AN ASSESSMENT OF AWARENESS LEVEL ON CONTRACEPTIVES AND THEIR USE BY COLLEGE STUDENTS IN KISUMU CITY, KENYA

BY

OMOGI IRENE AWUOR

A THESIS SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTER OF PUBLIC HEALTH

SCHOOL OF PUBLIC HEALTH AND COMMUNITY DEVELOPMENT

MASENO UNIVERSITY.

ABSTRACT

Reproductive health problems account for 18.4% of the global disease burden. In Kenya, this burden of reproductive health manifests as a high rate of unplanned pregnancies, abortions and sexually transmitted infections with the prevalence of these conditions being higher in some regions of the country like former Nyanza Province. Kisumu City lies in former Nyanza Province which has the highest rate of teenage pregnancies in Kenya and a high unmet need for contraception. Unplanned pregnancies are also high amongst college students. Addressing the problem of unplanned pregnancies requires access to information on awareness on contraceptives and their use. The broad objective of the study was to assess level of awareness on contraceptives and their use by college students in Kisumu City. The specific objectives for the study were: To establish level of awareness on contraceptives among college students in Kisumu City; To determine the level of use of contraceptives by college students in Kisumu City; To determine association between socio-demographic characteristics of college students in Kisumu City with their level of awareness on contraceptives; To determine level of association between socio-demographic characteristics of college students in Kisumu City with use of contraceptives. It was a cross sectional study. Quantitative data was collected using self-administered questionnaires from 422 college students while qualitative data was collected from the students through focus group discussions. Multi-stage cluster sampling technique was used in selection of study participants for the quantitative data and the data analyzed using descriptive statistics, bivariate and multivariate regression. Association between dependent and independent variables was determined by use of chi-square ($p \leq 0.05$) and thereafter binary logistic regression at $p \leq 0.05$ and odds ratio with 95% confidence intervals was determined. Qualitative data was analyzed using content analysis method. The results show that only 4.4% of the students had high level of awareness on contraceptives. Furthermore it was found that only 54.7% of respondents were using contraceptives consistently. The socio-demographic factors that were found to be significantly associated with awareness on contraceptive were age (p=0.041) and type of certificate pursued (p=0.043). The socio-demographic factors of the respondents that were found to significantly influence use of contraceptives were: gender (p= 0.017), age (p=0.002), year of study (0.031), employment history (p=0.008), social habits such as attending parties (p=0.001) and drinking alcohol (p=0.014). The multivariate analysis showed significant association between use of contraceptives with age [p=0.000, OR=1.502(1.201-1.877)], attending of parties [p=0.018, OR=2.290(1.150-4.560)] and use of alcohol [p=0.007, OR=4.590(1.516-13.897).In conclusion, the level of awareness on contraceptives and their use by college students is low. In addition to that awareness on contraceptives and their use by college students is associated with certain socio-demographic characteristics of the students. It is recommended that programmes are put in place to increase awareness on contraceptives and their use by college students. Furthermore, socio-demographic characteristics that are associated with contraceptive use should be considered in designing of services offering contraceptives to college students. The significance of this study is that it provides information that can be used by health providers in designing and improving family planning service programming and policy for youth in colleges.

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

At the International Conference on Population and Development (ICPD) in 1994 many governments, including Kenya, recognized the largely unmet need for sexual and reproductive health information and service for the youth (United Nations Population Information network, 1994). In spite of commitments made at the ICPD conference and others related to improving reproductive health the global burden of disease pertaining to sexual and reproductive health remains high with a higher proportion occurring in developing countries (Mathers, Lopez & Salomon, 2001). Estimates suggest that sexual and reproductive health problems account for 18.4% of the global burden of disease. One of the underlying causes of this high burden of disease is the low access to key interventions for improving reproductive health such as family planning services (World Health Organization, 2004).

Limited access to family planning services manifests as unmet need for contraception as seen in developing countries where more than 17 percent of women who would want to avoid a pregnancy are not using any form of contraception (Ross & Winfrey, 2002). In Kenya the unmet need for contraception at 25.6 percent is higher than the global average (Kenya Bureau of Statistics & ICF Macro, 2010). Policy makers are concerned about the unmet need for contraception as it can lead to unintended pregnancies which pose risks for women, their families and society (Haub & Herstad, 2002). Unintended pregnancy rates vary considerably in different regions and continents of the world (Singh, Sedgh & Hussain, 2010) and by different age groups as seen the United States of America (USA) where pregnancy rates are twofold higher among

young women (18–24 years) compared with all women of reproductive age (Finer & Zolna, 2011). Some of the reasons for higher rates of pregnancy among women age 18 to 24 years include widespread use of less-effective methods of contraception (Mosher & Jones, 2010); higher rates of non-compliance with oral contraceptives compared with older women (Finer & Zolna, 2011); a proportion of young women at risk of unintended pregnancy not using any method of contraception (Mosher & Jones, 2010). In Kenya 43 percent of pregnancies are unplanned (Kenya Bureau of Statistics & ICF Macro, 2010). Most of the unplanned pregnancies occurring among youth in Kenya are terminated at great health risk to the individuals (Ministry of Health, 2005).

Unintended pregnancy affects a significant number of college students as well, that is, 75 percent of pregnancies among college students are unplanned (Nguyen & Akintoshi, 2003). The unplanned pregnancies have negative social, economic and health impact on the affected students (Prentice, Storin & Robinson, 2012). Additionally unplanned pregnancies also reduces the chance of affected female students completing college education as seen in the USA where 27 percent of women who have children after enrolling in community colleges reducing their course hours or failing to complete college (Bradburn, 2002). Prevalence of unplanned pregnancies among the youth can be effectively reduced with the consistent use of effective contraceptives (Ministry of Health, 2005).

To address the challenges pertaining to access of youth to contraceptives, the Government of Kenya has endeavored to avail services that meet the age specific needs of the youth by establishing relevant policies and guidelines to support in improving access of the youth to

relevant services and information (Ministry of Health, 2005). A key policy target is to double the contraceptive prevalence rate among youth from 19.9 percent in the year 1998 to 40 percent by 2015 (National Council for Population and Development, 2003). In spite of this commitment by the government there is still a high unmet need for contraceptives in the country which stands at 25.6 percent (Kenya National Bureau of Statistics & ICF Macro, 2010). This unmet need for contraception is even higher in Kisumu City (Machiyama & Cleland, 2013). The city is located in former Nyanza Province which has the third lowest contraceptive prevalence rate in the country (37 percent for all women of reproductive age) with an unmet need for family planning at 32 percent and has the highest rate of teenage pregnancies in the country, that is, 27 percent (Kenya National Bureau of Statistics & ICF Macro, 2010).

Addressing these challenges requires an understanding of factors that influence use of contraceptive by college students. The conceptual framework for this study is based on the Health Behavior Model which postulates that an individual's access to and use of health services is considered to be a function of certain predisposing factors such as socio-cultural characteristics of individuals such as education, occupation, ethnicity, social networks, social interactions, and culture; health beliefs such as attitudes, values and knowledge that people have concerning health intervention; and demographic factors such as age and gender (Andersen, 1995).

1.2 Statement of the Problem

In spite of commitments made by governments during the ICPD conference to improve access of youth to information on reproductive health and relevant services there are still many challenges

pertaining to an area in reproductive health service provision, that is, the use of family planning services. The Government of Kenya has put in place additional measures such as having in place Adolescent Reproductive Health and Development Policy and guidelines for provision of youth friendly services yet the use of contraceptives by youth in Kenya is still low. This low use of contraceptives manifests in the high prevalence of unplanned pregnancies among youth including those attending colleges. These unplanned pregnancies have negative health, social and economic impact on college students and their families. Among college students in Kisumu City the problem of low contraceptive use is heightened by the high unmet need for contraception noted in the regional health indicators.

Putting in place measures to promote use of contraceptives by college students in need of such intervention is possible when there is adequate understanding of the level of contraceptive awareness, use and factors influencing contraceptive use particularly socio-demographic factors. Research that has been published focuses on either the whole population of the city or general youth thus the needs of college students on information and services providing contraceptives has not been determined. This has resulted in availability of scanty information on level of awareness on contraceptives and their use by college students in Kisumu City thus limiting possibility of focused interventions to be put in place.

1.3 General objective

To assess the level of awareness on contraceptives and their use by college students in Kisumu City, Kenya.

1.4 Specific objectives

1. To establish level of awareness on contraceptives among college students in Kisumu City, Kenya.
2. To determine the level of use of contraceptives by college students in Kisumu City, Kenya.
3. To determine association between socio-demographic characteristics of college students in Kisumu City with their level of awareness on contraceptives.
4. To determine association between socio-demographic characteristics of college students in Kisumu City with their use of contraceptives?

1.5 Research questions

1. What is the level of awareness on contraceptives among college students in Kisumu City?
2. What is the level of contraceptives use by college students in Kisumu City?
3. Is there an association between socio-demographic characteristics of college students in Kisumu City with their awareness on contraceptives?
4. Is there an association between socio-demographic characteristic of college students in Kisumu City with their use of contraceptives?

1.6 Justification of the study

The persistence of reproductive health challenges arising from non-use of contraceptives where it is indicated among college youth as revealed from literature therefore prompted this study. Research on awareness and use of contraceptives will help to inform reproductive health service

providers on contraceptive needs of college students in terms of information and services provided. Furthermore, establishing influence of socio-demographic characteristics and level of awareness of the students on use of contraceptives is important in informing family planning programme formulation as it will enable focused intervention on groups at risk of low use of contraceptives. Determining influence of socio-demographic factors on awareness allows identification of groups of college students at risk of low level of awareness and appropriately addressing their needs on information about contraceptives. Ultimately, use of the information from this study can contribute to a decrease in prevalence of reproductive health problems related to lack of contraceptive use such as unintended pregnancies, abortions and complications arising out of abortions.

1.7 Delimitations

Similar to other structured interview-based studies, this study was susceptible to response bias. However, this potential source of bias was minimized by testing the tool and amending it to make the wording familiar and culturally-appropriate.

1.8 Conceptual Framework

The conceptual framework adapted for this study was developed based on the Health behavior Model (Andersen, 1995). The model suggests that personal health practices and people's use of health services are functions of the predisposing and enabling factors. According to the model, the predisposing and enabling components establish the conditions within which college students are likely or unlikely to use contraceptives. The conceptual framework describes the students'

socio demographic characteristics, their level of awareness on contraceptives and social habits (independent variables) that have influence on use of contraceptives (dependent variable).

