

Substance Abuse and Predictors of Risky Sexual Behavior among Students in Axum University, Ethiopia

Hiwet Zelalem Fisseha¹, Wondwossen Lerebo^{2*} and Kidan Abreha Teferi²

¹Aksum University, Central Tigray, Ethiopia

²Mekele University, Mekele, Tigray, Ethiopia

*Corresponding author: Wondwossen Lerebo, Assistant Professor, School of Public Health, Mekele University, 02-102, Ayder, 1871, Ethiopia, Mekele, Tigray 1871, Ethiopia, Tel: +251921628003; E-mail: kidwonyt4@gmail.com

Received date: November 15, 2014, Accepted date: January 2, 2015, Published date: January 7, 2015

Copyright: © 2015 Lerebo W et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Abstract

Introduction: Even though sexual activity has been claimed to produce health benefits, worldwide sexual risk taking behavior accounts for large number of opportunities for sexually transmitted infection including human immunodeficiency virus and unintended pregnancy. This study is intended to describe magnitude of substance abuse and predictors of risky sexual behavior among students in Axum University.

Methods: Institution based cross-sectional study design, multistage sampling technique and self administered questionnaire were used in March 2013 to collect data on 636 students (61.3% males). Descriptive statistics and binary logistic regression was employed to describe and identify factors associated, respectively. STATA version 11 software packages were used.

Result: Response rate for the study was 96%. About 192(30.2%) participants ever had sexual intercourse. The median age at first sexual intercourse was 18 (IQR: 16-19) years. Students who abused any substance were 4 times [AOR=3.96; 95%CI: 1.927, 8.131] more likely practiced risky sexual behavior. Students who were watching pornography, not discussing about SRH with their parents, not visiting religious service place, not using university cafeteria, attending night club, being male and not having enough income for basic needs increase the likelihood practicing risky sexual behavior.

Conclusion: Significant number of sexually active respondents in Axum University had usually practiced risky sexual behavior. Substance use and sexual intercourse were started at early schooling. Sex, pocket income, substance abused, religiosity, attending night clubs, watching pornography and mother education were found as predictors for risky sexual behavior. University and different stakeholder should work together to prevent and control risky sexual practices and to strengthen substance use control policies.

Keywords Predictors of risky sexual behavior; Substance abuse; Students in Axum University.

Introduction

World Health Organization (WHO) categorize adolescent as age group 10-19 years and young adult (youth) 15-24years [1]. Young adult is period of transition in biological, emotional, educational and economical development through adult roles and responsibilities [2]. Though reproduction among human is usually occurs through sexual intercourse and has been claimed to produce health benefits, [3] young adults should be encouraged to delay sexual activities until they become ready for mature sexual relation [1-4].

Sexual and reproductive health profoundly affects social and economic development of countries and influenced by complex set of interactions of personal characteristics socio-cultural norms and values. Risky sexual behaviors are common in young adult since; sexually active, frequently mix sex with substance, single and prone to have multiple partners [4,5].

Worldwide sexual risk taking behavior accounts for large number of opportunities in acquiring Human Immunodeficiency Virus (HIV)

infection and unintended pregnancies [6-8]. Globally about 448 million new infections of Sexually Transmitted Infections (STIs) among 15-49 years [6], 2.5 million new HIV infections [7], 87 million unintended pregnancies (46 million end with induced abortion) and 4,000 blind newborn due to STIs occur every year [8]. These health consequences in turn increase unbearable cost to the economy of a given country. Currently due to changing conditions of urbanization and associated life styles, adolescent health in developing countries is increasingly at risk of substance abuse, STIs including HIV, unintended pregnancy and unsafe abortion with highest burden in Sub-Saharan African (SSA) countries, and Ethiopia is not exception [6-8]. These all happened due to early sexual initiation, low condom use, young population and lack of diagnostic and therapeutic facilities. Understanding these interwoven and interconnected factors that influence sexual behaviors is vital in designing and implementing sexual risk reduction interventions [7].

