



Jimma University
College of Health Sciences
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Assessment on Effect of Male Circumcision on Condom Utilization among Openo
Technical and Vocational College students, Gambella Region, Ethiopia

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Table of contents

Table of contents.....	I
Acknowledgment.....	VI
Acronyms.....	IX
List of figures.....	VII
List of tables.....	VI
Abstract.....	X
Chapter one: Introduction.....	1
1.1. Back ground.....	1
1.2. Statement of the problem.....	3
1.3. Rationale of the study.....	4
Chapter two: Literature review.....	5
2.1 Over view of HIV/AIDS.....	5
2.2 Male circumcision and its effect in condom utilization.....	6
2.3 Condom use as a barrier for HIV/AIDS infection.....	7
2.4: HIV, circumcision and condom utilization status in Gambella; Ethiopia.....	8
2.5 Risk groups for HIV/AIDS behavioral risk development due to circumcision.....	8
2.6. Conceptual frame work.....	9
2.7. Significance of the study.....	11
Chapter three: Objective.....	12
3.1. General objective.....	12

3.2 .Specific objectives 12

Chapter four: Methods and participants 13

4.1. Study area and period 13

4.2. Study design 13

4.3. Population..... 13

4.3.1. Source population..... 13

4.3.2. Study population for exposed 13

4.3.3. Study population for unexposed 13

4.4. Sample size determination and technique 13

4.5. Study variables 16

4.5.1 Dependant variable 16

4.5.2 Independent variable 16

4.6. Eligibility criteria..... 16

4.6.1. Inclusion criteria 16

4.6.2. Exclusion criteria 16

4.7. Data collection procedure:..... 16

4.8. Data quality control..... 16

4.9. Data processing and analysis 16

4.10. Ethical considerations..... 17

4.11. Limitation of the study 17

4.12. Dissemination of results 17

Chapter five: Results	19
5.1. Socio-demographic characteristics circumcised respondents	19
5.2. Socio-demographic characteristics uncircumcised respondents	20
5.3. Knowledge of circumcised students on HIV/AIDS and condom.....	21
5.4. Knowledge of uncircumcised students on HIV/AIDS and condom.....	22
5.5. Magnitude of condom use on circumcised students	23
5.6. Magnitude of condom use on uncircumcised students	24
5.7. Attitude of circumcised students about condom use	25
5.8. Attitude of uncircumcised students about condom use	26
5.9. Effect of circumcision on condom utilization	27
5.9.1. Bi-variate analysis	27
5.9.2. Multiple logistic regressions.....	27
Chapter six: Discussion.....	29
Chapter seven: Conclusion and recommendations.....	30
7.1. Conclusion.....	30
7.2: Recommendations	30
References	31
Annexes.1.....	34
Annexes 2	35

List of tables

Table1: Selected socio-demographic characteristics of circumcised respondents in
 Openo TVET College, Gambella Region, Ethiopia December, 2015----- 19

Table2: Selected socio-demographic characteristics of uncircumcised respondent students in
 Openo TVET College Gambela Region, Ethiopia, December, 2015-----20

Table3: Knowledge of circumcised respondent students on HIV in Openo TVET College,
 Gambella Region, Ethiopia, December, 2015-----21

Table4: Knowledge of uncircumcised respondent students on HIV in Openo TVET College,
 Gambella Region, Ethiopia, December, 2015-----22

Table5: Circumcised students response on ever used condom during sexual intercourse with
 opposite sexual partner on last 12 months in Openo TVET College, Gambella Region,
 Ethiopia, December, 2015-----23

Table6: Uncircumcised students response on ever used condom during sexual intercourse with
 opposite sexual partner the on last 12 months in Openo TVET College, Gambella Region,
 Ethiopia, December, 2015-----24

Table7: Circumcised students characteristics by attitudes about condom utilization in the last `12
 months in Openo TVET College, Gambella Region, Ethiopia, December,2015-----25

Table8: Distribution of uncircumcised students characteristics by attitudes in the last `12 months in
 Openo TVET College, Gambella Region, Ethiopia, December, 2015-----26

Table 9: Association of independent variables with ever use condom in the last 12 months in Openo
 TVET College, Gambella Region, Ethiopia, December, 2015-----28

List of figures

Fig1: Conceptual frame work adapted on effect of circumcision on condom utilization, Openo College, Gambella Region, December, 2015-----	9
Fig2: Schematic presentation of sampling procedure of sexually active students from academic level one to three of Openo College, Gambella Region, December, 2015-----	15

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Acronyms

AIDS	Acquired Immunodeficiency Syndrome
ART	Anti Retro Viral Therapy
DHSE	Demographic Health Survey of Ethiopia
GNP	Growth National Product
HAPCO	HIV/AIDS prevention and control office
HIV	Human Immunodeficiency Virus
HPV	Human Papilloma Virus
MC	Male circumcision
MOH	Ministry of Health
SPSS	Statistical Package for Social Science
STD	Sexually transmitted diseases
STI	Sexually transmitted infections
TVET	Technical Vocational Education and Training
VMMC	Voluntary Medical Male Circumcision
W H O	World Health Organization

Abstract

Back ground: A rapid scale-up in voluntary medical male circumcision to meet a target of 80 % of the target resulted in a large increase in number of circumcised men from 4.8% by 2011 peaking up to 46.8% coverage by 2015 in Gambela Region .There is a potential for where in circumcised males may engage in high risk behavior without the use of condoms under the false reassurance that their circumcised status may prevent them from acquiring Human Immune Deficiency Syndrome. In fact, in the circumcised group actually reported higher risk sexual behaviors; nevertheless, the group had lower incidence of HIV, suggesting further the validity of the results that circumcision is highly protective.

Objective: To assess effect of male circumcision on condom utilization among Gambella Openo Technical and Vocational Students, Gambella Region, South West Ethiopia.

Methodology: A comparative cross-sectional study design was used. The study period was from December 1-20/2015.Circumcised and uncircumcised students who were sexually active and enrolled in Openo TVET College last 12 months were the study population. Simple random sampling method was used to select study participants. SPSS version16.0 window software computer program was used for data entry and analysis.

Results: Uncircumcised (intact) students used condom more during sexual intercourse with opposite sex partner in the last 12 months. Circumcised students were 0.019(.004, .091) times ever used condom. This shows circumcised students were less likely ever used condom than uncircumcised students.

Conclusion: Uncircumcised (intact) students used condoms more and circumcised students were less likely used. Circumcision status, marital status and religion of the students were found to be important predictors that determined condom utilization.

Chapter one: Introduction

1.1. Back ground

Sexually transmitted infections are contracted principally through sexual intercourse. World health organization estimates 330 million new cases of treatable STIs per year. STIs are particularly prevalent in developing countries and among sexually active young people. STIs are a powerful co factor in transmitting or acquiring human immune deficiency syndrome. The presence of STIs increases a person's vulnerability to HIV by a factor of 15-20 % (1). Ethiopia is one of the countries hardest hit by the pandemic of HIV/AIDS. From estimated 3 million cases of HIV 75% were believed to be infected through unprotected sexual intercourse in Ethiopia. Presence of STIs in either of the partners and sexual contact with multiple partners are the two most important factors that increase the risk of HIV transmission to the non-infected partner (2). In the context of HIV/AIDS, sexual behavior is probably the most important behavior to consider (3). Reduction in sexual intermixing rates among the sexually active men and women from the general population may be achieved by promoting faithful messages that advocate monogamy; correct and consistent use of condoms rounds out the basic prevention message (4, 5).

