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**ASSOCIATION OF KHAT CHEWING WITH RISKY SEXUAL BEHAVIOR AND
ITS DETERMINANT FACTORS AMONG ADULTS IN GUBRE TOWN, GURAGE
ZONE, ETHIOPIA 2022: COMPARATIVE CROSS SECTIONAL STUDY**

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Title: ASSOCIATION OF KHAT CHEWING WITH RISKY SEXUAL BEHAVIOR AND ITS DETERMINANT FACTORS AMONG ADULTS IN GUBRE TOWN, GURAGE ZONE, ETHIOPIA 2022: COMPARATIVE CROSS SECTIONAL STUDY

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Acronyms

- **CI:** Confidence interval
- **HH:** House hold
- **RSB:** Risky sexual behavior
- **STIs:** Sexually transmitted infections
- **SNNPR :** Southern Nation Nationality and People Region
- **SPSS:** Statistical Package for the Social Sciences

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Abstract

- ✓ **Background:** *Khat (Catha edulis Forsk) is a psycho-stimulant substance grown in East Africa. People chew khat for its central nervous system stimulant effects such as euphoria, energy, alertness and for social purposes. The number of khat users has increased in Ethiopia during recent decades and the habit has become popular in all sections of the society. But its adverse effects and its prevalence are not well studied. Thus, this research will study some adverse effect of khat chewing and specifically assess risky sexual behavior and its association with it.*
- ✓ **Objective:** *To assess the association between khat chewing and risky sexual behavior among adults in Gubre sub city, Ethiopia, 2022.*
- ✓ **Methods:** *A comparative cross-sectional study was conducted from March 24 to June 16 among adults in Gubre subcity. Study subjects were selected using stratified random sampling technique, and data was collected using self-administered questionnaire for those who can read and write and verbal interview for those who can't. It was collected by 3 principal interviewers and supervision was conducted simultaneously. Data analysis was made using SPSS version 21.0 for windows package and the results are presented conceptually using graphs as well as theoretically by written report.*
- ✓ **Result:** *The prevalence of RSB was 186 (55.5%) among khat chewers and 149(44.5%) among non-chewers. The odds of RSB among male respondents was 57.5 times higher than that of females (AOR =57.5; 95% CI: (15.7-210)). The odds of RSB among the age range of the respondents that are between 18-24 was higher than that of the age range between 25-34 (AOR =17.8; 95%CI:6.2-50.9). Respondents who are single had 9.5 times higher odds of RSB than that of the married (AOR =9.5; 95% CI:3.2-28.1). Those who earned an average monthly income of 1001-3000 birr had almost thirteen times (AOR =12.9; 95% CI: 3.06-53.5) higher odds of RSB than who earned less than 1000 birr per month. Those who earned an average monthly income of more than 3000 birr had three times (AOR =3.1; 95% CI: 1.2-7.8) higher odds of RSB than who earned less than 1000 birr per month.*
- ✓ **Conclusion:** *The prevalence of risky sexual behavior in Gubre town was higher than those who don't involve in it. It is more prevalent on single participants than married and has strong association with RSB. The prevalence of RSB among khat chewers was significantly lower than non-chewers. Single, male sex, and more than 1001 EBR monthly income were found to be factors having significant association with current RSB. Therefore, this study does explicitly show that khat chewing was found to be an independent factor (as preventive factor) affecting RSB. However, as this evidence varies and was lacking detailed information, there is a need for intense research using other strong designs like longitudinal study design to explore the actual interactions between khat use among settlers and risky sexual behaviors if there is and along with using a proper standard tool.*
- ✓ **Key words:** *Risky sexual behavior, Khat, Gubre, Ethiopia*

1. Introduction

1.1. Background

Khat (or qat) is a narcotic found in the leaves of *Catha edulis*, a wild East African plant. Cathinone, a central nervous system stimulant, is found in the plant. (1) Chewing khat is linked to thousands of years of social and cultural practices, particularly in North-Eastern Africa and the Arabian Peninsula, where the plant is widely farmed. (2)

Khat has effects that are similar to caffeine and other stimulants. When people take khat, they may feel talkative, alert, delighted, and euphoric. Some people claim to have a higher sense of self-worth. Others talk about having more ideas and imagination. (3)

Khat is typically eaten, with people holding the chewed leaves in their cheek for several hours at a time, chewing intermittently. Chewing sessions are usually 3 to 4 hours long. Khat is outlawed in the United States and Canada, although it is permitted in many other countries, including Ethiopia, Somalia, Yemen, and Kenya, where it is regarded as a food rather than a drug. (4) Despite the fact that khat is a legal substance in some countries, it can serve as a gateway to other illicit narcotics and risky sexual behaviors. To mitigate the impacts, local government authorities and other concerned bodies must be made aware of this.

Risky sexual behaviors (RSB) are those that put you at risk of having a negative reproductive outcome. (5) Early sexual intercourse, having multiple sexual partners, changing sexual partners frequently, having oral, vaginal, or anal sexual contact without a condom, using unreliable birth control methods, or using birth control methods inconsistently, or engaging in sex with commercial sex workers are all examples of RSB.

Khat is a psychoactive and mind-altering stimulant that may affect logical decision-making and promote risk-taking behavior, leading to unsafe sexual conduct (6). Risky sexual activity was more prevalent in countries like Cambodia, Tanzania, and Ethiopia that lacked

access to high-quality reproductive health care (7) .In Ethiopia, 50.7–60.9 percent of college students have engaged in risky sexual behavior at some point in their lives. In the last 12 months, 74.1 percent of sexually active college students had sex with more than one sexual partner, 41.0 percent didn't use a condom or used it inconsistently in the first sexual intercourse, and 11.4 percent had sex with commercial sex workers (8) (9).

Furthermore, various research in Ethiopia have shown that chewing khat leads to family disintegration and diverse sexual activities. Due to the related risky sexual behaviors such casual sex, unprotected sex, and early commencement of sexual activity documented among chewers (10) (11), the practice could fuel the spread of sexually transmitted infections (STIs).

