

Contraceptive knowledge, sexual behavior, and factors associated with contraceptive use among female undergraduate university students in Kilimanjaro region in Tanzania

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Background: Previous studies have shown that knowledge of contraceptives, especially among the youth in universities, remains limited, and the rate of premarital sexual activity, unwanted pregnancies, and illegal abortions remains higher among university students. This study aimed to assess contraceptive knowledge, sexual behavior, and factors associated with contraceptive use among female undergraduate university students in Kilimanjaro region in Tanzania.

Methods: A cross-sectional analytical study was conducted from May to June 2015 among undergraduate female students in four universities in Kilimanjaro region. A self-administered questionnaire was given to the participants. Data analysis was performed using Statistical Package for Social Sciences. Descriptive statistics were used to summarize the data. An odds ratio with 95% confidence interval for factors associated with modern contraceptive use was computed using multiple logistic regression models. A *P*-value of <5% (two-tailed) was considered statistically significant.

Results: A total of 401 students were involved in the study. Two-thirds (260, 64.8%) of the participants had had sexual intercourse. The majority (93.8%) of the participants had knowledge of contraception. One hundred and seventy-five (43.6%) sexually active women reported that they used contraceptives in the past, while 162 (40.4%) were current contraceptive users. More than half (54.2%) of the sexually active group started sexual activity between the ages of 20–24 years. The most popular methods of contraception used were condoms, withdrawal, and periodic abstinence. The main sources of information about contraception were friends, television, and health care workers (44.8%, 40.3%, and 39.0%, respectively).

Conclusion: Most of the participants had knowledge of contraception. However, the rate of contraceptive use was low. The majority of the respondents were sexually active and started sexual activity at >18 years of age. Hence, advocacy for adolescent reproductive health education to promote the use of the available contraceptive services among university students is needed.

Keywords: knowledge, contraception, utilization, university students, Tanzania

Background

It is estimated that the global population will increase by 2.5 billion over the next 43 years, from the current 6.7 billion to 9.2 billion in 2050.¹ This rapid population growth may pose a burden on resource-limited health care settings particularly in many developing countries. Fast population growth may also compromise economic development and political stability. Therefore, controlling population growth is an important component in the overall developmental goal of improving living standards and the quality of life and social well-being of the people.² Family planning helps couples to

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plan in advance for the desired number of children in their lifetime and allows pregnancy spacing. Family planning is important for the health of a mother and her children, as well as for the family's economic welfare. Thus, access and utilization of family planning services helps to control population growth and enhance economic development.³

Family planning is pivotal to ensuring the health and development of youth, reducing unnecessary health risks, and improving their opportunities for education and productive livelihoods. Unsafe sex has been estimated to be the second most important global risk factor for health.⁴ Although there are regional differences, trends show that there is an increase in delayed marriage among youths in sub-Saharan Africa, while the age at onset of sexual activity remains low in many settings.⁵ Previous investigators in sub-Saharan Africa including Tanzania reported that maintaining virginity is still a way of securing marriage for girls, especially in rural areas; the authors also found that belief and intention to marry a virgin among boys was higher in the rural population.⁶

Studies have reported that the majority of the university students are at the upper end of the teenage years (17–19 years) during which they are more likely to experiment with sexual activities while lacking knowledge on sexual health and protective measures.^{7,8} The authors of these studies have attributed a lack of sexual health knowledge among youth with the absence of school curriculum on sexual health at secondary education level, and poor knowledge of parents on sexual health that hinders discussion on sexual health issues with their children. This lack of knowledge on sexual activities makes adolescents vulnerable when transforming from a restricted high school environment to a liberal urban environment, such as university.^{7,8}

With a decreasing age of menarche and onset of sexual activity, young females are exposed early to unplanned and unprotected sexual intercourse, leading to unwanted pregnancies and unsafe abortions, severe illness, infertility, and even death.^{9,10} Individual factors such as risk perception, fear of side effects, opposition from male partners, health service limitations, and insufficient knowledge to make informed choices, have been reported as barriers for utilization of contraception in Nigeria.^{10–12}