Abstinence, be faithful and consistent Condom use strategy promulgated for prevention of sexual transmission of HIV is believed to have had measurable effects in reducing HIV incidence and prevalence (6). To protect young people against STI infection, it is important to understand adolescent sexual behavior and the factors that influence their use of condoms. Condoms can prevent unwanted pregnancy, family planning and the transmission of sexually transmitted diseases including HIV (7). Male circumcision has been demonstrated effective in reducing risk for HIV infection. Global expansion of STI treatment and male circumcision programs is a vital tool for control of HIV infection (8). An association of higher rates of circumcision in regions with lower prevalence of HIV has been noted, as in North Africa and the Middle East, and in selected parts of central/west Africa (9). Without additional interventions, HIV incidence could eventually be reduced by 25–35%, depending on the level of coverage achieved and whether onward transmission from circumcised men is also reduced. However, circumcision interventions can act synergistically with other types of prevention program. If efforts to change behavior are increased in parallel with the scale-up of circumcision services, then dramatic reductions in HIV incidence could be achieved (10).

Any obstacles to the use of condoms in heterosexual relationships can interfere with their frequent and consistent employment as a means of preventing AIDS and STDs, and for family planning purposes (11). Although some of the specific barriers to condom use in Africa have been elucidated (12, 13), a method of measuring an individual's barriers to their use has still to be identified. Measuring and explicating the potential barriers to condom use represents an important step in promoting the effectiveness of a strategy for improving their use (14). In sub-Saharan Africa condom use reported by only 1% of women in the reproductive age group (16). One suggestion for this was that condom use interferes with the sexual functioning of these groups of people, perhaps because sexual intercourse was not so enjoyable when a condom is used or because some guilt feelings are experienced. Resistance to condom use with their marital partners can be expected among men in sub-Saharan Africa, where condoms were mainly employed in extramarital relationships (15, 17). There were known limitations to condom use. These include non-cooperative partner, irritation and sensitivity to latex, difficulty using condoms correctly and having to use a new condom with every sex act (18).

1.2. Statement of the problem

Male circumcisions can reduce HIV infection. Circumcised men can still become infected with HIV, and if HIV positive, can infect others, so circumcision should never replace other known effective previous methods and always considered as part of comprehensive prevention packages, which includes correct and consistent use male or female condom, reduction in number of sexual partners, delaying the onset of sexual relations and HIV testing and counseling. Condom use was impeded by low level of education, marriage, drunkenness, and misconceptions regarding anti-retroviral therapy. People with low education, those in marriage, users of alcohol, and people receiving ART should be the target for consistent condom use (19). There was a potential where in circumcised males may engage in high risk behavior without the use of condoms under the false perceptions that their circumcised status may prevent them from acquiring HIV. In fact, the South African study participants in the circumcised group actually reported higher risk sexual behaviors; nevertheless, the group had lower incidence of HIV, suggesting further the validity of the result that circumcision was highly protective (9). To date, no significant links have been made between provision of medical male circumcision and decline in condom use. One study from Zambia showed a marginal in the prevalence of risky behaviors following the implementation medical male circumcision; however same study in the country also reported more protective behaviors among other circumcised men. In Lesotho MC acts as a critical gate way to HIV testing, treatment and care. As a result, men can learn their HIV status and reduce the risk of onward transmission to others (15).

In Gambella region the overall adult HIV prevalence was 1.4 percent, while the overall male circumcision rate was 92.5 percent. However, the adult HIV prevalence was 6.0 percent in the region. Male circumcision rate was only 46.8 percent. 39.6% of those had sexual contact with non-regular partner do not use condom. HIV prevalence among circumcised males was 4.1% and among not circumcised was 7.9% (20, 21).

1.3. Rationale of the study

By 2011, the number of native circumcised men was 4.8 in the region. By 2015 circumcised men reached to 46.8%. An increment of circumcised men from 4.8 to 46.8 % happened due to circumcision assumed as a method of prevention of the high prevalence of HIV/AIDS in the region. In contrary to this study, there was an evidence where in circumcised males may engage in risk behavior without the use of condom under the false perceptions that being circumcised may prevent from infecting by HIV infection. With the general belief that circumcised is an HIV vaccine, circumcised men tend to have unprotected sexual intercourse. So, this study focused to identify the effect of an increased of male circumcision on condom utilization by comparison o circumcised and uncircumcised students who were sexually active and enrolled in Gambella Openo Technical and Vocational Training College in the last year.

Chapter two: Literature review

2.1 Over view of HIV/AIDS

Unwanted pregnancy, sexual transmitted diseases and their adverse health consequences are widespread public health problems. An estimated of 19 million new STDs occur each year in the United States of America of which, 50% are among persons between the ages of 15 and 24 (22). Human immune deficiency syndrome/Acquired immune deficiency syndrome is a disease of the human immune system caused by the Human Immunodeficiency Virus and is one of the world's leading pandemics (15). Globally an estimated 35.3 million people are living with HIV/AIDS with 2.3 million new infections. About 69% of these populations live in sub-Saharan Africa. Striking gains have been made towards many of the 2015 targets and elimination commitments, although significant challenges remain (23, 24). At the end of 2003, 40 million people worldwide were living with HIV, 60% of them in sub Saharan Africa, where over 90% of adult infections are estimated to be transmitted through heterosexual intercourse. A total of 33.3 million people were living with HIV worldwide in 2009. Sub-Saharan Africa remains the most affected region; 22.5 million people were estimated to be living with HIV in 2009 (25), there were an estimated 2.6 million people who became newly infected with HIV and approximately 1.8 of them are Sub-Saharan African (26). Moreover, 92% of all pregnant women living with HIV and 90% of the world's children living with HIV reside in this sub-Saharan region. In the year 2011, 71% of all AIDS related deaths worldwide were recorded in Sub-Saharan Africa (24, 27). In Nigeria, the prevalence rate of HIV infection in adults aged 15 to 49 is 3.7% and 210,000 deaths were due to AIDS in 2011 (28). The impact of the HIV/AIDS epidemic on the economy has been a concern since the beginning of the pandemic. Some believe that the HIV/AIDS epidemic is responsible for slowing the rate of growth of the gross national product of many heavily affected countries and that in some cases; growth national product growth could decrease by more than 1 percentage point for every 10 per cent HIV prevalence (16).