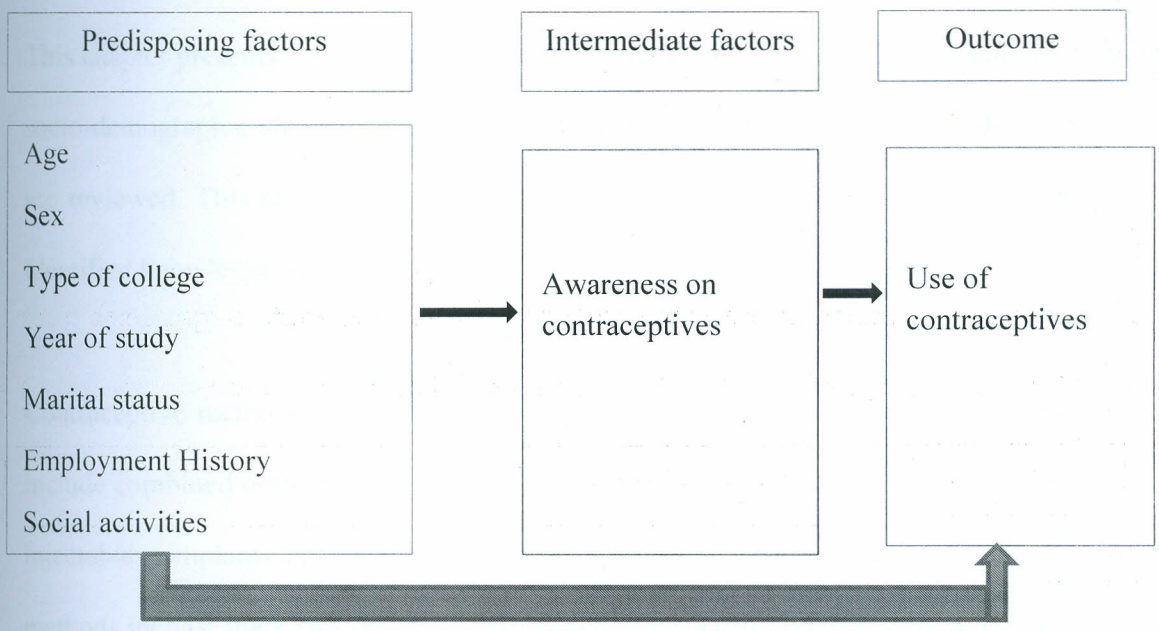

Figure 1.1: Conceptual Framework

Adapted from Health Behavior model (Andersen, 1995).

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter presents a review of literature on contraceptive use, awareness and association with socio-demographic characteristics. Relevant studies in both developing and developed countries are reviewed. This chapter also presents the conceptual framework adopted for this study and identified knowledge gaps.

Contraceptive methods can be categorized as hormonal and non-hormonal. Hormonal methods include combined oral contraceptives (COC), progestine only pills (POP), patches, vaginal rings, injectables, implants and intrauterine releasing systems (Carr & Khan, 2004). Non-hormonal methods include male and female condoms and other barrier methods, intrauterine contraceptive devices (IUCDs) and lactational amenorrhea (Arcanques & Vogelsong, 2002). Implants and intrauterine devices are also categorized as long-acting contraceptive methods while condoms and other barrier methods, oral contraceptives and injectables are categorized as short acting contraceptive methods (World Health Organization & John Hopkins Bloomberg School of Public Health, 2007). Designed to prevent sperm from entering the uterus, barrier methods are removable and may be an option for women who cannot use hormonal methods of contraception (Arcanques and Vogelsong, 2002). Hormonal methods of birth control use hormones to regulate or stop ovulation and prevent pregnancy (Carr and Khan, 2004). Emergency contraception (EC) is an effective post-coital contraceptive that can reduce the risk of an unintended pregnancy after contraceptive failure or when one has engaged in sexual contact without using a means to prevent pregnancy (Bartfan, 2002). It reduces the chances of a pregnancy occurring by 75% to 89% if taken within 120 hours of sexual intercourse (Rodrigues, Grou & Joly, 2001). Emergency

contraceptives work by inhibiting or delaying of ovulation or preventing the implantation of a fertilized egg; however, it does not interfere with an established pregnancy (Glasier, Ketting & Palan, 1996). Emergency contraceptive pills may contain only progestrin in the form of Levonorgestrel or a combination of estrogen and progesterone (Grimes & Raymond, 2002).

Not all contraceptive methods are appropriate for all situations, and the most appropriate method of birth control depends on a woman's overall health, age, frequency of sexual activity, number of sexual partners, desire to have children in the future, and family history of certain diseases (World Health Organization, 1998; Arcanques & Vogelsong, 2002; Glasier *et al.*, 1996; World Health Organization, 2004).

2.2 Awareness of College Students on Contraceptives

Many college administration and adults in general believe that when students enroll in college, they surely have learned all about how to prevent unplanned pregnancy (Prentice *et al.*, 2012). However, as evidenced in the high rates of unplanned pregnancy, this is far from a guarantee (Nguyen & Akintoshi, 2003). Students have low levels of awareness on long acting reversible contraceptives, that is, 34% of students are not at all familiar with IUDs and 49% were not at all familiar with implants (Prentice *et al.*, 2012). This is particularly unfortunate given that these are the most effective methods of birth control and have been linked to a significant reduction in unplanned pregnancy (Peipert, Madden & Allsworth, 2012). Level of awareness of college students on contraceptives differ as established by a study on female college students which showed that the commonly known method in this group is condoms (95 percent) followed by

pills (79.2 percent), injectables (75.6 percent) then emergency contraceptive pills at 61.4 percent (Akintade, Supa & Karl, 2011).

Misperceptions on contraceptives exist among young people as seen in the case where nearly half (44%) incorrectly believe that it is necessary to take a break from the pill every few years (Kaye, Suellentrop & Sloup, 2009). At the same time, there is a false perception that birth control methods are less effective than they really are as noted in a in a survey where four in ten single young adults 18-29 agree with the statement, "It doesn't matter whether you use birth control or not, when it's your time to get pregnant it will happen" (Kaye *et al.,* 2009). Misperceptions about certain contraceptives have also been noted among students as seen in the case of birth control pill which is 92% effective yet more than four in ten young adults believe there is a 50-50 chance of getting pregnant within a year when using the pill (Kaye *et al.,* 2009). Only two out of ten students at get information on pregnancy planning and prevention from their colleges (Prentice *et al.*, 2012).

The studies above have provided a good background on awareness on contraceptives by college students as it covers awareness on various contraceptives and provides information on misperceptions. However, none of the studies was focused in Kisumu City nor Kenya to provide country specific data for Kenya. Therefore this information is still lacking.

2.3 Contraceptive Use by College Students

2.3.1 Contraceptive preference

The last demographic and health survey done in Kenya revealed that 52.2 percent of women aged 20-24 years have ever used a modern method of contraception. Use of specific

contraceptives are as outlined: 14.1 percent use the pill; 0.8 percent use the IUCD; 30 percent use injectables; 1.0 percent use implants; 23.8 have used the male condom; 0.4 percent have used the female condom; 3.0 percent have used emergency contraception (Kenya National Bureau of Statistics & ICF Macro, 2010).

A study of youth in Busia indicated that condoms were the most preferred contraceptive method at 71.7%, followed by Depo-provera at 31.8% and pills at 9% (Kayongo, 2013).

A study in Kisumu indicated that 52 percent of the youth had ever-used a contraceptive method with majority having used the male condom; 34.6% of the youth had used a contraceptive method during their first sexual experience while only 31.4% of the youth are current users of a contraceptives (Oindo, 2002).

The most preferred method of birth control among college students is male condoms (48.9 percent) followed by withdrawal (23.4 percent) then oral pills (12.8 percent), EC pills (7.4 percent), Depo-provera (4.1 percent), standard days method (3.2 percent) then IUCD (1.1 percent) (Byamugisha, Mirembe & Faxalid, 2006). Concerns have arisen on misuse of emergency contraceptives by college students as noted in a progressive study which indicated that 40 percent of students reported that they or their partner had used emergency contraception in the six months preceding the study even in cases where they should have used primary methods of birth control (Kaye *et al.*, 2009).

About 36 percent of contraceptive users in Kenya discontinue using a contraceptive within 12 months with the highest are being for condoms (58.9 percent) followed by pills (43.2 percent)

while injectables (29.0 percent) is lowest in discontinuation (Kenya National Bureau of Statistics & ICF Macro, 2010). Among young people those who communicate less frequently with their partners about prevention issues are less likely to use contraceptives consistently (Davies, Diclemente, Wingoog, Person & Harrington, 2006). There is need to involve male partners and work on developing communication skill of young adults in sexual relationship as a solution towards reducing discontinuation of contraceptive use for those at risk of unplanned pregnancies (MacPhail, Pettifor, Pascoe & Rees, 2007). It is imperative to look into ways of motivating young people to stick to prescribed contraceptive regimen (Boohonene, Tsodzai, Hardee-Cleaveland, Weir & Janowitz, 1991).

The studies above have provided information on use of contraceptives by youth in Kisumu, general Kenyan population and college students in other countries. However, the studies do not provide us with a chance to understand the context among college students in Kisumu City or Kenya. The studies done in Kenya have not disaggregated the data to provide information on contraceptive use among college students.

2.3.2 Source of Contraceptives

Many Kenyans (57 percent) get their supplies of contraceptives through public health facilities followed by private facilities at 36 percent while the remaining 7 percent of the population get their supplies from shops, chemists and community based distributors (Kenya National Bureau of Statistics & ICF Macro, 2010). Most users of implants, IUCDs and injectables are supplied through public facilities while pills and male condoms are mainly supplied through private sector (Kenya National Bureau of Statistics & ICF Macro, 2010). Among young people in Kenya

public health facilities is the preferred source of contraceptives (Obare, Birungi, Undie, Wanjiru, Liambila & Askew, 2011). For college students the main source of contraceptives is retail pharmacies (29.1 percent), followed by youth clinic (19.2 percent) then private clinics at 14.4 percent then college health unit (12.3 percent) and other sources account for 11.7 percent (Byamugisha *et al.*, 2006).