Family planning services continue to face challenges in meeting clients' expectations and needs, despite the fact that pregnancy spacing can prevent 20%–35% of all maternal deaths.¹³ Data from Tanzania Demographic and Health Survey¹⁴ indicate that in 2010, about one-third of all women in Tanzania were using contraception, among which 24% were using modern methods, and 5% were using traditional methods. According to the survey, the use of contraceptives is still low, as less than half of all participants reported that

they were not using contraceptives. The most commonly used modern methods of contraception were injectable contraceptives, pills, and male condoms.¹⁴

A recent study in Tanzania reported that 41.5% of female university students are using contraceptive methods of any type¹⁵ as is the case in Uganda, where the rate of contraceptive use is 14.5%,⁸ and Ghana, where the rate is 17.8%.¹⁰ In Uganda, regardless of the female's education level, sociocultural norms have been reported to be a factor associated with low levels of contraceptive use, as females make no decisions on family-related matters including family planning.¹⁶

The limited information about sexual behaviors, contraceptive knowledge, and contraceptive use among adolescents in Tanzania underscores the need to understand the knowledge and pattern of contraceptive use among this high-risk group in order to promote proper use of contraceptives.¹⁵ As an attempt to curb the problem, Tanzania government policy on family planning has made an effort to ensure the availability of free contraceptive services, including family planning education, in its health facilities for men and women who are in need.¹³ However, information on contraceptive use is not easily available to young students due to the social stigma of using contraception before marriage, and hence, they may fear disclosing their sexual activity.

Therefore, this study aimed to assess contraceptive knowledge, sexual behavior, and factors associated with contraceptive use among female undergraduate university students in Kilimanjaro region in Tanzania.

Methods

Study design and setting

A cross-sectional analytical study was conducted from May to June 2015 in Kilimanjaro region of Tanzania. Kilimanjaro region has six districts; the universities selected for the study are located in two of the districts namely Moshi Urban and Moshi Rural which are situated close to the highest mountain in Africa.

The study population consisted of all registered undergraduate students in the first to final year at the selected universities.

Four out of six universities were randomly selected: the names of all six universities in Kilimanjaro region were written on small pieces of paper, the pieces were then folded, and four of them were picked out randomly. The selected universities were Mweka College of African Wildlife Management, Mwenge Catholic University, Moshi Cooperative University, and Kilimanjaro Christian Medical University College, having 650, 1,800, 2,300, and 1,350 enrolled students, respectively.

A minimum sample size to be used for the study was calculated, using a standard formula as described by Reid and Boore.¹⁷ If low number of female students were found, we included all the female students who were available in the class in order to reach the desired sample size of 504 participants, or proportionate sampling was used if the number of female students were more.

Data collection technique

Since the topic under study is sensitive, a researcher and a research assistant visited the universities as per a prior agreed schedule (after class hours). A female representative in each university organized a meeting for the researcher and his team with the female students. The team was introduced, and the researcher took the opportunity to describe the study and its objectives. A self-administered questionnaire for collecting data was distributed to all females in the class who consented to participate, and questionnaires were also given to the female representatives for those female students who were not present.

Data collection tool

A self-administered questionnaire with structured questions was used to collect the information required from the participants. The questionnaire consisted of three parts: information on the demographic characteristics, knowledge about contraceptive and contraceptive use, and sexual experience and contraceptive usage. Specific questions asked regarding the education level at sexual debut, source of information on contraceptive, known contraceptive type, and contraceptive ever used and current use of contraceptive. The questionnaire was adapted from a previous study which was conducted among female university students in the capital city in Tanzania.¹⁵

Ethical consideration

Ethical clearance was obtained from Kilimanjaro Christian Medical University College Research Ethics Committee. Permission to carry out the study was also obtained from Mwenge Catholic University, Kilimanjaro Christian Medical University College, Moshi Cooperative University, and Mweka Wildlife University, located in Kilimanjaro region, Tanzania. Signed informed consent was obtained from the respondents. Anonymity was maintained by using codes instead of names to hide participant identity. Participation was voluntary, and the right to withdraw from the study without giving any reason was explained.

Data analysis

Data were analyzed using Statistical Package for Social Sciences version 22 (IBM Corporation, Armonk, NY, USA).

Descriptive statistics were used to summarize mean and standard deviation for continuous variables and proportion for categorical variables. Unadjusted and adjusted odds ratios (ORs) with 95% confidence intervals (CIs) were estimated in a logistic regression model to determine the association between modern contraceptive use and number of explanatory variables. A *P*-value of <0.05 was considered statistically significant.

