

## Review Article

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## Designing Public Health Policy to Curb Health and Economic Impact of Khat Chewing

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**ABSTRACT**

**Introduction and Background:** Khat (*Catha edulis* Forsk) known for long period as an indigenous plant to Ethiopia, has many mixed effects and impact. Some consider it as a good means to socialize. Others consider it as a good source of income. Nowadays, as a result of its effect on health, public health concern is growing. However, there are no policies controlling these khat effects.

**Objective:** To present policy option to curtail health and economic impact of khat chewing practice in Ethiopia.

**Methods:** Narrative literature review was made to look into different effects of khat chewing with a particular reference to Ethiopia.

**Key findings** khat chewing has stimulating, euphoric and addictive effects. It has a constricting effect on blood vessels leading to hypertension. It has also neuropsychiatric and physical consequences including aggression, suicidal ideation, anxiety, paranoia, manic behaviors, insomnia, depression, increased heart rate, anorexia and weight loss, dental and pulmonary problems. Additionally, khat abuse found linked to liver damage and failure.

**Conclusion:** Given that medical risks of khat use are modest, or studies are not conclusive, there should be a regulatory framework with the objective of protecting consumers and community. This is best achieved by establishing processes for the quality control of khat and by regulating access and availability. Conclusive studies are very rare and even some are inadequate and contradictory. Most of the evidences on adverse effects of khat come from case reports and observational studies. Therefore, high quality research is justified.

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**Introduction and Background**

The Ethiopian Government has no policy on khat despite research evidences of all its positive and negative impact on the livelihoods and health status of different population groups. The reason for not having policy could be that Khat is a contested plant which has many contradictory mixed effects and impacts on social, agricultural, ecological, economic, environmental and health aspects. Some consider it as a good means of getting attached to each other and to socialize without any difficulty. A stranger in a community can easily introduce and integrate himself in the process of chewing khat. Others consider it as a good source of income for smallholder farmers and families and for those who are involved in the chain of khat trade [1-6]. But as a result of its effect on health, public health concern is growing. This review has tried to address these mixed and sometimes contradictory effects related to khat.

**Short and Long Term Effects**

Khat chewing, while it has been considered as an entertainment, it has multitude of health effects. It has stimulating, euphoric and addictive characteristics [6]. It has a constricting effect on

blood vessels because of cathinone- a substance which it contains. Cathinone has a similar effect like that of amphetamine which is a drug under control by the WHO. Although khat is categorized by the WHO as a drug of abuse, it is not controlled at the UN level [7]. The constricting effect on blood vessels may lead to hypertension [8-11].

Khat has many short term and long term side effects on the health status of chewers. Khat chewers need the effect of khat for increased energy, mental alertness, physical stimulation, mild euphoria, sensory perception changes, boosted confidence, lowered inhibitions which can lead to dangerous choices and increased fluency [12]. However, khat also produces several negative effects on chewers including aggression, suicidal ideation, anxiety, paranoia, manic behaviors, insomnia, depression if the chewer doesn't get it or during withdrawal, increased heart rate, anorexia and weight loss, dental and pulmonary problems [1, 12].

On those who consistently abuse khat, especially in very large doses over long period of time it can lead to psychosis even if this is not true in some studies from Butajira, Ethiopia [9,13,14]. Additionally, khat abuse over many years has also been linked to liver damage and failure which can further lead to fibrosis or cirrhosis [12, 15]. Some khat chewers also use other substances

like cigarettes or shisha smoking along with water, coffee and tea, and after chewing for long hours and reaching high level of stimulation there will be a period of coming down. This period is usually a period of inactivity (unwillingly) and thus chewers incline towards alcohol consumption which they call it “Chebsi” or breaking the effect of khat in order to get a sound sleep [2, 3].

### **Khat as a Source of Income and Employment**

Khat, unlike to other substances like alcohol and smoking, it has many complex effects on different sectors. On the economic and agricultural sector it is considered as a paradise plant which gives good source of income. For the trading industry it is an opportunity for self-employment and employing others. The chain of employment opportunity is very long which starts from the smallholder farmer to the end consumer. Being governed by the law of demand and supply many are involved in cutting khat leaves, preparing and packing, transporting and delivering locally, across borders or internationally. In this process local and national governments are involved in terms of taxation and earning foreign currency from exporting khat to Europe, Asia and the western world [16].

