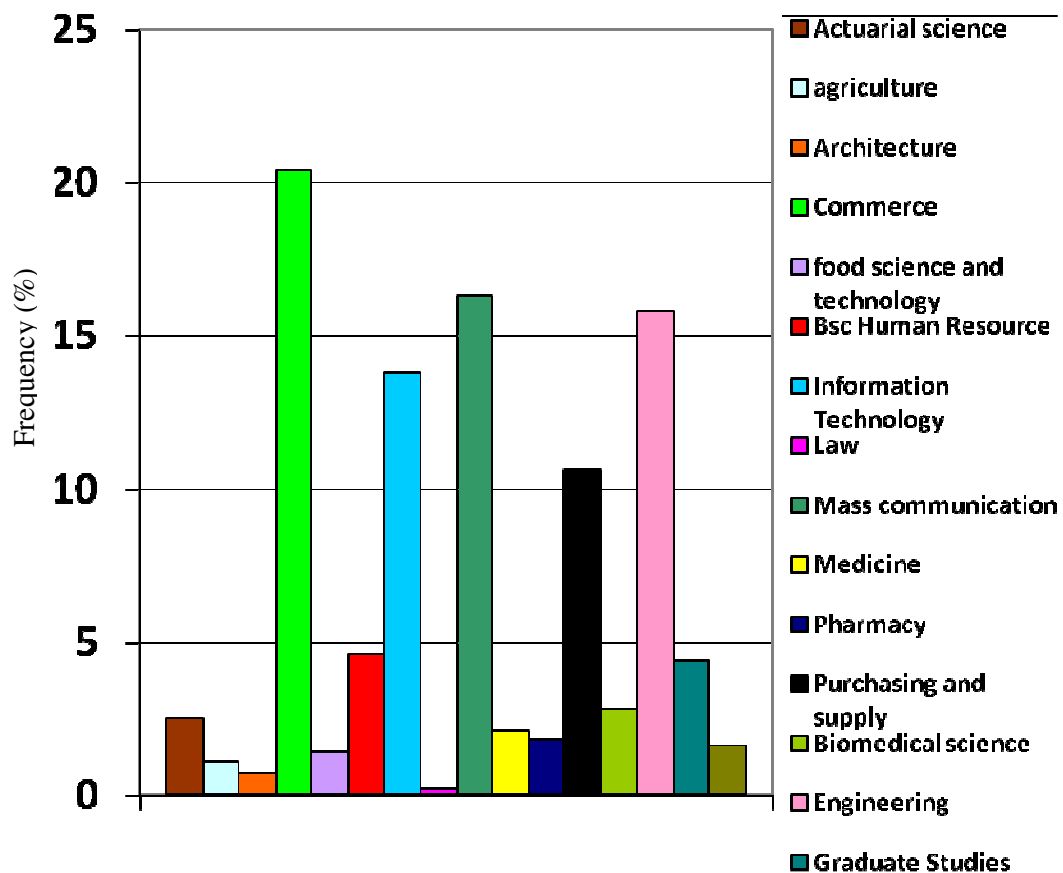


Figure 4.1: Courses undertaken by respondents of study at JKUAT
Courses undertaken

4.3 Sexual behavior and contraceptive use

Slightly over half of respondents (52.1%) had at least one sexual partner compared to 47.9% who reported not having sexual partner(s). This distribution was not significantly different between the two groups (Table 4. 2).

The mean age of sexual debut for respondents who had at least one sexual encounter was 17.68 years (range 10–24 years). Majority (62.8%) of the respondent had sexual debut between 16 to 20 years followed by (6.9%) 10 to 15 years and (4.1%) 21 to 25 years.

Almost all of the respondents (96.1%) were aware of contraceptives and only 3.9% stated not having any idea about contraceptives. The most common sources of information about contraceptives included 53.2% from print and electronic media, 17% from family, friends and peers, 6.9% books, internet and media and 3.4% from health facilities.

Sixty percent (65.1%) of the respondents had used at least one of the contraceptives and only 33.3% stated not having used. The most commonly used contraceptive was condom (54.8%), emergency pills (11.9%) and regular pills including injections (8%). Most of the contraceptives (60.6%) were obtained over the counter in pharmacies, 9.2% from staff/students clinic while 1.6% obtained their contraceptives from hospital, shops or supermarkets. Some of the reasons for using particular contraceptives included affordability (21.6%), safety and accessibility (17.4%) to prevent pregnancy,(15.1%) to prevent pregnancy plus HIV/STIs and 11% to prevent HIV/STIs.

Table 4.2: Respondents' sexual behaviour and contraceptive use at JKUAT

Contraceptive characteristic	Sample size		Pearson χ^2	df	P Value
	No	%			
Sexual partner					
Yes	227	52.1	0.743	1	0.389
No	209	47.9			
Age of sexual debut					
10-15	30	6.9	383.229	3	0.0001
16-20	274	62.8			
21-25	18	4.1			
Not stated	114	26.1			
Aware of contraceptive					
Yes	419	96.1	370.651	1	0.001
No	17	3.9			
Source of contraceptive information					
Books/Internet and Media	30	6.9	548.321	4	0.001
Family/Friends and Peers	74	17.0			
Health facility	15	3.4			
Not stated	21	4.8			
Print/Electronic Media	232	53.2			
Ever used contraceptive					
Yes	284	65.1	45.037	1	0.0001
No	145	33.3			
Type of contraceptive used					
Emergency contraceptive	52	11.9	130.698	2	0.002
Condoms	239	54.8			
Regular pills/injections/coil	36	8.0			
Source of contraceptive					
Pharmacy	264	60.6	204.769	2	0.001
Student/staff clinic	40	9.2			
Clinic, Hospital, Neighbour, shop/supermarket	7	1.6			
Reasons for using contraceptives					
Cheap/accessibility/safe	94	21.6	217.578	4	0.001
Not stated	152	34.9			
Prevent HIV/STIs	48	11.0			
Prevent pregnancy	76	17.4			
Prevent pregnancy and HIV/STIs	66	15.1			

No - Number; % - Percentage; χ^2 - Chi square; P Value- Level of significance

4.4 Uptake of Contraceptives among Respondents

When asked if they were currently using any contraceptives only 149/436 (34.2%) of the respondents reported using at least one of the contraceptives, 287/436 (65.8%) were not. (54.8%) reported utilizing condoms followed by 11.9% utilizing emergency pills and 8% utilizing regular pills including injectables and coils.

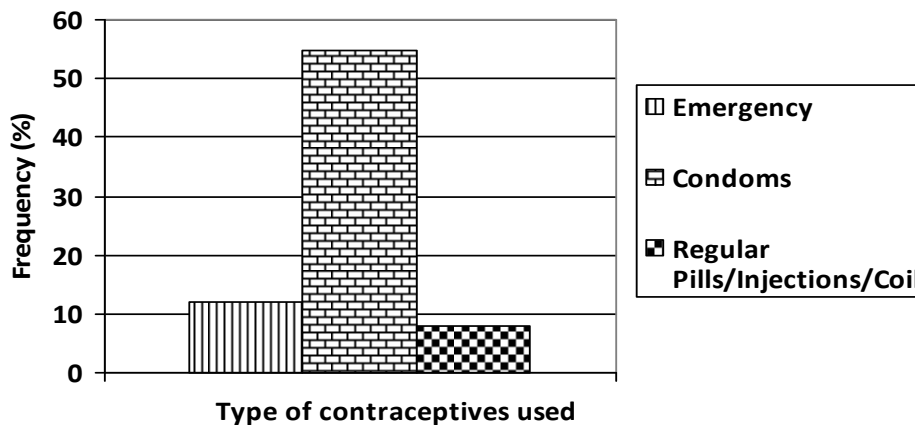


Figure 4.2: The types of contraceptives used by the students at JKUAT

4.5 Socio-demographic factors associated with contraceptive use

149/436 (34.2%) respondents reported using one of the many types of contraceptive compared to 287/436 (65.8%) who were currently not utilizing at least one type of contraceptive.