Results

Sociodemographic characteristics of study participants

A total of 401 students were studied. This corresponds to a response rate of 79.56% (~80%). One hundred and three students (20.44%) did not return the questionnaire. Two hundred and fifty-five (63.6%) participants were aged 20–24 years with a mean (standard deviation) age of 24.39 (4.282) years. The majority (307, 76.6%) of the respondents were single, 16 (4.0%) were cohabiting, 77 (19.2%) were married, and one participant (0.2%) was a widow. Three hundred and forty-nine (87.5%) were Christians, 49 (12.2%) were Muslims, the remaining three (0.7%) were of other religious denominations. Three hundred and seventy-five (93.3%) were not using alcohol, and only 26 (6.7%) were using alcohol (Table 1).

Table 1 Social demographic characteristics of the participants (N=401)

| Characteristics | n | % |
|--|--------------|------|
| Age (years), mean (standard deviation) | 24.39 (4.28) | |
| Age group (years) | | |
| 16–20 | 5 | 1.2 |
| 20–24 | 255 | 63.6 |
| 25–29 | 96 | 23.9 |
| 30+ | 48 | 11.1 |
| Marital status | | |
| Single | 307 | 76.6 |
| Cohabiting | 16 | 4.0 |
| Married | 77 | 19.2 |
| Widow | 1 | 0.2 |
| Religion | | |
| Christian | 349 | 87.5 |
| Muslim | 49 | 12.2 |
| Other | 3 | 0.7 |
| Alcohol intake | | |
| Yes | 26 | 6.7 |
| No | 375 | 93.3 |
| Name of the university | | |
| Mwenge Catholic University | 201 | 50.1 |
| Kilimanjaro Christian Medical University College | 136 | 33.9 |
| Moshi Cooperative University | 44 | 10.9 |
| Mweka Wildlife University | 20 | 5.0 |

Source of information and knowledge about contraception

The most common sources of information about contraception were friends/peers (44.8%), and television, and health facilities (40.3%). Most (93.8%) of the respondents were aware of the types of contraceptives. Condoms and pills were the most commonly heard of contraceptive methods (78.0% and 60.4%, respectively) (Table 2).

Sexual behavior and contraceptive use

Two-thirds (260, 64.2%) of the respondents had had sexual intercourse. More than half (54.2%) had their first sex at the age of 20–24 years. More than half (134, 51.7%) of the respondents started sexual activity when they were at university, 123 (47.1%) started sexual activity when in secondary school, and three (1.2%) respondents started sexual activity when in primary school. Less than half of the respondents (175, 43.6%) had ever used any of the contraceptive methods, and 162 (40.4%) were current contraceptive users, with the most common contraceptive method ever used being condoms (128, 73.14%) (Table 3). Condom was the commonest contraceptive method ever used among married (29, 37.7%) and unmarried respondents (89, 27.5%). Periodic abstinence was the commonest contraceptive currently used

Table 2 Source of information and contraceptive knowledge among participants (N=401)

| Characteristics | n | % |
|--|-----|------|
| Ever heard about contraceptives? | | |
| Yes | 376 | 93.8 |
| Source of information | | |
| Friends/peers | 175 | 44.8 |
| Health facility | 157 | 40.2 |
| Television | 157 | 40.3 |
| Health care workers | 152 | 39.0 |
| Radio | 146 | 37.5 |
| Internet | 126 | 32.2 |
| Family member/partner | 122 | 31.2 |
| Poster/banner | 54 | 13.8 |
| Modern contraceptive ever heard | | |
| Condom | 308 | 78.0 |
| Pills | 238 | 60.4 |
| Injectable/Depo-Provera | 175 | 44.4 |
| Implants | 144 | 36.6 |
| Intrauterine devices | 118 | 29.9 |
| Female sterilization (BTL) | 102 | 25.9 |
| Vasectomy | 98 | 24.8 |
| Diaphragm | 95 | 24.1 |
| Spermicides | 81 | 20.6 |
| Traditional contraceptives ever heard | | |
| Withdrawal | 199 | 50.4 |
| Periodic abstinence | 186 | 47.0 |
| Lactation amenorrhea | 62 | 15.7 |

Abbreviation: BTL, bilateral tubal ligation.