Students of higher learning institutions are assets for the society and change agents in filling the gap and on whom future generation is based [9]. Even though Ethiopia increases University enrollment much faster than any other SSA countries (ten years back only 15,000 students were enrolled but in 2012 raised to 380,000) [10] it is the

second most populous East African country highly affected by HIV and other STIs with increasingly being recognized among youth [11].

Substance abuse is hazardous use of psychoactive substances, alcohol or illicit drugs lead to strong desire to take the drug despite harmful consequences due to dependence [12]. The WHO seeks to promote concept of "Health for all" through strategy of reducing incidence and prevalence of psychoactive substance use by providing best available evidence on management of substance related problems [13]. Even though, recent trends indicate substance use has dramatically increased particularly in developing world there is no sufficient data in many developing countries [13,14].

Studies conducted abroad confirmed that despite their adequate knowledge many undergraduate students often engaged in risky sexual behavior and incidence of HIV infection and other STIs are clearly observed among University students [7]. Little is known about factors associated with risky sexual behavior among adolescents in developing countries [15]. Even though, studies were done at community, school and University level on separate risky sexual practice in Ethiopia, factors associated with risky sexual behavior are not well documented and the impact of substance abuse on risky sexual practice is not known.

Since students are considered to be fully aware of risk and preventive strategies, no universal prevention or intervention program designed to address risky sexual behaviors of students in Ethiopian Universities [10]. However, for students to be successful and realize their goal and country to get tomorrow's potential generation, the life of students should be protected from risky practices [9]. Therefore, the purpose of this study is to describe magnitude of substance abuse and identify factors associated with risky sexual behavior among students in Axum University which help to provide evidence based valuable information for the decision makers.

Methods and Materials

Study setting and design

Quantitative research was done using institution based cross-sectional study design. The study was conducted on March, 2013 in Axum University which is one of higher education institution in Ethiopia found in 1010 kilometer from Addis Ababa.

Population and sample size

The source populations were undergraduate students in Axum University. The calculated sample size was 660 by single population proportion formula considering the following assumptions: 8859 total regular students, proportion of risky sexual behavior 30% [16], 95% CI, 5% margin of error, design effect as 2, correction formula (populations<10,000), 10% non response rate.

Sampling techniques

Two departments from each collage were selected by Simple Random Sampling (SRS) after taking department list from the respected collages. Students list was taken from the selected department and stratification done by batch and sex then samples was allocated proportionally. Finally, samples were selected from each stratum through SRS using computer generated random number.

Data collection tools and procedure

Structured self administer questionnaire was prepared in English through reviewing literatures and translated to Amharic and back to English then pre-tested. Data collectors and supervisors were trained. Outcome variable was risky sexual behavior classified based on ABC rules. Some of the independent variables were; age, sex, region, religion, religiosity, marital status, residence, ethnicity, study year, income, watching pornographic, attending night club and substance abused.

Data analysis

The collected data was reviewed and checked for completeness before data entry and questionnaires having more missing value were excluded and 10% was double-entered. Descriptive statistics was used to describe findings. Association between categorical predictors with outcome variable was checked with Chi-square. Both bivariate and multivariate logistic regression analysis was estimated at 5% level of significance and STATA V.11 was used.

Model was built through stepwise regression technique. Confounders and interaction effect was checked by likelihood ratio test [17], Multicollinearity by VIF (Variance Inflation Factors), Outliers by standardized residual, influential observation by df beta statistics, overall model goodness of fit by Hosmer-Lemeshow and the prediction power by ROC (Receiver-Operating Characteristic) was checked. Ethical clearance was obtained from Institutional Review Board (IRB) of Mekelle University. Informed consent was obtained from all participants and confidentially was kept.