In bivariate analysis, respondents who were catholic, or protestants and Muslims were less likely to utilize contraceptives than those of other religious affiliations (5.3%), like traditional and *Akorino* just to mention a few. (OR 0.41, 95% CI 0.23 to 0.67), (OR 0.46, 95% CI 0.27 to 0.79), and (OR 0.35, 95% CI 0.15 to 0.84) respectively. Further, respondents who resided on campus (OR 0.55, 95% CI 0.37 to

0.94) were less likely to use contraceptives compared to those who resided off campus (Table 4. 3).

Respondents who had given birth (OR 1.53, 95% CI 1.02 to 2.457) were more likely to use one or more of the available contraceptives. Similarly, respondents who stayed alone (OR 2.49, 95% CI 1.33 to 4.67) were more likely to use contraceptives compared to those who stayed with parents (Table 4. 3).

In multivariate analysis, catholic and Muslim respondents were (OR 0.54, 95% CI 0.31-0.98) and (OR 0.37, 95% CI 0.15-0.92) respectively less likely to use contraceptives compared to students of other religions (OR 0.54, 95% CI 0.31 to 0.98) and (OR 0.37, 95%CI 0.37 to 0.94) respectively. Further, compared to respondents who stayed with parents, those who stayed alone (OR 2.4 95% CI 1.33-4.67) showed an increase in likelihood of utilization of contraceptives (Table 4. 3).

Table 4.3: Socio-demographic factors associated with contraceptive use at JKUAT

Socio-Demographic Characteristics	Sample size	Contraceptive utilization		P - value	Bivariate OR (95% CI)	Multivariate OR (95% CI)
		No	%			
Gender						
Male	203	76	37.44	0.277	1.19 (0.86-1.65)	1.13(0.81-1.58)
Female	233	73	31.33	Reference	Reference	Reference
Age Group						
18-20	118	32	27.12	0.936	1.08 (0.15-7.94)	0.19(0.02-1.52)
21-25	314	116	36.94	0.697	1.47 (0.21-10.57)	0.23(0.031-1.82)
26-30	4	1	25	Reference	Reference	Reference
Religion						
Catholic	177	53	29.94	0.001	0.41(0.23-0.67)	0.54(0.31-0.98)
Protestant	209	72	34.45	0.005	0.46(0.27-0.79)	NS
Muslim	27	7	25.93	0.020	0.35(0.15-0.84)	0.37(0.15-0.92)
Other	23	17	73.91	Reference	Reference	Reference
Marital status						
Married	25	13	52	0.989		
Single	395	131	32.91	0.989	ND	ND
Separated/Divorced	16	5	31.25	Reference	Reference	Reference
Given Birth						
Yes	40	20	50	0.045	1.53 (1.02-2.45)	1.52(0.39-5.81)
No	396	129	32.58	Reference	Reference	Referent
Number of children						
1-2	34	16	47.06	0.165	1.44 (0.86-2.42)	0.72(0.21-2.45)
3 and above	6	4	66.67	0.158	2.04(0.75-5.54)	NS
None	396	129	32.58	Reference	Reference	Reference
Course						
Sciences	124	39	31.26	0.54	0.89 (0.62-1.28)	NS
Arts	312	110	35.26	Reference	Reference	Reference
Year of Study						
1st year	67	15	22.39	0.302	0.55(0.18-1.68)	
2nd year	186	58	31.18	0.63	0.77(0.28-2.14)	
3rd year	132	50	37.88	0.916	0.94(0.34-2.62)	NS
4th year	41	22	53.66	0.589	1.34(0.46-3.89)	
>4 years	10	4	40	Reference	Referent	Reference
Residence						
On campus	140	31	22.14	0.004	0.55(0.37-0.82)	0.59(0.37-0.94)
Off campus	296	118	39.86	Referent	Referent	Reference
Reside With						
Guardian	9	0	0	0.985	ND	
Older brother/sister	8	2	25	0.687	1.36(0.31-6.15)	
Alone	186	85	45.7	0.004	2.49(1.33-4.67)	2.37(1.23-4.54)
Colleague	173	51	29.48	0.153	1.61(0.83-3.08)	1.95(0.97-3.93)
Parents	60	11	18.33	Reference	Reference	Reference

No - Number; % - Percentage; OR - Odds ratio; CI - confidence interval; ND-Not Done; NS - Not significant

4.6 Respondents' behavioral factors associated with uptake of contraceptive

In bivariate analysis, respondents who reported ever having sex were 9.6 times more likely to utilize contraceptives than those who had no sex (OR 9.63, 95% CI 5.45 to 17.01).

Respondents who previously used condoms or regular pills/coils were 4.3 times more likely to use contraceptives compared to those who used emergency pills (OR 4.38, 95% CI 2.83 to 6.79) and (OR 2.21, 95% CI 1.39 to 3.51) respectively (Table 4.4).

Respondents who obtained contraceptives from pharmacy or other sources (clinic, hospitals, neighbor and other shops) were more likely to use contraceptives compared to those who obtained their contraceptives from students/staff clinic (OR 8.43, 95% CI 4.4 to 16.04) and (OR 9.3, 95% CI 2.93 to 29.94).

Further, respondents who observed a positive attitude from the contraceptive provider were more likely to use the contraceptives compared to those who observed a negative attitude of the provider (OR 78.6, 95% CI 10.9 to 562.1).

Factors such as cheap/accessible/safe (OR 43.65, 95% CI 5.9 to 321.3), to prevent STIs and HIV (OR 91.8, 95% CI 12.5 to 674.1), to prevent pregnancy (OR 78, 95% CI 10.7 to 567.7) and to prevent pregnancy and HIV/STIs (OR 122, 95% CI 16.8 to 882.6) were strongly associated with uptake of contraceptives.

Respondents who were currently using condoms (OR 281.7, 95% CI 39.3 to 2.14) or pills (OR 286, 95% CI 38.1 to 2149) were 281 or 286 times more likely to use other contraceptives than those who did not indicate the contraceptive type they were currently using. In multivariate analysis; none of the behavioral factors were found to be independently associated with contraceptive use.

Table 4.4: Respondents' behaviour associated with contraceptive use at JKUAT

Respondents	Sample size	Contraceptive utilization		P - value	Bivariate OR (95% CI)	Multivariate OR (95% CI)
		No	%			
Sexual partner						
Yes	227	136	59.91	0.001	9.63(5.45-17.01)	NS
No	209	13	6.22	Reference	Reference	Reference
Age of sexual debut						
10-15	30	14	46.67	0.97	NS	
16-20	274	127	46.35	0.97	NS	NS
21-25	18	8	44.44	0.97	NS	
Not stated	114	0	0	Reference	Reference	Reference
Aware of contraceptive						
Yes	419	149	35.56	0.971	NS	NS
No	17	0	0	Reference	Reference	Reference
Sources of Contraceptive information						
Books/Internet and Media	30	8	26.67	0.977		
Family/Friends and Peers	74	31	41.89	0.977	NS	NS
Health facility	15	2	13.33	0.977		
Print/Electronic Media	232	84	36.21	0.977		
Not stated	21	5	23.8	Reference	Reference	Reference
Ever used contraceptive						
Yes	284	148	52.11	0.978	NS	NS
No	145	21	40.38	Reference	Reference	Reference
Contraceptive used						
Condom	239	125	52.3	0.001	4.38(2.83-6.79)	
Regular pills/injections/coil	36	23	65.71	0.001	2.21(1.39-3.51)	NS
Emergency contraceptive	52	12	23.1	Reference	Reference	Reference
Source of contraceptive						
Pharmacy	264	60.6	22.95	0.001	8.43(4.4-16.04)	
Clinic, Hospital, Neighbour, shop	7	1.6	22.85	0.001	9.3(2.93-29.94)	NS
Student/staff clinic	40	9.2	28	Reference	Reference	Reference
Provider's attitude						
Positive	267	139	52.06	0.001	78.6(10.9-562.1)	NS
Negative	18	9	50	Reference	Reference	Reference
Why use contraceptives						
Cheap/accessibility/safe	94	27	28.72	0.001	43.65(5.9-321.3)	
Prevent HIV/STIs	48	29	60.42	0.001	91.8(12.5-674.1)	NS
Prevent pregnancy	76	39	51.32	0.001	78(10.7-567.7)	
Prevent pregnancy or HIV/STIs	66	53	80.3	0.001	122(16.8-882.6)	
Not stated	152	1	0.66	Reference	Reference	
Contraceptive currently being used						
Condom	133	131	98.5	0.00	281.7(39.3-2.14)	NS
Pill	17	17	100	0.001	286(38.1-	
Not stated	286	1	0.35	Reference	Reference	

