

Factors Associated with Risky Sexual Behavior Among Reproductive-Age Men in Ethiopia: Evidence from Ethiopian Demography and Health Survey 2016

Melash Belachew Asresie ¹, Daniel Tarekegn Worede ²

¹Department of Reproductive Health and Population Studies, School of Public Health, College of Medicine and Health Science, Bahir Dar University, Bahir Dar, Ethiopia; ²Department of Public Health, College of Health Sciences, Debre Markos University, Debre Markos, Ethiopia

Correspondence: Melash Belachew Asresie, Tel +251920774471, Email kalleabl@gmail.com

Background: Risky sexual behavior is defined as engaging in sexual activities that increase the risk of contracting sexually transmitted infections (STIs) and unintended pregnancies, both of which are global public health issues, particularly in low and middle-income countries like Ethiopia. Hence, this study aimed to identify factors associated with risky sexual behaviors among sexually active men in Ethiopia.

Methods: We analyzed data on 8, 103 men aged 15–59 years obtained from the 2016 Ethiopian Demographic and Health Survey. Bivariable and multivariable logistic regression analyses were performed to identify the factors associated with risky sexual behavior. Statistical significance was defined at a 95% confidence interval (CI) with a p-value less than 0.05.

Results: Overall, 13.6% (95% CI: 12.8–14.3) of men were engaged in risky sexual behavior. Men who were married (adjusted odds ratio [AOR]=0.02, 95% CI: 0.01–0.03) and residing in agrarian-dominated regions (AOR=0.58, 95% CI: 0.44–0.76) were less likely to engage in risky sexual behavior. On the other hand, men who had alcohol-drinking habits (AOR=1.50, 95% CI: 1.13, 1.99), and initiated sexual activity before the age of 18 (AOR=1.58, 95% CI: 1.26–1.99), those with primary education (AOR=1.32, 95% CI: 1.01–1.72) or secondary education (AOR=1.65, 95% CI: 1.20–2.26), and those who were Muslim (AOR=1.84, 95% CI: 1.32–2.60) or other religion followers (AOR=2.00, 95% CI: 1.44–2.76) were more likely to engage in risky sexual behavior.

Conclusion: Risky sexual behavior was significantly associated with marital status, geographic location, alcohol consumption, age of first sexual experience, religion, and educational level, which highlights the importance of encouraging men to avoid early sexual activities and to abstain from consuming alcohol. Moreover, a greater emphasis should be placed on initiatives that promote safer sexual behaviors, particularly targeting men living in pastoral regions, unmarried individuals, and Muslim religious followers.

Keywords: sexual behavior, men, associated factors, Ethiopia, EDHS

Background

Sexually transmitted infections (STIs), including Human Immunodeficiency Virus (HIV), are a major global public health important.^{1,2} In low-income countries, STIs and their consequences are among the top five diseases.¹ Globally, around 39 million people were living with HIV, with approximately 1.3 million newly infected in 2022. In the same year, 630,000 individuals lost their lives due to illnesses related to AIDS.³ In Ethiopia, the number of individuals living with HIV is approximately 613,000, and the estimated prevalence stands at 0.9%.⁴

Risky sexual behavior has been defined as engaging in unprotected sex with someone other than their spouse or cohabiting partner, having multiple sexual partners, engaging in sex with older partners, and sexual debut at an earlier age resulting in contracting STIs and unintended pregnancies.^{2,5} Risky sexual Behavior not only elevates the chance of STIs/HIV transmission but also adversely impacts the overall quality of life and intimate relationships of the couple.⁶ The primary factor contributing to the introduction of STIs/HIV into marital relationships is risky sexual behavior among

men.^{7–9} Most men have had multiple sexual relationships before marriage, and the majority of sexual encounters are unprotected.¹⁰ Married men are also engaged in risky sexual behavior.¹¹