2.2 Male circumcision and its effect on condom utilization

Male circumcision is the surgical removal of the intact foreskin of the human penis. Intact foreskin is one of the risk factors for HIV transmission from infected women to men (29). Circumcision is undertaken worldwide for religious, cultural, and social as well as medical reasons (30). Male circumcision should be a priority prevention service in countries with high HIV prevalence rates and low prevalence of MC, HIV/AIDS (31). Treating STIs and reducing high risk behaviors can reduce both infectiousness and susceptibility. Circumcision can help protect men from getting infected, but this, in turn, helps protect women who may be exposed to fewer infected men, if community circumcision coverage is substantial and men do not increase their high risk activities. Epidemiological and biological evidences suggested that promotion of MC may be a potential intervention measure to reduce risk of acquisition of HIV (25). In 2007 world health organization recommended the adoption of male circumcision as part of the comprehensive strategy to reduce heterosexually-acquired HIV infection in countries with high HIV prevalence and low levels of male circumcision (32). The link between un-circumcised men and infection can be explained biologically since the tissue of the internal foreskin absorbs up to nine times more efficiently than female cervical tissue through HIV target cells. Internal foreskin also has a mucosal surface, which is particularly susceptible to tears and abrasions, consequently increasing exposure to sexually transmitted infections and HIV (33). Male circumcision has been recommended as a method of reducing the risk of transmitting HIV. However, widespread uptake of male circumcision may lead to HIV risk compensation by impeding condom use. Study in Botswana found that 15% of circumcised men did not use condoms compared to 12% of uncircumcised men, and circumcision was not significantly associated with condom use. Non-use of condoms was significantly affected by religious beliefs, low level of education, marriage, drunkenness, and ART (34).

2.3 Condom use and HIV/AIDS infection

HIV prevention remains the primary method of controlling the epidemic. Condoms work by blocking fluid transfer between sexual partners. Semen, vaginal mucous, anal mucous, menstrual fluid or blood of one person is prevented from coming in to contact with a mucous membrane of a sexual partner (24). Male condoms are 98% effective in preventing pregnancy but with typical use which includes incorrect and inconsistent use), the failure rate is 18% (17). The use of male condoms can also be advised for oral sex as a means of reducing the risk of HIV transmission. Individuals living with HIV should be advised to use condoms to prevent onward transmission of HIV, super infection with different HIV strains, and acquisition of other STDs (26). Additional advantages of condoms includes low cost, easy access, simple disposal, no systemic action and minimal side effects, noninterference with breastfeeding. It can also enhance sexual pleasure by reducing anxieties about the risk of infection and pregnancy (29). In Nigeria one reason for the minimal effects of the existing advocacy methods for condom use is that most interventions do not incorporate mechanisms to control the barriers that inhibit condom use in sexual relationships (12). Condom use can interfere with the sexual functioning of these groups of people, perhaps because sexual intercourse is not so enjoyable when a condom is used or because some guilt feelings are experienced. Resistance to condom use with their marital partners can be expected among men in sub-Saharan Africa, where condoms are mainly employed in extramarital relationships (15, 17).

2.4: HIV, circumcision and condom utilization status in Gambella; Ethiopia

According to the 2011 Ethiopian health and demography survey, the HIV prevalence in the general population is 1.5%, with urban and rural prevalence of 4.2% and rural 0.6%, respectively. The country carries one of the largest HIV disease burdens in the world (35, 36). A 2011 EHDS indicates the HIV prevalence in the general population of Gambella region is 6.5% from this female prevalence is 7.9 and male prevalence is 4.9%. HIV prevalence among circumcised and among not circumcised males is 4.1%, 7.9% respectively in the region. While the national HIV AIDS HAPCO's 2010 single point estimate data indicates a 2.4 percent HIV prevalence rate in the region (37). This implies that low circumcision status of the risk groups may have its own factor on high prevalence of HIV infection of the region. Different studies show risk of HIV infection can be reduced by circumcising adults. Ethiopia has one of the highest circumcised male populations in Africa (93%). But the dominant ethnic groups of the Nuer and the Anuak in Gambella have until recently regarded the procedure with suspicion. The vast majority of men in Ethiopia are circumcised for religious or cultural reasons, usually in infancy. But in Gambella the CM coverage is 46.8%. HIV prevalence is three times of the national coverage, i.e. 6.5% before the starting of medical male circumcision program (38). HIV transmission in Gambella is high due to a low level of awareness, a high influx of itinerant farm workers, and a high number of refugees from neighboring South Sudan. HIV awareness is low especially among the local population. Many still believe that condoms decrease sexual desire and satisfaction. They understand that HIV exists, but do not take it seriously and circumcision is given by routine in few health facilities and sometime mass campaign by partners (39).

2.5. Circumcision and behavior risk development for HIV infection

All male adults, young male adults, adolescent males, and men at higher risk of HIV exposure are the targets for circumcision. Uncircumcised adults were more likely to be HIV positive than circumcised adults (35). Even though circumcised adults were less likely to be HIV positive, there is a potential for behavioral risk where in they may engage in high risk behavior without the use of condoms under the false 'reassurance' that their circumcised status may prevent them from acquiring HIV (9).