1.2. Statement of the problem

The habit of chewing khat is thought to influence a considerable portion of Ethiopia's population, particularly the productive age group (12) . Individuals involved suffer socioeconomic, psychological, and physical health consequences as a result of the recent significant increase in khat consumption. Though chewing khat is said to cause elation and sensations of heightened alertness and arousal, users may have a low mood, irritability, loss of appetite, gastritis and peptic ulcer disease, and sleeping difficulties at the end of a khat session (13) (14). It has also contributed to adult hazardous sexual behavior.

Accordingly, studies on the health implications of chewing khat have been undertaken in Ethiopia; but, to the best of the researchers' knowledge, investigations particularly on risky sexual behavior are extremely rare. Furthermore, studies on the health impacts of the Khat chewing habit among youths in the cities of Wolkite, Gubre, and Butajira are insufficient.

Despite the fact that several research on the subject were undertaken in the aforementioned places, no efforts were made to evaluate the influence of khat chewing on risky sexual behavior or to assess its prevalence, particularly among the adolescent group.

For example, Addis and colleagues found that age of the respondents, religion, educational level, peer influence, job environment, and perceived benefit of Khat are the key factors of Khat chewing decision among the respondents in their study surrounding Wolkite Town, Gurage Zone, Ethiopia (15) . However, the study's main focus was on using a quantitative research approach to discover the important characteristics that influence Khat chewing among families, with little effort made to examine the link between khat chewing and risky sexual behavior, as well as the impacts of Khat chewing.

Despite the fact that the prevalence of khat use and its effects have been investigated, there is still a lack of information about khat chewing and its link to dangerous sexual behaviors at the community level. As a result, identifying the prevalence of current khat chewing and its relationship to risky sexual behaviors among residents of Gubre City, southern Ethiopia, is critical to help health care practitioners and program designers in focusing their approach to the management of khat-related health concerns.

1.3. Significance of the study

The purpose of this study is to look into the link between khat chewing and risky sexual behavior in adults, as well as the present prevalence of the link, with a focus in Gubre town, Gurage zone, Ethiopia. It also compares the RSB levels of khat chewers vs non-khat chewers. The findings of this study are anticipated to fill a knowledge gap in the effort to improve adolescent and youth health by lowering the negative repercussions of poor reproductive health also provide substantial input to health-related policymakers/stakeholders in order to establish and strengthen proper education and devise successful intervention methods to reduce khat chewing and its detrimental impacts at the individual, community, and national levels.

2. Literature Review

2.1. Prevalence of khat chewing and risky sexual behavior

Khat is chewed by an estimated 10 million people globally, and is most widely found and consumed in the southern Arabian Peninsula and East Africa, as well as immigrant groups in Europe and North America (13). In the same way, khat consumption is not really a big deal in Ethiopia. In Jimma, both institutional and community-based investigations found that 46 and 37.8% of people chewed khat at least once in their lives (14). Khat was previously only grown and chewed in a small area of the country, primarily in the east. It is now grown and consumed throughout the country, particularly in (16).

Furthermore, various research in Ethiopia have found that chewing khat leads to family disintegration and diverse sexual activities. As a result of the related risky sexual behaviors like casual intercourse, unprotected sex, and early commencement of sexual activity documented among chewers, the habit could fuel the spread of sexually transmitted infections (STIs) (10) (11).

According to the findings of a study done on Bahar dar City [20], 204 (25.7%) of the 794 study participants had chewed khat at least once in their lives, with 79.9% having chewed in the previous 12 months. Within the prior three months, 95 percent of individuals who chewed in the previous 12 months chewed khat. When all 794 study participants were taken into account, 163 (20.5%) and 155 (19.5%) chewed khat in the previous twelve and three months, respectively. Among the 155 study participants who chewed khat recently (within the last three months), 68 (43.9%) chewed weekly, followed by 66 (42.6%) daily, 16 (10.3%) infrequently, and 5 (3.2%) monthly.

44 (9.93%) of the 443 married/divorced/separated/widowed participants had several sexual partners. More than one extra sexual partner was reported by fifteen (34.1%) of those

Who had them Nearly 56% of the 351 single study participants have experienced sexual intercourse at some point in their lives. In the 12 months leading up to the study, 161(82.1%) of the participants had engaged in sexual activity. 95(48.7%) of the 195 survey participants who had engaged in sexual activity at least once in their lives did so with casual partners and/or commercial sex workers, while the remaining 100(51.3%) did it with regular partners.

Furthermore, 113 (70.8 percent) of 161 participants who had engaged in sexual activity used a condom throughout their engagement, with consistent (59.3%) and inconsistent (40.7 percent) usage. 68 (8.6%) of the total participants had a history of STIs within the previous 12 months, according to their self-reported sexually transmitted infections (STIs). In addition, 2.5 percent of all participants watched a pornographic film (17).

According to the findings of a study done in Arba Minch (18), Majority 178 (83.6%) of khat chewers and almost one-third 288 (32.1%) of non-chewers ever practiced sexual intercourse. The prevalence of lifetime RSB was 82.2% among khat chewers and 30.9% among non-chewers (p-value< 0.001).

2.2. Khat Chewing and its related effects

In Ethiopia, use of substances is a growing problem and it is noted that the abuse of alcohol, tobacco, and khat is more common than other drugs. Alcohol and khat are the most frequently abused. Khat is the second commonly used substance in Ethiopia followed by cigarettes. Cigarettes smoking is the third commonly used substance in Ethiopia (18). However, despite its adverse effects, study revealed that khat has psychological, medical effects on its users and also lied to risky sexual behavior.