Several studies have highlighted that risky sexual behavior among men is linked to a range of demographic, behavioral, and social factors. These include age, residence, geographical region, religion, educational status, working status, substance use (illicit drug or alcohol, tobacco), age of first sexual intercourse, marital status, living with a partner, wealth index, and awareness of STIs/HIV were associated with risky sexual behavior.^{12–15}

There are some studies about risky sexual behavior studies in Ethiopia, but, almost all targeted adolescents.^{16–22} Nevertheless, evidence in Ethiopia showed that as men's age advances, the probability of them participating in risky sexual behavior also rises. For instance, the likelihood of having multiple sexual partners was eightfold greater among men aged 40–49 years compared to those aged 15–19 years. Additionally, the likelihood of engaging in such behavior was nine times higher among men who were divorced, separated, or widowed, in contrast to those who had never been married.²³

However, information is scarce regarding the factors associated with risky sexual behavior among men of reproductive age. Thus, understanding factors associated with risk sexual behavior among men of reproductive age holds significant importance for policymakers and collaborators who work on STIs/HIV programs, it enables them to formulate strategies for addressing these healthcare concerns more efficiently, ultimately contributing to the attainment of global objectives. Therefore, the objective of this study was to identify factors associated with risky sexual behaviors among reproductive-age men in Ethiopia using EDHS 2016 data.

Materials and Methods

Data Source

We used Ethiopian Demographic and Health Surveys (EDHS) data conducted in 2016. These surveys were carried out in nine regions and two cities in administrative Ethiopia.²⁴

Study Design, Sampling Technique, and Sample Size

EDHS was a nationally representative, community-based cross-sectional study. The data were collected from January 18 to June 27, 2016. EDHS employed a two-stage stratified cluster sampling technique. The sampling frame for the EDHS was derived from the Ethiopia Population and Housing Census (PHC) conducted in 2007. The PHC provided a comprehensive list of 84,915 enumeration areas (EAs) established for the census. The sampling process involved stratifying each region into urban and rural areas, resulting in 21 sampling strata. In the first stage, 645 EAs (202 in urban areas and 443 in rural areas) were selected with a probability proportional to their size based on the 2007 PHC data. In the second stage, 28 households within each cluster were selected using an equal probability systematic selection method. Out of the households approached, a total of 16,650 households were successfully interviewed, indicating a commendable response rate of 98%. Among these households, 8448 men between the ages of 15 and 59 years, who reported ever engaging in sexual intercourse, were identified. The study population for this study was men aged 15–59 who were sexually active within the 12 months before the survey. So, a total of 8103 weighted samples who were sexually active within the 12 months before the survey were included in the final analysis.²⁴

Measurements

Outcome Variable

The primary outcome of this study was risky sexual behavior (Yes/No). A man was considered to have “risky sexual behavior” if he experienced one or both of the following risky sexual behaviors: I) had multiple sexual partners (two or more sexual partners). Each man was asked about the number of sexual partners in the last 12 months if he had sexual intercourse with two or more partners considered as having multiple sexual partners. II) had sexual intercourse with someone other than their spouse or cohabiting partner. Each man was asked if he had had sexual intercourse with someone other than his spouse or cohabiting partner in the last 12 months. Consistent condom use is one option for protection against sexually transmitted diseases, including HIV. Yet, we did not include it in this study. Because EDHS

did not collect information on consistent condom use but collected information on a condom in the last sexual intercourse, it did not show consistent condom use.^{14,24}

Exposure Variables

Based on their availability in the EDHS data sets and the literature, the following variables were chosen as exposure variables. Age at the time of interview (15–24, 25–49, and 50–59), resident (rural and urban), contextual region (pastoral dominated, agrarian dominated and city dominated region), religion (orthodox, Muslim, (Protestant, Catholic, and Traditional)), age at first sex (<18 and >18 years), marital status (married and unmarried), education status (no formal education, primary, and secondary or higher), working status (working and not working), wealth index (Poor, middle, and rich), smoking habits (No or Yes (referred to as current use of tobacco)), awareness of STIs/AIDS (No or Yes), knowledge on prevention of STIs/AIDS (No or Yes), exposed to media (not exposed, less than one in a week, and at least one in a week). If a man drunk alcohol and smoke tobacco in the last months before the survey was considered as had drinking and smoking habits, respectively.

