

*Review*

# Public discourse on *Khat* (*Catha edulis*) production in Ethiopia: Review

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**Agriculture is the most important economic activity and employment opportunity in Ethiopia. Globally, the country is the largest producer of *Khat*. The producers and consumers of *Khat* are increasing combined with earning for the national exports. Despite several controversies have continued on *Khat* practice, the legal stance of the Ethiopian government and studies on environmental impact are minimal. The review results reveal that agro-climates in different parts of Ethiopia are suitable for *Khat* production. The plant cultivation has come to common and expanded from southeastern to northwestern part of the country since the 1990s. Various anthropogenic and edaphic factors have contributed for the expansion of *Khat* production. *Khat* has substantial economic advantages though it has adverse implications on livestock production, cereal crops and water resource. *Khat* has undesirable effects on health, social, and environment followed by less empowering the economic capacity of women. Nervous problems, extra marital affairs, sexual abuse, HIV/AIDS, corruption, suicide, addiction, and car accidents are among the detrimental effects of *Khat* practice on health and social relations. Thus, researchers, policy makers, scholars, and higher learning institutions need to come together to minimize the controversies, alleviate heated debates and disclose public discourses on *Khat* practice in Ethiopia.**

**Key words:** Agriculture, Ethiopia, *Khat*, origin, prevalence, public discourse.

## INTRODUCTION

Ethiopia is located in the horn of Africa, between 3° 24' and 14° 53' North and 32° 42' and 48° 12' East (Eshetu and Habtemariam, 2001). Agriculture is the main stay of the economy, which contributes for 34% of the gross domestic product (GDP) and about 80% of employment opportunity (Admasu, 2017). The altitude of the country ranges from 100 m.a.s.l in the Afar depression (Wild Frontier, 2014) to 4620 m.a.s.l of Ras Dejen, a highest mountain in the Northwestern Ethiopia (Asrat et al., 2012). The country is classified into 18 major agro-

ecological zones (Hurni et al., 2016). The current size of population is estimated to be above 100 million (Assefa and Seid, 2017). The population is expected to twofold and reach 188 million by 2050 (ECA, 2016). Even though about 14 million holders earn their living by farming, only 13.8 million ha of land is cropped annually (CSA, 2015). Ethiopia is the leading and the largest producer of *Khat* practice (Cochrane and O'Regan, 2015; Cafer, 2016). The number of *Khat* chewers has significantly increased over the years in the country and reached an average

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prevalence rate of 15.3% (Demewoz and Yihunie, 2015; Awell et al., 2016). The land used for *Khat* production has increased by 160% from 2001/2002 to 2014/2015 and rapidly expanded to new areas of the country where it had not previously been grown (Cochrane and O'Regan, 2015). In the 2000s, *Khat* was the second export item and accounted for 13.4%. Currently, it is the third largest export crop after coffee and oil seeds with a share of 15.0% (Taye and Aune, 2003; Degol, 2007; Berhanu et al., 2014). Young leaves and tender twigs of *Khat* are important products. It plays significant roles for social life for many people in most parts of Ethiopia and has economic advantages for producers. The plant is a cash crop with psychoactive properties that resulted in euphorizing effects (Gebissa, 2008).

*Khat* is an illegal drug in most countries of Europe, Asia, and North America (Cochrane and O'Regan, 2015). The number of countries in the world is criminalizing the use of *Khat*. It is neither allowed nor prohibited in Ethiopia (Gessese, 2013). *Khat* has started to replace cereal, coffee, fruit, root and vegetable crops grown in the highlands of Ethiopia (Kandari et al., 2014). Outmigration, volatility in coffee market, increasing demand for export, and transportation network are among the key contributions for *Khat* expansion and production in Ethiopia (*Ibid*). Currently, over two million farmers produce *Khat* on more than 250,000 ha of land (Gessese, 2013; CSA, 2015). A number of studies were conducted in different parts of Ethiopia in different social settings. The findings of previous studies show that the prevalence of *Khat* chewing is extremely increasing (Gebissa, 2008; Demewoz and Yihunie, 2015). The concern of *Khat* practice has been increasing among college and secondary school students (Cafer, 2016).

Despite several controversies, *Khat* plant is an integral part of life for many people in Ethiopia. A substantial literature is available on various aspects of *Khat* such as historical background, botanical characteristics, chemical constituents, cultivation, pharmacology, marketing and export. Nevertheless, a little is known and no inclusive evidence on social, economic, health, and environmental impact of *Khat* and its expansion in Ethiopia. Therefore, the aim of this paper is to provide comprehensive information on different effects of *Khat* and expansion of the plant in terms of production and consumption in different parts of Ethiopia. It also provides overview on debates of different public discourse. The sources of secondary information were abstracts and literature review based on empirical research findings from different spatial and temporal dimensions.

## HISTORICAL PRECEDENTS OF KHAT: OVERVIEW

*Khat* is known by different names; *chat* in Ethiopia, *qat* in Yemen (Numan, 2012), *mirra* in Kenya, and *jaad* in

Somalia (Alem et al., 1999). Gebissa (2008) described it 'leaf of *Allah*' and others express it 'flower of paradise'. An extensive public discourse has continued on the origin, practice and legality of *Khat* in the world. The most debated issue is the origin of *Khat* because it is not clearly identified. Numan (2012) believed that the origin of *Khat* is around southern Red Sea, Yemen or Ethiopia. Many literatures agree that it is native to Ethiopia (Assefa, 1983; Awell et al., 2016). It was introduced to Yemen between the 1st and 6th centuries and later on the Danish botanist and physician Forsskal gave the name *Catha edulis* to the plant growing on the mountain of Yemen in 1762 (Estifanos et al., 2016; Numan, 2012). However, there is no conclusive evidence for specific time of introduction and the origin of *Khat* to Yemen and Ethiopia.