Results

Demographic and Socio-economic characteristics

Complete data for analysis were obtained from 636 students with response rate of 96%. Of these 390(61.3%) were males and 587(92.4%) were 20 years old and above. The dominant ethnic group was Tigre 261(41%) and majority 512(80%) of the respondents were Orthodox religion follower (Appendix Table 1)

About one third 192(30.2%) of participants ever had sexual intercourse with median age at first sexual intercourse 18 years [IQR=(16-19)] and quarter 68(23%) of substance user had practiced sex after taking substance of them only 14(20.6%) were always using condom (Appendix Table 2).

Only 17 (5.8%) of substance users have started after joining University but 147(50%) at primary, 87 (29.5%) at secondary and 44 (15%) at preparatory school (Figure 1). Nearly half 89(46.4%) of sexually active respondents start sexual intercourse for the sake of personal desire followed by promising words for marriage 42 (21.9%) and peer pressure 21(10.9%) (Figure 2). About 107(17%) of respondents had practiced risky sexual behavior (Figure 3).

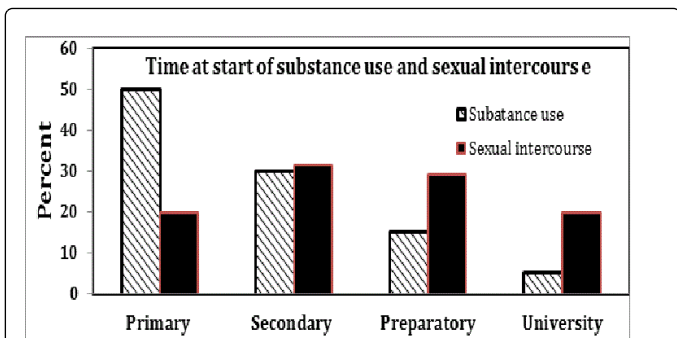


Figure 1: School at which respondent's stated sexual intercourse and substance use, Axum University, Ethiopia, March, 2013.

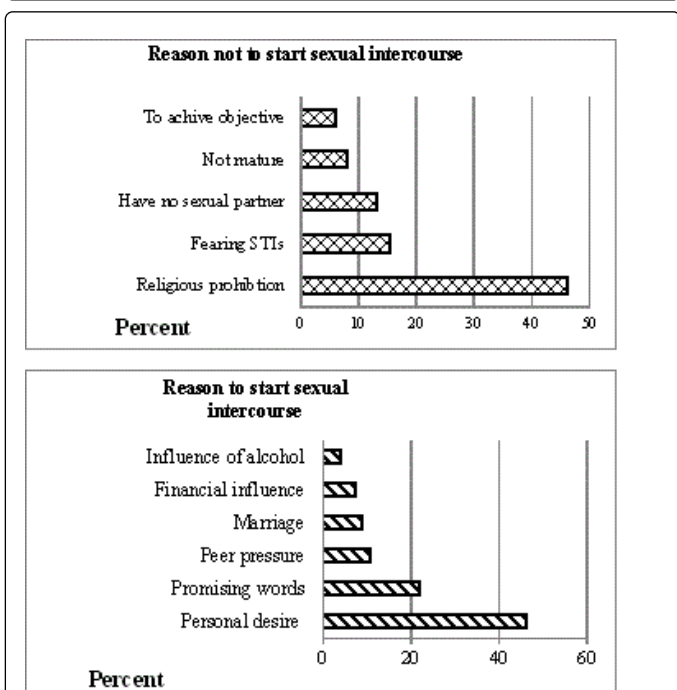


Figure 2: Reasons to start and not to start sexual intercourse among respondents in Axum University, Ethiopia, March, 2013.