If a man heard about HIV/AIDS or other STIs was considered aware of STIs/AIDS and if a man who knows that people can reduce the risk of getting HIV or other STIs by using condoms and having just one uninfected faithful partner was considered as knowledgeable of STIs/AIDS prevention.

Exposure to media was constructed by merging reading newspapers or magazines, watching television, and listening to the radio weekly. If a man was not exposed to at least one of the media in the week was grouped as not exposed.

Afar, Benishangul Gumuz, Somali, and Gambela regions were grouped as pastoral-dominated regions, whereas Amhara, Tigray, Oromia, and South nation and nationality people of the regions were grouped as agrarian dominated, and Addis Ababa, Harari, and Dire Dawa were grouped as a city dominated the region.

Statistical Analysis

To adjust disproportionate sampling and non-response the sample was weighted. Additionally, we employed the “svyset” command to appropriately account for the complex sample survey design utilized in EDHS. This approach helped us accurately handle the effects of the complex sampling method in our data analysis. The analysis was done using STATA software version 14.1. Frequency distribution and descriptive statistics (proportion, mean, and standard deviation (SD)) were used to describe the characteristics of the study participants. Bivariate and multivariate logistic regression analyses were done to identify factors associated with risky sexual behavior. On bivariate analysis, all variables were significantly associated with risky sexual behavior at a p-value of 0.20 and were kept in the multivariate analysis. A 95% confidence interval was used to declare statistical significance. Multi-collinearity was checked before multivariable logistic regression analysis was done. The goodness of fit of the final model was tested by Hosmer-Lemeshow and the p-value was greater than 0.05.

Ethical Approval and Consent to Participate

The International Review Board of the Demographic and Health Surveys (DHS) program granted us permission to access and download the dataset for our study after we submitted the required consent paperwork. In line with ethical guidelines, informed consent was waived for the use of the data by the DHS program data archivists. The confidentiality of the data was strictly maintained, and it was not shared with any other organizations. The primary data collection process adhered to national and international ethical standards.

Results

The mean age of men was 36.2 years with a standard deviation of 0.7 years. Approximately 11% of the men were in the age group of 15–24 years, while 12.3% were aged 50–59 years. The majority, 81.4% and 89.6% of men resided in rural areas and were married at the time of the survey, respectively. About 39% of men were with no formal education, while only 20.3% of men were secondary or higher education status. Around 9% of men were from poor households, while 56.3% came from rich households. Nearly all of the participants (99%) had heard about STIs/AIDS, and 69.3% were knowledgeable about STIs/AIDS prevention methods (Table 1).

Table 1 Socio-Demographic Characteristics and Risky Sexual Behavior by Characteristics Among Sexually Active Men in Ethiopia, EDHS 2016

