Oral health and khat chewing: reviewing and addressing the gaps

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Objectives

- to note the current evidence base for the determinants of oral problems
- to identify and assess the literature reporting the relationship of oral problems with khat chewing
- to report the results of a study of oral problems and khat chewing
Common risk factors determine oral problems

1. Smoked and chewed tobacco (oral cancer, periodontal [gum] disease)
2. Alcohol (oral cancer)
3. Sugar (dental caries)
4. Dirt (periodontal [gum] disease)

Is there a role for khat?
Assessing the literature

Aim:

To assess bias or susceptibility to bias in observational epidemiological studies (cohort, case-control and cross-sectional) that report on the oral health effects of khat chewing.

PICO question for study inclusion:

P  In people (all ages) that
I   chew khat
C  compared with people who do not chew khat (or other comparisons)
O  what are the oral health effects? Including (but not limited to): Periodontal diseases (periodontitis, gingivitis), oral mucosal lesions, pre-malignant lesions, oral cancer
# Assessing the literature: included studies

<table>
<thead>
<tr>
<th>Study ID (author/year of publication)</th>
<th>Method (Design /Sample selection/allocation)</th>
<th>Participants</th>
<th>Exposure</th>
<th>Outcome</th>
<th>Other Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inclusion</td>
<td>All relevant studies, no limits on year of publication</td>
<td>Primary Observational Studies: Cross sectional studies, Cohort, Case control</td>
<td>All age groups, Both male and female participants, any study location.</td>
<td>Catha, Miraa, Qato or Khat</td>
<td>Oral Problems: Periodontal (gum) disease (pre-malignant lesions, oral cancer Pre-cancerous conditions Other problems</td>
</tr>
<tr>
<td>Exclusion</td>
<td>Case reports, case series, reviews, animal or laboratory based studies</td>
<td>Other smokeless tobacco products as main exposure of interest</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
Search strategy and outcomes

Search MEDLINE (PubMed)
Search terms (catha OR miraa OR qat OR khat) AND oral AND health, oral AND lesions, caries, periodont* and oral*

53 Unique Papers

Title and abstract search

43 Papers (case reports & series, laboratory studies, editorials, animal & experimental studies)

Search on three other databases (CINAHL, EMBASE and PsycINFO)
No Additional Papers

10 Papers

Full text scan of 10 papers

One Paper (Review)

Nine included studies

Seven cross-sectional studies (including two simple paired comparisons)
Two case-control studies

10 Papers

Full text scan of 10 papers

Nine included studies

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53 Unique Papers

Title and abstract search

43 Papers (case reports & series, laboratory studies, editorials, animal & experimental studies)

Search on three other databases (CINAHL, EMBASE and PsycINFO)
No Additional Papers
Altman (1991) criteria of literature evaluation

1. Was the source of the subjects clearly described?
2. Was the method of selection of subjects clearly described?
3. Was the sample size based on pre-study consideration of statistical power?
4. Was the sample of subjects appropriate with regard to generalisability of the findings?
5. Was the data instrument valid and reliable?
6. Was the design of the study acceptable?
7. Was satisfactorily high response rate achieved?
8. Was there a statement adequately describing all statistics procedures?
Review results

- Study focus: oral cancer (4), periodontal disease (5), others (2)
- Methodologically limited: 22% of included studies met 4 criteria, 45% met 3 criteria, 33% met 2 criteria (out of a possible 8)
- Positives: study design, source of subjects, description of statistical procedures
- Negatives: sample size calculation, response rate, source of study instruments, clinical criteria
- Lack of control of confounding associations with health outcomes e.g. tobacco use, social inequality

Conclusion: the association of khat with oral problems awaits identification
Scanning the literature

- Limited number of studies
- Contradictory outcomes
- Particular disease focus
- Particular community
- Individualistic focus
Khat's association with oral problems: the Sheffield study

- Well established Yemeni community
- Estimated community size: 4224
- Estimated adult males: 851
Study aims

- To identify factors that influence the practice of khat chewing in a sample of Yemeni khat chewers in Sheffield.
- To establish how these factors related to khat chewing are associated with self-reported oral problems.
An holistic theoretical framework: outcomes of khat use

- **Socio-economic status**
  - (level of education completed and employment status)

- **Culture**
  - (language spoken and years of UK residency)

- **Psychosocial**
  - (khat dependence, social participation)

- **Behavioural**
  - (khat behaviour, smoking status, dental attendance pattern)

- Self reported oral problem, health 'compromised', health condition, 'high' nicotine dependency

Demographic variables including age
Study methods

1. cross sectional study
2. a purposive sample of 204 male regular khat chewers aged 18 years and older, living in Sheffield
3. selected during random visits to khat sellers
4. face to face structured interviews
5. validated with voluntarily saliva and expired carbon monoxide samples.
6. data analysis: simple descriptive, univariate and hierarchical multiple logistic regression analyses
Recruitment into study