No - Number; % - Percentage; OR - Odds ratio; CI - confidence interval; ND-Not Done; NS - Not significant

4.7 Additional respondents' behavioral factors associated with uptake of contraceptive

In bivariate analysis, respondents who stated that unwanted pregnancy leads to economic burden were more likely to use contraceptives than those who had no idea (OR 0.52, 95% CI 0.37 - 0.75). Respondents who stated they would terminate pregnancy (OR 0.63, 95% CI 0.41 - 0.99) or report to parents (OR 0.32, 95% CI 0.17 - 0.55) if pregnant were more likely to use contraceptive than those who had no idea. Further, respondents who stated that health complications were hindrance to contraceptive use (OR 0.59, 95% CI 0.35 - 0.99), were less likely to use contraceptives compared to those who reported that contraceptive use could lead to death. Respondents who stated encouragement of abstinence as a means of improving uptake of reproductive health services were less likely to use contraceptive compared to those who had no solution (OR 0.2, 95% CI 0.06-0.66) (Table 4.5).

On the other hand, respondents who reported that they could be encouraged to use contraceptives by making them affordable/accessible/available (OR 6.78, 95% CI 2.3 - 19.5) or by creating more awareness (OR 4.79, 95% CI 1.77 - 12.9) were more likely to use contraceptives compared to respondents who did not mention any strategy to encourage usage. Respondents who previously used condoms or regular pills/coils were 4.3 times more likely to use contraceptives compared to those who used emergency pills (OR 4.38, 95% CI 2.83 - 6.79) and (OR 2.21, 95% CI 1.39 - 3.51) respectively. Respondents who had been infected with an STD were more likely to use contraceptives than those who had not been infected (OR 2.55, 95% CI 1.79 - 3.65). Further those who were infected with bacterial/fungal STD (gonorrhea, syphilis, chlamydia, chancroid or yeast) were more likely to use contraceptive than those infected with viral STD (HIV or Herpes) (OR 2.68, 95% CI 1.84 - 3.89) (Table 4.5)

.In multivariate analysis, affordability/accessibility/availability was 4.5 times more likely to lead to uptake of contraceptive use (OR 4.56, 95% CI 1.54 - 13.5). Further, those who stated creating more awareness (OR 4.07, 95% CI 1.43 - 11.5) were more likely to use contraceptive than those respondents who did not mention any strategy to encourage usage (Table 4.5).

Table 4.5: Characteristics factors associated with contraceptive use at JKUAT

Contraceptive characteristic	Sample size	Contraceptive utilization	No	%	P - value	Bivariate OR (95% CI)	Multivariate OR (95% CI)
Encouragement to use contraceptive							
Affordable/accessible/available		46	24	52.17	0.001	6.78(2.3-19.5)	4.56(1.54-13.5)
Breaking Stigma		29	7	24.14	0.068	3.13(0.91-10.7)	
Creating more awareness		309	114	36.89	0.002	4.79(1.77-12.9)	4.07(1.43-11.5)
Not Stated		52	4	7.69	Reference	Reference	
Impact of unwanted pregnancy							
Health risks		137	51	37.23	0.114	1.32(0.93-1.87)	NS
Academic delay		340	117	34.41	0.106	0.71(0.46-1.07)	
Economic burden		230	61	26.52	0.001	0.52(0.37-0.75)	
No idea		6	0	0	Reference	Reference	
Action if pregnant							
Terminate pregnancy		143	43	30.07	0.048	0.63(0.41-0.99)	
Defer training		170	68	40	0.888	1.02(0.69-1.53)	NS
Report to parents		93	14	15.05	0.001	0.32(0.17-0.55)	
No idea		8	0	0	Reference	Reference	
Definition of unsafe abortion							
Termination of pregnancy by unskilled person		375	126	33.6	0.876	0.92(0.34-2.5)	
Termination of unwanted pregnancy		50	19	38	0.936	1.05(0.35-3.07)	NS
No idea		11	4	36.36	Reference	Reference	
Health risks of abortions							
Barrenness		410	144	35.12	0.265	1.95(0.61-6.33)	
Infections		205	73	35.61	0.946	1.014(0.67-1.52)	NS
Loss of body parts		107	41	38.32	0.622	1.12(0.712-1.76)	
No idea		13	3	23.08	Reference	Reference	
Hindrane to contraceptive use							
Health complications		263	67	25.48	0.05	0.59(0.35-0.99)	
Costly		20	5	25	0.286	0.58(0.21-1.57)	NS
Lack of awareness		21	6	28.57	0.39	0.66(0.26-1.67)	
Cause death		90	53	58.89	Reference	Reference	
Improvement of reproductive health							
Affordable/accessible/available		38	12	31.58	0.927	1.03(0.52-2.045)	
Increase awareness		40	20	50	0.098	1.63(0.91-2.92)	
Encourage abstinence		49	3	6.12	0.008	0.2(0.06-0.66)	NS
Qualified health personnel		210	84	40	0.232	1.31(0.84-2.03)	
Condom use		14	4	28.57	0.899	0.93(0.32-2.67)	
No solution	85	26	30.59	Reference	Reference		
Ever had any STIs?							
Yes	58	42	72.41	0.001	2.55(1.79-3.65)	NS	
No	378	107	23.31	Reference	Reference		
STI Type							
Bacterial	49	37	75.51	0.001	2.68(1.84-3.89)	NS	
Viral	7	5	71.43	Reference	Reference		

No - Number; % - Percentage; OR - Odds ratio; CI - confidence interval; ND-Not Done; NS - Not significant

Table 4.6: Key Informant Interviews at JKUAT

The clinical officer, nursing officer and the nurse working in the family planning room took part in the interview. The interview had ten themes.

THEME	RESPONSE/S
1) Use of contraceptive services among youth.	“The students use the services but we cannot verify the number or percentage which is low”.
2) Sexual health problems among the youth in the university.	“Sexual health problems are common. They include STIs and abortions”.
3) Causes of the sexual health problems.	“Causes include ignorance, peer influence and alcoholism”. Other responses:”Sex is so casual, the problems are mostly common among the first year students”.
4) Attitudes and practices on seeking sexual health services among youth.	“Students are reserved. They do not seek for health care on time but come when complications have set in. This can be due to stigma and fear of being harassed by the staff. Abortion and STI cases usually come at night.”
5) Outlets for sexual health services for youth.	“Outlets include private clinics and chemists especially for emergency contraceptives”
6) Sexual health coping mechanisms among youth.	“Students fear to seek for treatment when they have sexual health problems. They collect condoms at night. Other responses: They are weak as they come to the hospital with STIs/STDs several times”.
7) Availability of the services.	“Contraceptive services are available. All the same, we do not over them at night and on weekends”.
8) Stock out of the commodities.	“Stock out is not experienced as when Kenya Medical Supply Agency (KEMSA) fails to supply the hospital usually buys”.
9) Training of the staff.	The staff is well trained and usually have continuous medical education monthly.
10) Current use of contraceptives among students and the preferred type.	“Students are currently using contraceptives but we do not have specific data. Preferred type is male condoms and emergency pills”.

CHAPTER FIVE

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Discussion

5.1.1 Demographic and sexual characteristics of the study respondents

This is among the first comprehensive study to evaluate contraceptive uptake and associated factors among university students in Kenya. The majority of those included in the study were female, aged 21 to 25 years, Christians, single, currently not pregnant or had given birth, in their second year of study and resided off campus. Globally, students in tertiary colleges share common demographic characteristics for example, in a study among non-Hispanic white U.S. College students Higgins *et al.*, (2010) noted that three-quarters of students (77%) lived with both parents, which is quite high compared to this study (13.8%). Majority were either mainline Protestants (38%) or Catholics (37%). This is slightly lower compared to this study which is 41% and 48% respectively.