There are different legends in Ethiopia and Yemen, goatherd who noticed the effects and properties of *Khat* on his goats (Numan, 2012). Al-Habeshi and Skaug (2005) supposed that the origin of *Khat* could be in Yemen and then spread to Ethiopia, or vice versa. Sir Richard Burton described, *Khat* was introduced to Yemen from Abyssinia in the 15th century (Burton, 1966 cited in Al-Habeshi and Skaug, 2005; Saeed, 1987). El-Menyar et al. (2015) reported that the plant is native to Ethiopia and Arabian Peninsula but it is produced widely in Yemen than that of Ethiopia (Saeed, 1987). Gebissa (2008) corroborated that *Khat* is originated in eastern part of Ethiopia; specifically in *Harar*. It is grown and/or practiced in many countries from South to Northeast Africa and elsewhere in the world (Saeed, 1987; Alem et al., 1999; Numan, 2012; Asmamaw et al., 2013; Alemayehu and Tewodros, 2014).

The second public discourse lies on the cultural and religious debates of *Khat* practice. On one hand, *Khat* is an illegal substance in most European countries (including Germany, France, and the Netherlands), the United States and Canada. On the other hand, it remains allowed in many countries like Somalia, Djibouti, Ethiopia, Yemen, and Israel (Belwal and Hassen, 2011; Yusuf, 2011; Al-Menyar et al., 2015). Laws against the use of *Khat* are not established in Ethiopia (Gebissa, 2008). Many literatures claimed that East African migrants particularly Somali people uses *Khat* in United Kingdom and other European countries (Yusuf, 2011). *Khat* is non-scheduled substance in United Kingdom (Numan, 2012), where it is chewed among Diaspora communities mainly Ethiopians and Southern Arabia for pleasure and social interactions (Anderson and Carrier, 2011; Kassim et al., 2015).

In Yemen, *Khat* users deem that it is their identity, social status, source of pride and sense of self-esteem (Numan, 2012). In 1933, the Advisory Committee on the Traffic in Opium and Other Dangerous Drugs of the League of Nations attempted to prohibit the cultivation and trade of *Khat* by French, British and Italian colonial

administrations that have been undertaken in East Africa (Kenya, Djibouti, and Somaliland) and South Yemen in the first half of the 20th century. Others have attempted to ban *Khat* undertaken in Aden in 1957 and in Somalia in 1956 and 1983. Yemen tried to ban *Khat* in 1972 but the campaign failed completely (Numan, 2012).

## THE EXPANSION OF *KHAT* IN ETHIOPIA

*Khat* chewing has deep rooted history as early as 14th century and is commonly used for social and religious purposes (Alemayehu and Tewodros, 2014). The cultivation of *Khat* in Ethiopia is started earlier than that of coffee (Al-Menyar et al., 2015). Though originally Muslim prayers have used *Khat* for ceremonies, it has become widely utilized also by Orthodox follower Ethiopians for recreational purposes. As late as the 19th century, only the political elite, religious devotees and well-off urbanites chewed *Khat* regularly in Ethiopia (Gebissa, 2008). Currently, Ethiopia is the leading producer of *Khat* and the production has an increasing trend (Degol, 2007; Kandari et al., 2014; Beyene et al., 2017). In the new era, for instance in *Harar*, even children under-five chew *Khat* (Alem et al., 1999). However, *Khat* chewing is commonly practiced in ages between 25 and 44 years (*ibid*). According to the study of Estifanos et al. (2016) conducted in *Dessie* city of Ethiopia, the mean average age of *Khat* chewers is 19.23 years.

*Khat* grows well in middle and higher altitudes (Berhanu et al., 2014). It can grow between altitudes of 1500 and 2590 m.a.s.l. adapting to well-drained and poor soils with a range of climatic conditions (Al-Habeshi and Skaug, 2005; Yusuf, 2011; Kandari et al., 2014). The height of *Khat* tree ranges from 1.0 to 18.0 m in Yemen (Al-Habeshi and Skaug, 2005). In Ethiopia, the plant can grow up to a height of 30 m around Wondo Genet (Gessesse and Kinlund, 2008). The plant is seedless and hardy, growing in a variety of climates and soils (Alemayehu and Tewodros, 2014). The plant can grow in marginal lands, terraced hillsides and relatively requires low labor and inputs, and resistance to many diseases (Degol, 2007; Beyene et al., 2017). The detail characteristics of the plant are shown in Table 1.

The potential areas of *Khat* growing are found in the eastern highlands of Ethiopia (Hurni et al., 2016). The significant expansion of *Khat* has appeared since the 1960s (Gessesse, 2015). Nowadays, it is grown in almost all regions of the country. For example, there was no *Khat* cultivation at farm level in South and North Gondar areas prior to 1990s. Nowadays, *Khat* production is extensively practiced along the main asphalt road between Bahir Dar and Gondar cities of Northwestern Ethiopian highlands (own surveillance). A study conducted by Asmamaw et al. (2013) in Dera district found that the prevalence of *Khat* use is 17%. There are

several evidences for the expansion of *Khat* in Ethiopia. Extensive deforestation of the natural forest in Wondo Genet environment is the result of human intervention for *Khat* expansion (Gessesse and Kinlund, 2008). *Khat* practice has increased over the years and recently the country becomes the fastest growing of *Khat* commodity (Kandari et al., 2014) that cultivated and chewed extensively (Beyene et al., 2017). The plant yields between 15 and 18 ton/ha through monoculture cultivation (Kandari et al., 2014). Gessesse (2015) has found that the average yield of *Khat* is 8 ton/ha around rift valley areas.