The studies above provide information on contraceptive use by general Kenyan population and college students in Kampala which provides a good basis for comparison with college students in Kisumu which is based in an urban setting. There is therefore need to establish the same information for college students in Kisumu City as the studies above do not provide this information.

2.3.3 Barriers to Contraceptive Use

A study in Cambodia showed that the barriers to youth accessing reproductive health services included lack of confidentiality, shyness, poor relations with health staff, illiteracy and low prioritization by parents for reproductive health services (Adra, 2007). In developing countries, contraceptive use among young people involves a lot of experimentation and is inconsistent (Davies *et al.*, 2006). This may be attributed to barriers either at individual level or quality of health services (Tripp & Viner, 2005). Health service factors that limit uptake of contraceptives include institutional policy on contraceptives, socio-cultural norms and long distance to health facilities (Campbell, Sahin-Hodoglugil & Potts, 2006).

Access to contraceptives for the youth is a problem as health services are considered inaccessible because of the long distance to the facilities and the youth also perceive services to be catering principally for married women leading to fears of receiving a negative reception from clinic staff (Wood & Jewkes, 2006). Furthermore, family planning services in some regions is restricted to health facilities with constraints such as written consent of husband, proof of marital status, age or parity and excessive revisit schedule (Campbell *et al.*, 2006). Static health facilities continue to be the dominant source of family planning and geographical access is considered a constraint on uptake of services (Cleland, Berstein, Ezeh, Faundes, Glasier & Innis, 2006). Other aspects of family planning service quality that have been shown to deter contraceptive use include constant stock-out of family planning commodities; lack of competent staff; few staff; high staff turnover; failure to treat clients with dignity; and lack of privacy in consultation rooms (Singh, Darroch & Vlasoff, 2003). Other barriers to contraceptive uptake include unavailability of family planning services; inadequate knowledge about reproductive health services; negative attitudes of parents and society; health facilities that are insensitive to the needs of young people; and cost of FP services (Agampodi, Agampodi & Piyaseeli, 2008).

The main reasons for none use of contraceptives by college students include fear of side effects such as menstrual disruption (26.5 percent); health concerns (18.8 percent); some of them or their partners are opposed to use of contraceptives (11.3 percent); desire to have children (5 percent); they may be pregnant or not sexually active; and a small proportion (1.3 percent) may not use contraceptives due to lack of knowledge (Bryant, 2009). There is a proportion of students who fail to recognize their risk of getting pregnant or making their partner pregnant while others have misconceptions about contraceptives (Kaufmann, Wet & Stradler, 2003). Lack of adequate

information can also limit contraceptive use among the youth which is attributable to cultures where young people are rarely provided with adequate information about modern contraceptives as it is considered too sensitive a topic to talk about (Nguyen & Akintoshi, 2003). Fear of future infertility is another deterrent to use contraceptives by young women (Williamson, Parkes & Hart, 2009). Other barriers to effective contraceptive use include forgetfulness; fear of partner rejection; and discomfort buying or carrying contraceptives (Kaufman *et al*, 2003). Some religions such as Islam oppose the use of contraceptives among their followers (Davies *et al.*, 2006).

The studies above provide a good understanding on factors that may hinder college students from using contraceptives as they touch on both the service provision factors and barriers pertaining to demand for contraceptives by users. However, the studies do not provide information for students from Kisumu City in Kenya thus the need for this information to be determined through this research.

2.4 Influence of socio-demographic factors and awareness on Contraceptive Use

The Health Behavior Model postulates that an individual's access to and use of health services is considered to be a function of three predisposing factors which include the socio-cultural characteristics of individuals such as education, occupation, ethnicity, social networks, social interactions, and culture; health beliefs such as attitudes, values and knowledge that people have concerning and towards the health intervention; and demographic factors such as age and gender (Andersen, 1995). Studies have established that there is an association between contraceptive use with level of education, economic status, residence that is rural or urban (Kenya National Bureau

of Statistics & ICF Macro, 2010). Influence of age on contraceptive use is seen in increased uptake of family planning services among youth (Maina, 2009) and has further been observed among college and school going students in Thika District (Obonyo, 2010). The influence of gender in use of reproductive health services has been noted where female students are more likely to use the services in comparison to the male students (Obonyo, 2010). Studies reveal that use of reproductive health services by youth is determined by their level of education, that is, the more educated youth are more likely to seek youth friendly health services as they possess better understanding of their health needs (Kenya National Bureau of Statistics & ICF Macro, 2010; Biddlecom *et al.*, 2007).

The socio-economic and demographic factors influencing uptake of contraceptives by youth in Kisumu include age, sex, occupation, level of education and engagement in social activities whereby the younger youth are less likely to use contraceptives than the older ones; contraceptive use among males is higher than among the females; and youth who are employed and those engaging in social activities are more likely to use contraceptives than their counterparts who are not employed and are not engaging in social activities (Oindo, 2002).

Further, the health behavior model postulates that knowledge about a health intervention influences its use (Andersen, 1995). Among the youth it has been established that awareness on reproductive health services influences use Biddlecom *et al.*, 2007; Godia, 2010). However, results of a study among youth in Tanzania indicated that awareness on contraceptives does not relate to use (Mung'ong'o, Mugoyela & Kimaro, 2010). Further, non-use of contraceptives persists even in settings where awareness of contraceptive methods is high as seen from results

of a study in the Maldives which found that knowledge of family planning was universal but only 30% of couples were using a contraceptive method (Population Reports 1999).

The review provides information on influence of socio-demographic factors on use of contraceptives though it does not provide the same information for youth attending college in Kisumu City which is a research gap that can be addressed through this study. The association between level of awareness and use of contraceptives seems to differ from results from studies focusing on use of reproductive health services by the youth and postulations of Health Behavior Model. This research also determined the association between level of awareness and contraceptive use particularly focusing on youth attending college in Kisumu City.

2.5 Influence of socio-demographic factors on awareness on Contraceptives

Association between socio-demographic characteristics and awareness on health services has been established in studies as outlined in this literature review. Age significantly influences awareness on reproductive health services including contraceptives whereby older youth are more likely to be aware of reproductive health services than the younger ones (Hasan, Rashedul, Khan, Nuzhat & Arefin. 2013; Vanphanom, Visanu, Alongkone & Keokedthong, 2013). Gender influences awareness on contraceptives among young people where male are more aware than females (Vanphanom *et al.*, 2013). Level of education and employment status influence awareness on health services, that is, persons with a higher level of education are more likely to be aware of health services than those with lower education (Zain & Naing, 2002). Similarly persons who are employed are more likely to be aware of health services than persons who are unemployed (Zain & Naing, 2002).

These studies have not provided information on association of awareness on contraceptives with socio-demographic factors among college students. Furthermore, none of the studies have focused on Kenya. Influence of social habits such as attending parties that contribute to exposure of students to information on contraceptives has not been studied. This research was conducted to address these identified research gaps.

2.6 Knowledge gaps identified

There are knowledge gaps that were identified through reviewing literature on other studies done. It was established that there is scanty information on awareness about contraceptives and their use by college students in Kisumu City. In addition to that, information on association between level of contraceptive awareness and their use by college students in Kisumu City is scanty. Further, information on influence of socio-demographic factors on awareness about contraceptives by college students in Kisumu City was found to be lacking.

CHAPTER 3: METHODOLOGY

Introduction

This chapter is a description of the study site, study design and study population. It also includes a description of the sampling procedure, data collection methods, data management and data analysis methods used in this research. The chapter also describes how the dependent and independent variables were measured in relation to contraceptive use among college students.

3.1 Study Site

This study was conducted in Kisumu City, Kenya (Appendix I). This is the third largest city in Kenya, with an estimated population of 322,024. The city is located in Western Kenya on the shores of Lake Victoria and covers a total area of 417 sq. km, of which 297 sq. km is land and 120 sq. km is water mass. Its geographical coordinates are 0° 60' 0" South, 34° 45' 0" East. The city is the headquarters of Kisumu County. The county lies in the former Nyanza Province which faces reproductive health challenges that is, low contraceptive prevalence rate, high unmet need for family planning and high maternal mortality rates. Furthermore the province has the highest rate of teenage pregnancies in the country (Kenya National Bureau of Statistics and ICF Macro, 2010). The city has a large proportion of the population constituted by youth (20.1%).

3.2 Research Design

The study adopted a cross-sectional design. This was done to enable collection of information from a large population over a short period of time. It also enabled the study to be carried out in the real-life settings thus increasing the external validity (generalizability) of the study.

3.3 Study Population

The study population was students from both public and private universities and colleges located in Kisumu City. The colleges and universities were those registered by the Ministry of Education. The city has a total of 36 registered colleges and universities and with 12688 students (Ministry of Education, 2013).

3.3.1 Criteria for inclusion of participants

Students in this study were those from registered universities and colleges in Kisumu City. Their age ranged from 18 and 24 years (they should not have reached their 25th birthday on the day they were filling in the questionnaire) as this study focused on youth (Ministry of Health, 2005).

3.3.2 Criteria for exclusion of participants

Collecting of data for this study required getting informed consent from participants thus the participants had to be mentally capable to provide such consent. Students who were intoxicated were not recruited into this study and institutions dealing with students with mental problems were excluded from the sampling frame. Similarly, those who did not give written informed consent were not included in the study.

3.4 Sample size determination and sampling procedure

The desired sample size for the study was calculated using Fisher's formula as modified by (Mugenda and Mugenda, 1999)

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

Where,

n=minimum sample size (for population >10,000) required

z =is the standard normal deviate (1.96 for a 95% confidence level)

d = 0.05 as the level of statistical significance

p= proportion of students using contraceptives. The proportion was assumed to be 50% since the proportion of youth in college who use contraceptives was not accurately

q= proportion of students presumed not to be using contraceptives (q=1-p)

Therefore,

$$n = \frac{1.96 \times 1.96 \times 0.5 \times 0.5}{0.05^2}$$

$$= 384$$

At least 384 participants were required. An additional 10% was added thus bringing the final sample size to 422 so as to estimate the study outcome to within $\pm$ 0.5%, allowing for sampling defect (Visser, Krosnick, Marquette & Curtis, 1996). This was to cover for unexpected attrition. Since the target population was more than 10000, that is, 12688 (Ministry of Education, 2013) there was no further adjustment to the sample size.