2.6. Conceptual frame work

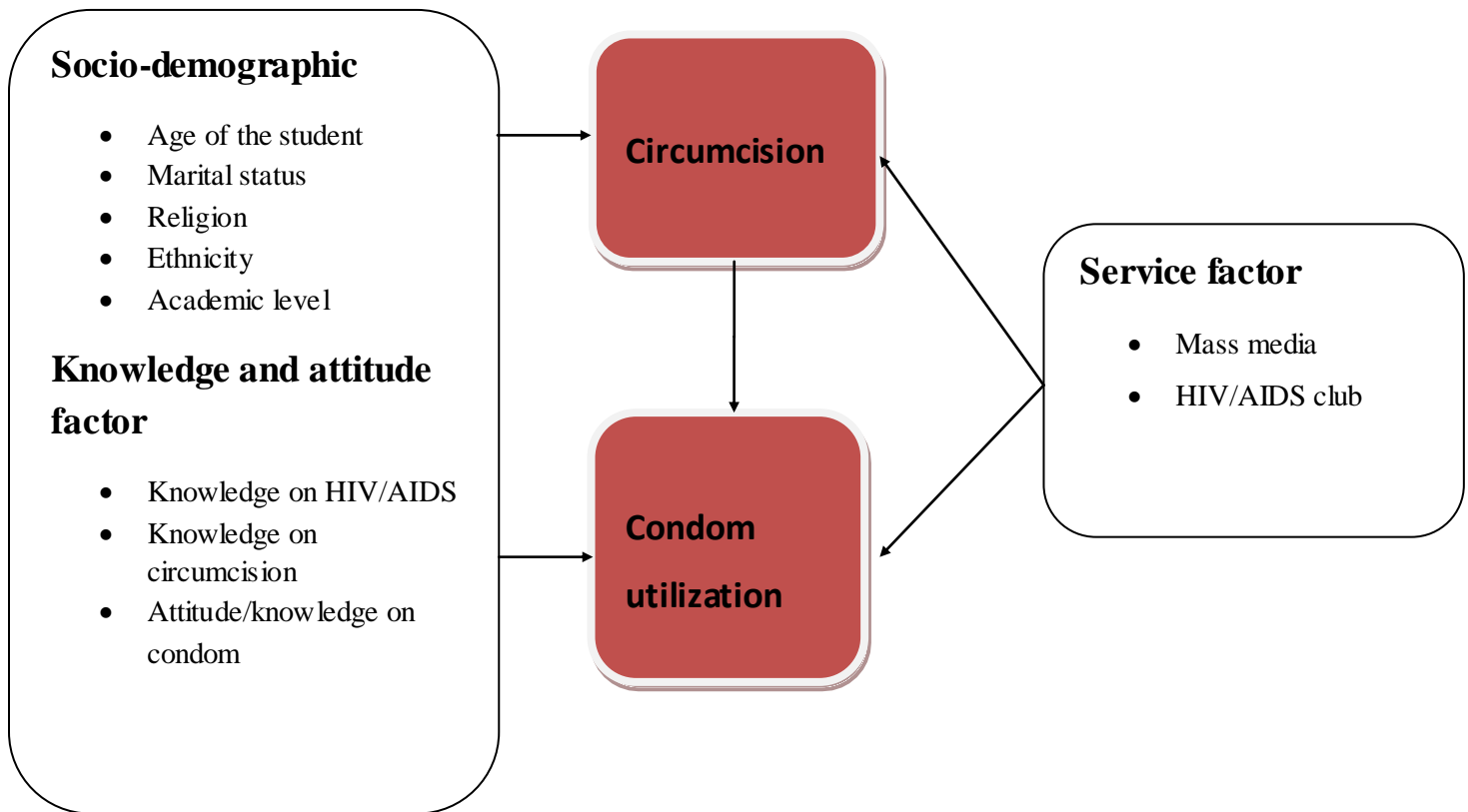


Fig 1.conceptual frame work adapted on the effect of circumcision on proper condom utilization (39).

The conceptual framework for this study is shown in figure one. There is a link between circumcision status and socio-demographic characters. In developing countries, being circumcised is primarily influenced by religious and ethnic/cultural reasons in addition to other socio-demographic and economic factors, including but not limited to education, residence, region, wealth status, occupation, age, and marital status (40). However, with increased sensitization about the hygienic and HIV-related benefits of safe male medical circumcision, the educated, employed, and urban populations are more likely than others to get circumcised (41). Although there is a positive relationship between education of parents and circumcision, particularly with reference to neonatal circumcision, a study in Central Uganda showed decreased personal willingness toward safe male circumcision among young men with increased educational attainment, which may partly reflect the limited knowledge on the public health benefits of circumcision. Individual background characteristics not only affect men's circumcision status but also the age at which they are likely to be circumcised. Socio-demographic

and economic factors play an important role in determining the age at circumcision. In Uganda most Moslems are circumcised during infancy or before age 10. In contrast, among the Bagisu culture, circumcision practiced as a transition from childhood to adulthood takes place from the onset of puberty, as early as age 12 (42). Men's circumcision status can influence their sexual behavior. Circumcised men may behave sexually differently from non-circumcised men. Circumcised men tend to engage in risky sexual behaviors, including but not limited to engaging in risky sex, concurrent partners, non-condom use during high-risk sex, transactional sex, age at first sex below age 18 and high number of lifetime partners. With the general belief that circumcision is an HIV vaccine, circumcised men tend to have unprotected sexual intercourse. Such changes in sexual behavior are postulated in behavioral risk compensation theory, as observed in other studies (43). Men's sexual behavior may also be influenced by their age at circumcision. Men, who are circumcised later in life, after puberty or adolescence, are likely to be circumcised for health reasons, specifically for HIV protection. This is in light of the increased sensitization of the safe male circumcision programs by government and civil society, which offer free circumcision services, especially in government health facilities. Having been circumcised for health reasons and particularly for HIV prevention may influence these men's sexual behavior (44). There is an association between age, marital status and knowledge. Older students (25 years and above) were more likely than the younger ones to have adequate knowledge of male condom. Also, being married was significantly associated with better knowledge of male condom (45).

2.7. Significance of the study

It is relevant to investigate problems associated with condom utilization comparing male circumcision status to Gambella Openo technical and vocational college student, thereby it helps in knowing male condom use among circumcised and not circumcised students. The result of this study revealed the effect of circumcision on condom utilization with comparing circumcision status of the students who were sexually active and enrolled in the college.

Findings from this study can serve as a source of information for better planning and implementation for improving condom utilization as a strategy of HIV/AIDS prevention and control.

Chapter three: Objective

3.1. General objective

- To assess effect of male circumcision on male condom utilization comparing by circumcision status among Openo Technical and Vocational College Students, Gambella Region, South West Ethiopia.

3.2 .Specific objectives

- To determine the effect of male circumcision on condom utilization comparing by circumcision status among college students.
- To assess the magnitude of male condom utilization among college students

Chapter four: Methods and participants

4.1. Study area and period

Gambella region is located in western part of Ethiopia and it is about 450km from Jimma town and 777km away from Addis Ababa.

The population residing in this region is about 409000 (m=200410, f=208000). The area of Gambella region is 29782.82KM². The region is mainly inhabited by various Nilotic ethnic minority population (Nuer 46.66%, Anuak 21.16%, Megineng 4% and others ethnics were 28%). There are three primary hospitals, one general hospital, 33 health centers and 117 health posts. Openo College is a technical and vocational college in the region. The study period was in December 2015.

4.2. Study design

A comparative cross-sectional study design was used.

4.3. Population

4.3.1. Source population

All circumcised and non-circumcised male students who were sexually active and enrolled in Gambella Openo TVET College were the source of population

4.3.2. Study population for exposed

- ❖ Circumcised male students who are sexually active and enrolled in Gambella Openo TVET College.

4.3.3. Study population for unexposed

- ❖ Non-circumcised male (intact) students who are sexually active and enrolled in Gambella Openo TVET College.

4.4. Sample size determination and technique

Sample size was calculated based on the following assumption: the proportion of 21% for exposed not to utilize condom [P1] and not utilize condom for intact students were 10% [P2].

Precision 5% at 95% confidence level, power of study 90% and also considering 10% non-response rate for both groups was used to obtain a total sample size of 232 intact and 232 circumcised students. Generally sample size was calculated by the following formula for comparison of two populations' proportion.

$$n1 = (p_1q_1 + p_2q_2) (f(\alpha, \beta)) / (p_1 - p_2)^2 = (z_{\alpha/2} + z_{1-\beta})^2 (p_1q_1 + p_2q_2) / (p_1 - p_2)^2$$

Where these assumptions are considered

n1= total sample among exposed

n2=total sample among non-exposed

n1=rn2, n1= (1) n2 where ratio is equal

P1= proportion of not using condom among exposed (0.21)

P2= proportion of not using condom among non-exposed (0.10)

Z $\alpha/2$ =standard normal deviate for two-tailed test based on alpha level (relates to the confidence interval level)

Z $1-\beta$ =standard normal deviate for one-tailed test based on beta level (relates to the power level=90%)

Based on this formula the calculated n1 sample was $n1 = (1.28 + 1.96)^2 ((0.21 * 0.79) + (0.10 * 0.90)) / (0.21 - 0.10)^2$

$$10.4796(0.1659+0.09)/(0.11)^2=10.4796(0.2559/0.0121)$$

$$=211*10(\text{nonresponsive rate}) = 232$$

n2= n1 (232), totally 464 (232 for exposed and 232 for not exposed).