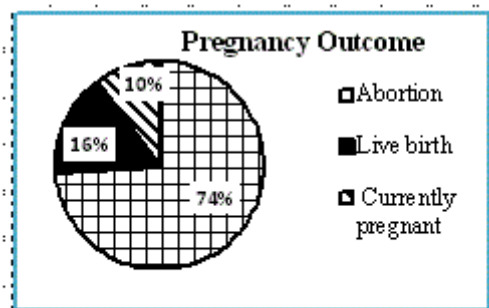
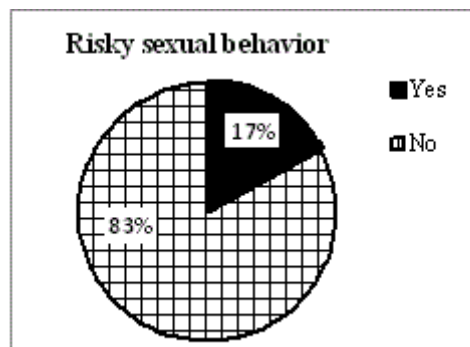


Figure 3: Pregnancy outcome and magnitude of risky sexual behavior among participants of Axum University, Ethiopia, March, 2013.

Predictors of risky sexual behavior

Female students were 58% [AOR=0.42 95%CI: 0.189, 0.951] less likely practiced risky sexual behavior than male. Students who attend night club were 2.5 times [AOR=2.5; 95%CI: 1.310, 4.940] more likely practiced risky sexual behavior than non attendant. Respondents who did not use University cafeteria were 4.8 times [AOR=4.85; 95%CI: 1.468, 16.021] more likely practiced risky sexual behavior than University cafeteria users. Respondents who never visited religious service place were 5.5 times [AOR=5.48; 95%CI: 1.101, 30.095] more likely practiced risky sexual behavior than daily visitors (Appendix Table 3).

Respondents having pocket income not enough for basic needs were 2.0 times more likely practiced risky sexual behavior than students with enough money [AOR=2.04; 95% CI: 1.039, 3.899]. Respondents who abused substance were 4 times [AOR=3.96; 95%CI: 1.927, 8.131] more likely practiced risky sexual behavior than not abused. Students who never discussed about SRH issues with their parents were 6.3 times more likely practiced risky sexual behavior as compared with counter parts [AOR=6.25; 95%CI: 3.189, 12.238] (Appendix Table 3).

Regression diagnostics

Model built through step wise regression technique and models compared with likelihood-ratio test (P-value=0.4102) indicate adding other predictors in the reduced model has no statistical value in

explaining outcome. Food service was a confounder for pocket income (P-value=0.016). Statistical significant interaction effect was not identified by Likelihood-ratio test. No Multi collinearity between predictors in the model by VIF.

Residual outliers were identified by Pearson standardized residual but no influential observation in the model by df beta statistics. Overall model goodness by Hosmer-Lemeshow was not significant (P-value=0.8309) reveals the model fit the data well. Model prediction power was very high with AUC=0.9299 indicate model having these predictors has very high power to predict risky sexual behavior.

Discussion

Magnitude and consequences of risky sexual behavior

The median age at first sexual intercourse was similar with the study finding in Debre-Brehan University [18] but lower in Nigeria [19], Jimma [16], Haramaya [20], Addis Ababa [21], Hawassa [22], Bahir-Dar [23], Ghana and Kenya [24,25] and the EDHS 2011 [26]. Whereas study in South Africa found higher age [27]. The current study participants history of sexual intercourse were similar with studies finding in Hawassa [22] and Haramaya [20] but lower than other studies in Uganda [19], Nigeria [28], Kenya [24], Addis Ababa [21], Hosanna Health science collage [29], and South Africa [27]. But higher than study in Jimma [16]. Discrepancies between findings might be due to biological, socio-cultural and behavioral variation between countries that influence human sexuality.

Proportion of multiple sexual partners finding of this study was similar with studies in Uganda [28], Addis Ababa [21], Gondar and Bahir Dar [30]. But lower in Hawassa and Haramaya [20,22]. Jimma and Kenya [16,24] and Nigeria [19]. On contrary higher in Debre-Brehan and Hosanna health science collage [18,29]. The disparity might be due to behavioral, cultural and socio-economical variation between settings that influence human sexuality. In addition knowledge and experience on related health issue might preserve from risky practice particularly in Nigeria since the study subjects were 4-6 years medical students.