The other controversy lies on the use of *Khat*. Some organizations/institutions do not classify *Khat* as addictive drug, like the World Health Organization (WHO). Saudi Arabia and others have strictly banned the practice of *Khat* with the help of enforced law. Nevertheless, some countries including the UK, had classified the crop as a drug substance, but they did not take any measure to ban it (Berhanu et al., 2014). The International Narcotics Control Board is leading a campaign to ban *Khat*. In contrast, the WHO has not yet found justification for restricting the availability and use of *Khat* (Degol, 2007). In Ethiopia, *Khat* is grown from less than 100,000 ha ahead of 15 years to the present 250,000 ha of land (Alemayehu and Tewodros, 2014; Kandari et al., 2014; Cafer, 2016). Beyene et al. (2017) found that some farmers converted their landholding to *Khat* plantation in Oromia and SNNP regions of Ethiopia. About a third of *Khat* production is exported to neighboring countries like Djibouti and Somalia (Kandari et al., 2014). It implies the plant is expanding at rapid rate (Cafer, 2016).

There are several reasons for the expansion of *Khat* in Ethiopia. Many farmers are challenged with crop productivity due to soil degradation. *Khat* can be grown in those degraded areas. The plant can incur higher income returns relatively as compared to other cereal crops. The plant is evergreen and less vulnerable to drought. It is low labor intensive as compared to other crops (Kandari et al., 2014; Beyene et al., 2017). Improving road networks, availability of land and air transport have contributed to the expansion of *Khat* (Gessesse and Kinlund, 2008; Numan, 2012). Many studies concur on the economic factor of *Khat* expansion (Gessesse and Kinlund, 2008). The positive and negative effects of *Khat* practice have had inconclusive discourse and not free from socio-economic, political, and public dilemma.

## THE SOCIO-ECONOMIC AND ENVIRONMENTAL EFFECTS OF *KHAT*

### Correlates of *Khat* and health

A practice of *Khat* chewing is a growing health concern in Ethiopia (Demewoz and Yihunie, 2015). *Khat* can have medicinal values for some epidemic diseases and

**Table 1.** The major characteristics of *Khat* plant.

Botany	It is classified under Celastraceae family. The scientific name is <i>Catha adulis</i> and its local name is <i>Khat</i> .
Distribution	<i>Khat</i> is practiced in Ethiopia, Kenya, Sudan, Somalia, Djibouti, Tanzania, Rwanda, Burundi, Uganda, Zambia, South Africa, Zimbabwe, Saudi Arabia, Afghanistan, Yemen, Israel, India, Pakistan, Turkestan, Iran, Malaysia, Australia, and Madagascar.
Description of the plant	<i>Khat</i> is a flowering evergreen tree or shrub that reaches up to 30m. Leaves can have a length of up to 10 cm and 2-5 cm width.
Chemical constituents	The active ingredient of <i>Khat</i> are cathinone and cathine, which produce psychotropic, euphoric, metabolic, and cardiovascular effects similar to amphetamine. A maximum potency of leaves are up to 48 hours but can be preserve using freezing.
Ecological adaptability	The plant grows in medium altitude (1500-2600 m.a.s.l.), medium temperature (18-29°C), high rainfall amount (900-1200 mm), and well drained soils.
Methods of cultivation	<i>Khat</i> is propagated by cutting. It can be planted year round. The plant can be grown in monoculture or intercropping with maize, sorghum and other cereal crops. It can be fertilized using manure. DDT can be used for disease protection. Watering, weeding, manuring, topping, pruning, and stumping are tending operations. The first harvest is within 2-3 years. The plant can give yield over 75 years at a rate of 2-4 harvest per year.
Harvesting	Harvesting is by hand picking in morning or late afternoon. After harvesting, it can be wrapped using <i>enset</i> or banana leaves or packed using plastic bags to retain its moistness and freshness.
Uses and effects	The young leaves or shoots are used for chewing and marketing. Tea can be prepared from <i>Khat</i> . It can have both positive and adverse effects on social, economic, and environment.
Legality	<i>Khat</i> is illegal in many countries in Europe and USA. It is legal in Ethiopia but chewing is prohibited in the civil servants and university campuses based on rules of conducts.

Source: Al-Habeshi and Skaug (2005); Gessesse and Kinlund (2008) and Kandari et al. (2014).

alleviate symptoms of melancholia and depression (Balint et al., 1991). Despite the plant do not contain calories; it has protein and fiber contents of 5.6 and 2.5%, respectively (Gessesse, 2015). It may also be used to suppress hunger when there is shortage of food (Balint et al., 1991). On the contrary, many research findings revealed that *Khat* practice has detrimental effects on health. In addition, Alem et al. (1999) have reported that there is no evidence that *Khat* can increase intellectual performance. Subsequent to fifteen years, Ewenat et al. (2014) confirmed that *Khat* chewing is associated with poor academic performance among students in Bahir Dar University. Many researchers have discovered that the psycho-stimulant effect of *Khat* is due to the alkaloid chemical ingredient 'cathinone' present in the fresh leaves of the plant. The central and peripheral nervous system, the gastro-intestinal system, dental problems, stomach ulcer, and stroke are among the main adverse effects of *Khat* chewing (Alemayehu and Tewodros, 2014).