Stratified random proportionate sampling technique was applied in selection of study participants. Selection of colleges was done using the ballot system. In order to select these

colleges a list of registered private and public colleges in Kisumu was obtained from the Ministry of Education, Nyanza Province. All the colleges were first classified into four groups, that is, universities, medical training colleges, technical training institutes and commercial colleges. The next step was allocating number of colleges per category that was done proportionate to their total number. Thereafter the names of colleges in each category were written down on papers and the researcher randomly picked from each group then folded the paper again and returned it to ensure equal chances of each college being picked. A total of 12 colleges were selected (Table 3.1). The number of students to be interviewed per college was allocated proportionate to the total number of students in the selected college. In each college students were selected randomly from different years of study. Students from selected classes were requested to participate in the study.

Table 3.1: Distribution of samples per college

Institution	Number of students	Calculation of number of students selected	Sample size
Ramogi Institute of Applied Technology	910	910/7745x422	50
Kisumu Polytechnic	2949	2949/7745x422	161
Intraglobal college	50	50/7745x422	3
KIM	300	300/7745x422	16
Kenya Association of Counseling College	205	205/7745x422	11
St. Marks College	152	152/7745x422	8
Kenya Medical Training College	944	944/7745x422	52
International Medical School	40	40/7745x422	2
Maseno University	845	845/7745x422	46
Catholic University	650	650/7745x422	35
Africa Institute of Africa	300	650/7745x422	16
Nairobi Aviation College	400	400/7745x422	22
Total	**7745**		**422**

3. 5 Data collection tools

Quantitative data was collected using self-administered questionnaire (Appendix II). Information was obtained on socio-demographic characteristic, social habits, awareness about contraceptives and use of contraceptives. Qualitative data was collected through focus group discussions using an FGD guide (Appendix III).

3.6 Data collection procedure

The researcher started out by meeting the college administrators individually and briefly describing to them the aim of the study. Permission was then sought to collect data from the institution. Upon getting permission, the researcher selected the classes in which questionnaires were to be issued. Students in the selected classes were approached individually and provided detailed information about the research. Those who agreed to participate in the study were issued with the consent form to sign then given the questionnaire to fill in. The researcher, upon return of the questionnaires by the students, checked them (questionnaires) for completeness and accuracy. The participants were thereafter allowed to ask any questions they had.

Qualitative data was collected through focus group discussions. The FGDs participants comprised students from different categories as follows: First year university students; Second year university students; Third year university students; Fourth year university students; First year diploma students; Second year diploma students; Certificate students. A total of seven focus group discussions were conducted as the saturation limit was reached at that point.

3.7 Pre-testing of data collection tools

A pre-test was carried out at Great Lakes University Kisumu. This was done in order to test the study tools and improve their quality and efficiency. A total of 50 students were interviewed during the pre-test, this was calculated as an approximation of 10% of study sample size as recommended by Newman, John, Odir and Anderson (1972). After collecting and evaluating the pretested questionnaires, the questions were checked and revised. The data from this college (Great Lakes University of Kisumu) was not included in the final analysis and therefore does not form part of the research findings in the results section.

3.8 Data analysis

The questionnaires were checked for completeness; only 409 questionnaires were analyzed as 13 had to be discarded because they were incomplete. Data was collated and analyzed using descriptive statistics, bivariate and multivariate analytic methods. Each objective was analyzed separately. Quantitative data was recorded as proportions and applied in reporting on socio-demographic data, level of awareness and use of contraceptives. The association between dependent and independent variables was determined by use of chi-square ($p \leq 0.05$) for categorical data (sex, social habits, history of employment and marital status) and t-test for continuous data (age). Thereafter binary logistic regression was done for third and fourth objectives at $p \leq 0.05$ and odds ratio with 95% confidence intervals determined. Binary logistic regression was used to determine the level of association between dependent and independent variables. The data is presented in tables, charts and graphs.

Qualitative data was analyzed using content analysis method whereby themes emanating from responses were identified. The qualitative data was used to triangulate the quantitative data by allowing for verification of quantitative data results.

3.9 Measurement of variables

The dependent variables identified in this study were contraceptive use and awareness on contraceptives. The independent variables in this study were level of awareness about contraceptives and the socio-demographic characteristics of the respondents which include age, marital status, social activities, level of college education and employment history. Level of awareness of students was classified as either low, moderate or high. All students who mentioned more than six contraceptive methods were classified as having high level of awareness; those who mentioned four to five methods were classified as having moderate level of awareness; and those who mentioned three contraceptive methods or less were classified as having low level of awareness (Mung'ong'o *et al.*, 2010). Level of contraceptive use was measured as a proportion of students using contraceptive against eligible population (those already sexually active). Further, the research also established use of specific contraceptives by study participants.

For the bivariate and multivariate analysis respondents were grouped into two, that is for use of contraceptives, one group was comprised of respondents using contraceptives and the other group of those not using contraceptives while for awareness about contraceptives respondents one group comprised those who were aware about contraceptives and the second group of those

not aware about contraceptives. Thereafter analysis was done to establish associations between level of awareness and socio-demographic factors and secondly between level of awareness and socio-demographic factors with use of contraceptives.

3.10 Ethical Considerations

Data collection commenced upon obtaining of ethical approval from Maseno University Ethics Review Committee (Appendix IV). This was followed by requesting for permission from the administration of the selected colleges to carry out the study in their institutions. In the process of data collection written informed consent was obtained from the respondents (Appendix V and Appendix VI). The importance of maintaining confidentiality was emphasized. Respondent identity was filed under code numbers i.e. no individual names were recorded on the questionnaires. The participants were not given monetary compensation for taking their time to fill in the questionnaires. However, the respondents were reassured that filling in the questionnaire would not take longer than 20 minutes.

It is the intention of the researcher to disseminate the findings of this study to the relevant authorities including the colleges from where the study participants were drawn and the Ministry of Health. This shall be achieved through sharing a soft copy of the study with administration of the colleges and publishing the findings in a relevant peer reviewed journal.

CHAPTER 4: RESULTS

Introduction

In this chapter the findings of the study are presented according to the specific objectives. At the beginning, the socio-demographic characteristics of the participants are presented followed by level of awareness on contraceptives; level of use of contraceptives; the association between socio-demographic factors and level awareness on contraceptives; then association between socio-demographic factors, level of awareness on contraceptives with use of contraceptives.

4.1 Socio-demographic Characteristics of Respondents

The total number of students interviewed was 422 but only results from 409 students were analyzed as the remaining 13 questionnaires were incomplete. Out of this group 55% were female and 45% were male. Furthermore, 33.0% of the participants were in their first year, 36.2% in the second year, 24.4% in the third year and 6.3% in the fourth year of study. In addition to that, 56.7% were pursuing diploma courses, 24.8% degrees, and 18.5% were pursuing certificate courses.

The average age of respondents was 21.82 ± 1.650 years. Most of the students (89.2%) were single while a lower proportion (10.5%) was married. Of the students interviewed only 46. 7% of the students had ever worked for pay. In regards to social activities, about 60.3% of the students attend parties and 30% use alcohol. The following table presents the socio-demographic results:

Table 4.1: Socio-demographic characteristics of respondents

Demographic characteristic	Number	Percentage
Age		
18	7	1.7
19	29	6.8
20	69	16.8
21	63	15.1
22	85	20.5
23	70	17.1
24	86	20.8
Gender		
Male	184	45.0
Female	225	55.0
Marital status		
Single	365	89.2
Married	44	10.5
Year of study		
Year 1	134	33.0
Year 2	148	36.2
Year 3	100	24.4
Year 4	27	6.3
Certification pursued		
Degree	101	24.8
Diploma	232	56.7
Certificate	76	18.5
Employment		
Ever worked for pay	190	46.7
Never worked for pay	219	53.3
Social activities		
Visiting night clubs	247	60.3
Drinking alcohol	122	30.0

4.2 Level of awareness on contraceptives among college students in Kisumu City.

When participants were grouped as either being aware of contraceptives or not it was realized that 95.2% of them were aware of at least one contraceptive. When participants' level of

awareness was grouped as high, moderate and low it was realized that 50.1% of the respondents had low awareness level on contraceptives, that is, they were aware of only three contraceptive methods or less. Further, 45.5% had moderate awareness level, that is, they are aware of between four to five contraceptive methods. Only 4.4% of the respondents had high level of awareness on contraceptives, that is, they were aware of six or more contraceptive methods. Figure 4.1 below provides a summary of the results on level of awareness on contraceptives.

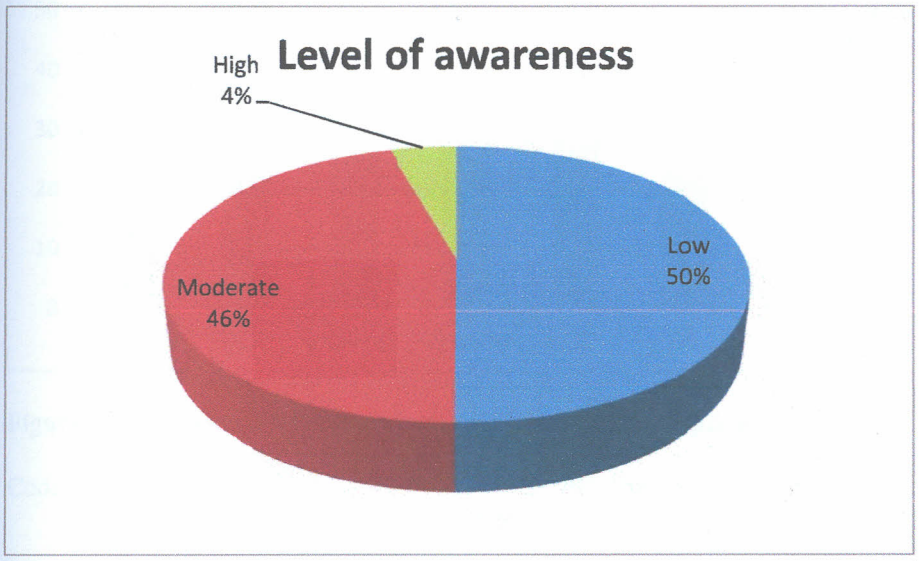

Figure 4.1: Level of awareness on contraceptives

Further analysis was done on awareness of students on the specific contraceptives. The results indicate that the contraception most known by the students is condom (93.2%). This is followed by the daily oral contraceptives at 62.7% then implants at 38.9%, injections at 33.3%, IUCD at 29.3% and lastly emergency contraceptives at 23.4%. This is as presented in Figure 4.2. There are other contraceptives in the market that the respondents were not aware of and these include the patch, intrauterine releasing systems, diaphragm, cervical cap and vaginal ring. The pattern of awareness on contraceptives is an indicator that participants are only aware of few

contraceptives in the market which denotes limited initiatives towards providing information on contraceptives to students in Kisumu City.