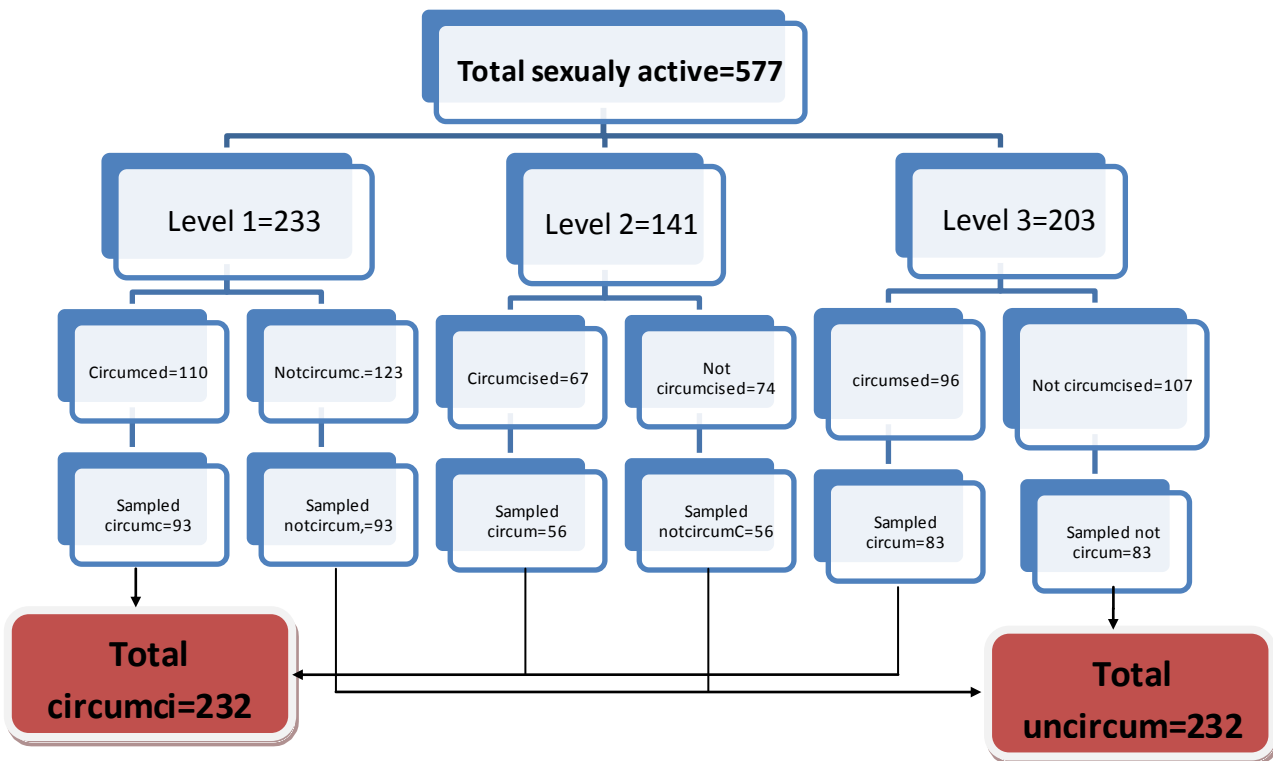


Fig2: Schematic presentation of proportionate sampling procedure of sexually active students from academic level I-III, 2015.

The College had a total number of 1200 students attending their education in different departments. The identified source population was 577 male students who were sexually active in the last 12 months and enrolled in the college. From those five hundred seventy seven (577) sexually active students 233,141 and 203 were from academic level one, two and three respectively. A total of 110 circumcised and 123 uncircumcised students were identified first from education level one. Similarly a total of 67 circumcised and 74 uncircumcised students were identified from second level of education. In addition 96 circumcised and 107 uncircumcised students were identified first from third level of education of the college by using survey prior to selection of the study participants. Totally 186 students from academic level one, 112 students from academic level two and 166 students from academic level three were identified. Finally a total of 232 circumcised and 232 uncircumcised students were selected equally for final study from both levels base on the above mentioned diagram (fig 2).

4.5. Study variables

4.5.1 Dependent variable

- condom utilization

4.5.2 Independent variable

- Religion, marital status, age, ethnicity, residence, knowledge, academic level, attitude toward condom, attitude toward condom utilization and service availability
- Male circumcision status (circumcised and not-circumcised) students.

4.6. Eligibility criteria

4.6.1. Inclusion criteria

All circumcised and intact male students who are sexually active and enrolled in Gambella Openo TVET College

4.6.2. Exclusion criteria

- ❖ Students who were not lived for at least six months.

4.7. Data collection procedure:

The study was carried out using pre tested and standardized questioners. The questioners were prepared in English. A 26 structured self-administer questioners was used to elicit information from both circumcised and not circumcised students.

4.8. Data quality control

The questioners were pretested among five percent (5%) student for each group of students with the same socio-demographic characters in teaching college. Participants were randomly selected. The pre test was used to ascertain clarity of the questions and to estimate the prevalence of the outcome among the two study populations. Quality of data was assured by properly designed and pre-tested questionnaires. Questionnaires were reviewed and checked for completeness, and the necessary feedback was given every day until the data collection was completed.

4.9. Data processing and analysis

The data collected using quantitative method was entered to SPSS version 16.0 window software computer program for analysis.

Simple descriptive statistics such as a frequency distribution and percentages were performed.

Level of significance was fixed at $p \leq 0.05$ with a 95% confidence interval. Bi-variate analysis to show the factors associated with condom use. Finally, variables with a cut point of p-value ≤ 0.25 in the bi-variate analysis were included in the final multiple logistic regression model to determine the relative importance of these variables. In addition, a simple cross-tabulation was done for factors affecting condom use. Odds ratios and their 95% confidence intervals were calculated.

4.10. Ethical considerations

A letter obtained from ethical review committee of College of Health Sciences Jimma University.

Informed consent obtained from individual that were going to be involved in the study. The purpose of study, confidentiality assurance and consent was explained to students during data collection.

4.11. Limitation of the study

- Over estimation of condom utilization may occur due sensitivity of condom use.

4.12. Dissemination of results

The result of this study would be disseminated to planners, health personnel's, city's administrators and governmental organizations who are more engaged in HIV/AIDS control and prevention for the region. The findings could be disseminated through soft copy and hard copy of the research to the responsible organizations mentioned above.

Operational definition

- **Inconsistent condom use:-** Instances where respondent students reported had used condom but not for every act of sexual intercourse in the last 12 months
- **Nonuse condom:-** instances where respondents never used condom during sexual intercourse with sexual partner in the last 12 months.
- **Consistent condom use:-** instances where respondents always used condom for every act of the sexual intercourse with opposite sexual intercourse in the last 12 months.
- **Medical male circumcision:** - is the surgical removal of the intact foreskin of the human penis. It is a service for all male adults, young male adults, adolescent males, male newborns, and men at higher risk of HIV exposure.
- **Sexually active and enrolled:** students having had sex with opposite sex partner in the past 12 months and enrolled in Openo TVET College.
- **Persons less than 25 years old:** Adolescents (students who were less than 19 years old) and young adults (students who were from 19-25 years old).
- **Persons greater than 25 years old:** students who were adults.
- **Yes:** those students strongly agreed and agreed on the given attitude questions
- **No:** those who disagreed or strongly disagreed on the attitude questions
- **Not sure:** those students not sure about the given attitude questions

Chapter five: results

5.1. Socio-demographic characteristics circumcised respondents

A total of 224 circumcised students were asked using a self-administered questionnaire giving a response rate 176(75%) students. The mean age were 22 ± 3.6 . Comong to ethnicity 55 (31%) and 80 (46%) were Nuer and Agnwak respectively. About 114(65%) were protestants. Related to marital status 120(68%), 53 (30%), and 3(2%) were single, married and divorced respectively. About 77(44%) were from 3rd year education level.