2.3. Health related effects

Prolonged and excessive use of khat is linked with several health problems. Mental health problems are prominent leading to cognitive impairment, learning difficulties, and behavioral changes. Other health-related problems such as dental health problems, cardiac abnormalities, and elevated blood pressure were reported with prolonged use of khat (12). The habit of khat chewing lead to both acute and chronic health effects like low birth weight, reduced sperm count and motility, social and economic problems affecting the consumers and their families. It is also associated with liver toxicity, cardiovascular disease, and periodontal disease, sleeping disorder, reduced appetite, depression gastrointestinal adverse effect, psychosis, memory impairment and poor academic performance (19).

In addition, medical problems associated with khat intoxication include psychiatric manifestations such as deterioration of psychophysical function and schizophreniform psychoses. Khat chewing is also associated with a wide range of health problems including ischemic heart disease, gastritis, liver toxicity, oral cancer, hypertension, spermatorrhoea and hemorrhoids. Concurrent habits such as tobacco smoking may further precipitate the risks associated with khat abuse (20).

2.4. Effect of khat chewing on risky sexual behavior

Early sexual intercourse, having more than one sexual partner, changing sexual partners frequently, and having oral, vaginal, or anal sexual contact without a condom, using unreliable methods of birth control, or using birth control methods inconsistently, or engaging in sex with commercial sex workers are all examples of risky sexual behaviors (5).

Khat consumption is one of the common problems among youth's especially high school, college and university students (9). A study from Yemen and Ethiopia showed that 54 and 19.6% of college students respectively chewed khat (21). The active constituent of khat

releases nor-epinephrine that brings about increased sympathetic nervous system activities, which initiates sex drive and increases sexual arousal in women through increase in vaginal pulse amplitude and vaginal blood volume (22). Studies conducted among university students in Jimma, South West Ethiopia; high school students in Humera and college students in Bahir Dar, North West Ethiopia showed that RSB among chewers (51, 61.1 and 52.5%) was significantly higher than non-chewers (19.8, 9.3 and 16.5%) respectively (23) (24) . A study from Haramaya University showed RSB was slightly higher (68.4%) among khat chewers than non-chewers (62.7%) (25) . The combined use of khat and other abusive substances showed an increase in the risk of RSB (10) (26) . Generally, literature and empirical works revealed that Khat chewing habit causes risky sexual behaviors and health related adverse effects up on chewers.

2.5. Conceptual Framework

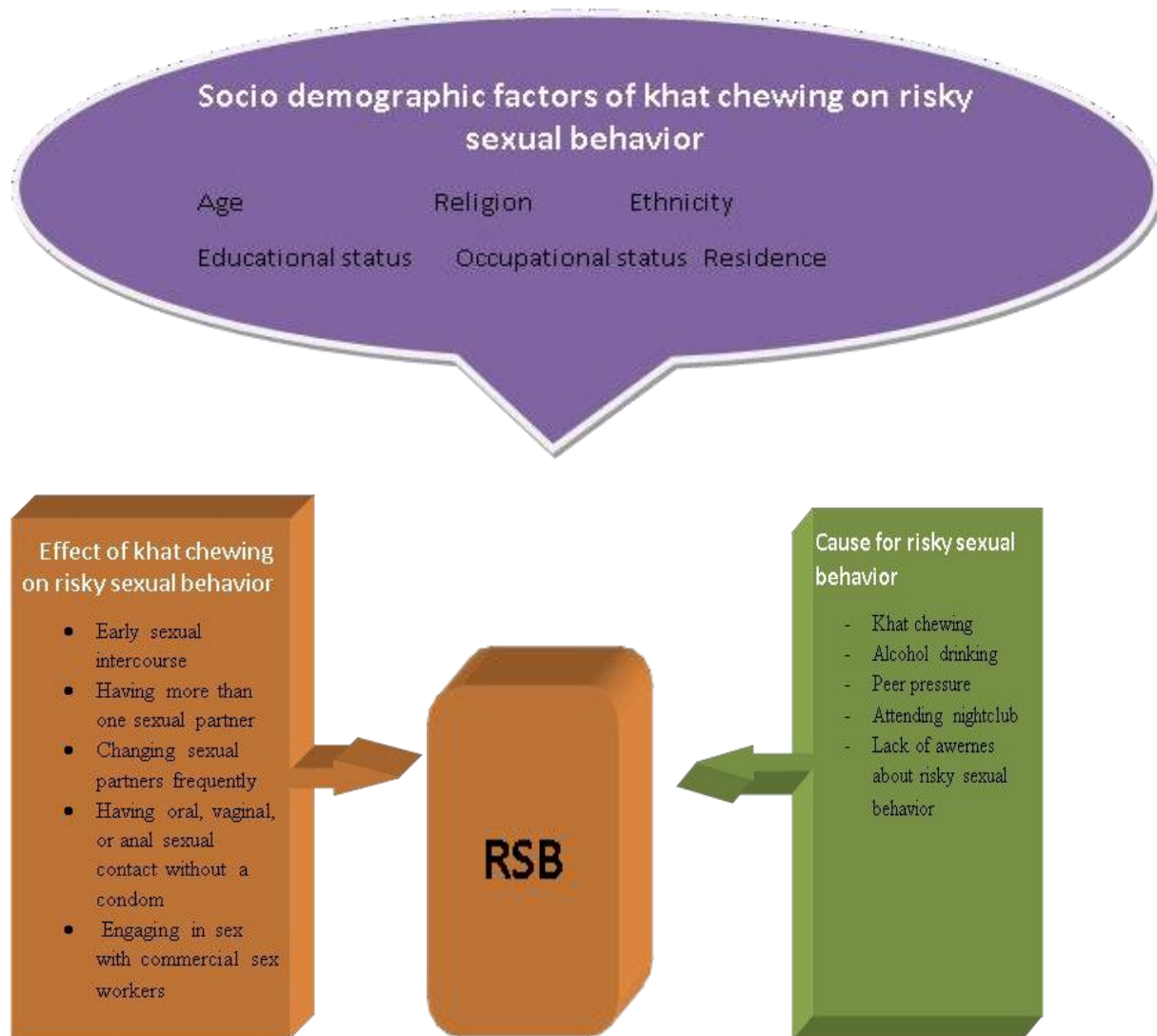


Figure 1 Conceptual Framework of the research for association of khat chewing and risky sexual behavior among adults in Gurage zone Gubre town, SNNPR region, Ethiopia 2022

3. Objective

3.1. General objective

- Association of khat chewing with risky sexual behavior and its determinant factors among adults in Gubre town, Gurage zone Ethiopia 2022.