The proportion of respondents who had sexual intercourse in the last 12 months and always used condom was similar with study findings in Haramaya, whereas lower in Nigeria, Uganda, Debre-Brehan, Jimma, Addis Ababa, Hawassa and Hosanna [16,18,19,21,22,28,29]. The 2011 EDHS findings was higher. This discrepancy might be due to study subject difference in terms of socio-cultural and behavioral characteristics that influence condom use practice. Beside this availability and accessibility of condom might vary across setting and condom use pattern was not considered in some of the studies.

Similar proportion of males in this study and in Hosanna [29] had sex with CSWs but higher in Haramaya and Hawassa [20,31]. Whereas lower in EDHS 2011 report [26]. In addition to demographic, socio-economic and behavioral factors, service availability (like house of CSWs, night club) might contribute for this variation.

Despite potential and devastating outcomes 17% of sexually active participants had practiced risky sexual behavior and 10% had developed STIs symptoms. Higher in South Africa [32] Hawassa [22] and Gondar and Bahir-Dar [30]. But lower in EDHS 2011 (4% woman and 3% men) [26]. Variation might be due to degree of exposure to risky sexual practice half of males in Hawassa have history of sex with

CSWs [22]. In addition biological difference in developing symptoms, availability of health care, behavioral, social, technology and urbanization might also contribute on the prevalence as well as to disclose their exposure status honestly.

Predictors of risky sexual behavior

This study reveals sex as predictor for risky sexual behavior. Consistently, studies at different Universities in Ethiopia declared the increasing risk of males in terms of earlier sexual initiation and multiple sexual partners [16,20,23]. On other hand study in Debre-Brehan indicate being male was protective [18]. Variation might be due to different aspect of risky sexual behavior. Sex difference might be due to male ego and possibly cultural practice that put male above female to express sexuality. Male students may see themselves as manifesting their masculinity and sociability as it is supported by culture.

Similar with current finding several studies from different countries indicate the protective effect of visiting religious place for risky sexual behavior [21,25,28,31]. Lower probability of risky sexual behavior among religious group might be due their belief and intention to follow rules and regulations of their religion since most religion has restriction on risky sexual behaviors.

Similar with studies in Jimma and Addis Ababa Universities pocket income was found protective for risky sexual practice [16,21]. Contradict to these findings study in Dessie enhance the opportunity of having sexual intercourse with exchange of money [33]. The discrepancy might be due to positive and negative impact of personal income to ward sexual behavior. Those with less income might practice to fulfill their basic needs whereas other groups need to enjoy.

Similarly with studies in Jimma [16] and Haramaya [20] the increasing effect among night club attendant was found on this study. Watching pornography film was another factor that increases risky sexual behavior finding in Jimma and Haramaya Universities also support this finding [16,20]. On contrary study in Addis Ababa University found as protective [21]. This discrepancy might be due to positive and negative influence that some might get experience while others may be liable and need to enjoy what they observe in film.

Being substance abuser was a factor for risky sexual behavior. Even no studies on substance abuse studies at different setting indicate effect of substance use on risky sexual practice [12,18,20,21,23,29]. Family discussion on SRH issues with their younger children was factor for risky sexual behavior. Consistent with this finding different study also indicates the protective effect of parent child communication [34-38].

Respondents who used University cafeteria had lower probability of practicing risky sexual behavior than non café users. Even though no study on the effect of food service for risky sexual behavior the increasing effect among non café students might be related with socio-economic level of the respondents. At the university if the student wants to be non café user, the university gives the pocket money and his/her family send to the student more money; when they got money there are two trends to get food the first one is going to hotels or rent out rooms outside the campus for cooking, which gives more freedom to do what they want and expose to different risky behavior. Additionally when they have money they can buy alcohols and drugs that are not allowed in campus and can invite any one even opposite sex at their private room, which is strictly forbidden in campus. These all might increase the risk or practicing risky sexual behavior. The current study found that mother occupation, education and discussing

with the parents about sexual reproductive health were predictors for practicing risky sexual behavior.