Khat covers about 0.2% of the total area of Ethiopia, and it makes 10.5% of the country’s export value. During any one day, 3.6% of Ethiopia’s adult population chews khat, with a 5.3 kg per capita annual consumption while over three million smallholders are growing khat and base their livelihoods [17,18].

Currently khat use is expanding fast both in terms of land use and availability. In the last 15 years (2001/02 to 2014/15) its land use has grown by 160 percent at the same time reaching to place where it was not originally known either as an agricultural plant or as a commodity in the market [19]. As a result of expansion; variety, taste and quality are issues associated with its use; it then is consumed at various endpoints by people from all sorts of backgrounds [1, 4, 5] mainly affecting the productive age group. Thus, its’ increased availability and consumption has raised productivity and public health concern.

### **Policy Option**

All these effects mentioned above, use and meanings makes khat different from other substances, debatable and difficult to curtail it in policy. In fact in the khat debate, there are advocates of ban and crop eradication on one side, and the proponents of a laissez faire approach on the other or against ban and eradication. In between these a moderate position is opening up, proposing measures to reduce potential harm by regulating the production, distribution and use of khat [20]. As most of the evidences are coming from observational and case studies there are no high quality and conclusive research on khat, thus the later approach seems agreeable.

However, formulating policy on kha is not easy task. Numerous challenges and reasons can be raised. One of these reasons is that many farmers are faced with low crop productivity due to soil degradation. Khat can be grown in those degraded areas. The other reason is that the plant can incur higher income returns as compared to other cereal crops. Moreover, the plant is evergreen and less vulnerable to drought. It is low labor intensive as compared to other crops. Improving road networks, availability of land and air transport have also contributed to the increased availability and expansion of Khat. Hence many agree on the economic factor of Khat expansion [5, 21-23] as a positive economic benefit.

Unlike to its’ economic benefit, *Khat* is an extremely water demanding perennial plant and heavily reliant on irrigation

for intensive production [24]. Distinct to the argument of soil degradation cited above, many *Khat* landscapes itself are vulnerable to land degradation and *Khat* cultivation undermines crop production [17]. These positive and negative effects of *Khat* production, marketing and consumption practices are inconclusive dialogues which are not free from socioeconomic, political, and public dilemma [2, 3, 6]. Therefore, designing a public health policy need to balance all these factors.

In terms of banning the plant, various associated factors make the banning difficult. Of course to make a banning policy as to that of alcohol and smoking can be tough. *Khat* is deeply embedded in some cultures in Ethiopia. In such paradoxical contested space the government rather should take a different approach. Evidences show that more pragmatic approach of harm reduction strategy to mitigate the problems associated with *khat* chewing is an option for public health policy. Therefore, the government cannot be lenient or take a laissez-fare position [2, 3, 14, 19].

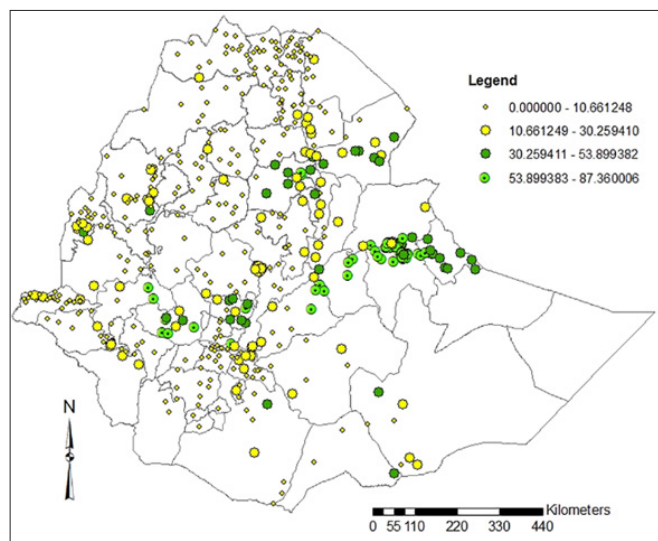
Of course conclusive studies are very rare and even some are inadequate and contradictory [2, 3, 6]. Most of the evidences on adverse effects of *khat* come from case reports and observational studies. Therefore, high quality research is justified to support and strengthen policy [6,20]. For instance observations showed that the processes from farming, transporting, collection, distribution (whole-sellers, retailers) to consumption indicate a potential risk for *Khat* leaf to become contaminated with chemicals or microorganisms [25]. Besides, plant-parasitic nematodes are associated with *khat* [26]. Such observations tell us that a very wide all inclusive aspect of *khat* research is required.