There is immense dilemma between merits and demerits of *Khat* and there is no conclusive evidence on some

health effects of the plant such as psychosis. *Khat* affects cardiovascular, constipation, oral cancers, digestive, respiratory, endocrine, and urinary systems (Numan, 2012). Gastritis, malnutrition, anorexia, spermatorrhea, arrhythmias, impotence, elevation of blood pressure, insomnia, anxiety, depression on cessation, tension, and various psychotic symptoms are adverse effects of *Khat* chewing (Alem et al., 1999). Moreover, females used hot beverages made from boiling dry or fresh *Khat* leaves in water to induce abortion (Awoke et al., 2017). If male and female chew *Khat* together, they tend to engage in unplanned and risky sexual intercourses especially among the young. Chewing is also dangerous for drivers and if alcohol is added, accidents will be worse. Furthermore, chewing has adverse effects for women who have children and their children face loss of weight due to low appetites of the mother who is unable to give adequate breastfeed (*Ibid*).

In some studies, deterioration of sexual activities and estrangement between spouses is reported. Contrasted findings are found in Somali region on sexual activities, 18.8% of male respondents replied that *Khat* improve

**Table 2.** The prevalence of *Khat* chewing in different social settings of Ethiopia.

Area of study	Prevalence (%)	Sources
Students in Bahir Dar university	24.0	Ewenat et al. (2014)
Students in university of Gondar	24.5	Desalegn et al. (2014)
Students in Jimma university	23.9	Tilahun et al. (2017)
Students in Sidama high schools	14.6	Andargachew et al. (2017)
Students in Agaro high school	65.0	Gebissa (2008)
Residents in Harar town	50.0	Alem et al. (1999)
Residents in Butajira town	50.0	Alem et al. (1999)
Residents in Jimma town	39.6	Gebissa (2008)
Residents in Adami Tulu town	31.7	Gebissa (2008)
Prevalence for men in Ethiopia	27.3	Demewoz and Yihunie (2015)
Prevalence for women in Ethiopian	11.0	Demewoz and Yihunie (2015)
Prevalence for rural Ethiopia	16.6	Demewoz and Yihunie (2015)
Prevalence for urban Ethiopia	11.2	Demewoz and Yihunie (2015)

sexual performance whereas 61% reported that it causes impairment (Alem et al., 1999). Homicide and suicide cases are reported in Ethiopia due to heavily addicted behaviors of *Khat* chewing. *Khat* reduces desire for cohabitation and food, brings confusion, and cause dehydration and spermatorrhea (Numan, 2012). Some of the aforementioned associated risks are in agreement with Kassim et al. (2015). Chewed leaves negatively affect the working ability and capacity of the users (Kandari et al., 2014).

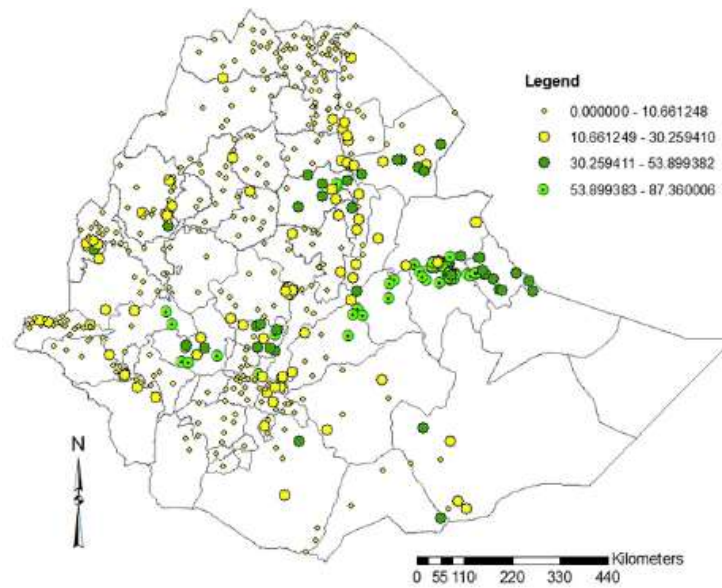
The higher concentration of cathinone was detected from samples in Ethiopia and Kenya (Numan, 2012). Perhaps, due to such contents and the taste properties consumers and customers ensure where a *Khat* comes from. The most popular varieties of *Khat* in Ethiopia are *Aweday* and *Abo mismar* found in *Harari* that Yemenis prefer (Kassim et al., 2015). The chemical properties of *Khat* are well documented in some studies. Cardiovascular system, respiratory system, gastrointestinal system, hepatobiliary system, genitourinary system, obstetric effects, metabolic and endocrine effects, central nervous system, and psychiatric system are the main adverse effects of *Khat* reported by Alemayehu and Tewodros (2014).

Socio-demographic characteristics such as sex being male, peer pressure, and seniority of students, family history for *Khat* practice, drinking alcohol, smoking, students in higher education, *Khat* growers, religious purposes, household with more income, and associated factors are positively associated with *Khat* chewing (Ewenat et al., 2014). Family chewing habit and production of *Khat* around residences are also among drivers of *Khat* chewing. The prevalence of *Khat* chewing is different among various social settings. The highest prevalence (65.0%) is reported for secondary school students in Agaro (Table 2).