3.2. Specific objective

- To determine the prevalence of risky sexual behavior in Gubre sub city, Gurage zone Ethiopia 2022.
- To assess factors associated with risky sexual behavior in Gubre sub city, Gurage zone Ethiopia 2022.
- To determine association between khat chewing and risky sexual behavior in Gubre sub city, Gurage zone Ethiopia 2022.

4. Methods

4.1. Study Design

A comparative cross-sectional study had been conducted to assess the association of khat chewing and risky sexual behavior among settlers of Gubre sub city from March 24 to June 16,2022.

4.2. Study Area

The study is conducted on Gubre sub city in the Southern Nations Nationalities and Peoples Region (SNNPR), Gurage zone, positioned at 178 km southwest of Addis Ababa and 20 km east of Wolkite town. Gubre is bordered on the south, west and east both by Cheha woreda and on the north by the Wabe River which separates it from Abeshge and Kebena Woreda. According to Gubre town health office (2022) the total population of the town is 9104 (27).

4.3. Population

4.3.1. Source Population

The source population for this study included all adult residents/settlers of Gubre sub city.

4.3.2. Study Population

The study population from which the sample population was drawn from included reproductive age groups who are more than 18 years old because it is assumed that they exhibit high sexual activity and those who are a lifetime chewer.

4.4. Inclusion and Exclusion Criteria

All people aged 18 years and above who lived for at least 6 months in selected kebeles during the study period and start sexual intercourse was included for the interview and those

who were unable to communicate or comprehend what they were asked about and who are seriously ill were excluded from the interview.

4.5. Sample Size

The sample size was determined using a formula for estimating a double population proportion. Considering 95% confidence interval (CI) ($Z_{\alpha/2} = 1.96$), 80% power ($1 - \beta$) 5% margin of error and 50% proportion of khat chewers and 40% proportion of non khat chewers taken from a previous study (28) generated a minimum sample size of 384. After adjusting with 10% as non-response rate, a total of 422.4 which is approximately 422 respondents were recruited in the study.

4.6. Sampling technique and sampling procedure

4.6.1. Sampling technique

The sampling technique that was followed is a stratified random sampling by proportionally allocating the sample size using kebeles as a stratification variable and by randomly selecting settlers from each stratum.

4.6.2. Sampling procedure

Participants were proportionally selected from those two kebeles. Total number of kebeles during study period were 01 kabele and Buchache. 01 kebele has 1193 house hold and 8024 population. Buchache kebele has 449 house hold and 1024 population.

$$N_i = n(NF)/N$$

Where N_i = sample needed from each kebele

n = house hold in each kebele.

N = Total number of house hold on gubre town (01 kebele + Buchache kebele) = 1193 + 449 = 1642

NF = total sample size (422)

At 01 Kebeles: $N_i = 1193(422)/1642 = 307$ house hold were needed from 01 kebeles.

At Buchache kebele: $N_i = 449(422)/1642 = 115$ house hold were needed from buchache kebeles.

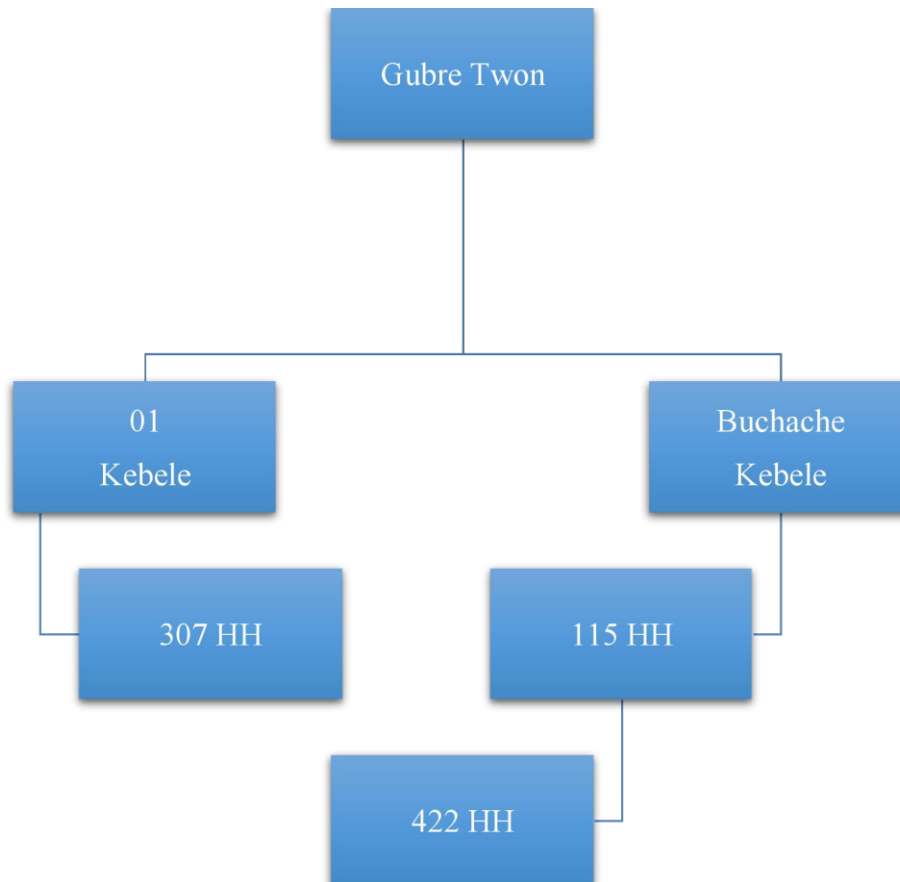


Figure 2 sampling procedure of gubre sub city

4.7. Variables

4.7.1. Dependent Variable

- Effect of Khat chewing on risky sexual behavior and its consequences was taken as dependent variables in this study.

