Khat chewing and risky sexual behavior in Sub-Saharan Africa: a systematic review protocol

Amanuel Tesfay Gebremedhin, MPH/RH¹
Hailay Abrha Gesesew, MPH/Epidemiology¹
Tariku Dejene Demissie, MSc¹
Mirkuzie Woldie Kerie, MD, MPH¹
Morankar Sudhakar, PhD¹

1. College of Public Health and Medical Sciences, Jimma University, The Ethiopian Malaria Alert Centre: a collaborating centre of the Joanna Briggs Institute

Corresponding author
Hailay Abrha Gesesew
hailushepi@gmail.com

Review question/objective

The objective of this review is to investigate the association between khat chewing and risky sexual behavior in Sub-Saharan Africa.

Background

The khat plant (*Catha edulis* Forsk.), variously referred to as khat, chat, Abyssinian tea, is a tree of the Celastraceae family and has leaves that contain alkaloids structurally related to amphetamine.¹ Khat is widely consumed in certain areas of the Arabian Peninsula, Eastern Africa and in places like Somalia, Ethiopia and as far south as the Cape in South Africa.¹ ² While a few decades ago, khat chewing was mainly restricted to older men or members of Muslim communities, its use has now spread across many faiths, ethnic groups, ages and sexes.³

Physiological changes during adolescence may explain young peoples’ motivation to explore a range of different activities and experiment in high-risk behaviors such as substance abuse and risky sexual activity.

During this time, teenagers and young adults may change partners frequently, have multiple partners within the same time period, or may practice unsafe sex. They may also engage in continuous substance abuse despite the potential harm that can occur as a result of their actions. These risky behaviors and sexual activities place this population at a greater risk of being affected by sexually transmitted infections (STIs) and human immunodeficiency virus (HIV), as well as increasing their
susceptibility to unwanted pregnancies and their complications. Not surprisingly, there is a strong relationship between substance use and unsafe sexual practices, despite the serious concern about HIV infection.

This review focuses on young people aged 10-24 years, as they make up one quarter of the world’s population and more than half of new HIV infections worldwide occur among individuals within the 15-24 year old age group. Furthermore, according to the 2012 global AIDS report, the same age group made up 42% of all new HIV infections in 2010. As to the setting, according to the 2012 UNAIDS Global report, Sub-Saharan Africa remains the most severely affected, where nearly one in every 20 adults (4.9%) are living with HIV, which accounts for 69% of the people living with HIV worldwide. Unless age appropriate and institution targeted interventions are implemented, young people may continue to engage in behaviors that place them at greater risk of HIV infection, other STIs and unwanted pregnancy.

Risky sexual behaviors are behaviors that include engaging in sexual activity from an early age, inconsistent use of condoms during sexual intercourse, unprotected sexual intercourse, having sex with commercial sex workers and the tendency to have multiple sexual partners. Situational evidence demonstrates a correlation between substance use and risky sexual behavior. Exactly why this association exists is not entirely clear; however, two primary theories (expectancy theory and cognitive escape theory) have been developed to understand the association between substance use and sexually risky behavior. Expectancy theory focuses on the contribution of cultural and social expectations about the effects of substances on sexual behavior and posits that substance use enhances sexual pleasure, in turn increasing the risk of sexual behavior. Thus, it is postulated that the habit of khat chewing may be a behavioral risk factor that could fuel the spread of HIV. For example, a link has been shown to exist between khat use and increased exposure to HIV/AIDS among prostitutes in Djibouti. A descriptive, cross-sectional study conducted in Bahir Dar of Ethiopia by Alemu et al., reported that khat chewers were five times more likely to engage in risky sexual behavior than non-chewers (AOR=4.98, 95%CI: 3.27-7.58). On the other hand, in a cross-sectional study, Celentano and colleagues found that most of the study subjects did not consider khat chewing as a HIV risk behavior unless it was accompanied by alcoholic drinks and/or done in a group or mixed-sex group. Hence, as no systematic review has been previously conducted on this issue, this review will focus on the association between khat chewing and risky sexual behavior in Sub-Saharan Africa among young people aged between 10 and 24 years who practice khat chewing irrespective of their HIV status.

Keywords
Khat, Catha edulis, substance use, risky sexual behavior, young people, youth, adolescents
**Inclusion criteria**

**Types of participants**

This review will consider studies that include young people aged between 10-24 years who practice khat chewing irrespective of their HIV status.

**Types of exposure(s)**

This review will consider studies that evaluate the association between khat chewing, which is the exposure of interest and risky sexual behavior.

**Types of outcomes**

The primary outcome of interest is risky sexual behavior. This review will consider studies that measure risky sexual behavior, which may be defined as early sexual debut, inconsistent use of condoms, unprotected sexual intercourse, having sex with commercial sex workers, or sex with multiple sexual partners. The secondary outcome of interest is HIV infection, other STIs or unwanted pregnancy.

**Types of studies**

This review will consider epidemiological study designs including prospective and retrospective cohort studies, case control studies, cross sectional studies and case series/case reports for inclusion.

**Search strategy**

The search strategy aims to find both published and unpublished studies. A three-step search strategy will be utilized in this review. An initial limited search of MEDLINE and CINAHL will be undertaken, followed by analysis of the text words contained in the title and abstract, and of the index terms used to describe the article. A second search using all identified keywords and index terms will then be undertaken across all included databases. Thirdly, the reference lists of all identified reports and articles will be searched for additional studies. Studies published in English will be considered for inclusion in this review, while non-English studies will be excluded. Studies published since the establishment of the journal will be considered for inclusion in this review; no limitations will be placed on the date of publication.