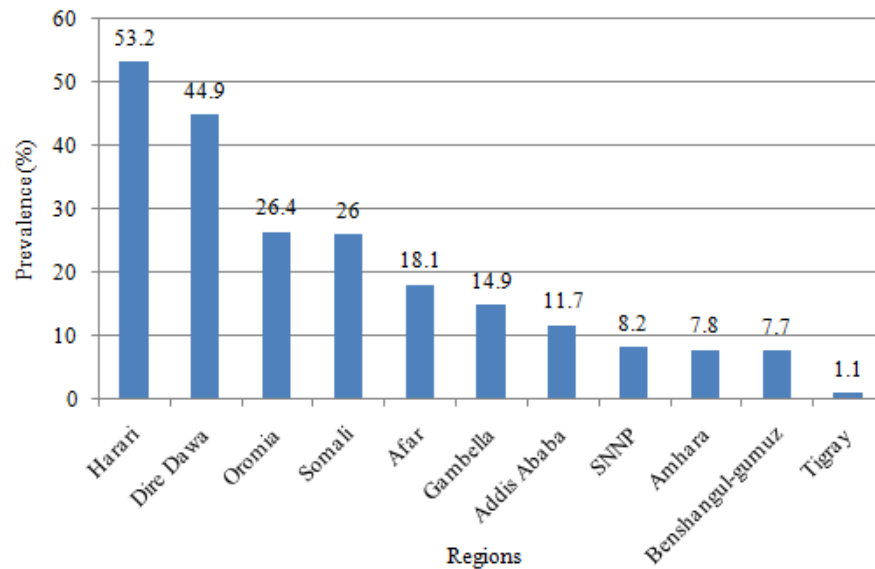
The prevalence of *Khat* chewing in University of Gondar has increased from 21.0% in the 2000s to 24.5% in 2010s (Yigzaw, 2002; Desalegn et al., 2014). Similarly, the prevalence of *Khat* chewing in Jimma University has increased from 23.9 to 39.0% within a decade (Gebissa, 2008; Tilahun et al., 2017). Not all areas in Ethiopia produce *Khat* and not all producers chew *Khat*. As one travels from northern part of Ethiopia to Southeastern Ethiopia, the size for production of *Khat* increases (Figure 1). There is a production and prevalence of *Khat* chewing variation among regions in Ethiopia (Demewoz and Yihunie, 2015). The highest *Khat* chewing prevalence is found in *Harari* (53.2%) while the lowest is found in Tigray (1.1%). It implies *Khat* consumption is practiced in every regions of Ethiopia with unlike magnitudes (Figure 2). It needs further inquiries and researches why the starting place of *Khat* growing is *Harar*. Agro-ecologies, trade routes, settlement patterns for Muslims, and other socio-cultural factors are the probable reasons that might influence the trends and patterns of *Khat* practice in Ethiopia.

### Social effects of *Khat*

Anderson and Carrier (2011) believed that there is no robust evidence between *Khat* use and social harms. Nevertheless, recent studies disclosed that *Khat* practice does not only affect human health but also it influences social cohesions (Saeed, 1987; Al-Habeshi and Skaug, 2005; Numan, 2012; Asmamaw et al., 2013; Al-Menyar et al., 2015). *Khat* consumption is high in Muslim communities and usually takes place at homes, recreational sites, or trading places for pleasures and other related purposes (Belwal and Hassen, 2011). Most people chew *Khat* in groups during special ceremonies



**Figure 1.** Distribution of *Khat* chewing practice in Ethiopia. Source: PLOS ONE | DOI:10.1371/journal.pone.0130460 July 19, 2018.



**Figure 2.** The prevalence of *Khat* chewing in different regions of Ethiopia. Source: Demewoz and Yihunie (2015)

intended to enhance social interaction or facilitate contact with Allah by Muslims (Alem et al., 1999). Playing during ceremonies, stabilize emotions, pleasure, increase work efficiency, stimulation, elevate mood, social meetings, concentration during studying, collective and individual labor works, and praying are some of the social reasons of *Khat* chewing (Alem et al., 1999; Numan, 2012).

Events of chewing include circumcision, wedding and funeral ceremonies for welcomed and entertained guests. Students, farmers, traders, and drivers chew *Khat*. Kandari et al. (2014) found that higher numbers of consumers are drivers followed by students and shopkeepers in *Harar*. A study conducted in *Dessie* city revealed that the most frequent users of *Khat* are jobless

youths, students learning in higher education, street children and drivers (Estifans et al., 2016). Affected schoolchildren resulting in school dropouts due to *Khat* chewing and increase in criminal activities (Kandari et al., 2014). *Khat* cultivation is claimed to be mainly male preference crop for the benefit of income. Women prefer *Khat* in less extent for the reason that men tend to marry additional wives and the plant increases alcohol consumption and drinking in turn expose to HIV/AIDS (Gessese and Kinlund, 2008). Social problems such as frequent quarrel among family members, breach of family ties, neglect of education, less care for children, encouraged prostitution, and addiction are linked with *Khat* chewing (Yusuf, 2011). Some research findings reported that *Khat* consumption has adverse consequences for married couples. Spending money to maintain the habit and wasting working hours during *Khat* ceremonies lead to family neglect and, consequently to divorce (Alem et al., 1999). The rise over addiction is associated with criminal activities such as terrorism (Cochrane and O'Regan, 2015).