4.7.2. Independent Variables

In this study, sex, age, religion, monthly income, occupation, marital status, educational status those were the socioeconomic independent variables that was used , where as pleasure seeking, peer pressure, age at first sex, multiple partners are taken as sexual practice independent variables

4.8. Operational Definition

- (a) Lifetime chewer: an individual is considered an ever chewer even if he/she had chewed only once in his/her lifetime;
- (b) Current user: individuals who were chewing khat within 3 months preceding the study;
- (c) having extra sexual partner: an individual is considered as having extra sexual partner if ever married individual had sexual partner in addition to his/her spouse;
- (d) Ever had sexual intercourse: an individual is considered as an ever had sexual intercourse if a single individual had history of having sexual intercourse even only once in his/her lifetime;
- (e) Inconsistent condom use: rarely, never and occasionally use of condoms during sexual contact other than always;
- (f) Sexual behavior: an individual is considered as having risky sexual behavior if he/she reported having penetrative vaginal sex without using condom or inconsistently use with any partner rather than regular partner, having multiple sexual partners, having extra sexual partners, starting sexual intercourse before 18 years, watching pornographic film and sex with causal or commercial sex worker. In this study, respondents who engaged in at least one of the above behavior were considered as having risky sexual behavior.

4.9. Data Collection Procedure and Quality assurance

Data was collected on April 25 by three of the principal investigators using structured pretested self-administered questionnaires and for those who can't read or write they were asked verbally. The designed questionnaire was initially developed in English and translated to Amharic and then back to English with expertise to ensure its consistency. The questionnaire was pretested on 5% of total sample size in one non-selected Kebele, and modification and correction that will be done 1 week before data collection. The respondents was interviewed in Amharic. They obtained a written consent with clarifying their right to decline from participation in the study, they will be provided with the questionnaire.

4.10. Statistical Analysis

Data was coded, checked and entered into IBM SPSS statistical software version 21 for cleaning and analysis. After cleaning data for inconsistencies and missing values in SPSS, descriptive statistics was done to show magnitudes of the variables using frequencies and percentages. Comparison of risky sexual behaviors among khat chewers and non-chewers was made using the Pearson chi-square test statistics in the SPSS to check whether risky sexual behavior of the respondents had an independent relationship with their chewing status. Logistic regression was performed to assess the association between outcomes and different explanatory variables. The strength of association was interpreted using odds ratio and 95% confidence interval. P value <0.05 was considered statistically significant in this study.

4.11. Ethical Consideration

The study was approved by the department of nursing, Wolkite University and the administrators of the college gave permission to conduct the study there. All the participants of the study was provided with explanations as to the purpose of the study, and that the information collected is kept strictly confidential; and those who has given their verbal consent to participate in the study are included.

4.12. Plans for Dissemination of Finding

The final report of the study was presented and submitted to Wolkite university, college of medicine and health science department of Nursing, in the form of written report and in a graphic form. Moreover, the result was presented for the department members and other concerned or interested bodies during presentation. Result of the study will be disseminated to students' library and Gubre city Health Office and efforts will be made to publish on reviewed journals.

5. RESULTS

Socio-demographic and behavioral characteristics of the respondents by their khat chewing status

A total of 382 citizens participated in the study, making a response rate of 90.5%. Half of the respondents were chewers and 175 (45.8%) were non chewers, 158 (79.3%) of chewer and 41(20.6%) of non-chewer respondents were male. Majority of the chewers were 94(59.4%) farmers and 64(40.5%) were non-chewers, and next to them 55(47.8%) chewers and 60(52.1%) non-chewers were merchants. Regarding educational status, 107(68.2%) chewers and 50(31.8%) non-chewers were those who completed primary education. Out of 207chewer respondents, 101(48.7%) were Islam religion followers, 112(54.1%) were married and 92(44.4%) were those who had an average monthly income of more than 3000 birr.

Socio demographic characteristics of the respondents

Table 1 Socio demographic characteristics of the respondents

Variables (N= 422)		Total no (%)	Life time khat chewing status	
			Chewer No (%)	Non chewer No (%)
Sex	Male	197(52.1%)	156(79.2%)	41(20.8%)
	Female	185 (47.9%)	51(27.57%)	134(72.43%)
Age	18-24	74 (19.4%)	26(35.13%)	48(64.87%)
	25-34	175 (45.8%)	99(56.57%)	76(43.43%)
	35-44	102 (26.7%)	62(60.78%)	40(39.22%)
	≥ 45	31 (8.1%)	20(64.51%)	11(35.49%)
Occupation	Government employee	58(15.2%)	31(53.44%)	27(46.56%)
	Merchant	115 (30.1%)	55(47.83%)	60(52.17%)
	Daily laborer	28 (7.3%)	26(92.86%)	2(7.14%)
	Student	23 (6.0%)	1(4.35%)	22(95.65)
	Farmer/housewife/private	158 (41.4%)	94(59.5%)	64(40.5%)
Educational status	No formal education	50 (13.1%)	25(50%)	25(50%)
	1-8 grade	157 (41.1%)	107(68.34%)	50(32.66%)