The results of this study showed that more than half of the students had sexual intercourse in 2013 when the study was conducted and some even had sex in exchange for gifts with a friend. This proportion is currently among the highest of the reported sexual activity among students in tertiary colleges. (Tilahun *et al.*, 2011) in Adama University, Central Ethiopia noted that 29.4% of the students were sexually active and 9.4% had a previous history of pregnancy. Among non-Hispanic white U.S. college students, Higgins *et al.*, (2010) showed that 37% of them were sexually active. In the Brazilian Institute of Geography and Statistics (IBGE) Malta *et al.*, (2011) observed that 40.1% of the students had one partner in life, 30.5% were sexually active, mostly males (43.7%) than females (19.7%), with higher numbers in public (33.1%) than in private colleges (20.7%). Among the male secondary-school students in Nairobi, Kenya, 31% were reported to be sexually experienced with 10% of them being female (Yotebieng *et al.*, 2009). Among male college students of Kathmandu, Nepal, two-fifths of survey respondents (39%) reported that they had premarital sex (Adhikari and Tamang, 2009). In the University of Port Harcourt,

Rivers State, Nigeria, more than half of the students (52%) had either a boyfriend or girlfriend and 144 (52.0%) of the respondents had sex with someone (Imaledo *et al.*, 2012). The current findings agree with a recent study among students of the University of Ilorin who are within the range with those of the study population, 72.7% of the respondents had ever had sex, 62.3% had more than one sexual partner in the last 2 months preceding the study, with 30.0% of the respondents having between 2-3 partners, 25.9% had between 4-6 partners, while 6.4% had more than 6 partners within the same period (Fawole *et al.* 2011).

This high level of sexual activity among the university students question the various efforts from stakeholders to address the issue of risky sexual behavior among young people especially those in higher institutions of learning in the recent past. With the high level of awareness of HIV/AIDS with 99% of women and 100% of men age 15-49 years having heard of AIDS (KNBS and ICF Macro, 2010), one would have expected that this knowledge would have translated to practice but this result is pointing to the contrary. Risky sexual practices are still common occurrences among students in higher institutions of learning. In a research conducted on fresh students of tertiary institutions in Rivers state Ibe, (2003), observed the risky practices recorded among students to include having sex without condom (57.0%), having multiple sexual partners (42.1%) and use of condom only at first sexual encounter (22.8%). Some had multiple current partners with 3.5% having 4 to 6 current partners.

The most common age of sexual debut among the students from JKUAT was 16 - 20 years. This calls for attention of those in authority to have a fresh look into the issue of child sexual molestation since these under-aged might have been tricked into the act without their consent; the present situation where people turn their eyes away from this heinous act as if it is non-existence in the country will not help the victims because of the psychological, social and health consequences on them both in the present and in the future. Among male college students of Kathmandu, Nepal, the age at first sexual intercourse of male students ranged from 10 - 25 years (Adhikari and Tamang, 2009). The majority had age of first sexual intercourse within the age

range of 15-19 years among sexually active students in the University of Port Harcourt, Rivers State, Nigeria (Imaledo *et al.*, 2012).

5.1.2 Contraceptive Awareness

In this study, almost all of the respondents (96.1%) were aware of contraceptive with print and electronic media the most common sources of information. Three quarters of the respondents (65.1%) had used at least a form of contraceptive. These results confirm the result of the KDHS (2008), which showed that more than 97% of unmarried males and females had knowledge of contraceptive (female sterilisation, male sterilisation, the pill, intra-uterine device (IUD), injectables, implants, male condoms, female condoms, lactational amenorrhoea, and emergency contraception and two traditional methods (rhythm or calendar method and withdrawal) used and available in Kenya (Kenya National Bureau of Statistic (KNBS and ICF Macro, 2010). The current contraceptive awareness is far much higher than the 39% rates reported between 1990 and 2011 among university students in Kenya (Muia *et al.*, 1999). Other regions have reported different level of awareness of contraceptives for example among college students in Kathmandu, Nepal, the level of awareness was 66% (Adhikari and Tamang, 2009), Ghana (43%) (Baiden *et al.*, 2002) and Cameroon (63%) (Kongnyuy *et al.*, 2007). The level of awareness on this study is comparable to that of university students, for example, in the USA (94%) (Vahratian *et al.*, 2008) and Jamaica (84%) (Harper *et al.*, 1995).

5.1.3 Utilization of Contraceptives

Individuals who engage in risky sexual behavior (typically defined as multiple partners, casual partners, unprotected sexual activity, or coinciding risky behavior such as heavy alcohol consumption) are at risk of negative consequences such as sexually transmitted infections, HIV and unwanted pregnancy (CDC, 2008; Lewis *et al.*, 2010). This could explain the causes of sexual health problems among the students as reported by the key informants.

“Causes include ignorance, peer influence and alcoholism”. Other responses: “Sex is so casual, the problems are mostly common among the first year students”.

According to the results of KDHS,(2008) 44 % of girls aged 15-19 years have had sexual intercourse and 19 % are sexually active. In this study, the median age at first sex for men is 16.8 years, compared with 16.7 years for women. Although men enter into sexual unions on average five years later than women, they start sexual activity at about the same age. In spite of high fertility and early sexual debut, contraceptive use among adolescents is relatively low. In Tanzania, only 6.6 % of persons aged 15-19 years were using any method of family planning in 1998. Of these, only 4 % were using modern methods. Among 20-24-year-olds, only 27 % were using any method while 19.9 % were using modern methods (TDHS, 1988). In the current study, 34.2% of the respondents were currently using at least one of the commonly available contraceptives. Majority of them (54.8%) reported using condoms 11.9% and 8% using emergency pills and regular pills respectively. This was confirmed by the key informant findings where according to the study participants use of contraceptive was low, though they did not have data and preferred type was male condoms.

“The students use the services but we cannot verify the number or percentage which is low”. “Students are currently using contraceptives but we do not have specific data. Preferred type is male condoms and emergency pills”.

In Adama University, Central Ethiopia only 26.7% of those who had unprotected sex used emergency contraception (Tilahun *et al.*, 2011). In four different public

universities in Texas and Wisconsin, a historically Black university in North Carolina, and a religiously-affiliated private university in North Carolina, one-in-four respondents (25%) reported that neither they nor their partner used a method of contraception at first sexual intercourse (Higgins *et al.*, 2010b). In a public college in New York City 42% of the sexually active students did not use condoms and other contraceptive strategies (O'Sullivan *et al.*, 2010). In large, urban, tertiary institution campus in South Africa a greater proportion of African (80.4%) than Indians (19.0%) indicated that they were sexually experienced. Over 90% of African and 75% of Indian sexually active participants reported having used a condom in the last three months compared to 52.3% in this study, but few had ever used a female condom (Mantell *et al.*, 2009).

Among individuals who choose to be sexually active, condom use is the only reliable method of STI and HIV prevention. Regardless of the method being reliable, rates of condom use among young adults, including college students, are low. For instance, research has shown that 4.5%, 27.9%, and 52.8% of sexually active students used condoms during their most recent oral, anal, and vaginal intercourse experiences, respectively (ACHA, 2008). Thus, it is critical to identify factors related to decrease sexual risk behavior among college students in Kenya.

5.1.4 Socio-Demographic factors affecting utilization of contraceptives among university students

Respondents who professed one kind of religion (catholic, protestants & muslims) were unlikely to utilize contraceptives. Religion teaches and advocates for sex within marriage therefore respondents who professed one kind of religion were unlikely to engage in premarital sex and thus the lack of need to use any form of contraceptive. This finding is contrary to Jones and Dreweke, (2011) who showed high proportion of both married and unmarried religious women using contraceptive.

Respondents who resided on campus were 0.55 times less likely to use contraceptives compared to those who resided off campus. This was probably because of the lack of knowledge, fear of being seen by others, and inconvenient service delivery within the campus environment could account for this lack of

association an attribute supported by Mehra *et al.* (2012) who showed that the area of residence and of growing up had a significant association with non-use of contraception. Further compared to students who stayed with parents, those who stayed alone showed a higher likelihood of utilization of contraceptives. This was probably because of the access of contraceptives and freedom to choose what to do.