### Economic effects

According to Berhanu et al. (2014), *Khat* is the third largest export commodity after coffee and oil seeds. *Khat* can generate considerable amount of revenue at individual, household and national level. Some farmers prefer *Khat* than that of other crops due to several reasons. *Khat* is a cash crop, which can bring substantial returns. The plant is less vulnerable to drought with less cost for labor demand throughout production. *Khat* has both positive and negative economic advantages. On the positive part, it serves as employment opportunity and source of income in the cultivation and marketing processes. The source of cash income (up to 76.8% in *Harar*) and drought resistance behavior of the plant are among the main economic advantages of *Khat* growing (Alem et al., 1999). Alemayehu and Tewodros (2014) and Beyene et al. (2017) reported that the wood part of the plant is resistance to termites that serves for fuel, farm implements, home utensils, house construction and fencing. The income return from maize mono-cropping is three times less than the intercropping of *Khat* with maize in Hararghe highlands (Kandari et al., 2014). Farmers also utilize mixed cropping with *tef* in south *Wollo* (Cafer, 2016).

Conversely, *Khat* has deleterious effects on disharmony, family breakdown, and diverting household incomes (Alemayehu and Tewodros, 2014). Spread of corruption, theft of public and private properties, damage to people and properties caused by accidents, and waste of family resources are economic related problems linked with *Khat* chewing (Yusuf, 2011). *Khat* is a cash crop covering about 0.2% of the total area of Ethiopia fetching

about 10.5% of the country's export value (Gessese, 2013). It is easy to transport and serve as fodder for goat production (Kandari et al., 2014). It affects livestock population adversely due to decline of pastureland and less interest in livestock raising (Kandari et al., 2014).

### Environmental consequences

*Khat* is an extremely water demanding perennial plant and heavily reliance on irrigation for intensive production (Cafer, 2016). Many *Khat* landscapes are vulnerable to land degradation and *Khat* cultivation undermines crop production (Gessese, 2013). The number of farmers growing annual crops has declined as the result of *Khat* expansion, which undermines food crop production. In many areas, for example in Wondo Genet, deforestation and land conversion took place for *Khat* cultivation that implies adverse environmental implications (Gessese and Kinlund, 2008). Thus, *Khat* production could have either positive or negative effects on food security. The relationship between *Khat* cultivation and its consequences on land use change and water use is complex (Gessese, 2015).

### DEBATES ON RULES OF LAW

The practice and global trade of *Khat* is controversial (Degol, 2007). Though public officials in East Africa denounce its consumption, they benefit from the foreign exchange and tax revenues that it generates. The United States and most countries in Europe have banned it, considering its psychotropic substance. Nevertheless, legislating against *Khat* in these countries has had little success in curbing use of the plant and has taken place with little consideration of evidences (Anderson and Carrier, 2011). The sale or use of *Khat* is enacted through laws and banned it in many western countries such as Netherlands, UK, China, and USA (Degol, 2007; Gessese, 2013; Beyene et al., 2017). Considering these aforementioned knowledge, it is likely to develop policies concerning to *Khat* practice. It has been condemned both by Islamic school of thought and by Orthodox Church in Ethiopia (Yusuf, 2011). Nevertheless, Ethiopian government neither encourages nor takes any action against its cultivation, trade and use (Berhanu et al., 2014). It looks like no specific government policy that promotes or prohibits production of *Khat*. Presently, it is difficult to punish someone out of substance dependence. Initially, dependent users ought to change their behavior and be active and productive members of the community (Estifanos et al., 2016).

A person who lived in Dessie city reported that *Khat* is not religion related rather Muslims chew *Khat* just to be alert and avoid sleep (Estifanos et al., 2016). Some



**Table 3.** Compiled potentials for strength, weakness, opportunity, and threats with a popular analytical technique known as SWOT.

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**Strength**

Ethiopia is the leading/producer of *Khat*.

*Khat* is the main export commodity (giving high contribution for the national economy).

*Khat* is a cash crop, which can bring substantial return.

Less vulnerable to drought and less cost for labor throughout the production of *Khat*.

**Opportunity**

*Khat* is able to mix with cereals, coffee, fruits, and vegetables.

*Khat* doesn't classify as addictive drugs (according to WHO statements).

Not all areas in Ethiopia produce *Khat*. It means there are several areas still have other potential crops to produce.

**Weakness**

Illegal drugs (detrimental effects on health, social conditions such as spread of corruption, theft of public and private properties, damage to people and properties caused by accidents).

*Khat* landscapes are vulnerable to land degradation

**Threats**

*Khat* is illegal in many countries, like Europe and USA. In Ethiopia *Khat* production is legal but chewing is prohibited.

There is no suitable policy to solve this debating issue.

Dependent users ought to change their behavior and be active in positive community.

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scholars in Ethiopia believed that Somalia and Yemen have integrated *Khat* use into religious life. According to Degol (2007), *prohibiting the cultivation of Khat would threaten the livelihoods of many farmers and traders, and likely drive many of them deeper into illegal activity or into poverty. Criminalizing those who have to rely on Khat production for their survival is not the answer. The discussion of Khat needs to be placed within a development framework instead of being dominated by a mindset that stresses illicit 'substance abuse'*. Beyene et al. (2017) revealed that criminalizing and prohibiting *Khat* cultivation could affect the livelihood of *Khat* farmers, rural non-agricultural laborers and traders.