Table1: Selected socio-demographic characteristics of circumcised respondents in Openo TVET College, Gambella Region, Ethiopia December, 2015.

Students character	Category	Frequency	Percent
Age	≤25	131	74%
	>25	45	26%
	Total	176	100%
Ethnicity	Nuer	55	31%
	Agnwa	80	46%
	Megeng	2	1%
	Opo	26	15%
	Komo	13	7%
	Total	176	100%
Religion	Protestants	114	65%
	Catholic	61	34%
	Others	1	1%
	Total	176	100%
Marital status	Single	120	68%
	Married	53	30%
	Divorced	3	2%
	Total	176	100%
Academic years	1 st	63	36%
	2 nd	42	24%
	3 rd	71	40%
	Total	176	100%

5.2. Socio-demographic characteristics Non-circumcised respondents

A total of 224 circumcised students were asked using a self-administered questionnaire giving a response rate 221(95%) students. The mean age were 22 ± 2.5 . Among to ethnicity 76 (35%) and 56(25%) were Nuer and Megeng respectively. About 1128(58%) were Protestants. Related to marital status 105(48%), 81 (37%), and 34(15%) were single, married and divorced respectively. About 88(40%) were from 3rd year education level.

Table2: Socio-demographic characteristics of Non-circumcised respondent students in Openo TVET College, Gambella Region, Ethiopia December, 2015.

Students character	Category	Frequency	Percent
Age	≤ 25	189	86%
	> 25	31	14%
	Total	220	100%
Ethnicity	Nuer	76	35%
	Agnwa	47	21%
	Megeng	56	25%
	Opo	8	4%
	Komo	33	15%
	Total	220	100%
Religion	Protestants	128	58%
	Catholic	51	23%
	Others	41	9%
	Total	220	100%
Marital status	Single	105	48%
	Married	81	37%
	Divorced	34	15%
	Total	220	100%
Academic years	1 st	88	40%
	2 nd	50	26%
	3 rd	82	34%
	Total	220	100%

5.3. Knowledge of circumcised students on HIV/AIDS and condom

All of them had known about HIV/AIDS and the use condom. About 115(66%) students were responded as not protected sex was means acquiring HIV/AIDS. About 125 (72%) responded as health worker were source of information for HIV/AIDS and the use of condom. Related to male circumcision knowledge all 174(100%) students knew about male circumcision. Coming to benefit of circumcision 85(49%) students responded as it has a health benefit.

Table3: Knowledge of circumcised respondent students on HIV in Openo TVET College, Gambella Region, Ethiopia December, 2015.

Characteristics	Category	Frequency	Percent
Methods of acquiring HIV infection	Un protected sex	114	65%
	Sharing needles/sharps	42	24%
	Blood transfusion	15	8%
	Blood transfusion	5	3%
	Infected mother to fetus	176	100%
Total			
Source of information get from about use of condom	Friends	16	9%
	Health worker	125	71%
	Mass-media	23	13%
	Other sources	12	7%
Total	176	100%	
Circumcision benefit responded	Health benefit	85	48%
	Religion benefit	91	52%
Total	176	100%	

5.4. Knowledge of Non-circumcised students on HIV/AIDS and condom

All of them had known about HIV/AIDS and the use condom. About 153(70%) students were responded as not protected sex was means acquiring HIV/AIDS. About 117 (53%) responded as mass media were source of information for HIV/AIDS and the use of condom knowled ge. Related to male circumcision knowledge all 183(83%) students knew about male circumcision. Coming to benefit of circumcision 116(53%) circumcised students responded as it has a health benefit.

Table4: Knowledge of uncircumcised respondent students on HIV in Openo TVET College, Gambella Region, Ethiopia December, 2015.

Characteristics	Category	Frequency	Percent
Methods of acquiring HIV infection	Un protected sex	153	70%
	Sharing needles/sharps	46	21%
	Blood transfusion	8	3%
	Infected mother to fetus	13	6%
	Total	220	100%
Source of information get from about use of condom	College club	72	33%
	Friends	7	3%
	Health worker	24	1%
	Mass-media	117	53%
	Total	220	100%
Know about circumcision	Yes	183	83%
	No	37	17%
	Total	220	100%
Benefit of circumcision	Health benefit	116	53%
	Religion/cultural benefit	104	47%
	Total	220	100%

5.5. Magnitude of condom use on circumcised students

About 67(38%) circumcised students were ever used condom during sexual intercourse with opposite sex partner in the last 12 months. Coming to consistency utilization 50(75%) students were used condom consistently. About 56(51%) student responded as reason for not condom use due to faithfulness to sexual partner.

Table 5: Circumcised study participants response on condom use in last 12 months in Openo TVET College, Gambella Region, Ethiopia December, 2015.

Characteristics	Category	Frequency	Percent
Ever using condom during sexual intercourse with opposite sex partner in the last 12 months	Yes	67	38%
	No	109	62%
	Total	176	100%
Frequency of condom use in the last 12 months	Consistently	50	75%
	Inconsistently	17	25%
	Total	67	100%
Reason for not using condom during sexual intercourse with opposite sex partner last 12 months	Condom not avail	24	22%
	Partner refusal	29	27%
	Faithfulness	56	51%
	Total	109	100%

5.6. Magnitude of condom use on Non-circumcised students

About 112(51%) uncircumcised students were ever used condom during sexual intercourse with opposite sex partner in the last 12 months. Coming to consistency utilization 85(76%) students were used condom consistently. About 59(55%) students responded as reason for not condom use was due to faithfulness to sexual partner.

Table 6: Non-circumcised participant students response on condom use in last 12 months in Openo TVET College, Gambella Region, Ethiopia December, 2015.

Characteristics	Category	Frequency	Percent
Ever using condom during sexual intercourse with opposite sex partner in the last 12 months	Yes	112	51%
	No	108	49%
	Total	220	100%
Frequency of condom use in the last 12 months	Consistently	85	76%
	Inconsistently	28	24%
	Total	112	100%
Reason for not using condom during sexual intercourse with opposite sex partner last 12 months	Condom not avail	28	26%
	Partner refusal	21	19%
	Faithfulness	59	55%
	Total	108	100%

5.7. Attitude of circumcised students about condom use

About 150(85%) circumcised students did not believe on using condom decrease sexual satisfaction. Regarding to condom use discussion 123(70%) circumcised students believed on it is difficult to discuss the possibility of condom use with sexual partner.

Table 7: Circumcised students attitude toward condom use in the last 12 months in Openo TVET College, Gambella Region, Ethiopia December, 2015.