Strengths and Limitations of the study

Since it utilized information originated from real life gave insight about risky sexual practice at higher education institutions in Ethiopia. The response rate was high that decreases non response bias but subject to social desirability biases and possibility of underestimation cannot be ruled out since the study raised sensitive issues. There might be difference in sex of respondents and we did not consider this and also did not collect information on the cultural issues, which might strengthen our study finding. In addition it is impossible to determine causal effect relationship due to cross-sectional nature of the study.

Conclusions and Recommendations

Majority of the respondents were started sexual intercourse and substance use at early age before joining University even at primary schools. Substantial proportion of sexually active respondents in Axum University were usually practiced risky sexual behavior including; unsafe sexual practice, multiple sexual partners, sex with causal partners and CSWs. Significant number of sexually active respondents had encountered STIs and unintended pregnancy. Around half of abstinence explains religious prohibition as main reason to restrain from sexual intercourse. Being female, religiosity, family discussion on SRH issues and having enough money for basic need was protective for risky sexual behavior whereas abuse for any substance, attending night clubs and watching pornographic films were factors that increase risky sexual behavior.

Risky sexual behavior and substance use related issues should be considered in school and University curriculum. University and different stakeholders should work together to prevent and control risky sexual practices and night club attends as well as to strengthen substance use control policies. Establishment and strengthening of anti AIDS club at all level in schools and Universities which helps to develop effective and ongoing strategy to reduce risky sexual practice through ABC rules by school-based IEC/BCC.

More attention should be given for religious leaders to make students as regular visitor and teach them on safe sexual practice. Emphasis should be given for women education and parents should be encouraged to control their children from substance use and to discuss on SRH issues with their younger children to help for informed sexual decisions. The parents and the universities has follow and give due attention how the non cafe users are spending the money the are getting. Further study is recommended in a mixed design covering representative sample from Ethiopian Universities to explore factors for risky sexual practice particularly substance abuse at higher education institutions in Ethiopia.