	9-12 grade	100 (26.2%)	34(34%)	66(66%)
	Diploma and above	75(19.6%)	41(54.66)	34(45.34%)
Religion	Orthodox tewahedo	128(33.5%)	64(50%)	64(50%)
	Muslim	150(39.3%)	101(67.34%)	49(32.66%)
	Protestant	91 (23.8%)	33(36.26%)	58(63.73%)
	Others	13 (3.4%)	9(69.23%)	4(30.76)
Ethnicity	Gurage	245(64.1%)	156(63.67%)	89(36.33%)
	Others	137(35.9%)	51(37.2350)	86(62.77%)
Marital status	Married	203(53.1%)	112(55.17%)	91((44.33%)
	Single	146(38.2%)	66(45.2%)	80(44..83%)
	Widowed/separated	33 (8.6%)	29(87.87%)	4(12.3%)
Average monthly income	Non employed	44 (11.5%)	13(22.54%)	31(70.46%)
	< 1000 birr	62 (16.2%)	41(66.13%)	21(33.87%)
	1001-2000 birr	86 (22.5%)	61(70.93%)	25(29.07%)
	≥ 3001 birr	190 (49.7%)	92(48.42%)	98(51.58%)

Khat chewing practice and sexual behavior of the respondents

The lifetime prevalence of khat chewing among the participants was 207(54.2%). Out of 382 sexually active respondents, 119 (31.1%) had their first sex at age less than 18 years. Out of 119 respondents, 77(64.7%) were female. From the total 382 respondents, 335(87.7%) had risky sexual behaviors in their lifetime. Out of 382 sexually active respondents, 189(49.5%) had multiple partners, majority of the respondents 165(43.2%) used condom inconsistently and 31(8.1%) of males had sex with commercial sex workers as first sexual partners.

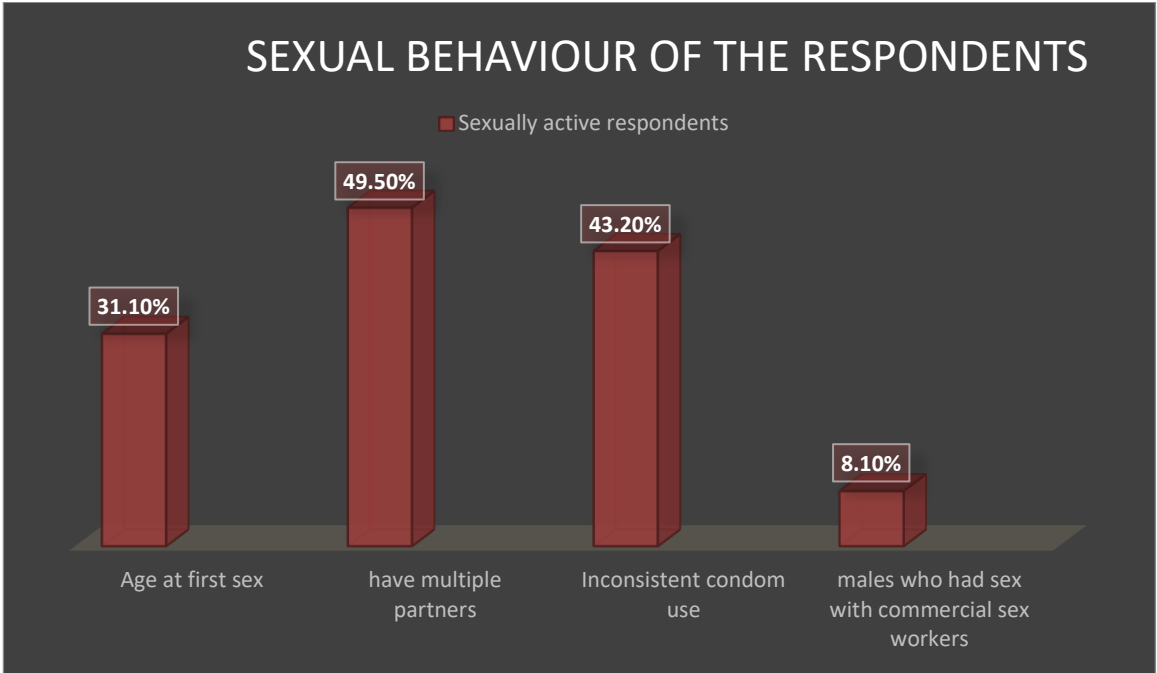


Figure 3: Sexual behavior of the respondents

Comparison of risky sexual behavior among khat chewer and non-chewer citizens in Gubre town.

Majority 207(54.2%) of khat chewers and almost 175(45.8%) of non-chewers ever practiced sexual intercourse. The prevalence of RSB was **186 (55.5%)** among khat chewers and **149(44.5%)** among non-chewers. The prevalence of multiple sexual partners was 77 (37.2%) among chewers and 112(54.1%) among non-chewers. Among those who chew khat in three months, 65(50%) of the respondents feel sexually aroused during or immediately after chewing khat ($p = 0.0004$).

Comparison of sexual behavior among khat chewer and non-chewer citizens

Table 2 Comparison of sexual behavior among khat chewer and non-chewer citizens

Life time sexual behaviour		Total No. (%)	Life time khat chewing		p-value
			Yes No. (%)	No No.(%)	
Life time sexual intercourse (N= 382)	YES	382	207 (54.2%)	175 (45.8%)	-
Age at first sexual intercourse	< 18 years old	119(31.15%)	70(58.82%)	49(41.18%)	P=.225
	>=18 years old	263(68.85%)	137(52.09%)	126(47.91)	
Reason to start sex	Marriage	175(45.81%)	75(42.85%)	100(57.15%)	P= .0004
	Personal desire	150(39.26%)	86(57.33%)	64(42.67%)	
	Peer pressure	11(2.28%)	10(90.90%)	1(9.09%)	
	Influence of drugs/alcohol	29(7.6%)	29(100%)	0	
	Without interest	17(4.5%)	7(41.17%)	10(58.83%)	