5.1.5 Sexual behavior, knowledge on contraceptive, attitude and practices affecting utilization of contraceptives

Respondents who had given birth were 1.53 times more likely to use one or more of the available contraceptives. Probably for family planning reasons, an attribute confirmed by the KDHS 2008-09 (KNBS & ICF Macro, 2010).

Respondents who had sexual partners, or used condoms or regular pills/coils were 9.63 times more likely to use contraceptives. This was in agreement with previous studies that students in a relationship were likely to use contraceptives than those who were single, possibly because of the association relationships and risky sexual behaviors (Ryan *et al.*, 2007; Tami *et al.*, 2011; Mehra *et al.*, 2012).

Respondents' source of contraceptives greatly influenced uptake; those who obtained contraceptives from pharmacy or other sources (clinic, hospitals, neighbor and other shops) were likely to use contraceptives compared to those who obtained their contraceptives from students/staff clinic. This is supported by statements that emerged from key informants.

“Outlets include private clinics and chemists especially for emergency contraceptives”. “Stock out is not experienced as when Kenya Medical Supply Agency (KEMSA) fails to supply the hospital usually buys”.

This was in agreement with a study done in Uganda which showed that combined delivery models of contraceptive at community level increased uptake of contraceptives among young people (Kayongo, 2013).

This can be circumvented by change of some policies and health care providers changing their attitudes towards young people and contraceptive use. In China, Long *et al.*, (2012) found that providing free condom at student health centre was associated with increased odds of condom use among male college students. The study indicated that services for contraceptive provision could be improved and policies modified in order to facilitate access to contraceptive care (Ryan *et al.*, 2007). Incorporating contraceptive/family planning services into health protection programs could benefit university - students who have high rates of unintended pregnancies and are at high risk of STDs (Ryan *et al.*, 2007).

Contraceptive service provider positive attitude (52%), contraceptive affordability (21.6%), accessibility/safety (17.4%) and use of contraceptive to prevent pregnancy and HIV/STIs (15.1%) were strongly associated with contraceptive uptake. Further, student's current contraceptive use has great influence on continuous use. With regard to this, key informants noted that;

“Students are reserved. They do not seek for health care on time but come when complications have set in. This can be due to stigma and fear of being harassed by the staff. Abortion and STI cases usually come at night.” “Students are currently using contraceptives but we do not have specific data. Preferred type is male condoms and emergency pills”.

The importance of good provider attitude, accessibility and affordability has been extensively showed elsewhere. Among college students in Sikkim, India, (Renjhen *et*

al., 2010) showed that students who thought contraceptives were to be used to prevent unwanted pregnancy and for birth spacing were associated with actual use. Similarly in Ethiopia Wasie *et al.*(2012) showed that students who believed that contraceptives were effective in preventing pregnancy and STI were statistically significantly associated with actual use. It is reasonable to state therefore that positive attitude about contraceptives and good knowledge about their use are key motivators for actual use. The students in Kenyan colleges and other learning institutions could benefit from enhanced contraceptive information aimed at improving their attitude and that of service providers for the purposes of contraceptive dissemination and use.

Respondents demonstrated poor knowledge and attitude towards unwanted pregnancy. Slightly more than a quarter (26.5%) stated that it leads to economic burden, or that they would terminate pregnancy (30%). These were statistically associated with disuse of contraceptives. Further, respondents who stated that contraceptive use leads to health complications were a hindrance to contraceptive use due to ignorance.

Respondents' previous history of STD infection had a great impact on current contraceptive use. Those students who had been infected before with an STD were more likely to use contraceptive. Further, those who were infected with bacterial/fungal STD (gonorrhoea, syphilis, chlamydia, chancroid or yeast) were more likely to use contraceptive than those infected with viral STD (HIV or Herpes).In China, Zhou *et al.* (2013) observed similar trend among unmarried graduate students. STD infection to the students causes great emotional burden. Overall, the CDC estimates that 19 million new sexually transmitted infections occur each year, almost half among 15- to 24-years-old. College is a time when many young people choose to explore their newfound freedom. Part of this can be engaging in potentially unsafe sexual situations. Perhaps that is why STD rates are so much higher among teens and young adults than they are with any other age group. This is confirmed by the following statement from the key informant.

”Sex is so casual, the problems are mostly common among the first year students”.

Bacterial infection often leads to an immediate onset of signs and symptoms. About 80% of people who have a sexually transmitted disease experience no noticeable symptoms (especially the viral STDs). This often means that since they have no reason to believe that anything is wrong with them they will be unlikely to visit a doctor to be checked, nor use contraceptives during sex allowing them to transmit the disease to other partners. Students need to keep in mind that just because you have not seen the effects of an STD does not mean it is not there. When reporting about sexual health coping mechanisms among the youth, the following statements were made by the key informants.

“students are reserved. They do not seek for health care on time but come when complications have set in”. “Students fear to seek for treatment when they have sexual health problems. They collect condoms at night . Other responses: They are weak they come to the hospital with recurrent STIs/STDs frequently”.

5.2 Study Limitations

5.2.1 Recall bias

Some of the study respondents could not remember whether they used the pills.

5.3 Conclusions

- There is high level of sexual activity (72.7%) among university students with low uptake of contraceptive services (34.2%). Condom was the most commonly used contraceptive (54.8%).

- Factors influencing uptake of contraceptive services included religion, previous sexual practices, availability and affordability greatly influence contraceptive acceptability and uptake.

5.4 Recommendations

- Students in Kenyan tertiary institutions require enhanced continuous health education on sexuality and proper use of contraceptives aimed at improving their attitude towards contraceptive awareness and hopefully uptake.
- Sex education in all education levels should be enhanced by the ministry of education in conjunction with ministry of health to improve acceptability and utilisation of services.

REFERENCES

- Ademola, A. (2001).** Adolescent and youth pregnancy. Unpublished Msc thesis, Lagos: Lagos State University medical students association.
- Adhikari, R and Tamang, J. (2009).** Premarital Sexual Behavior among male college students of Kathmandu, Nepal. *Biomedical Central Journal of Public Health*. 9, 241-250.
- Ajuwon, A. J., Olaleye, A., Faromaju, B. and Ladipo, O. (2006).** Sexual behaviour and experience of sexual coercion among secondary school students in three states in North Eastern Nigeria. *Biomedical Central Journal of Public Health*, 6(310), 1–10.
- American College Health Association. (2008).** National College Health Assessment Spring 2007 reference group data report [Abridged]. *Journal of American College Health*. 56, 469–479.
- Askew, B. I. and Baker, N. (2002).** Integration of STI Prevention and Management with Family Planning and Antenatal Care in Sub-Saharan Africa — What More Do We Need to Know ?, 28(2), 77–86.
- Baiden, F, Awini, E and Clerk, C. (2002).** Perception of university students in Ghana about emergency contraception. *Contraception* , 66, 23–26.
- Bankole, A, Ahmed, FH, Neema, S, Ouedraogo, C and Konyani, S. (2007).** Knowledge of correct condom use and consistency of use among adolescents in Sub-Saharan Africa. *African Journal of Reproductive Health*, 11(3), 28-43.
- Bateman, C. (2007).** Maternal mortalities. *South African Medical Journal*, 97(12), 1238-42.
- Barer, M. (2006).** Making abortions safe: a matter of good public health policy and practice. 78(5), 580-592.