According to Estifanos et al. (2016), many people have intentions to stop *Khat* (for instance USA 62%, UK 50%, Yemen 46% and Ethiopia in Dessie city 68.47%). However, in reality, both the production and use of the plant is increasing. Thus, considering only economic strategy for *Khat* cultivation cannot be the basis of policy establishment for a sustainable development (Gebissa, 2008). In identifying suitable policies, potentials for strength, weakness, opportunity, and threats are compiled with a popular analytical technique known as SWOT (Table 3).

**CONCLUSION AND POLICY IMPLICATIONS**

In Ethiopia, *Khat* production is one of poverty reducing

instrument for producers in the short run. *Khat* cultivation is expanding rapidly at the expense of cereal crops. The production has boomed over the last two decades, making the country a leading nation. The highest prevalence of *Khat* production and consumption spread from Eastern and Central Ethiopia to northeastern and other most major cities and towns of the country. The discourse between harm and benefits effects are inconclusive and not free from ethical dilemmas. That means *Khat* has adverse effects on health, society and environment with positive income effects on consumers and producers (Kandari et al., 2014).

Nowadays, *Khat* chewing is a public health concern. Heart failure and blood pressure are among the key health related problems of *Khat* chewing. The prevalence of *Khat* chewing is higher in secondary schools and university students influenced by peer pressure, family chewing habit, drinking, smoking and vicinity to residences. Many researchers argue that a complete ban or the production and marketing of *Khat* may be disastrous for Ethiopian economy for the short run (Belwal and Hassen, 2011). Some others claim that the government of Ethiopia has placed dual taxation, at local and federal level. The review has shown that *Khat* chewing habit has affected the majority of productive age groups confirmed by large number of students.

Previous studies are limited on different social settings and spatial distributions. A few number of researchers address the issue of *Khat* chewing and associated



behaviors at secondary schools, rural and urban residents, *Khat* trading areas, and universities. More studies are required on psychological, epidemiological, environmental and associated aspects. The attributes and effects of *Khat* has to be studied independently at different social settings, socio-demographic characteristics and work behaviors such as traders, farmers, women, shoe shine, civil servants, students, youth, adults, drivers, children and others. Knowledge based, gender sensitive, health and environment centered policy is required. Taking measures related to joblessness and educating people are among solutions. Therefore, it is essential to raise awareness, disclose public debates about the potential hazards of *Khat* chewing. Legislation has to consider for education into the curricula for primary and secondary students.

## CONFLICT OF INTERESTS

The author has not declared any conflict of interests.