Total sexual partner in a life time	Single	193(50.52%)	81(41.97%)	112(58.03)	P = 0.0001
	Multiple	189(49.48%)	126(66.67%)	63(33.33)	
Consistent condom use with non-regular partner	Yes	64(27.7%)	54(84.4%)	10(15.6%)	P = 0.0007
	No	167(72.3%)	72(43.11%)	95(56.89%)	
Sexual intercourse with prostitute	Yes	36(9.42%)	24(66.67%)	12(33.33%)	P = 0.0001
	No	346(90.58%)	183(52.9%)	163(47.1%)	
Knowledge of HIV/AIDS	Yes	341(89.28%)	180(52.8%)	161(47.2%)	P=0.136
	No	41(10.72%)	27(65.85%)	14((34.15%)	
Discuss on sexual reproductive health issues with others	Yes	292(76.43%)	143(49%)	149(5150)	P =.0001
	No	90(23.57%)	64(71.1%)	26(28.9%)	

Factors associated with Risky sexual behavior of this study

The odds of RSB among male respondents was 57.5 times higher than that of females (AOR =57.5; 95% CI: (15.7-210). The odds of RSB among the age range of the respondents that are between 18-24 was higher than that of the age range between 25-34 (AOR =17.8; 95%CI:6.2-50.9). Respondents who are single had 9.5 times higher odds of RSB than that of the married (AOR =9.5; 95% CI:3.2-28.1). Those who earned an average monthly income of 1001-3000 birr had almost thirteen times (AOR =12.9; 95% CI: 3.06-53.5) higher odds of RSB than who earned less than 1000 birr per month. Those who earned an average monthly income of more than 3000 birr had three times (AOR =3.1; 95% CI: 1.2-7.8) higher odds of RSB than who earned less than 1000 birr per month.

Factors associated with risky sexual behavior

Table 3 Factors associated with risky sexual behavior

Variables		Total	Risky sexual behavior status		COR(95% CI)	AOR(95% CI)	P value
			Yes No. (%)	No No. (%)			
Sex	Male	197	191(96.96%)	6(3.04%)	9.06(3.7-21.9)	57.5(15.7-210)	P=0.0001*
	Female	185	144(77.84%)	41(22.16%)	1	1	1
Age	18-24	209	197(94.26%)	12(5.74%)	4.16(2.0-8.3)	17.8(6.2-50.9)	P=0.0004*
	≥25	173	138(79.77%)	35(20.23%)	1	1	1
Marital status	Married	203	164(80.79%)	39(19.21%)	1	1	1
	Single/widow/separated	179	171(95.5%)	8(4.5%)	5.08(2.3-11.2)	9.5(3.2-28.1)	P=0.0007*
Average monthly income	Not employed,<1000	108	92(85.19%)	16(14.81%)	1	1	1
	1001-3000 birr	88	83(94.31%)	5(5.69%)	2.87(1.01-8.23)	12.8(3.06-53.5)	P=0.0005*
	>3001 birr	186	160(86.02%)	26(13.98%)	1.07(0.5-2.09)	3.12(1.2-7.8)	P=0.01*
Do you chew khat	Yes	130	119(91.54%)	11(8.46%)	1	1	1

within three months	No	252	216(85.71%)	36(14.29%)	0.5(0.27-1.13)	5.3(1.72-16.3)	P=0.004*
Religion	Orthodox/Protestant/others	234(61.2%)	231(98.7%)	21(8.9%)	2.2(1.2-4.0)	1.2(0.53-2.8)	P=0.652
	Muslim	148(38.7%)	122(82.4%)	26(17.6%)	1	1	1

*= P < 0.05 which is significant

Discussion

87.7% of the respondents had engaged in risky sexual practices at some point in their lives. Out of this sexually active respondents, 49.5% had many partners, the majority 43.2% used condoms inconsistently, and 8.1% of males had intercourse with commercial sex workers as their first sexual partners. It is in line with the study done in Metema district (38), Northwest Ethiopia, that was among daily laborers and among Cobblestone Chiseling Daily Laborer, (39) in Addis Ababa. This study is higher when compared to the study done on secondary and preparatory school in Aksum town (37), Northern Ethiopia. The difference may occur due to cultural differences, accessibility of risk factors, and geographic area.

The study shows 31.1% had their first sex at age less than 18 years. Out of these respondents, 64.7% were female. This study is lower compared to the studies done in Ambo (36) and in Aksum town (37). The difference might be due to the decrease in early marriage and because of the recently endorsed family law.

Respondents who are single had 9.5 times higher odds of RSB than that of the married (AOR = 9.5; 95% CI: 3.2-28.1). The marital status of the study participants also had a significant association with risky sexual behavior. This result however happened to be slightly lower than Jimma, Ajro (34). This difference might be that individuals being apart from family members and/or parents may aggravate daily laborers risky sexual behaviors and be out of control.

The study has found that life time prevalence of khat chewing was **54.2%**. This study has revealed relatively higher lifetime khat chewing than the result from Bahar dar (30) and Gondar town (31).

The higher prevalence of khat chewing in the current study is might be due to the fact that the availability and the accessibility of khat in this site are higher and the community can easily access and develop habit. In addition to its accessibility, chewing khat might also be seen as a culture in these community.

The lifetime prevalence of khat chewing in Gondar town were lower than from the current study. The difference might be due the source population of the study. The study done in Gondar included all of Ethiopia as a participants which reduces the prevalence of khat chewing and since khat chewing is very culturally done the prevalence in Gubre subcity.

The current study showed that males (40.8%) were more liability of khat chewing than females (13.3%) which is coherent with studies that was done in Dire Dawa, Ethiopia (29) and Saudi Arabia (32). It was assumed that it might be due to acceptance of substance use for males in different parts of the world which includes Ethiopia. To rephrase, this could be due to the culture's trend that is discouraging the habit of khat chewing among females (30).

In this study, those with higher monthly income or who earned an average monthly income of greater than 3000 birr were more prone to chew khat than the lower monthly income. This study is similar to the studies done in Bahr Dar (17) and Yemen (35). This might be due to lack/shortage of money to buy khat since diversion of income for purchase of khat results in neglecting the family needs leading to family conflicts and discords. Thus, participants with low income will be restricted from chewing khat (30).