Variables		Overall (%)	Risky Sexual Behavior	
			Yes (%)	No (%)
Age in year	15–24	11.0	46.0	54.0
	25–49	76.7	10.0	90.0
	50–59	12.3	6.7	93.3
Residence	Urban	18.6	25.1	74.9
	Rural	81.4	10.9	89.1
Contextual region	Pastoral dominate	3.6	15.4	84.5
	Agrarian dominate	90.7	12.1	87.9
	City dominate	5.7	35.7	64.3
Religion	Orthodox	44.5	15.1	84.9
	Muslim	32.7	12.3	87.7
	Others	22.8	12.4	87.6
Age at first sex	≥18 years	9.9	12.0	88.0
	<18 years	90.1	19.9	80.1
Marital status	Unmarried	10.4	87.4	12.6
	Married	89.6	5.0	95.0
Educational status	No formal education	39.3	5.9	94.1
	Primary	40.4	13.8	86.2
	Secondary or higher	20.3	27.9	72.1
Working status	Not working	1.6	46.1	53.9
	Working	98.4	13.0	87.0
Wealth index	Poor	8.5	8.5	91.5
	Middle	53.2	10.5	89.5
	Rich	56.3	19.0	81.0
Smoking habits	No	90.1	13.2	86.8
	Yes	9.9	16.8	83.2
Alcohol drinking habits	No	50.4	10.9	89.1
	Yes	49.6	16.5	83.5
Awareness of STIs/AIDS	No	0.8	1.3	98.7
	Yes	99.0	13.7	86.3

(Continued)

Table 1 (Continued).

Variables		Overall (%)	Risky Sexual Behavior	
			Yes (%)	No (%)
Knowledge on the prevention of STIs/AIDS	No	30.7	12.8	87.2
	Yes	69.3	13.9	86.1
Exposed to media	No	41.7	9.1	90.9
	Less than one in a week	16.7	12.2	87.8
	At least one a week	41.6	18.6	81.4

Risky Sexual Behavior

Out of all the men included in this study, 13.6% (95% CI: 12.8–14.3) were engaged in risky sexual behavior. Among men residing in urban areas, about 25% engaged in risky sexual behavior, while among rural men, the proportion was 11%. The percentage of risky sexual behavior among married men was 5%, whereas 87% among unmarried men. Among men with no formal education, around 6% reported that they engaged in risky sexual behavior, whereas the figure rose to 28% among men with secondary education or higher. Regarding media exposure, approximately 19% of men who were exposed to any form of media at least once a week were engaged in risky sexual behavior. In contrast, among men who were not exposed to any media, the percentage of engaged in risky sexual behavior was 9% (Table 1).

Factors Associated with Risky Sexual Behavior

As Table 2 shows, on bivariate analysis, all variables were associated with risky sexual behavior at a p-value of 0.2. When these variables were kept in the multivariate analysis only, religion, age at first sex, marital status, educational

Table 2 Factors Associated with Risky Sexual Behaviors Among Sexually Active Men in Ethiopia, EDHS 2016

Variables		COR	AOR
Age in year	15–24	1	1
	25–49	0.12 (0.11, 0.14)	0.95 (0.69, 1.29)
	50–59	0.06 (0.05, 0.08)	1.35 (0.88, 2.08)
Residence	Urban	1	1
	Rural	0.33 (0.30, 0.37)	0.89 (0.64, 1.24)
Contextual region	Pastoral dominate	1	1
	Agrarian dominate	0.51 (0.44, 0.59)	0.58 (0.44, 0.76)***
	City dominate	1.25 (1.07, 1.46)	0.85 (0.73, 1.03)
Religion	Orthodox	1	1
	Muslim	0.61 (0.54, 70)	1.84 (1.32, 2.60)***
	Others	0.78 (0.66, 0.91)	2.00 (1.44, 2.76)***
Age at first sex	≥18 years	1	1
	<18 years	2.14 (1.89, 2.42)	1.58 (1.26, 1.99)***

(Continued)

Table 2 (Continued).