Step I & II
Identifying khat sellers and recruitment of khat sellers

Step III
Recruitment of potential khat chewers

Step III (a)
Identifying khat chewing purchasers

Consent

Screening interview for inclusion

Meet the inclusion criteria

Consent

Stage III (b)
Main interview

No consent

Exit
Demographic/ socio-cultural features: (Croucher et al., 2007) (Martin and Martin 1991)

Social participation: (Croucher et al., 2007)

Khat chewing: (Griffiths 1998), (Kassim and Croucher 2006), (Fagerstrom et al., 1978)

Health outcomes & related behaviours: (Kassim and Croucher 2006), (Karien Stronks, 1996) (Fagerstrom et al., 1990), (UK Adult Dental Health Survey, 1998)

Severity of dependency on khat (SDS): (Gossop et al., 1995)

Tobacco use: Fagerstrom et al., 1990), (Croucher et al., 2007), (Griffiths 1998) and (Kassim and Croucher 2006)

Interview piloting/amendment (20 khat chewers)

Final Questionnaire
Sample overview

- 219 participants recruited (204 analysed)
- Mean age = 44.8 years (range 18-87)
- 29% reported a current oral problem (of whom 62% reported two oral problems)
- 40% rated their health as ‘compromised’
- 38% reported having health conditions
### General sample characteristics (n=204)

<table>
<thead>
<tr>
<th>Variables</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employed</td>
<td>72 (35.3)</td>
</tr>
<tr>
<td>Unemployed</td>
<td>132 (64.7)</td>
</tr>
<tr>
<td>Higher level of completed education</td>
<td>70 (34.3)</td>
</tr>
<tr>
<td>Lower level of completed education</td>
<td>134 (65.7)</td>
</tr>
<tr>
<td>Low social participation</td>
<td>87 (42.6)</td>
</tr>
<tr>
<td>High social participation</td>
<td>117 (57.4)</td>
</tr>
<tr>
<td>Preferred reading language = Arabic and English</td>
<td>86 (42.2)</td>
</tr>
<tr>
<td>Preferred reading language = Arabic and Other</td>
<td>118 (57.8)</td>
</tr>
<tr>
<td>Born outside Yemen</td>
<td>34 (16.7)</td>
</tr>
<tr>
<td>Born in Yemen</td>
<td>170 (83.3)</td>
</tr>
<tr>
<td>Dental attendance = Check-up</td>
<td>78 (38)</td>
</tr>
<tr>
<td>Dental attendance = Pain or problem</td>
<td>90 (44.1)</td>
</tr>
<tr>
<td>Never been to dentist</td>
<td>36 (17.6)</td>
</tr>
<tr>
<td>Not Khat dependent</td>
<td>100 (49)</td>
</tr>
<tr>
<td>Dependent</td>
<td>39 (19)</td>
</tr>
<tr>
<td>High dependence</td>
<td>65 (32)</td>
</tr>
<tr>
<td>Current regular tobacco smoker</td>
<td>91 (44.6)</td>
</tr>
<tr>
<td>Smoke tobacco with khat chewing</td>
<td>42 (20.6)</td>
</tr>
<tr>
<td>Not current tobacco smoker</td>
<td>71 (34.8)</td>
</tr>
<tr>
<td>Regular tobacco smokers nicotine dependence (n=91)</td>
<td></td>
</tr>
<tr>
<td>Low (≤5 scores)</td>
<td>51 (56)</td>
</tr>
<tr>
<td>High (≥ 6 scores)</td>
<td>40 (44)</td>
</tr>
</tbody>
</table>
Aspects of khat chewing

- Originated in Yemen
- Mean age of starting: 18.5 years
- Importance of social support
- Mean units (Harri) chewed per session: 1.48 (range 0.25-3.5)
- 2 sessions per week
- 48% had made quit attempts (mean: 3.77)
Associations with self-reported oral problem: results of multiple logistic regression

After controlling for a range of factors in a multivariate analysis, a low level of completed education was found to be significantly associated with self reported oral problems \((P \leq 0.045; \ OR, 2.27; \ 95\%CI=1.02 \ -5.04)\).
Discussion (1)

- The presumed association of khat behaviours (individual or composite) with oral problems is not sustained.
- Low level of completed education reflects socio-economic disparities within the participants.
Discussion (2)

- Low level of completed education is reported to predict self-perceived oral health
- Low level of completed education has predicted tooth loss, periodontal disease and untreated dental decay
- Self reported oral problem is a valid measure of clinical condition
Future developments

- Replication studies
- Clinical examination
- Representative samples from khat chewing populations
Thank you for listening!

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