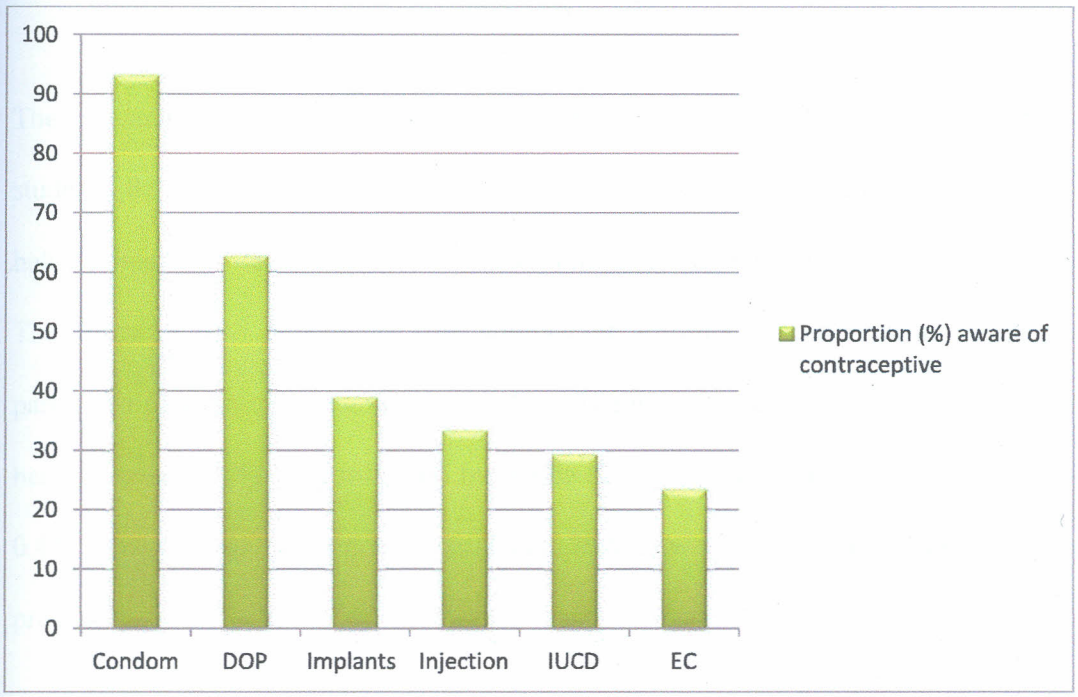

Figure 4.2: Awareness of respondents on various contraceptives

Code: DOP- Daily oral pills EC- Emergency contraceptive
IUCD- intrauterine contraceptive device

There are other methods of birth control that are not contraceptive of which the respondents were also aware of. The awareness on these other methods was as follows: abstinence 20.5%, withdrawal 17.4%, female sterilization 14.0% and standard days method 7.1%.

During FGD it was apparent that misconceptions exist among college students on the various forms of contraceptives available. A twenty-year old female student had this to say '*There is a liquid in the condom that with time causes impotence in men who use the condoms.*' The myth above was reiterated by a third year male student. Another misconception that was mentioned in all the groups is that *'Contraceptives affect intrauterine development of fetus and can result in*

teratogenicity.' Further discussion on effect of contraceptives on fetus revealed that a number of students were in agreement and even cited examples of people they knew of whose babies had been affected by contraceptives. A third misconception voiced by a 21-year old female student and echoed by other students is that *'Contraceptives can cause infertility in women.'*

The researcher related the misconceptions from the FGD to the fact that more than half the students do not get their information on contraceptives from health providers (see table 4.2 below) thus they may hold information with no scientific backing as revealed in examples above. The research also established the sources of information on contraceptives for the study participants as shown in the table 4.2 below. The main source of information on contraceptives is health providers (43.6%) followed by media (23.1%), parents (3.4 %), 2.7% internet and lastly 0.4% from siblings. Most college students (76.8%) would prefer to get information from health providers.

Table 4.2: Source of information on contraceptives

Source of information	Current source of information (%)	Preferred source of information (%)
Health provider	43.6	76.8
Peers	9.6	7.2
Siblings	0.4	0
Parents	3.4	5.1
Media	23.1	5.1
Internet	2.7	2.5
College	8.8	2.9
Seminars	3.4	0.4

4.3 Level of contraceptive use by college students in Kisumu City

Majority of the students (81.7%) had ever used a contraceptive. However, only 54.7% of the respondents are using contraceptives consistently. It was established that the age at first use of contraceptives was 18.83 ± 2.179 years and only 60.3% of the respondents used contraceptives with their first sexual contact. The average delay period on initiating contraceptives for those who do not use contraceptives with their first sexual contact was 12.41±12.725 months.

Many of the respondents (53.1%) decide on contraceptive use on their own; 40.4% make a joint decision with their sexual partner; while for 6.5% of the respondents the decision is reached by their partner. Sources of contraceptives among the students vary, that is, higher proportion of the participants (46.1%) got their contraceptives from public health facilities followed by shops (22.0%), pharmacies (19.8%), condom dispensers (6.5%), college clinics (6.5%) and friends (0.4%). Table 4.3 below provides a summary of the findings on contraceptive use by respondents.

Table 4.3: Contraceptive use by college students

Variable	Number	Frequency
Ever used contraceptives	334	81.7
Age at first use of contraceptives		
Below 15 years	10	2.9
15-17 years	69	20.9
18-19 years	111	33.1
20 years and above	144	43.1
Use of contraceptives		
Always	183	54.7
Sometimes	151	45.3
Initial use of contraceptives		
First sexual act	201	60.3
Afterwards	133	39.3
Decision on contraceptive use		
Self	177	53.1
Partner	22	6.5
Joint	135	40.4
Source of contraceptives		
Private clinics	10	3.0
Public health facilities	154	46.1
Pharmacy	65	19.8
Shop	73	22.2
Friends	1	0.4
Condom dispensers	20	6.5
College clinics	20	6.5

From the information on Table 4.3 above the researcher deduced that there are practices on use of contraceptives by the respondents that may contribute to high level of inconsistent use of contraceptives and which ultimately puts the respondents at a high risk of unplanned pregnancies. These include: delay in use of contraceptives for longer than two years; reliance on public health facilities, which are marked by constant stock-outs of commodities, as a source of

contraceptives; and more than half of the respondents not making joint decision with their sexual partners on use of contraceptives.

Information on use of specific contraceptives by respondents is summarized in Figure 4.3 below. Majority of the respondents (82.2%) use condoms, followed by combined oral contraceptives (5.1%) and injections (5.1%) then implants (4.2%) and lastly IUCD (1.4%) and EC (1.4%). Use of condoms by many students can be attributed to it being readily available.

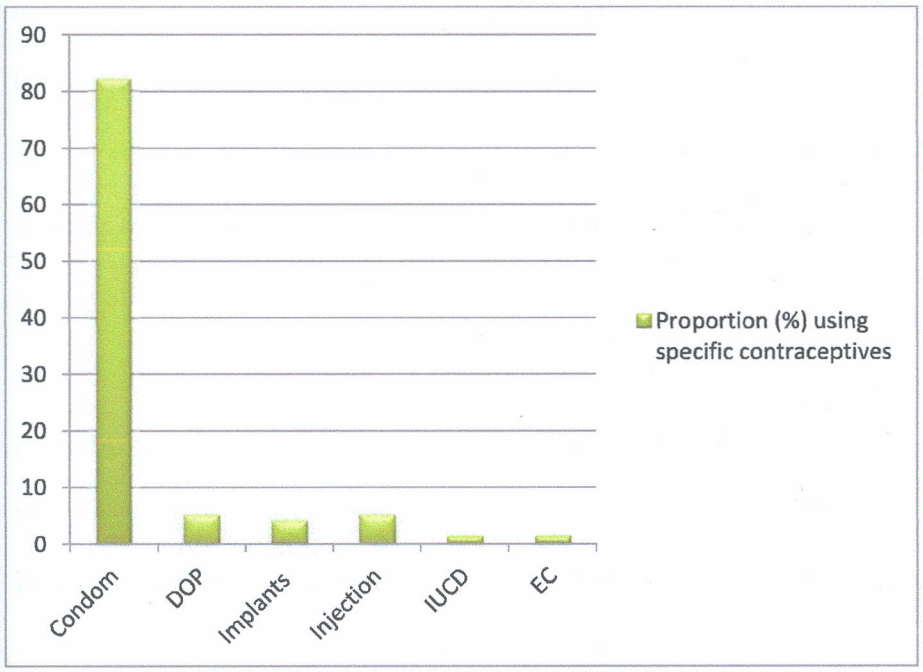

Figure 4.3: Use of various contraceptives by college students

Code: DOP- Daily oral contraceptives IUCD- intrauterine contraceptive device
EC- Emergency contraceptives

The researcher sought to establish if there are barriers to contraceptive use by respondents to enable further understanding on reasons for inconsistent use of contraceptives by more than half the respondents. Through the focus group discussions it was realized that barriers exist and

pertain to either the perceived effect of the contraceptives by the respondents or quality of family planning services.

One of these barriers pertaining to perceived effect of contraceptives is the fear of side effects as mentioned by a 19 year old female student and reiterated by others, mainly female respondents *'Contraceptives cause excessive bleeding and lead to a change in pattern of the menses.'* A second barrier arises from misperceptions on contraceptives as expressed by a female respondent who mentioned that, *'I am not willing to use contraceptives because I am afraid that I will not have children in the future if I use them.'* Another barrier to contraceptive use is fear of method failure as expressed by one of the respondents, *'I cannot use these contraceptives because they can fail and I will then get pregnant. I would rather count my days and abstain on the days when it is not safe.'* The barriers to contraceptive use that pertain to perceived effect can be attributed to lack of adequate information on contraceptives.