- Chaudhuri, S. K. (2007).** Practice of fertility control. A comprehensive manual for family planning. 259-262.
- Centers for Disease Control and Prevention. (2008).** HIV/AIDS surveillance report, 2007, Atlanta: U.S. Department of Health and Human Services; Retrieved from <http://www.cdc.gov/hiv/topics/surveillance/resources/reports/>
- Coley, R. L. and Chase, P. L. (2009).** Adolescent pregnancy and parenthood: Recent evidence and future directions. *American Psychologist Journal*, 53, 152-166.
- Fawole, A.O., Ogunkan, D.V. and Adegoke ,G. S. (2011).** Sexual Behaviour and Perception of HIV/AIDS in Nigerian Tertiary Institutions: University of Ilorin, a Case Study. *Global Journal of Human Social Science*. 11(1), 1.
- Harper, C.C. and Ellerton ,C.E. (1995).** The emergency contraceptive pill: a survey of knowledge and attitudes among students at Princeton University. *American Journal of Obstetrics Gynaecology*, 173,1438–2445.
- Higgins, J.A, Trussell ,J, Moore, N.B. and Davidson Sr ,J.K. (2010a).** Young adult sexual health: current and prior sexual behaviors among non-Hispanic white U.S. college students. *Journal of Sex Health*. 7(1).
- Higgins, J.A., Trussell, J, Moore ,N.B and Davidson Sr, J.K.(2010b).** The Language of Love?—Verbal versus Implied Consent at First Heterosexual Intercourse: Implications for Contraceptive Use. *American Journal of Health Education*. 41(4), 218–230.
- Ibe, S.N. and Ibe, A. (2003).** Condon use among sexually active students in Bori, Rivers State, Nigeria. *African Journal of Applied Sciences and Environmental Biology*. 5, 49-54
- Imaledo, J.A., Peter-Kio O.B. and Asuquo, E.O. (2012).** Pattern of risky sexual behavior and associated factors among undergraduate students of the

University of Port Harcourt, Rivers State, Nigeria. *Pan African Medical Journal*. 9, 97

Jewkes, R., Rees ,H., Dickson, K., Brown, H. and Levin, J. (2007).The impact of age on the epidemiology of incomplete abortions in South Africa after legislative change. *Biomedical Journal of Gynecology*. 112 (3), 355-9.

Jones, R.K. and Dreweke, J. (2011).*Countering Conventional Wisdom: New Evidence on Religion and Contraceptive Use*, New York: Guttmacher Institute.

Kayongo, S.B. (2013).Uptake of modern contraception among youths(15-24) at community level in Busia district, Uganda.

Kenya AIDS Indicator survey (KAIS); (2007). Preliminary Report. Retrieved from <http://www.aidskenya.org>.

Kenya National Bureau of Statistics (KNBS) and ICF Macro. 2010. *Kenya Demographic and Health Survey 2008-09*. Calverton, Maryland: KNBS and ICF Macro.

Kenya Demographic and Health Survey (KDHS); (2003). Complications associated with child birth and HIV/AIDS. Retrieved from www.measuredhs.com/pubs/pdf/sr104/sr104ke03.pdf.

Kenya Demographic and Health Survey (KDHS); (2009).Final report. Retrieved from dhsprogram.com/publications/publication-fr229-dhs-final-reports.cfm.

Kenya Demographic and Health Survey (KDHS); (2010). Kenya Demographic and Health Survey. Nairobi: Health (San Francisco).

Kenya Demographic and Health Survey (KDHS), (2011). Prevention of sexual transmission of HIV/AIDS. Retrieved from www.measuradhs.com/pubs/pdf/fr229/fr229.pdf.

- Kenya Human Rights Commission (KHRC) and Kenya Reproductive Health and Rights Alliance (KHRA). (2010).** Teenage pregnancies and unsafe abortions. *Journal on unsafe abortions in Kenya.* 941, 66-65.
- Kibiru, C.W. and Ezeh, A. (2007).** Factors Associated with Sexual Abstinence among Adolescents in Four sub Saharan countries. *African Journal of Reproductive Health,* 11(3), 46-72.
- Kithuka, N. B. A. (2012).** Factors Associated with Condom Use among Students at Jomo Kenyatta University of Agriculture and Technology. Unpublished Msc thesis, Juja: Jomo Kenyatta University of Agriculture and Technology.
- Kongnyuy, E. J., Ngassa, P., Fomulu, N., Wiysonge, C. S., Kouam, L and Doh, A. S. (2007).** A survey of knowledge , attitudes and practice of emergency contraception among university students in Cameroon. *Biomedical Central Journal of Emergency Medicine.* 7(7), 1–7.
- La pelle, N.R. (2003).** Simplifying qualitative data analysis using general purpose soft ware tools. Available at <http://escholarship.umassmed.edu/prevbeh-pp>.
- Lewis, M.A, Kaysen, D.L, Rees, M. and Woods, B.A. (2010).** The Relationship between Condom-Related Protective Behavioral Strategies and Condom Use among College Students: Global- and Event-Level Evaluations. *Juvenile Sexual Reoffense Journal.* 47(5), 471–478.
- Long, L, Yuan, T, Wang, M, Xu, C, Yin, J, Xiong, C, Wei, S and Nie, S. (2012).** Factors associated with condom use among male college students in Wuhan, China. *National Center for Biotechnology Information Journal.* 7(12), e51782.
- Malta, C, Silva, M.A., Malta de Mello, F.C., Monteiro, R.A., Porto, D.L., Sardinha, LM. and Carvalho de Freitas P.(2011).** Sexual health of adolescents according to the National Survey of School Health. *Revista Brasileira Epidemiologia Journal.* 14(3),147-56.

- Mantell, J.E., Needham, S.L., Smith, J.A., Hoffman, S., Cebekhulu, Q., Adams-Skinner, J., Exner, T.M., Bcurr, Z.K., Beksinska M, Stein Z.A. and Milford C. (2009).** Gender norms in South Africa: Implications for HIV and pregnancy Prevention among African and Indian women students at a South African tertiary institution. *Culture Health and Sexuality Journal*. 11(2), 139–157.
- Mehra, D, Agardh, A, Petterson, K.O, and O’stergren P. (2012).** Non-use of contraception: determinants among Ugandan university students. *Glob Health Action*. 5, 18599.
- Mensc, S., Barbara, Clark, H., Wesley, L. B. C. and E. S. A. (2001).** Premarital sex, Schoolgirl pregnancy and school quality in rural Kenya. *Studies in Family Planning*. 32(4), 285–301.
- Ministry of Health (MOH). (2007).** National Reproductive Health Policy (pp. 1–80).
- Moreland and Talbird. (2006).** Achieving the millennium development goals. (PDF).Retrieved from www.un.org/esa/population/publications/popfacts-2010-1.pdf.
- Mugenda,A and Mugenda,O (1988).** Research methods. Nairobi. Acts press.
- Muia, E, Ellertson, C, Lukhando, M, Flul, B, Clark, S. and Olenia, J. (1999).** Emergency contraception in Nairobi, Kenya: Knowledge, attitude and practices among policy makers, family planning providers and clients, and university students. *Contraceptives manual*. 60 (4),223–232.
- Muia Esther, Ellertson Charlotte, Clark Shelley, Lukhando Moses, Elul Batya, Olenja. and Joyce, W. E. (2000).** What do family planning clients and university students in Nairobi, Kenya, know and think about emergency contraception. *African Journal of Reproductive Health*. 4(1), 77–87.