References

1. Karin R, James G (2005) improving the reproductive health of SSA countries' youth. WHO, USAID.
2. Michael L(2010) Prendergast. Substance use and abuse among college students. *Journal of American College Health*. 43: 99-113.
3. Deborah M, Karin R (2011) Sexual and reproductive health in East Africa. Population Reference Bureau.
4. Renee E Sieving, Jennifer A Oliphant, Robert Wm Blum (2002) Adolescent Sexual Behavior and Sexual Health. *Adolescent Medicine. Pediatrics in Review*.
5. WHO (2010)Prevention of Suicidal Behaviors': A Task for All: WHO
6. WHO(2011) Sexually transmitted infections. Fact sheet .N°110.
7. WORLD BANK, UNICEF, USAID (2010) Accelerating the Education Sector Response to HIV/AIDS in Africa. WORLD BANK.
8. WHO, UNICEF, USAIDS (2011) Global HIV/AIDS response-Epidemic update and health sector progress towards Universal Access.
9. WHO, UNFPA /UNICEF(2006) Investing in our future framework for accelerating action for the sexual and reproductive health of the young people. Geneva27.
10. David J (2012) Olson.Using technology to talk to Ethiopian University students about HIV.Addis Ababa, Ethiopia.
11. UNFPA(2007) Ethiopia. Preventing HIV / AIDS.
12. WHO (2004) Neuroscience of psychoactive substance use and dependence. Geneva ISBN. 92 4, 159124 2.
13. WHO (2011)Global status report on alcohol. Mental health and Substance Abuse Geneva.
14. Elizabeth B, Donna S M, Jennifer B. U, Ping S, Louise Ann R,et al. (2012) Boosting a Teen Substance Use Prevention Program. *Subst Use Misuse*. ed Kilpatrick et al., 47: 418-428.
15. Zabin LS, Kiragu K (2005) Health consequences of adolescent sexuality and fertility behavior in sub-Saharan Africa. *Stud Fam Plann*.
16. Gurmesa T, Fessahaye A, Sisay D (2012) Risky sexual behavior and predisposing factors among students of Jimma University. *Ethiop J Health Sci*. November 22.
17. Hosmer. D W, Lemeshow S (2000) *Applied Logistic Regression*: Wiley Seriu in Probability and StlltstricsCressie A C. et al 93:136-139.
18. Muluken D, Maereg W (2012) Predictors of consistent condom use among University students DebreBerhan,Ethiopia .
19. Daniyam CA,Agaba PA, Agaba EI (2010) Sexual behavior of medical students in Nigeria. *African Health Sciences*. 10:150 -153.
20. Tariku D, Lemessa O, Nega A (2012) Patterns of sexual risk behavior among undergraduate University students in Ethiopia. *Pan African Medical Journal*.
21. Nigatu R, Seman K (2011) Attitudes and practices on HIV preventions among students of higher education institutions in Ethiopia. *Educational Research*. 2: 828-840.
22. Yifru B, Dejene H, Abraham A (2011) Predictors of sexual-risk behavior and HIV-preventive practices among University students in Ethiopia. *African Journal of AIDS Research*. 10:225-234.
23. Hibret A, Damen H M, Kassahun A B, Gail D (2007) Factors Predisposing Out-of-School Youths to HIV/AIDS-related Risky Sexual Behaviors in Northwest Ethiopia. *J health Populnutr*.
24. Moses Gitonga, Monica Sinyard . Substance use andHIV Sexual Risk Behaviors
25. KenyanUniversity (2012) *Journal of Biology, Agriculture and Healthcare*. 2(8).
26. David Duke (2012) Substance use and risky sexual behaviors.' *Public Health*. 12:571
27. Central Statistical Agency (2012) Ethiopia Demographic and Health Survey 2011. ICF International Calverton, Maryland, USA.
28. Muhammad EH (2011) Risky sexual practice among undergraduate female students in Kwazulu-Natal, South Africa, *AOSIS Open Journal*.
29. AnetteAgardh, Gilbert Tumwine, Per-Olof O stergren (2011) Impact of Socio-Demographic and Religious Factors upon Sexual Behavior among Ugandan University. *PLoSone*.
30. Likawunt S, Mulugeta T A (2012) Substance use and sexual risk behavior southern Ethiopia. *IJPSR* .
31. Belaynew W, Yeshambel B, Beyene M,Bemnet A (2012) Effect of emergency oral contraceptive on condom utilization and sexual risk taking behaviors among University students, Northwest Ethiopia. *BMC Research Notes*.5:501.
32. Global Journals Inc. USA: Demographic Predictors of Sexual Risk Susceptibility among

-
33. Undergraduates in Two Universities in Nigeria. (2012) 12 (11). Version1.0.
 34. Clement S Deveau, Ludovick Tengia, Carolyne Mutua, Samuel Njoroge, Lillian Dajoh, et al. (2011) Drug and alcohol Studies: Relationship between drinking and HIV/AIDS African Journal, CRISA. 9(2).
 35. Abdulhakim Hussein (2008) Factors promoting risky sexual behavior of high school adolescents. Unpublished study in Dessie town.
 36. Erum Ikramullah, Jennifer Manlove, Carol Cui, Kristin A Moore (2009) The Role of Parents in Teens' Decisions about Sex. *Child Trends*.
 37. Samuel W Sturgeon (2008) The Relationship B/n Family Structure and Adolescent Sexual Activity. The Heritage Foundation.
 38. Amsale C, Yamane B (2012) Peer Pressure Is the Prime Driver of Risky Sexual Behaviors in Addis Ababa, Ethiopia. *World Journal of AIDS*, Vol. 2. 159-164.