Another barrier to contraceptive use by respondents was the nature of services provided. The main source of contraceptives for the participants is the public facilities. Services in these facilities seem not to be addressing the needs of the youth. This is deduced from the sentiments of a 23-year old male student, *'You know sometimes we find it hard to get contraceptives from health facilities because you go there and find that the nurse is known to your mother. You always feel that they will tell your mother what you are up to. Some of the people waiting for services may also be from your home locality.'* In addition to that is the inadequate auditory and visual privacy in some health facilities as one of the respondents put it forth that, *'When you are in some family planning rooms you feel that other people are hearing what you are telling the*

nurse.' Respondents also stated that they are not able to afford certain contraceptives because of the cost as stated, *'Sometimes we are not able to opt for the contraceptives we would like to use because of the high cost. We therefore go for what we can afford.'* The barriers to contraceptive use that pertain to nature of services provided can be attributed to the non-inclusion of youth in designing of sexual and reproductive health services thus services provided do not meet age specific needs.

4.4 Association between socio-demographic characteristics of college in Kisumu City with their awareness on contraceptives

A summary of bivariate analysis on association of socio-demographic characteristics of respondents with awareness on contraceptives is provided on Table 4.4. The results indicate that there is significant association between awareness on contraceptives with age and certificate pursued. The socio-demographic factors that are not significantly associated with contraceptive use are marital status, type of college, sex, history of employment, year of study, use of alcohol and attending parties.

Table 4.4: Bivariate analysis on association of socio-demographic characteristics of respondents with their awareness on contraceptives

Predictors		Aware of contraceptives	Not aware of contraceptives	p-value	Test
Sex	Male	176(45.5%)	10(35.3%)	**0.409**	χ^2
	Female	211(54.5%)	12(64.7%)		
Age	Mean (standard deviation)	21.87(1.654)	21.00(1.369)	**0.041**	t
Marital status	Ever married	37(9.3%)	0(0%)	**0.549**	χ^2
	Never married	352(90.7%)	20(100.0%)		
Type of college	University	98(25.1%)	3(17.6%)	**0.065**	χ^2
	MTC	41(10.5%)	0(0%)		
	Commercial college	67(17.4%)	8(41.2%)		
	TTI	183(47.7%)	8(41.2%)		
Year of study	First year	129(33.0%)	7(33.3%)	**0.737**	χ^2
	Second year	139(35.7%)	8(41.2%)		
	Third year	98(24.9%)	2(13.3%)		
	Fourth year	25(6.3%)	1(6.7%)		
Certificate pursued	Degree	99(25.4%)	3(17.6%)	**0.043**	χ^2
	Diploma	225(57.5%)	8(41.2%)		
	certificate	66(17.1%)	8(41.2%)		
Worked for pay	Ever been employed	183 (47.0%)	8(41.2%)	**0.639**	χ^2
	Never been Employed	206(53.0%)	12(58.8%)		
Attending parties	Attending parties	238(61.3%)	8(41.2%)	**0.099**	χ^2
	Not attending parties	151(38.7%)	12(58.8%)		
Use of alcohol	Drinking alcohol	120(30.6%)	3(17.6%)	**0.255**	χ^2
	Not drinking alcohol	269 (69.4%)	17(82.2%)		

Further, multivariate analysis was carried out to determine the level of association between age and type of certification pursued with awareness on contraceptives. The results indicate that there is a negative association between age and awareness on contraceptives, that is, the younger students are less likely to be aware of contraceptives than the older ones. This influence of age

on awareness on contraceptive denotes increased exposure to information on contraceptives with advancing in age. Further, students who are pursuing degrees are more likely to be aware of contraceptives than those pursuing certificate courses. This denotes the influence of level of education on awareness on contraceptives, that is, students who have a higher level of education are more likely to be aware of a service than those having a lower level of education. However, there is no significant difference in association between awareness on contraceptives between respondents undertaking degree courses and those undertaking certificate courses.

Table 4.5: Multivariate analysis on influence of age and type of certificate pursued on awareness on contraceptive

Variable		ß	OR	P-value
Age		-0.316	0.729(0.536-0.991)	**0.043**
Certificate pursued	Degree		2.575(1.069-6.846)	**0.072**
	Diploma	-1.279	0.278(0.068-1.135)	**0.074**
	Certificate	-1.145	0.318(0.106-0.954)	**0.041**

4.5 Association between socio-demographic characteristics of college students in Kisumu City with their use of contraceptives

A bivariate analysis of the data showed that there is significant association between contraceptive use by the students with their sex, age, history of employment, year of study, use of alcohol and attending parties. Other socio-demographic factors that were studied but were not found to be not to be significantly associated with contraceptive use are marital status, type of college and certification pursued.

Table 4.6: Bivariate analysis on association of socio-demographic characteristics of respondents with their use of contraceptives

Predictors		Used contraceptives	Never used contraceptives	p-value	Test
Sex	Male	150(49.5%)	8(25.0%)	**0.017**	χ^2
	Female	154(50.5%)	22(75.0%)		
Age	Mean (standard deviation)	22.03(1.56)	21.04(1.55)	**0.002**	t
Marital status	Ever married	32(10.3%)	2(7.1%)	**0.597**	χ^2
	Never married	272(89.7%)	28(92.9%)		
Type of college	University	76(25.1%)	8(25.0%)	**0.483**	χ^2
	MTC	35(11.7%)	2(3.6%)		
	Commercial college	52(17.0%)	6(25.0%)		
	TTI	141(46.3%)	14(46.4%)		
Year of study	First year	65(30.9%)	17(57.1%)	**0.031**	χ^2
	Second year	115(36.2%)	8(25.0%)		
	Third year	88(27.0%)	3(10.7%)		
	Fourth year	19(6.0%)	2(7.1%)		
Certificate pursued	Degree	77(25.4%)	8(25.0%)	**0.518**	χ^2
	Diploma	176(58.0%)	15(50.0%)		
	certificate	51(16.6%)	7(25.0%)		
Worked for pay	Ever employed	152 (50.2%)	7(22.2%)	**0.008**	χ^2
	Never employed	151(49.8%)	23(77.8%)		
Attending parties	Attending parties	203(66.7%)	10(32.1%)	**0.001**	χ^2
	Not attending parties	101(33.3%)	20(67.9%)		
Use of alcohol	Drinking alcohol	108 (35.8%)	3(10.7%)	**0.014**	χ^2
	Not drinking alcohol	194 (64.2%)	27(89.3%)		
Level of awareness on contraceptives	Low	154(50.5%)	11(35.7%)	**0.117**	χ^2
	Moderate	137(45.2%)	19(64.3%)		
	High	13(4.2%)	0		

Code: TTI- Technical training institute
MTC- Medical training college

The researcher further carried out multivariate analysis on the data to determine level of association between use of contraceptives with the independent variables that were found to be significantly associated in the bivariate analysis. The factors found to have a significant correlation with contraceptive use are age, attending of parties and use of alcohol.

Table 4.7: Multivariate analysis on influence of gender, employment history, attending of parties and use of alcohol on contraceptive use

Variable		ß	OR	P-value
Gender	Female	0.574	1.776 (0.862-3.656)	0.119
Age		0.407	1.502(1.201-1.877)	0.000
Year of study	Year 1			0.652
	Year 2	0.865	2.374(0.621-9.076)	0.206
	Year 3	0.767	2.153(0.583-7.945)	0.250
	Year 4	0.667	1.946(0.480-7.885)	0.351
Employment history		0.80	1.084(0.544-2.157)	0.819
Attending of night clubs	Attending night clubs	0.828	2.290(1.150-4.560)	0.018
Use of alcohol	Drinking alcohol	1.524	4.590(1.516-13.897)	0.007

From the Table 4.7 it can be noted that the older respondents are 1.776 times more likely to use contraceptives than the younger ones; students attending parties are 2.29 times more likely to use contraceptives than those who do not attend parties; while students who drink alcohol are 4.590 times more likely to use contraceptives than those who do not. The influence of age on contraceptive use denotes increased exposure to services and information as respondents advance in age. The positive influence on attendance of parties and use of alcohol on contraceptive use

indicates that engagement in social activities also increases exposure to students on information on contraceptives.

CHAPTER 5: DISCUSSION

Introduction

In this chapter, the findings of the study are discussed in reference to similar studies done elsewhere.

5.1 Level of awareness of college students in Kisumu City on contraceptives

The first objective of the study is to establish awareness on contraceptives by college students in Kisumu City, Kenya. Results indicate that 96.2% of respondents were aware of at least one method of birth control. This finding is similar to that of the general population in Kenya (Kenya Bureau of Statistics & ICF Macro, 2010). College students in Kisumu have low level of awareness on long acting contraceptives such as IUD, implants and injectables (more than 50% do not know about these contraceptives) and emergency contraceptives. This is similar to results of community college students in USA whose level of awareness on long term contraceptives was at 66% on IUD and 51% on implants (Prentice *et al.*, 2012). A comparison of these results with that of a similar study carried out among female college students in Lesotho (Akintade *et al.*, 2011) were similar for awareness on short acting contraceptives (male condoms 95 percent and oral daily pills 79.2 percent) while for the long acting methods and emergency contraceptives the students from Lesotho has a higher level of awareness (75.6% for injectables and 61.4% respectively). The low level of awareness on long acting methods of contraception and emergency contraception is of concern particularly for students who are at risk of getting unplanned pregnancies.

Misperceptions on contraceptives exist among college students in Kisumu as brought out by results of the FGD. Similarly such misperceptions have been noted in other studies as seen in community college students in the USA where nearly half (44%) incorrectly believe that it is necessary to take a break from the pill every few years (Kaye *et al.*, 2009). Furthermore, there is a false perception that birth control methods are less effective than they really are as noted in a in a survey where four in ten single young adults agree with the statement, "It doesn't matter whether you use birth control or not, when it's your time to get pregnant it will happen" (Kaye *et al.,* 2009). The lack of confidence in contraceptives among college students from Kisumu City was also brought out through the FGDs where some participants felt that it was better to use traditional methods of FP than modern methods of contraception. Misperceptions about condoms brought out in this study have also been noted among students in Lesotho (Akintade *et al.,* 2011). These misconceptions prevent students from using contraceptives even for those at risk of getting pregnant. This points to the need for interventions to be put in place to ensure that students get comprehensive information on contraceptives from reliable sources such as health providers and peer education programmes.