Variables		COR	AOR
Marital status	Unmarried	1	1
	Married	0.05 (0.04, 0.06)	0.02 (0.01, 0.03)***
Educational status	No formal education	1	1
	Primary	2.34 (1.98, 2.77)	1.32 (1.01, 1.72)*
	Secondary or higher	5.90 (5.02, 6.95)	1.65 (1.20, 2.26)**
Working status	Not working	1	1
	Working	0.27 (0.22, 0.34)	0.81 (0.52, 1.27)
Wealth index	Poor	1	1
	Middle	0.90 (0.73, 1.12)	1.01 (0.72, 1.40)
	Rich	2.26 (1.99, 2.57)	0.92 (0.68, 1.23)
Smoking habits	No	1	1
	Yes	1.30 (1.12, 1.50)	1.28 (0.98, 1.66)
Alcohol drinking habits	No	1	1
	Yes	1.68 (1.49, 1.88)	1.50 (1.13, 1.99)**
Awareness of STD/AIDS	No	1	1
	Yes	3.62 (1.91, 6.88)	8.88 (3.16, 24.94)***
Knowledge of the prevention of STI/AIDS	No	1	1
	Yes	1.47 (1.29, 1.67)	0.94 (0.76, 1.17)
Exposed to media	No	1	1
	Less than one in a week	1.69 (1.39, 2.06)	0.84 (0.60, 1.18)
	At least one a week	2.85 (2.49, 3.27)	1.11 (0.87, 1.43)

Notes: *p-value<0.05, **p-value<0.01, ***p-value<0.001.

Abbreviations: COR, Crude Odds Ratio; AOR, Adjusted Odds Ratio.

status, region, alcohol drinking habits, and awareness of STI/AIDS were significantly associated with risky sexual behavior at a p-value of 0.05. The odds of risky sexual behavior among men from the agrarian-dominated region was 42% less compared to men from the pastoral-dominated region (AOR=0.58, 95% CI: 0.44, 0.76). The odds of risky sexual behavior among married men were 98% less compared to unmarried men (AOR=0.02, 95% CI: 0.01, 0.03). Men who had alcohol-drinking habits were 1.5 times more likely to engage in risky sexual behavior compared to men who had not alcohol-drinking habits (AOR=1.50, 95% CI: 1.13, 1.99). The odds of engaging in risky sexual behavior among men who were aware of STIs/AIDS were 9 times higher compared to men not aware of STIs/AIDS (AOR= 8.88, 95% CI: 3.16, 24.94) (Table 2).

Discussion

Ethiopia has made considerable efforts to mitigate the impact of HIV/STIs, resulting in significant progress in reducing new HIV infections. However, the burden of HIV/STIs remains substantial. This study aimed to examine the factors

associated with risky sexual behavior, which is crucial for decision-makers and partners involved in HIV/STI programs, as it enables them to develop targeted interventions and strategies. This study revealed that 13.6% (95% CI: 12.8, 14.3) of men were engaged in risky sexual behavior. This finding was higher compared to EDHS 2011.²³ The reason might be the expansion of broadband or internet connection using a smartphone that enables them to access media or pornographic content, positively influencing them to have unplanned sex. The other reason might be that early marriage is decreasing and alcohol consumption among men in Ethiopia is gradually increasing, which might be associated with having sexual intercourse with someone other than their spouse or cohabiting partners.

Multivariable logistic regression analysis showed that religion, age at first sex, marital status, educational status, region, alcohol drinking habits, and awareness of STI/AIDS were significantly associated with risky sexual. This study showed that the region they were living in was an important variable for engaging in risky sexual behavior. Men who lived in the agrarian-dominated region were less likely to engage in risky sexual behavior compared to men who lived in the pastoral-dominated region. This finding was in line with a previous study.¹⁴ The possible reason for this could be that agrarian societies often have more stable and settled social structures. People in these societies are more likely to live in close-knit communities where social norms and expectations regarding behavior, including sexual behavior, are well-established. These norms may discourage or limit risky sexual behavior due to the emphasis on family stability, the importance of reputation, and the need to maintain community cohesion.²⁵ Moreover, agrarian regions tend to be more settled and developed, providing better access to education, healthcare, and information about sexual health.