Table 3 Sexual behavior and contraceptive use among female undergraduate students (N=260)

| Sexual behavior and use of contraceptives | n | % |
|--|--------------|-------|
| Ever used | 175 | 43.6 |
| Current users | 162 | 40.4 |
| Ever had sex (sexually active participants) | 260 | 64.8 |
| Age at first sex (years), mean (standard deviation) | 24.39 (4.28) | |
| Age group at first sex^a | | |
| 20–24 | 141 | 54.2 |
| 25+ | 119 | 45.8 |
| Type of contraception used (ever used) (N=175) | | |
| Modern contraceptive used ^b | | |
| Condom | 128 | 73.14 |
| Pills | 36 | 20.6 |
| Others | 18 | 10.2 |
| Injectable/Depo-Provera | 12 | 6.9 |
| Traditional contraceptive used ^b | | |
| Periodic Abstinence | 76 | 43.4 |
| Withdrawal | 75 | 42.9 |
| Lactation amenorrhea | 1 | 0.5 |
| Type of contraception (current users) (N=162) | | |
| Modern methods used ^b | | |
| Condom | 89 | 54.9 |
| Pills | 14 | 8.6 |
| Intrauterine devices | 14 | 8.6 |
| Injectable/Depo-Provera | 10 | 6.1 |
| Others | 4 | 2.4 |
| Traditional methods used ^b | | |
| Periodic abstinence (calendar method) | 63 | 38.9 |
| Withdrawal | 44 | 27.2 |
| Lactation amenorrhea | 2 | 1.2 |

Notes: ^aValues do not add to the total because some participants (n=11) did not disclose their age at first sex. ^bSome respondents mentioned more than one method; thus, the values do not add to total study group of 260 for respondents who were sexually active.

Table 4 Factors associated with contraceptive use (N=260)

| Characteristics | Current use of contraceptive, n (%) | | |
|-------------------------------------|-------------------------------------|------------|----------------------|
| | Yes | No | OR (95% CI) |
| Demographics | | | |
| Marital status | | | |
| Unmarried | 120 (74.1) | 204 (85.4) | 1.0 |
| Married | 42 (25.9) | 35 (14.6) | 0.49 (0.29–0.81) |
| Sexual behavior | | | |
| Ever had sex | | | |
| Yes | 159 (39.4) | 101 (25.4) | 53.05 (19.04–147.85) |
| No | 3 (1.0) | 138 (34.2) | 1.0 |
| Education level at first sex | | | |
| Secondary school | 79 (67.5) | 38 (32.5) | 0.675 (0.34–1.14) |
| University level | 73 (58.4) | 52 (41.6) | 1.0 |

Abbreviations: OR, odds ratio; CI, confidence interval.

by married respondents (16, 20.8%) followed by condom use (14, 18.2%) (Table 3).

Factors associated with contraceptive use

Factors associated with current use of contraceptives are shown in Table 4. Those who had ever had sex were

significantly associated with higher odds of reporting current use of contraceptive (OR 53.04; 95% CI: 19.04–147.85) compared with those who had never had sex. Furthermore, female students who were married had less odds of using contraceptives compared with those who were single (OR 0.49; 95% CI: 0.297–0.810). On the other hand, female students who started sexual activity at secondary school level were less likely to be associated with current use of contraceptives (OR 0.675; 95% CI: 0.339–1.142) compared to those who started sexual activity in universities, but this association was not statistically significant.

Using qualitative methods, we found the other reasons that were attributed to the use of contraceptives to be: fear of pregnancy (72, 35.6%), fear of contracting sexually transmitted diseases (35, 17.3%), and pregnancy spacing (35, 17.3%). Some of the sexually active respondents indicated fear of side effects (31, 33.0%) and religious beliefs (26, 27.7%) as the reasons for not using contraceptives.