- Mutungi, M. (2006).** East Africa Regional Workshop on HIV/AIDS Toolkit
1.Choose life Africa. Retrieved from <http://www2.aau.org/aur-hiv-aids/ws/kenya06>.
- National AIDS Control Council (NACC). (2010).** Kenya National HIV and AIDS Strategic Plan 2005/06 – 2009/10. Retrieved from <http://www.nacc.or.ke>.
- NCAPD. (2010).** Protecting the Reproductive Health of Young People – An Investment in Kenya’s Future (pp. 1–8). Retrieved from www.ncapd-ke.org
- National AIDS/STI Control programme (NASCOP) (2002).** HIV/AIDS and Sexually Transmitted Infection in Kenya; Behavioral Surveillance Survey, Kenya. Retrieved from [www. Nacc.or.ke/index.php?option=com-book-library](http://www.nacc.or.ke/index.php?option=com-book-library).
- Nare, C, Katz, K. and Tolley, E. (2007).** Adolescent access to reproductive health and family planning services in Dakar. *African Journal of Reproductive Health*, 11(3), 7-12.
- Nour, M. (2008).** An introduction to maternal mortality. *Reviews in Obstetric Gynaecology and Gynaecology Journal*. 1, 77-81
- Nthangi, A. (2012).** Attitudes towards abortion among university undergraduate students in two selected public universities in Kenya. Retrieved from <http://etd-library.ku.ac.ke/ii>.
- Okwemba, A. (2009).** Obama Signature Opens Doors for Contraceptives to
Retrieved from
<http://www.awcfs.org/new/index.php/features/health/reproductive-health/579-obama-signature-opens-doors-for-contraceptives-to-kenya#sthash.qevvdFvC.dpuf>.
- O’Sullivan, LF, Udell, W, Montrose, VA, Antonello, P. and Hoffman, S. (2010).**
A Cognitive Analysis of College Students Explanations for Engaging in

- Unprotected Sexual Intercourse. *Archives of Sexual Behaviour Journal*. 39(5), 1121–1131.
- Pillitteri ,A. (2007).** Maternal and child health nursing. Care of the child bearing and child rearing family.
- Rajaseker, D. and Bigriggs, A. (2000).** Pill Knowledge amongst Oral Contraceptive Users in Family Planning Clinics in Scotland. *European Journal on Contraception Reproductive Health Care*, 4(2), 95-102.
- Renjhen, P, Kumar, A, Pattanshetty, A, Sagir ,A, and Samarasinghe, C.M. (2010).** A study on knowledge, attitude and practice of contraception among college students in Sikkim, India. *Journal of the Turkish-German Gynecological Association . 11*, 78-81
- Ryan, S, Franzetta, K, Manlove, J, and Holcombe, E. (2007).** Adolescents' discussions about contraception or STDs with partners before first sex. *Prospectives on Sexual and Reproductive Health Journal*. 39, 149–57.
- Santelli, J. (2007).** Explaining Recent Declines in Adolescent Pregnancy in the United States. The contribution of Abstinence and improved Contraceptive use. *American Journal of Public Health*, 97, 1-10.
- Smith, R., Ashford, L., Grible, J. and Clifton, D. (2009).** Family planning saves lives (PDF). Retrieved from <http://www.prb.org/pdf09/>.
- Tami, R, James, S, Michael, E, Benjamin, B, and Eleanor, D. (2011).** Contraceptive usage patterns in North American medical students. *International Reproductive Health Journal on Contraception* 83, 459–465.
- Tilahun ,F.D., Assefa, T. and Belachew, T. (2011).** Predictors of emergency contraceptive use among regular female students at Adama University, Central Ethiopia. *Pan African Medical Journal*. 7, 16.

United Nations AIDS Programme (UNAIDS) and United Nations Children Fund (UNICEF). (2011). Global HIV/AIDS Response: Epidemic Updates and health sector progress towards universal access.

United Nations AIDS Programme (UNAIDS) and World Health Organization (WHO). (2007). 2007 AIDS epidemic update retrieved from <http://data.unaids.org/pub/EPISlides/2007/2007-epiupdate-en.pdf>.

United Nations Department of Economic and Social Affairs (UNDESA). (2006). The world's women 2005: progress in statistics. (PDF). Retrieved from http://unstats.un.org/unsd/demographic/products/indwm/ww2005/pub/English/WW2005_text_complete_BW.pdf.

Vahratian, A, Patel ,DA, Wolff, K. and Xu, X. (2008). College students' perceptions of emergency contraception provision. *Journal of Women's Health (Larchmont)*. 17(1), 103–111.

Walker, A. (2008). Saving Nigerians from risky abortions. Retrieved from <http://news.bbc.co.uk/1/hi/world/africa/7328830.stm>.

Wasie, B, Belyhun ,Y, Moges, B and Amare,B. (2012). Effect of emergency oral contraceptive use on condom utilization and sexual risk taking behaviours among university students, Northwest Ethiopia: a cross-sectional study. *Biomedical Central Journal of Research Notes*.5, 501

Wehmeier, S. (2010). Oxford advanced learner's dictionary of current English.

World Health Organization (WHO). (2006). Pregnant Adolescents: Delivering on Global Promises of Hope (PDF). Retrieved from <http://whqlibdoc.who.int/publications/2006/9241593784-eng.pdf>.

World Health Organization (WHO). (2010). Sexually Transmitted Diseases (STDs) in Africa. Retrieved from <http://www.who.org>.

Yotebieng, M, Halpern, C.T., Mitchell, E.M.H. and Adimora, A.A. (2009).

Correlates of condom use among sexually experienced secondary school male students in Nairobi, Kenya. *National Center for Biotechnology Information Journal*. 6(1), 9–16.

Zhou, Y, Xiong, Shang ,X., Liu, G., Zhang, M. and Yin. P. (2013).

A blind area of family planning services in China: unintended pregnancy among unmarried graduate students. *Biomedical Central Journal of Public Health*. 13, 198-225.

APPENDICES

Appendix I: Questionnaire monitoring check-list

Name of Research Assistant	Issued serial No's	Returned serial No's	Signature of Research Assistant	Date

Checked by principal investigator

.....

Date

.....

Appendix II: Informed Consent and Consent Form

Uptake of contraceptive services among the university undergraduate students aged 18-35 years at Jomo Kenyatta University of Agriculture and Technology (main campus).

Researchers' statement

Good morning/afternoon, my names are Phillis Wangima Njoroge. I am a Master of Science public health student at Jomo Kenyatta University of Agriculture and Technology. Thank you very much for your response to the memo. I am here to carry out a study on uptake of contraceptives among the university undergraduate students aged 18-24 years. This form will give you information you need, so that you can make a decision on whether to participate or not in the study. There are no wrong or right answers. You will be given time to consider if you would like to be in the study. Please read the form well and ask where you do not understand. Please be honest and truthful in answering the questions.

I assure you that the information you give will be totally confidential and will not be required to identify yourself by name. Some of the questions are personal and sensitive too. Your participation is voluntary and you may therefore refuse to answer any question or stop the interview at any time without suffering any consequences.

Purpose of the Study

The purpose of this research is to determine the rate of uptake of contraceptive services among the undergraduate university students. This information will be used to improve HIV, STIs, complications associated with unsafe abortions and unintended pregnancies interventions in higher learning institutions. The information will be collected from 436 consenting undergraduate students from JKUAT (main campus).

Procedure

A total of 396 university students will be interviewed during this study, using self-administered questionnaire and 2 using key informant interview. The interview will last for about half an hour in a quiet place within the university premises and participants will be required to give answers to all the questions. Participants will have the opportunity to make suggestions and give information on the uptake of the contraceptives within the university.

Risks/Discomforts

There are no physical discomforts associated with participation in this study. However, people in the university could learn of your involvement in the study. To protect you from this risk, all information you will give us will be kept confidential within research team. All the data will be stored in lockable cabinets which the administration will provide on request.

Benefits

There is no financial compensation or other personal benefits from participating in the study. However your participation and/or answers to the questions may provide insights into improving future planning, implementation and evaluation of health programmes aimed at increasing contraceptive use among university students in Kenya.

Confidentiality

No names will be used on any of the reports from the study. All the respondents will be given different identification numbers and the information relating to research participant will be strictly confidential, available only to the study team. All notes will be destroyed once summary is prepared.

Voluntariness

Your participation is voluntary and therefore you may refuse to answer any question or stop the interview at any time without suffering the consequences.

Instructions

When you sign below it shows that you have agreed to participate in the study. If you do not understand any part of the information that has been read to you/you have read, be sure to ask questions. Do not sign until you have understood all that is expected or required.

I wish to take part in the study entitled: Uptake of contraceptive services among undergraduate university students aged 18-24years at JKUAT.I understand that i may at any time during the study withdraw my consent without any consequences. I have understood the information given in this sheet and I give my consent to be interviewed.

Respondent number----- Signature -----

Date -----

Obtaining additional information

You are encouraged to ask any questions to clarify any issues at any time or ask questions at any time during your participation in the study. The telephone number is available 24-hours. Please use the following contact:-

Phillis Wangima Njoroge (principal investigator)

P.O. Box 2822- 001000, Thika.