A low proportion of the students get information on contraceptives from their colleges. This is comparable to results of study carried out among college students in the USA where only two out of ten students got information on pregnancy planning and prevention from their colleges (Prentice *et al.,* 2012). Lack of programmes run by colleges targeted at increasing awareness of students on contraceptives.

5.2: Level of use of contraceptives by college students in Kisumu City, Kenya

Majority of the respondents had ever used a contraceptives but a much lower proportion are using contraceptives consistently. Results from this study are similar to those of a study carried out among students from Kwazulu Natal where only 61.3 percent of the students use contraceptives consistently (Hoque & Gluman, 2012). Comparing these results to those of studies on the general youth population in Kisumu and Kenya shows different results in that only 52 percent of the youth had ever-used contraceptives as compared to 82% in this study (Oindo, 2002; Kenya National Bureau of Statistics & ICF Macro, 2010). The mean age at first use of contraceptives denotes a delay denotes a delay in contraceptive use for almost two years as the sexual debut in Kenya is currently at 16.2 years (Ikamari & Towett, 2007).

The contraceptives used by respondents in this study are similar those of a study on students from Kampala where male condoms are the most preferred contraceptive and IUCD is preferred least (Byamugisha *et al.*, 2006) and among youth in Kisumu (Oindo, 2002). These results are different from those of the general Kenyan population whereby the most preferred contraceptive is the injectables and the IUCD is the least preferred contraceptive (Kenya National Bureau of Statistics & ICF Macro, 2010).Further, more than half of the respondents in this research are making decision on contraceptive use on their own. Lack of communication has been shown to contribute to inconsistent use of contraceptives among young people (Davies *et al.*, 2006). Similar to results of other studies carried out in Kenya the main source of contraceptives remains government health facilities (Kenya National Bureau of Statistics & ICF Macro, 2010; Oindo, 2002).

The respondents gave various reasons for not using contraceptives including concern on side effects, fear of method failure and the notion that some contraceptives reduce sexual satisfaction. These factors limiting contraceptive use were also identified in a similar study on college students (Bryant, 2009). Other barriers to contraceptive use mentioned by respondents such as fear of public opinion, the high cost of services particularly in private health facilities, service being provided by an elderly persons, some health providers are not willing to issue contraceptives to young people, were also identified in other studies (Agampodi *et al.*, 2008; Cleland *et al.*, 2006).

5.3: Association between socio-demographic characteristics of college students in Kisumu City with their awareness on contraceptives

The results on Table 4.4 indicate that there is significant association between awareness on contraceptives with certain socio-demographic characteristics, that is, age and certificate pursued. The results of this study show that there is a negative association between age and awareness on contraceptives, that is, the younger students are less likely to be aware of contraceptives than the older ones. Age significantly influences awareness on reproductive health services including contraceptives whereby older youth are more likely to be aware than the younger ones (Hasan *et al.*, 2013; vanphanom *et al.*, 2013).

Results on influence of level of education on awareness on contraceptives indicates that students who are pursuing degrees are more likely to use contraceptives than those pursuing certificate courses. Other studies have established that level of education and employment status influence awareness on health services, that is, persons with a higher level of education are more likely to

be aware of health services than those with lower education (Zain & Naing, 2002). The results of this study show that gender and employment status do not influence awareness on contraceptives while other studies determined a positive association with the two factors, that is, gender and employment status (vanphanom *et al.*, 2013); Zain & Naing, 2002).

5.4: Association between socio-demographic factors of college students in Kisumu City with their use of contraceptives

This study established that there is a significant association between gender and use of contraceptives by college students, that is, male students are more likely to use contraceptives than the female students. The influence of gender on use of contraceptives has also been noted among youth in Kisumu where the male youth are more likely to use contraceptives than the female youth (Oindo, 2002). Contrary to these finding Obonyo (2010) established that female students are more likely to use reproductive health services than male students. Much as this study established a significant association between contraceptive use and sex of the respondent a similar study on college students in Kwa Zulu Natal did not find a statistically significant association between gender and use of contraceptive (Hoque & Gluman, 2012).

Influence of age on contraceptive use as established in this study has been noted in other studies where there is higher uptake of contraceptives among older youth as compared to the younger ones (Kenya National Bureau of Statistics & ICF Macro, 2010; Maina, 2009) and has further been observed among college and school going students in Thika District (Obonyo, 2010). Influence of age on contraceptive use was also noted in contraceptive use among youth in Kisumu (Oindo, 2002).

The significant association between level of education with use of contraceptives has been noted in other studies. These studies reveal that the more educated a youth is the more likely they are to use reproductive health services including contraceptives as they possess better understanding of their health needs (Kenya National Bureau of Statistics & ICF Macro, 2010; Biddlecom *et al.*, 2007; Oindo, 2002). The significant association of history of employment and engaging in social activities with use of contraceptives were also noted in a study among youth in Kisumu whereby youth who have ever been employed and those engaging in social activities were more likely to use contraceptives than their counterparts who have never been employed and were not engaging in social activities (Oindo, 2002). Similarly, another study established that youth engaging in social activities are more likely to acquire varied information and behavior regarding contraception from peers (Tripp & Viner, 2005).

Level of awareness on contraceptives among the students is not significantly associated with use of contraceptives which differs from the postulations of Health Behavior Model stating that knowledge of a health intervention by an individual will influence his/her use of that intervention (Andersen, 1995) and other studies on access of youth to reproductive health services (Biddlecom *et al.*, 2007; Godia, 2010). This finding is, however, similar to that of a study on students in Dar es Salaam that did not find a significant association between awareness on contraceptives and their use (Mung'ong'o *et al.*, 2010) and in the Maldives which found that knowledge of family planning was universal but only 30% of couples were using a contraceptive method (Population Reports 1999).

CHAPTER 6: CONCLUSSION AND RECOMMENDATIONS

Introduction

This chapter gives conclusion from the findings from quantitative data and recommendations based on research findings of the independent factors studied as follows; socio-demographic factors; awareness on contraceptives; use of contraceptives; association between socio-demographic factors and awareness on contraceptives; and association between socio-demographic factors and use of contraceptives.

6.1 Conclusions

1. Youth attending college in Kisumu City have low level of awareness on contraceptives as more than half of them are aware of only three contraceptives or less and about 4.8 percent are not aware of any contraceptive. Furthermore, misperceptions on contraceptives exist in this group.

2. There is low use of contraceptives among college students in Kisumu City. Most of the students do not use the reliable long term contraceptives such as injections, implants and IUCD but instead opt for the less reliable short term contraceptives such as condoms.

3. Awareness on contraceptives among college students in Kisumu City is significantly associated with age and certificate pursued, that is, older students are more likely to use contraceptives than the younger ones and students pursuing degree courses are more likely to use contraceptives than those undertaking certificate courses.

4. Use of contraceptives by college students in Kisumu is significantly associated with their age, gender, year of study and engaging in social activities, that is, female students, younger students,

those in their earlier years of study and students who do not participate in social activities such as attending parties are less likely to use contraceptives.

6.2 Recommendations

1. This study has revealed that there is low level of awareness on contraceptives among college students in Kisumu City, Kenya. It is recommended active sensitization of the students be carried out through forums that create opportunities for relaying of comprehensive information on contraceptives to the students. The study also established that few students get information on contraceptives from their colleges pointing existence of a gap in provision of reliable information on contraceptives to the students. It is recommended that colleges institute initiatives to educate their students on contraceptives as a means of increasing their awareness and enhance their capacity to make informed choices on contraceptives. This is also necessary to reduce the prevalent misconceptions on certain contraceptives such as condoms.

2. The study further revealed that there is low level of use of contraceptives by students. It is recommended that programmes are put in place to address the low use of contraceptives by the students. Linking students to health facilities offering comprehensive family planning services where counseling for more reliable methods of family planning can be undertaken should be a priority.

3. This study also established that younger students and those who are pursuing certificate courses are less aware of contraceptives. Programmes put in place to increase awareness on contraceptives should consider these students as special groups and provide them with comprehensive information on contraceptives at the earliest opportunity.

4. The findings from this study indicate that female students, younger students, those in their earlier years of study and students who do not participate in social activities such as attending

parties are less likely to use contraceptives. The study recommends that these factors be considered in designing of programmes geared towards increasing use of contraceptives by college students.

This study focused on assessing contraceptive use among college students from Kisumu City in Kenya. The researcher recommends that comparative studies on contraceptive use among college students in other parts of the country should also be carried out.

REFERENCES

ADRA (2007). LDP youth friendly services in Cambodia: Leadership Management Sustainability. Cambodia: Management Sciences

Agampodi, S.B., Agampodi, T.C., Piyaseeli, U.K. (2008). Adolescents' Perception of Reproductive Health Care Services in Sri Lanka. *BMC Health Services Research.* **98**:1472-6963.

Akintade, O.L., Supa, P., Peltzer, K. (2011). Awareness and Use of and Barriers to Family Planning Services among Female University Students in Lesotho. *South African Journal of Obstetrics and Gynaecology.* **17(3): 72-75**

Andersen, R.M. (1995). Revisiting the Behavioral Model and Access to Medical Care: Does it Really Work? *Journal of Health Sciences and Social Behavior.* **36(1)**

Arcanques, C.M., Vogelsong, K. (2002). Recent Advances in Family Planning Methods. *Archives of Ibadan Medicine.* **3(1)**: 6-9

Bartfan, G.I. (2002). Emergency Contraception in Clinical Practice: Global Perspective. *International Journal of Gynecology and Obstetrics.* **70**: 49-58

Biddlecom, A.E., Munthali, A., Singh, S., Woog,V. (2007).Adolescents Views of and Preferences for Sexual and Reproductive Health Services in Burkina Faso, Ghana, Malawi and Uganda. *African Journal of Reproductive Health.* **11(3)**: 99-110.

Boohonene. E., Tsodzai. J., Hardee-Cleaveland, K., Weir, S., Janowitz, B. (1991). Fertility and Contraceptive Use among young Adults in Harare, Zimbabwe. *Studies in family planning.* **22(4)**:264-71

Bradburn, E.M. (2002). Short Term Enrollment in Post Secondary Education: Student Differences in Reasons for Early Departure. Washington DC: National Centre for Educational Statistics.US Department for Education.

Bryant, K. (2009). Contraceptive Use and Attitudes among Female College Students. *The ABNF Journal.* **20(1)**: 12-16.