The databases to be searched include:

PubMed, EMBASE and CINAHL

The search for unpublished studies will include:

Hand searches of studies and different sources of grey literature (e.g. reports, dissertations, conference and research reports) as well as a search of grey literature databases such as MedNar, and OpenGrey.

Initial keywords to be used will be:

Khat, *Catha edulis*, substance use, risky sexual behavior, young people, youth, adolescents.
Assessment of methodological quality

Papers selected for retrieval will be assessed by two independent reviewers for methodological validity prior to inclusion in the review using standardized critical appraisal instruments from the Joanna Briggs Institute Meta Analysis of Statistics Assessment and Review Instrument (JBI-MAStARI) (Appendix I). Any disagreements that arise between the reviewers will be resolved through discussion, or with a third reviewer. Authors of primary studies will be contacted to clarify missing or unclear data.

Data collection

Data will be extracted from papers included in the review using the standardized data extraction tool from JBI-MAStARI (Appendix II). The data extracted will include specific details about the interventions, populations, study methods and outcomes of significance to the review question and specific objectives.

Data synthesis

Quantitative data will, where possible, be pooled in statistical meta-analysis using JBI-MAStARI. All results will be subject to double data entry. Effect sizes expressed as relative risk for cohort studies and odds ratios for case control studies (for categorical data) and their 95% confidence intervals will be calculated for analysis. Heterogeneity will be assessed statistically using the standard chi-square test. Where statistical pooling is not possible, the findings will be presented in narrative form including tables and figures to aid in data presentation where appropriate.

Conflicts of interest

All the reviewers (primary, secondary, and associate) declare that they have no competing interests.

Acknowledgements

We would like to extend our gratitude to JBI for giving us the indispensable training in systematic review methodology and for providing funding for the conduct of this study. We are also grateful to Jimma University, The Ethiopian Malaria Alert Center for also assisting in making the conduct of this study possible.
References


Appendix I: Appraisal instruments

MAStARI Appraisal instrument

**JBI Critical Appraisal Checklist for Descriptive / Case Series**

Reviewer ___________________________ Date ___________________________

Author ___________________________ Year ________ Record Number ________

1. Was study based on a random or pseudo-random sample?  
   [ ] Yes  [ ] No  [ ] Unclear  [ ] Not Applicable

2. Were the criteria for inclusion in the sample clearly defined?  
   [ ] Yes  [ ] No  [ ] Unclear  [ ] Not Applicable

3. Were confounding factors identified and strategies to deal with them stated?  
   [ ] Yes  [ ] No  [ ] Unclear  [ ] Not Applicable

4. Were outcomes assessed using objective criteria?  
   [ ] Yes  [ ] No  [ ] Unclear  [ ] Not Applicable

5. If comparisons are being made, were there sufficient descriptions of the groups?  
   [ ] Yes  [ ] No  [ ] Unclear  [ ] Not Applicable

6. Was follow up carried out over a sufficient time period?  
   [ ] Yes  [ ] No  [ ] Unclear  [ ] Not Applicable

7. Were the outcomes of people who withdrew described and included in the analysis?  
   [ ] Yes  [ ] No  [ ] Unclear  [ ] Not Applicable

8. Were outcomes measured in a reliable way?  
   [ ] Yes  [ ] No  [ ] Unclear  [ ] Not Applicable

9. Was appropriate statistical analysis used?  
   [ ] Yes  [ ] No  [ ] Unclear  [ ] Not Applicable

Overall appraisal:  Include [ ]  Exclude [ ]  Seek further info [ ]

Comments (Including reason for exclusion)

________________________________________________________________________

________________________________________________________________________

doi: 10.11124/jbisrir-2013-877

Page 64
### JBI Critical Appraisal Checklist for Comparable Cohort/ Case Control

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
<th>Unclear</th>
<th>Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Is sample representative of patients in the population as a whole?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Are the patients at a similar point in the course of their condition/illness?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Has bias been minimised in relation to selection of cases and of controls?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Are confounding factors identified and strategies to deal with them stated?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Are outcomes assessed using objective criteria?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Was follow up carried out over a sufficient time period?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Were the outcomes of people who withdrew described and included in the analysis?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Were outcomes measured in a reliable way?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Was appropriate statistical analysis used?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Overall appraisal:** Include ☐ Exclude ☐ Seek further info. ☐

Comments (Including reason for exclusion):

________________________________________________________________________
________________________________________________________________________
Appendix II: Data extraction instruments

MAStARI data extraction instrument

<table>
<thead>
<tr>
<th>JBI Data Extraction Form for Experimental / Observational Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reviewer ___________________________ Date _____________________</td>
</tr>
<tr>
<td>Author ______________________________ Year _____________________</td>
</tr>
<tr>
<td>Journal, ____________________________ Record Number ____________</td>
</tr>
</tbody>
</table>

**Study Method**

- RCT
- Quasi-RCT
- Longitudinal
- Retrospective
- Observational
- Other

**Participants**

- Setting
- Population

**Sample size**

- Group A ________________  Group B ________________

**Interventions**

- Intervention A

- Intervention B

Authors Conclusions:

Reviewers Conclusions:
## Study results

### Dichotomous data

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Intervention ( ) number / total number</th>
<th>Intervention ( ) number / total number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Continuous data

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Intervention ( ) number / total number</th>
<th>Intervention ( ) number / total number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>