This study shows that the prevalence of risky sexual behavior among who chew khat within this last 3 months (35.5%) is significantly lower than non-chewers (64.5%).

6. Conclusion and Recommendation

The prevalence of risky sexual behavior in Gubre subcity was higher than those who don't practice risky sexual behavior. It is more prevalent on single participants than married and has strong association with risky sexual behaviour.

The prevalence of RSB among khat chewers was significantly lower than non-chewers. Single, male sex, and more than 1001 EBR monthly income were found to be factors having significant association with current RSB. Therefore, this study does explicitly show that khat chewing was found to be an independent factor (as preventive factor) affecting RSB. However, as this evidence varies and was lacking detailed information, there is a need for intense research using other strong designs like longitudinal study design to explore the actual interactions between khat use among settlers and risky sexual behaviors if there is and along with using a proper standard tool.

Therefore, creating community awareness to address the problem of risky sexual behavior and associated factors will be recommended to health professionals and volunteer community health workers. It is also recommended to the health-related policymakers/stakeholders in order to establish and strengthen proper education and devise successful intervention methods to reduce risky sexual behavior and its associates and its detrimental impacts at the individual, community, and national levels. As for the association of khat chewing and risky sexual behavior, intense researching will be recommended for the health professionals and volunteer community health workers to deeply investigate about it.

7. Limitation

The relationship between khat chewing and risky sexual behavior wasn't clear because of the nature of the design (cross sectional) it was not possible to differentiate the cause-effect relationship between them. The study lacks qualitative aspects, moreover, the questionnaires didn't include detailed questions on cigarette smoking, alcohol drinking that could be a confounding factor for our study and since it was adopted and adapted from reviewing different published articles rather than assessing by standard tool it was a limitation to the study.

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8. Annex

Questionnaire

Informed consent

Good morning(afternoon), my name is _____and nurse graduating student at WKU . I/we are conducting a research on title “**ASSOCIATION OF KHAT CHEWING WITH RISKY SEXUAL BEHAVIOR AND ITS DETERMINANT FACTORS AMONG ADULTS IN GUBRE TOWN, GURAGE ZONE, ETHIOPIA 2022**”and would appreciate your Participation. I/we would like to ask you some questions related to the above topic . I/we want to assure you that whatever information you provide us will be kept strictly confidential (secret) and we will never reveal your name or answers. I/We will not keep a record of your name and address. Participation in this research is voluntary. There are no right or wrong answers. You can skip any questions that you do not want to answer or stop the interview at any time. However, we hope that you will participate in this survey because your views are important. If you have any question about the study you may ask investigator through

Tel:

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Do you agree to be interviewed? 1.Yes 2. No .

If yes, thank the respondent for cooperation and proceed.

Data collectors name _____

-sign: _____

Questionnaire identification number_____

Socio-demographic variables

Part 1: Socio-demographic characteristics of study participants, 2022.

Please explain your response by encircling on the numbers provided under the remark column

<u>S</u> <u>No.</u>	<u>Variables</u>	<u>Category</u>	<u>Re</u> <u>mark</u>
1	<i>Sex</i>	Male	1
		Female	2
2	<i>Age</i>	18–24	1
		25–34	2
		35–44	3
		≥ 45	4
3	<i>Occupation</i>	Government esmploy	1
		Merchant	2
		Daily laborer	3
		Student	4
		Farmer/housewife/private	5
4	<i>Education</i>	No formal education	1
		1–8 grade	2
		9–12 grade	3
		Diploma and above	4
5	<i>Religion</i>	Orthodox Tewahedo	1

		Muslim	2
		Protestant	3
		Others	4
6	<i>Ethnicity</i>	Gurage	1
		Others	2
7	<i>Marital status</i>	Married	1
		Single	2
		Widowed/separated	3
8	<i>Average monthly income variables</i>	Non employed	1
		< 1000 EBR	2
		1001–2000 EBR	3
		≥ 3001 EBR	4

Part 2: Sexual and reproductive history of study participants, 2022.

	Variables	Categories	Remark
1	Ever had sexual	Yes	1

	intercourse	No	2
2	Reason to start sex	Marriage	1
		Personal desire	2
		Peer pressure	3
		Influence of alcohol/drugs	4
		Economic problem/for money	5
		Rap	6
		No history of intercourse	7
3	Age at first sexual intercourse	<18 years old	1
		≥18 years old	2
4	Use condom at first sex	Yes	1
		No	2
		No history of intercourse	3
5	Total number of sexual partners	One	1
		Two or more	2

		No history of intercourse	3
6	Knowledge of HIV/AIDS	Yes	1
		No	2
7	Discuss on sexual reproductive health issues with others	Yes	1
		No	2
8	Relationship of first sexual partner	Marriage	1
		Boy/girlfriend	2
		Prostitute	3
		Others	4
		No history of intercourse	5
9	Consistent condom use	Yes	1
		No	2
		No history of intercourse	3

Part 3: Main content questionnaires for study participants, 2022.

S No.	Questions	Categories	Remark
1.	Do you chew khat?	Yes	1
		No	2
2.	Have you chewed khat with in this three month?	Yes	1
		No	2
		No history of khat chewing	3
3.	Do you take to counteract the stimulation effect like alcohol after chewing?	Yes	1
		No	2
		No history of khat chewing	3
4.	Do you feel sexually aroused either during or immediately after chewing?	Yes	1
		No	2
		No history of khat chewing	3
5.	Have you used khat before your last intercourse?	Yes	1
		No	2
		No history of khat chewing	
6.	Have you used a condom during your last intercourse?	Yes	1
		No	2
		No history of intercourse	3

7.	How much sexual partner did you have in your life time?	One	1
		More than two	2
		Non	3
8.	How much sexual partner did you have the last 3 months?	One	1
		More than two	2
		Non	3