Byamugisha, K.J., Mirembe, M.F., Faxelid, E. (2006). Emergency Contraception and Fertility Awareness among University Students in Kampala, Uganda. *African Health Sciences.* 6(4): 194-200.

Campbell, M., Sahin-Hodoglugil, N., Potts, M. (2006). Barriers to Fertility Regulation. *Journal of Studies in family planning*; **37**: 87-98.

Carr, D., Khan, M. (2004). The Unfinished Agenda: Meeting the Needs for Family Planning in Less Developed Countries. Washington DC. Population Reference Bureau.

Cleland, J., Berstein, S., Ezeh, A., Faundes, A., Glasier, A., Innis, J. (2006). Family Planning: The Unfinished Agenda. *Lancet*: **368**: 1810-1827

Davies, S.L., Diclemente, R.J., Wingoog, G.M., Person, S.D., Harrington, K. (2006). Predictors of Inconsistent Contraceptive Use among Adolescent Girls: Findings from a prospective Study. *Journal of Adolescent Health*. **39**: 43-49

Finer, L.B., Zolna, M.R. (2011). Unintended pregnancy in the USA: Incidence and disparities. *Contraception*.**84**: 478-488

Glasier, A., Ketting, E., Palan, V.I. (1996). Case studies in emergency contraception from six countries. *International Family Planning Perspective*. **22:** 22-61

Godia, P. (2010).Youth friendly sexual and reproductive health service provision in Kenya: What is the best model? Nairobi. Ministry of Health.

Grimes, D.A., Raymond, E.G. (2002). Emergency Contraception. *Annals of Internal Medicine*. **137:**180-189.

Hasan, H.A., Rashedul, H., Khan, R.Z, Nuzhat, E., Arefin, U. (2013). Influence of Socio-Demographic Factors on Awareness of HIV/AIDS among Bangladeshi Garment Workers. *Springerplus*. **2(174).**

Haub, C., Herstand, B. (2002). Family Planning Worldwide 2002 Data Sheet. Washington DC. Population Reference Bureau.

Hoque, M., Glumann, S. (2012). Contraceptive Practices in the Era of HIV/AIDS among University Students in Kwa-Zulu Natal. *Journal of Social Aspects of HIV/AIDS*. **9(1)**:15-19

Ikamari, L., Towett, R. (2007). Sexual Initiation and Contraceptive Use among Female Adolescents in Kenya. *African Health Sciences*. **14:** 1-13

Jones, R. (2011). Teens Reflect on their Sources of Contraceptive Information. *Journal of Adolescent Research*. **28**(4): 72-79

Kaufman, C.E., Dewet, T., Stadler, J. (2003). Adolescent Pregnancy and Parenthood in South Africa. *Studies in Family Planning*. **32**:147–160.

Kaye, K., Suellentrop, K., and Sloup, C. (2009). The Fog Zone: How Misperceptions, Magical Thinking, and Ambivalence Put Young Adults at Risk for Unplanned Pregnancy. Washington, DC: *The National Campaign to Prevent Teen and Unplanned Pregnancy*

Kayongo, B.S. (2013). Uptake of Modern Contraception among Youths (15-24) at Community Level in Busia District, Uganda. Gender Resource Centre: Ministry of Labor, Gender and Social Development. Kampala, Uganda.

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

Machiyama, K., Cleland, J. (2013). Insights Into Unmet Need in Kenya: STEP UP Research Report. London. London School of Tropical Medicine and Hygiene.

MacPhail, C., Pettifor, A.E., Pascoe, S., Rees, V.H. (2007). Contraceptive Use and Pregnancy among 15-24 Years Old South African Women: a Nationally Representative Cross-sectional Survey. *BMC Med.* **5** (31): 149-154.

Maina, W.B. (2009). Factors Influencing Contraceptive Use among Female Youth Aged 15-24 Years in Kenya. University of Nairobi: Digital Repository. http://erepository.uonbi.ac.ke:8080/handle/123456789/5329. Accessed on 20/05/2014

Mathers CD, Vos T, Lopez AD, Salomon J, Ezzati M. (2001). National Burden of Disease Studies: A Practical Guide. Edition 2.0. Global Program on Evidence for Health Policy. Geneva: World Health

Ministry of Education, Kisumu County. (2013). Register of colleges for Kisumu County. Kisumu.

Ministry of Health, Division of Reproductive Health. (2005). National Guidelines for Provision of Adolescent Youth Friendly Services in Kenya. Ministry of Health. Nairobi.

Machiyama, K., Cleland, J. 2013. 'Insights into unmet need in Kenya' STEP UP research report. London. London School of Tropical Medicine and Hygiene.

Mosher, W., Jones, J. (2010). Use of contraception in the USA: 1982-2008. *Vital Health Statistics.* **29**: 1-44

Mugenda ,O.M., Mugenda, A.G. (1999). Research Methods: Quantitative and Qualitative Approaches. Acts Press, Nairobi.

Mung'ong'o, S.G., Mugoyela, V., Kimaro, S. (2010). Knowledge, Attitude and Practice on Contraceptive Use among Secondary School Students in Dar es Salaam, Tanzania. *The East and Central African Journal of Pharmaceutical Sciences.* **3(2)**: 43-51

National Council for Population and Development. (2003). Adolescent Reproductive Health and Development Policy. Ministry of National Planning and Development and Ministry of Health.

Newman, N., John, F., Andersen, W. (1972). Patterns of Dental Service Utilization in the united States: A Nationwide Social Survey, Research Series No. 30. Chicago. Centre for Health Administration Studies, University of Chicago.

Nguyen, H., Akiyoshi, T., Neinstein, L. (2003). Pregnancy in the College Population. *Journal of Adolescent Health.* **32**:158-165

Obare F., Birungi H., Undie C., Wanjiru W.,Liambila W., Askew I. (2011). Levels, Trends and Determinants of Contraceptive Use among Adolescent Girls in Kenya; APHIA II OR Project in Kenya/ Population Council: Nairobi, Kenya

Obonyo, A.O. (2013). Determinants of Utilization of Youth Friendly Reproductive Health Services among School and College Youth in Thika West District, Kiambu County, Kenya. Kenyatta University Institutional Repository. http://ir-library.ku.ac.ke/handle/123456789/7007. Accessed on May 20, 2014

Oindo, M. (2002). Contraception and Sexuality among the Youth in Kisumu, Kenya. *Journal of African Health Sciences*. **2(1)**: 33-40.

Population Reports 1999. Ending Violence Against Women. Series L, Number 11, Volume XXVII, Number 4, December.

Peipert, J.F., Madden, T., Allsworth, E.J. (2012). Effectiveness of Long Acting Reversible Contraception. *The New England Journal of Medicine*.**366** (21): 1998-2007

Power, J., French, R., Cowan, F. (2007). Subdermal Implantable Contraceptives Versus Other Forms of Reversible Contraceptives or Other Implants as Effective Methods of Preventing Pregnancy. *Journal of Steroid Biochemistry and Molecular Biolog.* **63:** 1-6

Prentice, M., Storin, C., Robinson, G. (2012). Make it Personal: How Pregnancy Planning and Prevention Help Students Complete College. Washington, DC: The National Campaign to Prevent Teen and Unplanned Pregnancy

Rodrigues, I., Grou, F., Joly, J. (2001). Effectiveness of Emergency Contraception Pills Between 72 and 120 Hours after Unprotected Sexual Intercourse. *American Journal of Obstetrics and Gynecology*. **184**:531-537.

Ross, J.A., Winfrey, W. L. (2002). Unmet Need for Contraception in the Developing World and Former Soviet Union: An Updated Estimate. *International Family Planning Perspectives* **28**(3): 23-28

Singh, S., Darroch, J.E., Vlasoff, M. (2003). Adding It Up: The Benefits of Investing in Sexual and Reproductive Health. New York. *The Allan Guttmacher Institute.*

Singh, S., Sedgh, G., Hussain, R. (2010). Unintended Pregnancies: Worldwide Trends, Levels and Outcomes. *Studies in Family Planning.* **41**: 241-450

Tripp, J., Viner, R. (2005). ABC of Adolescent Sexual Health, Contraception and Teenage Pregnancy. *British Medical Journal.* **330**: 590-593.

United Nations Population Information Network. (1994). Report on the International Conference on Population and Development, Cairo, 5-13 September 1994.

Vanphanom, S., Visanu H., Alongkone, P., Keokedthong, P. (2013). Awareness and Attitudes Towards Emergency Contraceptive Pills among Young People in the Entertainment places, Vientiane City, Lao PDR. BMC Women's Health 2013, **13**:14-23. http://www.biomedcentral.com/1472-6874/13/14

Visser, P.S., Krosnick, J.A., Marquette, J., Curtis, M. (1996). Mails Survey for Election Forecasting? " An evaluation of the Colombian Dispatch Poll."*Public Opinion Quaterly.* **60**: 181-227

Williamson, L.M., Parkes, D., Wight, D., Petticrew, M., Hart, G.J. (2009). Limits to Modern Contraceptive Use among Young Women in Developing Countries. *Reproductive Health.* **6**: 3-11.

Wood, K., Jewkes, R. (2006). Blood Blockages and Scolding Nurses: Barriers to Adolescent Contraceptive Use in South Africa. *Reproductive Health Matters.* **14:**109-118.

World Health Organization. (1998). Cardiovascular Disease and Use of Oral and Injectable Progestagen Only Contraceptives and Combined Injectable Contraceptives. Results of an International, Multicenter Case Control Study. *Contraception.* **57:** 315-324

World Health Organization. (2004). Medical Eligibility Criteria for Contraceptive Use. Third Edition. World Health Organization Press. Geneva.

World Health Organization Department for Reproductive Health and Research and John Hopkins Bloomberg School of Public Health, INFO Project. (2007). Family Planning: A Global Handbook for Providers. CCP and WHO. Baltimore and Geneva. www.fphandbook.org

World Health Organization. (2008). The Global Burden of Disease: 2004 Update. WHO Press. Geneva.

Zain, M.M., Naing, N.N. (2002). Socio-demographic Characteristics of Food Handlers and Their Knowledge, Attitude and Practice Towards Food Sanitation : A Preliminary Report. Department of Community Medicine, School of Medical Sciences, Universiti Sains Malaysia, Malaysia. **33(2)**:410-417