Characteristics	Category	Frequency	Percent
Believing on condom use does not give desired sexual satisfaction	Yes	13	7%
	Not sure	13	7%
	No	150	85%
	Total	176	100%
Believe on condom use causes delay in reaching orgasm	Not sure	33	2%
	No	143	81%
	Total	176	100%
Believing on condom can cause itching after use in sexual relationship	Not sure	34	19%
	No	142	81%
	Total	176	100%
Believing on condom can burst during sexual intercourse	Yes	6	3%
	Not sure	61	35%
	No	109	62%
	Total	176	100%
Believe on condom use causes pain during sexual intercourse	Yes	40	23%
	Not sure	13	7%
	No	123	70%
	Total	176	100%
Believing on it is difficult to discuss the possibility of condom use with Sexual partner.	Yes	123	70%
	Not sure	14	8%
	No	39	22%
	Total	176	100%

5.8. Attitude of Non-circumcised students about condom use

About 95(43%) uncircumcised students did not believe on using condom decrease sexual satisfaction. Regarding to condom use discussion 145(66%) circumcised students believed on it is difficult to discuss the possibility of condom use with sexual partner.

Table 8: Non-circumcised students attitude toward condom use in the last `12 months in Openo TVET college, Gambella Region, Ethiopia December, 2015.

Characteristics	Category	Frequency	Percent
Believing on condom use does not give desired sexual Satisfaction	Yes	36	16%
	Not sure	89	40%
	No	95	43%
	Total	220	100%
Believe on condom use causes delay in reaching orgasm	Not sure	95	43%
	No	125	57%
	Total	220	100%
Believing on condom can cause itching after use in sexual Relationship	Not sure	86	39%
	No	134	61%
	Total	220	
Attitude toward condom can burst during sexual intercourse	Yes	55	25%
	Not sure	110	50%
	No	55	25%
	Total	220	100%
Condom use causes pain during sexual inter course	Yes	89	40%
	Not sure	93	42%
	No	38	17%
	Total	220	100%
Difficult to discuss the possibility of condom use with partner	Yes	145	66%
	Not sure	42	19%
	No	33	15%
	Total	220	100%
Believing on wearing condom reduces one's sexual interest	Yes	77	35%
	Not sure	15	7%
	No	128	58%
	Total	220	100%

5.9. Effect of circumcision on condom utilization

5.9.1. Bi-variate analysis

Circumcised students were 0.593(0 .396, 0 .887) times to use condom than of intact students. This shows circumcised students were less likely ever used condom than uncircumcised students during sexual intercourse with opposite sex partner in the last 12 months. Single students were about 9 times (OR=9.600 95% CI: 3.605, 25.567)] more likely ever used condom than of control groups. Student from catholic religion were 4.788 times (OR=4.788 95% CI; 2.241, 10.23) more likely ever used condom. Students who believed it is difficult to discuss about condom use with partners were 0.599(0.372, 0.965) times ever used condom (table 9).

5.9.2. Multiple logistic regressions

Multiple logistic regressions analysis showed ever condom used was affected by circumcision status. Circumcised students were 0.019(.004, .091) times ever used condom during sexual intercourse with opposite sexual partner. This shows circumcised students were less likely ever used condom than uncircumcised students during sexual intercourse with opposite sex partner in the last 12 months. Intact men used condoms more frequently and that confidence predicts, suggesting that interventions should focus on building men's confidence to use condoms, especially for circumcised men. Students who were single were 10.620 times (AOR=10.620 95% CI: 1.087, 103.772) more likely to use condom during sexual intercourse in the last 12 months. Students who believed it is difficult to discuss about condom use with sexual partners were (AOR=.053 95% CI: 0.008, 0 .361) less likely ever used condom during sexual intercourse in the last 12 months (Table 9).

Table 9: Independent variables analyzed with ever use of condom in the last 12 months in Openo TVET College students, Gambella Region, Ethiopia December, 2015.

Variable	Categories	Condom utilization		COR (95% CI)	AOR (95% CI)
		Yes (%)	No (%)		
Ethnicity	Nuer	64(49%)	67(51%)	1.486(.750,2.945)	.041(.003, .605)
	Agnwa	48(38%)	79(62%)	.945(.473,1.889)	.133(.007,2.390)
	Megeng	28(48%)	30(52%)	1.452(.662,3.182)	.335(.023,4.919)
	Opo	21(62%)	13(38%)	2.513(1.011,6.246)**	12.678(.760,211.570)
	Komo	18(39%)	28(61%)	1.00	1.00
Age	≤25	149(47%)	171(53%)	1.336(.803,2.224)	
	>25	30(39%)	46(61%)	1.00	
Religion	Protestants	86(36%)	156(64%)	1.103(.551,2.206)	2.246(.209,24.116)
	Catholic	79(71%)	33(29%)	4.788(2.241,10.231)**	19.847(1.861,211.648)*
	Others	14(33%)	28(67%)	1.00	1.00
Marital status	Single	135(60%)	90(40%)	9.600(3.605,25.567)**	10.620(1.087,103.772)*
	Married	39(29%)	95(71%)	2.627(.9544,7.239)	2.884(.300,27.724)
	Divorced	5(14%)	32(86%)	1.00	1.00
Academic level	1 st level	63(42%)	88(58%)	1.718(1.069,2.763)	.258(.074, .900)
	2 nd level	71(77%)	21(23%)	8.114(4.461,14.760)**	15.892(2.985,84.613)*
	3 rd level	45(29%)	109(71%)	1.00	1.00
Circumcision status of respondents	Yes	67(38%)	109(62%)	.593(.396, .887)**	.019(.004, .091)*
	No	112(51%)	108(49%)	1.00	1.00
Benefit Of circumcision	Health	72(36%)	129(64%)	.459(.307, .687)**	.095(.039, .235)*
	Religion	107(55%)	88(45%)	1.00	1.00
Believing on condom does not give desired sexual satisfaction	Yes	28(57%)	21(43%)	1.219(.656,2.263)	36.843(8.946,151.735)*
	Not sure	23(22%)	79(78%)	.266(.157, .451)**	.814(.272,2.437)
	No	128(52%)	117(48%)	1.00	1.00
Believing on condom can be burst during sexual intercourse	Yes	24(39%)	37(61%)	.751(.413,1.366)	
	Not sure	79(46%)	92(54%)	.994(.647,1.528)	
	No	76(46%)	88(54%)	1.00	
Believing on it is difficult to discuss with sexual partner about condom	Yes	93(35%)	175(65%)	.599(.372, .965)**	.053(.008, .361)*
	Not sure	38(68%)	18(32%)	1.352(.826,2.210)	.145(.008,2.555)
	No	48(67%)	24(33%)	1.00	1.00
Assuming of condom cause pain during sexual intercourse	Yes	45(35%)	84(65%)	.599(.372, .965)**	.014(.003, .071)
	Not sure	58(55%)	48(45%)	1.351(.826,2.210)	.249(.050,1.237)
	No	76(47%)	85(53%)	1.00	1

NB ** Variables significant during bivariate analysis

* Variables which are significant during multiple logistic regression

Chapter six: discussion

One study from Zambia showed a marginal increase in the prevalence of risky behaviors following the implementation of medical male circumcision, which is in line with this study, however, some study, also reported more protective behaviors among other circumcised men (47).