Telephone No: 0722634076

Email: phillis.njoroge@yahoo.com

For any questions pertaining to rights as a research participant, use the following contact:-

The Secretary,

KEMRI Ethics Review Committee,

P.O. Box 54840 00200, Nairobi

Telephone numbers: 020-2722541, 0722205901, 0733400003;

Email address: erc@kemri.org

Appendix III: Self administered questionnaire

Uptake of contraceptives services among the university undergraduate students aged 18-35 years at Jomo Kenyatta University of Agriculture and Technology (main campus).

Instructions:

- ✓ Put a tick () in the appropriate box or fill in the space provided.

Section One: Socio-Demographic Information

1. Name (optional)

.....

2. Sex of respondent

Male	
Female	

3. Age of respondent (indicate age in years).....

4. Marital Status

Married	
Single	
Divorced	
Separated	

5. No of children (if any)

None	
Pregnant now	
1-2	
3 and above	

6. Course Studied (indicate)

7. What is your religion?

Catholic	
Protestant	
Muslim	
Other	

8. What is your year of study?

1st year	
2nd year	
3rd year	
4th year	
>4years	

9. Do you live on campus or off campus?

On campus	
Off campus	

10. Who do you live with?

Parents	
Guardian	
Older brother/sister	
Alone	
Colleague	

Section Two:-Factors associated with contraceptive uptake among Youth

11. Do you have a sexual partner?

Yes	
No	

12. How old were you when you first had sexual intercourse?

.....

13. Have you ever heard about contraceptives?

Yes	
No	

If yes what was the source of information?

.....
...

14. Have you ever used any contraceptive?

Yes	
No	

15. If yes which one?

Condoms	
Pills	
Others (specify)	

16. State the main reason for choosing that specific contraceptive

.....
.....

17. Where did you source the contraceptive from?

Pharmacy	
Students/staff clinic	
Others (specify)	

18. How would you describe the provider's attitude?

Positive	
Negative	

19. What was the reason for contraceptive use?

To prevent pregnancy	
To prevent HIV/STIs	
Others (specify)	

20. What was your preferred type of contraceptive?

Please specify.....

21. Are you using any type of contraceptive currently?

Yes	
No	

22. If Yes which type?

23. In your own opinion, how can young people be encouraged to use or make them more willing to use contraception?

.....

...

24. What is the impact of unwanted pregnancy among university students?

Health risks	
Academic delay	
Economic burden	
No idea	

25. If you realize you are pregnant now what can you do?

Terminate the pregnancy	
Defer the training and come back after delivery	
Report to my parents	
others (specify)	

26. What is unsafe abortion?

Termination of pregnancy by unskilled person	
Termination of unwanted pregnancy	
No idea	

27. What is your source of information?

Internet	
Friends	
Parents	
Others (specify)	

28. What are the health risks of unsafe abortions?

Barrenness	
Infections	
Loss of body parts	
No idea	

29. What makes this reproductive health services not so good for young people?

.....

30. What would make reproductive health services better for young people?

.....

31a). Have you ever had any of the STIs?

Yes	
No	

b). If your answer is Yes, which STI have you ever had?

.....

c). Did you seek treatment for the STI?

Yes	
No	

d). If No, what did you do about your condition?

.....

32. If your answer on question 31c was yes, what services did you receive?

Lab and medicine	
Prescription	
Medicine	
Others (specify)	

33. (a) Where did you go for treatment?

Student/Staff clinic	
Pharmacy	
Traditional medicine	
Did not go for treatment	
Others (specify)	

(N.B. Can tick more than one box)

b). If your answer was others, please specify

.....

34. How long did it take you before you sought treatment?

One day	
Two-three days	
After three days	
More than one week	
Others (specify)	

State reasons for taking that long

.....
.....
.....
.....

Appendix IV: Key Informant Interview Guide

Uptake of contraceptive services among university undergraduate students aged 18-35 years at Jomo Kenyatta University of Agriculture and Technology (main campus).

Participants:

These will include the nursing officer in charge of the health center, the nurse working in MCH/FP clinic and the clinical officer in charge of the outpatient department.

Areas of discussion (Themes)

- Use of contraceptive services among youth.
- Sexual health problems among the youth in the university.
- Causes of these sexual health problems.
- Attitudes and practices on seeking sexual health services among youth.
- Outlets for sexual health services for youth.
- Sexual health coping mechanisms among youth.
- Availability of the services.
- Stock out of the commodities.
- Training of the staffs.
- Current use of contraceptives among students and the preferred type.

Appendix V: SSC approval



KENYA MEDICAL RESEARCH INSTITUTE

P.O. Box 54840-00200, NAIROBI, Kenya
Tel (254) (020) 2722541, 2713349, 0722-205901, 0733-400003; Fax: (254) (020) 2720030
E-mail: director@kemri.org info@kemri.org Website:www.kemri.org

KEMRI/RES/7/3/1

April 4, 2013

TO: PHYLLIS WANGIMA NJOROGI (PRINCIPAL INVESTIGATOR)

THROUGH : DR. YERI KOMBE;
DIRECTOR, CPHR

RE: SSC PROTOCOL NO. 2364 – REVISED (*RE-SUBMISSION*): UPTAKE OF CONTRACEPTIVE SERVICES AMONG UNDERGRADUATE UNIVERSITY STUDENTS AGED 18 - 35 YEARS AT JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY, JUJA, KENYA

Forwarded 15/4/13

Make reference to your letter dated March 19, 2013.

This is to inform you that the Ethics Review Committee (ERC) reviewed the documents listed above and is satisfied that the issues raised at the initial review have been adequately addressed.

The study is granted approval for implementation effective this **4th day of April 2013**. Please note that authorization to conduct this study will automatically expire on **April 3, 2014**. If you plan to continue with data collection or analysis beyond this date, please submit an application for continuing approval to the ERC Secretariat by **February 21, 2014**.

Any unanticipated problems resulting from the implementation of this protocol should be brought to the attention of the ERC. You are also required to submit any proposed changes to this protocol to the ERC to initiation and advise the ERC when the study is completed or discontinued.

You may embark on the study.

Sincerely,

EAB

**DR. ELIZABETH BUKUSI
ACTING SECRETARY,
KEMRI/ ETHICS REVIEW COMMITTEE**

In Search of Better Health



**JOMO KENYATTA UNIVERSITY
OF
AGRICULTURE AND TECHNOLOGY**

P.O. BOX 62000 - 00200, Nairobi - Kenya, Tel: 067 - 52181- 4, 52711, Fax: 067-52017
Email: dvc@aa.jkuat.ac.ke
OFFICE OF THE DEPUTY VICE CHANCELLOR (ACADEMIC)

Ref: JKU/2/003/072

7th June 2012

Phillis Wangema Njoroge
P.O. Box 2822-01000
THIKA

Dear Madam,

RE: REQUEST TO CONDUCT RESEARCH AND ACCESS DATA

Your letter on the above subject refers.

On behalf of Jomo Kenyatta University of Agriculture and Technology, I wish to inform you that the request has been granted on condition that the research findings shall be used solely for academic purposes. In addition, a copy of the research findings should be availed to the University.

By a copy of this letter, the Deputy Registrar (Admissions) and the Chief Medical Officer are requested to facilitate the same. I wish you all the best as you embark on your research.

Yours faithfully

**PROF. ROMANUS OHDIAMBO, PhD.
DEPUTY VICE CHANCELLOR ACADEMIC**

Cc: Deputy Registrar (Admissions)
Chief Medical Officer

RO/es



JKUAT is ISO 9001:2008 Certified Setting Trends in Higher Education, Research and Innovation



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KEMRI/LIB/9/18

27th May, 2015

Phillis W. Njoroge

for
Thro The Director
CPHR

Forwarded
8-6-2015

KEMRI/PUB/3673 – Uptake of contraceptive services among undergraduate students aged 18 – 35 years at Jomo Kenyatta University of Agriculture and Technology, Juja, Kenya by Phillis W. Njoroge, CPHR

This is to inform you that during the 191st Publications Committee meeting held on 4th May 2015, the above manuscript was approved for publication.

Thank you.

DR. CECILIA MBAE
SECRETARY,
PUBLICATIONS COMMITTEE

In Search of Better Health