

## **Tobacco Use and Khat Chewing: A Systematic Review**

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## 1. Background

Globally, tobacco smoking is a significant cause of preventable death and ill health (Surgeon General's Report, 2004, 2010). Based on current trends, tobacco related mortality will increase to 8.3 million a year by 2030 and 80% of these deaths will occur in low and middle income countries (WHO, 2007). Different factors contribute to the uptake of tobacco use, separately or adjunct to other substances. These include socio-economic factors, ethnicity/culture and shared genetic and environmental factors (Unger et al., 2003, Nichter, 2003, Agrawal et al., 2012).

The chewing of khat leaf 'amphetamine like' (Kalix, 1992) is widely practiced in Africa and the Arabian Peninsula (Odenwald et al., 2010) and in the diasporas communities of these countries (Kassim. and Croucher, 2006). Khat chewing associated with unfavourable oral, general and mental health outcomes (Al-Motarreb et al., 2010). One of the important features of khat chewing is the co-occurrence of tobacco use (Kassim et al., 2011).

The socio-cultural embeddiness of khat chewing in specific communities (e.g., Yemen) contributes indirectly to tobacco smoking (Kassim. and Croucher, 2006, Kassim et al., 2011). However, information about age of initiation to khat chewing and the concurrences of tobacco use is dearth. In Yemen, khat chewing is often initiated early in the second decade of life among males and often late in the second decade of life among females (Ali et al., 2004).

The pace of khat chewing spread is growing and has become a national and international public health concern (WHO, 2003, WHO, 2006). Factors that contributed to the wide spread of khat chewing, and hence this tobacco use culturally specific, include normalization of khat chewing (Odenwald et al., 2010), social mobility, accessibility of khat (affordable, available the

whole year), absence of policies to curb the khat widespread agriculture (Muharam et al., 2002) and the importance of khat as cash crop, as it is in Kenya (Carrier, 2005).

Tobacco use among khat chewers in different population was reported as either regular (daily) (Kassim et al., 2011, Nakajima et al., 2013), or during khat chewing (Kassim et al., 2011, Kassim. and Croucher, 2006, Deressa and Azazh, 2011, Nakajima et al., 2013, Reda et al., 2012). Few studies reporting increase in the tobacco use among khat chewers during chewing (Griffiths, 1998, Kassim et al., 2011, Kassim. and Croucher, 2006) and current regular smokers were ex-khat chewers (Belew et al., 2000).

Between 12-30% chewers reported initiation of tobacco smoking with khat chewing, apparently khat is a 'gateway' to tobacco use (Kassim and Croucher, 2006; Reda et al., 2012). Daily cigarette smokers and episodic smokers (smoking while chewing) reported that smoking tobacco enhances the impacts of khat. Also, comparable percentages of both regular and episodic smokers reported smoking more during the first hours of khat chewing (Kassim et al., 2011). Finally, the co-occurring of khat chewing and tobacco smoking dependence is growing and is reported particularly amongst chewers in the diasporas (Kassim et al., 2011, Kassim. and Croucher, 2006).

The rationale of this systematic review is to inform the scientific debate about the indirect public health impacts of khat chewing that are often associated with tobacco smoking, a well-established common risk factor for many diseases (Sheiham and Watt, 2000). This takes into account the initiatives of the UK National Institute for Health and Care Excellence, NICE (2012), as to what intervention for tobacco cessation could be used to tailor the needs of each ethnic groups. Besides, the WHO (2007) recommends to tackle the social causation of tobacco uptake.

## **Aims**

We will conduct a systematic review of the medical literature to assess the prevalence of tobacco use, its pattern and associated level of dependence among khat chewers.

## **2. Methodology**

### **2.1 Study eligibility**

#### ***2.1.1 Inclusion criteria***

- Study design: cross sectional studies, and cohort studies, (whether prospective or retrospective).
- Population: either the general population or a specific population of interest (e.g., high school students) of any gender, any age group, and in any location.
- Topic: assessing the association between khat chewing with any form of tobacco use.

#### ***2.1.2 Exclusion Criteria***

We will exclude studies using convenience sampling, case reports, case series, experimental laboratory studies, case-control studies, and clinical trials.

### **2.2 Search Strategy**

We will search PubMed, Embase, PsycINFO databases. We will use the following terms: Catha OR miraa OR qat OR khat OR kath. We will not set with any limits for these searches. We will adapt this strategy to search all aforementioned databases. We will also use citation tracing for studies included in this review.

In addition to the electronic searches, we will review the lists of references of all studies included in this systematic review. We will contact experts in the field. We will consider the literature search in Google and Google scholar including thesis and dissertation.

### **2.3 Citation management**

All citations identified by the electronic search will be imported into the bibliography software package Endnote XIII. Other relevant studies identified through non-electronic searches will be entered to the same file. We will remove duplicates.

### **2.4 Screening for the retrieved studies based on inclusion criteria**

Two reviewers will screen titles and abstracts of identified citations in duplicate and independently for potential eligibility. We will get the full text for those judged as potentially eligible. Two reviewers will then screen the full texts in duplicate and independently for eligibility.

### **2.5 Data Extraction**

Two reviewers will abstract data from eligible studies in duplicate and independently. They will resolve disagreement by discussion or with the help of a third reviewer. They will use a standardized screening form. The data to abstract will include:

- Study methodology: sampling frame, sampling method, recruitment method, survey instruments used, and administration method.
- Characteristics of the population: country, target population, setting (location and time period), number sampled, number participated, and number analyzed
- Statistical results
- Funding

## **2.6 Methodological Quality Assessment**

We will assess the following methodological features: representativeness of the selected sample, the validity of tool for measuring tobacco smoking, the validity of tool for measuring khat use, and response rate

## **2.7 Data Analysis**

- We will calculate agreement between reviewers for full text screening using kappa statistic.
- We will synthesize the results narratively and quantitatively when appropriate. We will stratify the results by type of tobacco use.

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**Schematic of timeline for conducting the review and first draft manuscript submission**