Discussion

This study aimed to determine the prevalence of, and factors influencing, contraceptive use among female undergraduate university students in Kilimanjaro region. We found that the majority of the participants were single, and had knowledge about types of contraceptive methods. However, the overall rate of contraceptive use was low. This finding is consistent with a previous report from Ghana.¹⁰

The findings from this study indicate that the most common sources of information regarding contraception were friends, television (both public- and private-owned), and health facilities. Similar finding was reported in a study in Botswana,¹⁸ but it is in contrast to a study done in Nigeria which indicated hospital or clinics to be the most common source of information on contraceptives.¹⁹

We also found that two-third of the students were sexually active with most of them having had their sexual debut at aged between 20 and 24 years and while a student is at university. This was in line with a study among a similar group in Dar es Salaam, Tanzania.¹⁵ This can be contributed to the increased level of freedom when in university.

Surprisingly, we found that the rate of contraceptive use was low despite the existing government efforts to offer family planning services to those in need and aware of different contraceptive methods. This was in line with the findings from a study done in Dar es Salaam¹⁵ among university students. The success of any family planning program is determined by the level of current use of contraceptives.²⁰ However, the observed rate of contraceptive use in our study was higher than that reported among university students in

Uganda and Ghana.^{8,10} This difference was probably attributed to the increase in the efforts toward controlling population growth and combating HIV/AIDS and other sexually transmitted infections.

In our study, condom was the most commonly known contraceptive and was more frequently used. Other methods like intrauterine device, lactation amenorrhea, female sterilization, diaphragm, and spermicides were mentioned by only a few respondents. Similar findings have been reported in a study in Nigeria.²¹

Also, sexual activity was seen to be high among unmarried respondents compared to married respondents. The increased risky sexual behaviors (since starting university) of some female university students were believed to be attributed to movement from a restricted family and rural environment, to a more liberal urban environment.^{8,16} This finding is in line with the study done in Botswana in which more than half of the participants had engaged in sexual intercourse.¹⁸

The most common reason reported for using any form of contraceptive in our study was fear of unintended pregnancy, pregnancy spacing, and fear of sexually transmitted diseases as reported in another study in Ghana.¹⁰ We also found that pharmacies and shops were the common source of modern contraceptives for our respondents. This may be contributed to lack of user-friendly sexual and reproductive services for youth, which was also supported by a recent study done in Dar es Salaam.¹⁵

We also found that the most common reasons for not using any contraceptive were fear of side effects and religious beliefs. Our findings differ from the study done in Nigeria where female adolescents were not using contraceptives due to inadequate money, fearing that the use of contraceptive would render them infertile, or for fear of losing their lovers²² as also indicated in a study done in Bahir Dar University in Ethiopia which reported that the use of contraceptives, especially condoms, decreases sexual pleasure.²³

Strengths and weaknesses of the study

This study has some limitations that need to be considered while interpreting results. First, the study used a cross-sectional design; therefore, causal inferences cannot be made. Second, the findings from this study cannot be generalized to all female undergraduate university students in Tanzania, who may engage in higher rates of sexual activity. Third, the self-administered questionnaire lacks power to detect all misunderstandings despite the presence of a researcher in the field. Questionnaire administration on sensitive issues like this is prone to a number of biases that could affect the reliability and validity of a measure such as, a participant's

literacy level and comprehension of behavioral terminology, recall biases, and self-presentation or confidentiality concerns resulting from stigmatization of a behavior reported.

Conclusion

Addressing sexual and reproductive health among youth is central in reducing childhood and maternal morbidity and mortality embedded in the fourth and fifth Millennium Development Goals. We have found that, despite the high rate of sexual activity and knowledge on contraception among undergraduate students, the rate of contraceptive use among female university students is still low, and the main source of getting reproductive health information is friends. There is an urgent need for understanding why university students are not utilizing the services offered at existing facilities within their universities, and also a need for aggressive advocacy of adolescent reproductive health before initiation of sexual activity and dissemination of information on family planning methods among the adolescent population, as well as the university students in Tanzania. Intensive education on contraceptive use should be provided at a much earlier level of education, ie, during primary school and secondary school, before the adolescents are sexually active.

Acknowledgments

The authors would like to thank the research and publication office of Mwenge Catholic University, Mweka College of African Wildlife Management, Moshi Cooperative University, and Kilimanjaro Christian Medical University College for allowing them to conduct this research. They also extend their gratitude to students for their willingness to participate in this sensitive study.

Author contributions

All authors contributed toward data analysis, drafting and critically revising the paper and agree to be accountable for all aspects of the work.

Disclosure

The authors report no conflicts of interest in this work.

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