Not only banning *khat* is difficult and disastrous from an economic and social welfare standpoint but additionally farmers will be affected by an expanding prohibition measures on *khat* consumption [2,3,19]. Experts in the field advise that given that medical risks of *khat* use are modest, or studies are not conclusive the objective of the regulation should be protection of consumers and community [27]. This is best achieved by establishing processes of policy framework for the quality control of *khat* access and availability.

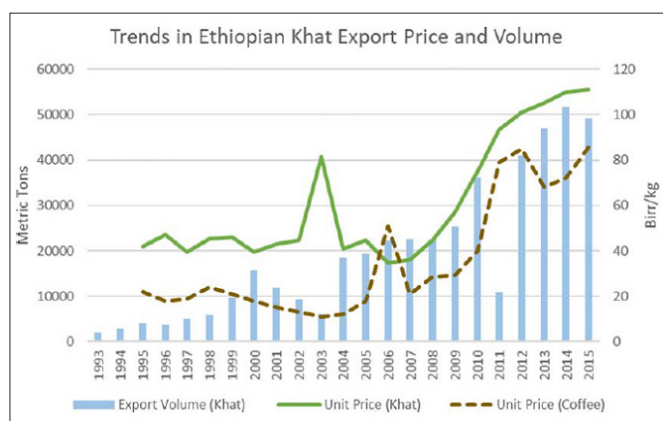
Therefore, the pragmatic approach for public health policy on *khat* chewing should start from farming and follow the chain of supply and consumption. Good handling in the production process could minimize environmental and health risks. Protective approach, legislative regulation and selective provision will reduce harm due to unrestrained *khat* chewing. These approaches may also increase awareness of the public against misconception and misunderstandings of the consequences of *khat* chewing. Restricting areas of availability, marketing and consumption will protect the most at risk group of populations by promoting *Khat* free areas. For instance most research suggests that early (12–14 years old) to late (15–17 years old) adolescence is a critical risk period for the initiation of substance use and that substance use may peak among young people aged 18–25 years, thus age restriction could be another approach [28].

Focusing on the demand side of regulation is also worthwhile as *khat* demand is price elastic (29). This means *khat* chewers are relatively responsive to price changes. For example, in one study the price elasticity of *khat* demand is found to be between – 2.38 and – 1.07, which means that each 1% increase in price is associated with 1–2% reduction in *khat* quantity demanded [29]. It was also found that one percent increase in the price of *khat* decreases the amount of money spent for *khat* consumption by 0.68%. The higher the price of *khat*, the less the amount of money

allocated for *khat* chewing thereby decreasing the intensity of *khat* consumption [30]. Therefore, implementing law enforcement strategies focused on disrupting the *khat* supply chain to realize high prices and so discourage use will likely reduce the incidence of *khat*-related ailments.



**Figure 1:** Distribution (%) of *khat* chewing practice in Ethiopian Zones, 2011. (source: doi: <https://doi.org/10.1371/journal.pone.0130460.g001>)



**Figure 2:** Trends in Ethiopian *khat* export price and volume. [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

## Conclusion

*Khat* is a contested plant which has many positive and negative effects on different sections of populations. Nowadays, its two opposite sides are prominent phenomenon- economic benefit and health hazard. A well designed pragmatic public health policy will balance the two opposite sides and can protect the public at large particularly those who are more vulnerable to the health consequences of *khat* chewing.

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