This study also showed that risky sexual behavior was significantly associated with religion. Individuals who follow Muslim and other religions were more likely to engage in risky sexual behavior than men who follow the Orthodox religion. Differences in religious beliefs can result in varying degrees of emphasis on traditional family values and conservative norms. This can influence expectations regarding premarital sex, faithfulness within marriage, and duties within the family unit. Religious teachings play a pivotal role in shaping both attitudes and behaviors in these areas. A previous study has documented the variation of STIs based on religious affiliations in Ethiopia.²⁵

Age at first sexual intercourse was significantly associated with risky sexual behavior. Men who started sexual intercourse before the age of 18 were more likely to have risky sexual behavior compared to men who started at or after the age of 18. This finding was in line with the other studies.^{14,22,26,27} Initiating sexual activity at a younger age might indicate limited access to sexual education and information. This lack of awareness can contribute to a higher likelihood of engaging in risky behavior. Moreover, individuals who start sexual activity before 18 potentially have a longer period of sexual activity before reaching adulthood. This extended exposure increases the opportunities for various sexual encounters, which can raise the likelihood of engaging in risky behaviors over time.

In this study, married men were less likely to engage in risky sexual behavior compared to unmarried men. This finding is supported by a previous study.¹⁴ One potential explanation is that marriage is often linked to societal norms and expectations that emphasize fidelity and monogamy. These norms can discourage extramarital sexual activities, contributing to a lower likelihood of risky behavior among married men. Marriage can provide emotional satisfaction and intimacy, reducing the perceived need to seek gratification through risky sexual encounters outside the relationship.^{23,28}

Surprisingly, the educational status of men was positively associated with risky sexual behavior. Men with primary and secondary education levels were more likely to have risky sexual behavior compared to men with no educational level. This finding was supported by a study done in two sub-Saharan African countries.²⁷ The reason could be that educated people may have higher economic means, allowing them to pay for sex with someone other than their spouse or cohabiting partner.²⁷ Moreover, individuals with no education might not be exposed to risky behaviors due to limited interaction with peers and access to information. Educated individuals are more likely to access social media platforms. Previous studies have documented that risky sexual behavior has been associated with exposure to sexually explicit media, including pornography.^{18,22,29} However, they may use condoms consistently, which this study did not investigate because the main source of data captured only condom use in the most recent sexual partner, which does not reflect continuous condom use.²⁸

Substance abuse is frequently the first factor in the initiation of risky sexual behavior.³⁰ In this study, men who had alcohol-drinking habits were more likely to engage in risky sexual behavior. This finding was agreed with by many other studies.^{13,21,22,26,31,32} The reason might be that risk perception ability decreases with alcohol consumption, which impairs decision-making ability.

People can be made more aware of the dangers of STIs and AIDS by raising their awareness of the consequences of risky behavior. In contrast to our belief, in this study, men who were awarded STIs or AIDS were more likely to have risky sexual behaviors. This finding was in line with another study.¹⁴ The explanation for this could be that STI prevention efforts typically target persons who engage in risky sexual behavior, and men who engage in risky sexual behavior may be more interested in learning about STIs/ HIV, and their consequences.¹⁴

Limitation of This Study

There may be a recall bias since this study relies on self-reported data. Moreover, consistent condom use was not considered in the measurement of risky sexual behavior since EDHS did not collect information on consistent condom use; it only collected information on condom use in the last sexual encounter, which did not indicate consistent condom use.

Conclusions

Risky sexual behavior is a significant public health concern in Ethiopia and is associated with age at first sexual experience, geographical region, educational status, alcohol drinking habits, religion, and knowledge of STIs/AIDS. Therefore, it is crucial to implement targeted safe sex promotion and STI prevention intervention programs aimed at these vulnerable groups. Particularly, this study highlights the importance of encouraging men to avoid early sexual activities and alcohol consumption. Moreover, any effort that encourages safer sexual activities should give more attention to men residing in pastoral regions, unmarried individuals, and Muslim religious followers.

Data Sharing Statement

We used the 2016 EDHS data for this study. Interested researchers can access the DHS data by using the link <https://dhsprogram.com/data>.

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