## REFERENCES

- Admasu S (2017). Productive Capacity and Economic Growth in Ethiopia. CDP Background Paper No. 34 ST/ESA/2017/CDP/34. New York, N.Y. 10017, USA.
- Alem A, Kebede D, Kullgren G (1999). The Prevalence and Socio-Demographic Correlates of *Khat* Chewing in Butajira, Ethiopia. *Acta Psychiatrica Scand*, 100:84-91
- Alemayehu G, Tewodros G (2014). The Chemistry of *Khat* and Adverse Effects of *Khat* Chewing. *American Scientific Research Journal for Engineering Technology and Sciences* 9(1):35-46.
- Al-Habeshi N, Skaug N (2005). *Khat (Chata adulis): An Updated Review*. *Addiction Biology* 10:299-307.
- Andargachew K, Eskindir L, Atklit E (2017). Prevalence of *Khat* Chewing and Its Effect on Academic Performance in Sidama Zone, Southern Ethiopia. *Africa Health Science* 17(1):175-185. <https://dx.doi.org/10.4314/ahs.v17i1.22>
- Anderson D, Carrier N (2011). *Khat: Social Harm and Legislation*. A Literature Review, University of Oxford.
- Asmamaw Z, Worku A, Endalew G, Fentie A (2013). *Khat* Chewing Practice and Its Perceived Health Effects among Communities of Dera District, Amhara region, Ethiopia. *Open Journal of Epidemiology* 3:160-168.
- Asrat A, Demissie M, Mogessie A (2012). Geoheritage Conservation in Ethiopia: The Case of the Simien Mountains. *Quaestiones Geographicae* 31(1):7-23.
- Assefa A, Seid N (2017). Prospects for Harsening Demographic Dividend in Ethiopian Regional States, Addis Ababa, Ethiopia.
- Assefa M (1983). Socio-economic aspects of *Khat* in the Harrarghe administrative region, Ethiopia. Proceedings of the International Conference on *Khat*, January 17-21 1983, Antananarivo, Madagascar.
- Awel Y, Yerra R, Tadele E, Getu K, Dagim A, Hailekiros G, Tesfamichae G, Yasodha KJ (2016). Socio-Economic and Health Effects of *Khat* Chewing in Mekelle, Tigray Region, Ethiopia. *International Journal of Pharmacy and Pharmaceutical Research* 8(1):11-22.
- Awoke M, Solomon T, Abebaw F (2017). What Constitutes Problematic *Khat* Use? An Exploratory Mixed Methods Study in Ethiopia. *Substance Abuse Treatment Prevention and Policy* 12:17.
- Balint G, Gebrekidan H, Balint E (1991). *Cuthu Edulis*, an International Socio-Medical Problem with Considerable Pharmacological Implications. *East African medical journal* 68:555-561.
- Belwal R, Hassen T (2011). Chat exports and the Ethiopian economy: Opportunities, dilemmas and constraints. *African Journal of Business Management* 5(9):3635-3648.
- Berhanu M, Aregash E, Ali M (2014). Socio-Economic Impact of *Khat* in Mana District, Jimma Zone, South Western Ethiopia. *Discourse Journal of Agriculture and Food Sciences* 2(2):21-32.
- Beyene W, Jennifer C, Anders D, Leon B, Tefera B (2017). "*Khat* Production and Consumption; Its Implication on Land Area Used for Crop Production and Crop Variety Production among Rural Household of Ethiopia." *Journal of Food Security* 5(4):148-154.
- Central Statistics Agency (CSA) (2015). Agricultural Sample survey. Report on Area and Production of Major crops, 2014/2015. Volume I, Addis Ababa, Ethiopia.
- Cochrane L, O'Regan D (2015). Legal Harvest and Illegal Trade: Trends, Challenges and Options in *Khat* Production in Ethiopia. *International Journal of Drug Policy* 30:27-34.
- Degol H (2007). Should *Khat* should be banned? The Development Impact. *International Poverty Centre*, No 40. Caribbean.
- Demewoz H, Yihunie L (2015). *Khat* Chewing Practice and Associated Factors among Adults in Ethiopia: Further Analysis Using the 2011 Demographic and Health Survey. *PLoS ONE* 10(6):1-11.
- Desalegn B, Deribew A, Belayneh K, Gobezie T (2014). Assessment on the Prevalence and Contributing Factors of Social Drugs Utilization among University of Gondar Regular Undergraduate Students, Maraki Campus, 2013. *International Journal of Pharma Sciences and Research* 5(8):518-530.
- Economic Commission for Africa (ECA) (2016). The Demographic Profile of African Countries. Addis Ababa, Ethiopia. ISBN: 978-99944-68-06-5.
- El-Menyar A, Mekkodathil A, Al-Thani H, Al-Motarreb A (2015). *Khat* Use: History and Heart Failure. *Omnia Medical Journal* 30(2):7782.
- Eshetu M, Habtemairiam K (2001). Evolution of Smallholder Mixed Farming Systems in the Harar Highlands of Ethiopia: The Shift towards Trees and Shrubs *Journal of Sustainable Agriculture* 18(4):81-112.
- Estifanos M, Azale T, Slassie MG, Amogne G, Kefale B (2016). Intention to Stop *Khat* Chewing and Associated Factors among *Khat* Chewers in Dessie City, North Eastern Ethiopia. *Epidemiology (Sunnyvale)* 6:250.
- Ewenat G, Yemane B, Alemayehu W (2014). *Khat* Chewing among Ethiopian University Students: A Growing Concern. *BMC, Public Health* 14:1198.
- Gebissa E (2008). Scourge of Life or an Economic Lifeline? Public Discourses on *Khat (Catha edulis)* in Ethiopia. *Substance Use & Misuse* 43:784-802.
- Gessese D (2013). Is *Khat* a Social Ill? Ethnical Arguments about a Stimulant among the Learned Ethiopians. *ASC Working Paper No 108*. African Studies Centre Leiden, The Netherlands.
- Gessese D (2015). Land and Water for Drugs, Cash for Food: *Khat* Production and Food Security in Ethiopia.
- Gessese D, Kinlund P (2008). *Khat* Expansion and Forest Decline in Wndo Genet, Ethiopia. *Geografiska Annaler: Series B, Human Geography* 90(2):187-203.
- Hurni H, Berhe WA, Chadhokar P, Daniel D, Gete Z, Grunder M, Kassaye G (2016). Soil and Water Conservation in Ethiopia: Guidelines for Development Agents. Second revised edition. Bern, Switzerland: Centre for Development and Environment (CDE). University of Bern, with Bern Open Publishing (BOP) P 134.
- Kandari L, Yadav H, Thakur A, Kandari T (2014). Chat (*Catha edulis*): a socio economic crop in Harar Region, Eastern Ethiopia. *Springer Plus* 3(1):579.
- Kassim S, Dalsania A, Nordgren J, Klein A, Hulbert J (2015). Before the Ban-an Exploratory Study of a Local *Khat* Market in East London, UK. *Harm Reduction Journal* 12:19.
- Numan N (2012). The Green Leaf: *Khat*. *World Journal of Medical Sciences* 7(4):210-223.
- Saeed A (1987). *Catha Edulis (Khat)*, A Sex Depressant, Euphoriant In history. *Ancient Science of Life* 7(1):45-48.
- Taye H, Aune J (2003). *Khat* Expansion in the Ethiopian Highlands:

- Effects on the Farming System in *Habro* District. Mountain Research and Development 23(2):185-189.
- Tilahun A, Daniel T, Adorjan K, Mubarek A (2017). Prevalence, Withdrawal Symptoms and Associated Factors of *Khat* Chewing among Students at Jimma University in Ethiopia. BMC Psychiatry 17:142.
- Wild Frontier (2014). Dallol Depression and Highlands of Tigray, Ethiopia.
- Yigzaw K (2002). Cigarette Smoking and *Khat* Chewing among University Instructors in Ethiopia. East African Medical Journal, 79(5):274-278.
- Yusuf B (2011). The Health Risk of *Khat* and Influences and It has on Integrations of Issues. MSc Thesis in Public Health Sciences, Malardalen University Sweden.