Similar to this study a comparison of condom use perceptions and behaviors between circumcised and intact men attending sexually transmitted disease clinics in the United States found that intact men may use condoms more frequently and that confidence predicts use, suggesting that interventions should focus on building men's confidence to use condoms, especially for circumcised men(46) The study found in Botswana showed, 15% of circumcised men did not used condoms compared to 12% of uncircumcised men in which circumcision had no significant effect which is opposite to this study (39).In Lesotho, medical male circumcision acts as a critical gate way to HIV testing, treatment and care. As result men can learn their HIV status and reduce the risk of onward transmission to others (47).

Among circumcised participant about 56(51%),29(27%) and 24(22%) set as a reason for not utilizing condom during sexual intercourse was due to sexual partner faithful, sexual partner refuse and condom unavailability of condom respectively. A study in Nigeria under graduate student shows 25%, 6% and 5.4% of not using was due to unavailability, partner refusal and faithfulness respectively (15).Only 67(38%) circumcised students ever used condom. condom utilization was 112(51%) among uncircumcised students. This study was similar with a study done in Gambella region in which rate of condom utilization was 39.6% (20).The study found in Botswana showed, 85% of circumcised men used condoms compared to 88% of uncircumcised men which high usage compare to this study. In addition nonuse of condom was significantly affected by marital status, religion and attitudes which is in line with non-use of condoms was significantly affected by religious beliefs, low level of education and marriage (39).This result was lower compare with that of a study in Nigeria in which more than four in five adolescents (82.3%) reported to have always used a condom with the most recent partner during the past 12 months.

About 125(71%) circumcised students got information about condom from health workers and 117(53%) circumcised got information from mass media. Similar study in Nigerian students found that the respondents knew about male condom and the main source of information was mass media (45.2%) (44).

Chapter seven: conclusion and recommendation

7.1. Conclusion

Condom utilization coverage is low in the college

Intact circumcised students used condoms more and circumcised students were less likely used.

In addition to circumcision status, marital status and religion of the students were found to be important predictors that determine condom utilization.

Believe on condom use discussion with sexual partner and positive attitudes toward condom use were positively associated with condom utilization.

Finding from this studies revealed that there is no young/adult student health services to prevent HIV infection in the college.

7.2: Recommendation

Interventions should focus on circumcised students to use condom.

It is important to increase awareness on the advantage of circumcision and the use of condom together.

It is important to establish youth friendly services to create awareness on HIV infection prevention.

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annexes.1

CONSENT FORM

Study on assessment on effect of male circumcision on condom use among Openo college student of Gambella town.

INTRODUCTION

Hello!

My name is berhe hailu and working for health in health organization. I am conducting study on condom utilization factor assessment among Openo male college students. The information collected will help to improve the health status of people.

CONFIDENTIALITY AND INFORMED CONSENT

You are randomly selected using lottery method .Your name will not be appear on the questioner and all the answer you provide to me will be strictly confidential. You are not obliged to answer any questions that you do not wish to answer, if you wish to do so. You are answering the following self-administer questions by choosing one answer only and circling the number you choose Your participation in this study does not involve any direct risk or benefit for you but is very useful for community health.

Annexes 2:-Questioners

Your code number/Identification number-----

PART ONE: SOCIO-DEMOGRAPHIC CHARACTERSTICS

NB: please circle one number you have choose on this section

Q/No.	Characteristics	Response choice
1.	Age	-----years
2.	Ethnicity	1. Agnwa 2. Nuer 3. Mezenger 4. Opo 5. Komo
3.	Religion	1. Protestant 2. Catholic 3. Orthodox 4. Muslim 5. Other
4.	Marital status	1. Single 2. Married 3. Divorced 4. Widowed
5.	Academic year	1. I (first) year 2. II (second) year 3. III (third) year

PART TWO: KNOWLEGE ON HIV/AIDS

1.	Do you know about HIV/AIDS?	<ol style="list-style-type: none"> 1. Yes 2. No.....Skip to Q3
2.	How HIV/AIDS is transmit from an infected person to a healthy person?	<ol style="list-style-type: none"> 1. Unprotected/ unsafe sex 2. Sharing needles and syringes 3. Blood transfusion 4. From infected mother to the fetus
3.	Do you know about condom and its use?	<ol style="list-style-type: none"> 1. Yes 2. No
4.	Where do you get information about condom use?	<ol style="list-style-type: none"> 1. College anti- HIV club 2. Friends 3. Health worker 4. Mass- media 5. Other sources
5.	Do you know about male circumcision?	<ol style="list-style-type: none"> 1. Yes 2. No
6.	What benefit does male circumcission have to a persons' health?	<ol style="list-style-type: none"> 1. Health benefit 2. Religion benefit 3. Others(specify)

PART THREE:-CONDOM UTILIZATION

NB: please circle only one number you have choose in the following section

1.	Did you use condom in the last 12 months during sexual intercourse with opposite sex partner?	1. Yes 2. No
2.	How frequent do you use condom during sexual intercourse in the last12 months?	1. Use condom consistently 2. Not use condom consistently
3.	What was the reason for not using condom in the recent sexual Intercourse?	1. Condom not easily available 2. Price of condom is expensive 3. Preference for other methods 4. Sexual partner refuse 5. Sexual partner is faithful to me

PART FOUR: ATTITUDES RELATED TO CONDOM AND CONDOM USE

NB: please circle only one number you have chosen.

1	Germs are carried in the process of fixing the condom	<ol style="list-style-type: none"> 1. Strongly Agree 2. Agree 3. Some What 4. Disagree 5. Strongly Disagree
2	Condom use causes pain during sexual inter course	<ol style="list-style-type: none"> 1. strongly Agree 2. Agree 3. Some What 4. Disagree 5. Strongly Disagree
3	Condom slips in to the sexual organ of the female during intercourse	<ol style="list-style-type: none"> 1. Strongly Agree 2. Agree 3. Some What 4. Disagree 5. Strongly Disagree
4	It is embarrassing buying Condoms	<ol style="list-style-type: none"> 1. Strongly Agree 2. Agree 3. Some What 4. Disagree 5. Strongly disagree
5	Condom use does not give desired sexual satisfaction	<ol style="list-style-type: none"> 1. Strongly Agree 2. Agree 3. Some What 4. Disagree 5. Strongly Disagree
6	Condom use causes delay in reaching orgasm	<ol style="list-style-type: none"> 1. Strongly Agree 2. Agree 3. Some What 4. Disagree

		5. Strongly Disagree
7	Condom cause itching after use in sexual relation ship	1. Strongly Agree 2. Agree 3. Some What 4. Disagree 5. Strongly Disagree
8	Condom burst during sexual intercourse	1. Strongly Agree 2. Agree 3. Some What 4. Disagree 5. Strongly Disagree
9	It is difficult to discuss the possibility of condom use with my partner	1. Strongly agree 2. Agree 3. Some what 4. Disagree 5. Strongly disagree
10	The process of wearing condom reduces one's sexual interest	1. Strongly agree 2. Agree 3. Some what 4. Disagree 5. Strongly disagree
11	Circumcision status(have you get circumcised)	1.Yes----- 2.No-----

End!!