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The stimulant khat—Another door in the wall? A call for overcoming the barriers

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ABSTRACT

Aim: In this article, we comment on the current international discourse on khat, we highlight pitfalls and and suggest balanced national international regulatory actions.
Method: A brief an focussed review of the available literature on khat and health and examples from our own research are provided.
Results: The use patterns of *catha edulis* (khat) have changed throughout the last decades. During this period khat has had a remarkable economic boom and developed from a niche crop to the backbone of the regional economy. Now it contributes to the livelihoods of millions of people. Today, khat use is often the proverbial "Door in the wall" for large parts of the populations in African and Arab countries beyond the traditional user groups. Its use is often excessive and not restricted by social regulation mechanisms. Under such conditions, problematic khat use patterns develop rapidly, exemplified by the growing group of binge users, and it gets even prevalent among especially vulnerable groups such as children, people with mental disorders or pregnant women. The currently existing scientific evidence suggests that problematic use patterns not the use *per se* can be linked to numerous health consequences.
Conclusion: This paper argues that changed patterns of khat use are a burden for some of the most underdeveloped countries in the world. But the debate around khat is stuck between extreme poles arguing for prohibition or for de-regulation. Here, we call for a balanced action of governments and international organizations leaving behind the decades of debilitating debate pro vs. contra scheduling and banning khat leaves. Instead, regulation and harm-reduction measures are urgently needed. We suggest a number of steps that should be taken immediately to better understand current khat use patterns, to address noxious excesses and to relieve suffering.

"Most men and women lead lives at the worst so painful, at the best so monotonous, poor, and limited that the urge to escape, the longing to transcend themselves if only for a few moments, is and has always been one of the principal appetites of the soul. Art and religion, carnivals and saturnalia, dancing and listening to oratory – all these have served, in H.G.Well's phrase, as Doors in the Wall. And for private, for everyday use, there have always been chemical intoxicants. All the vegetable, sedatives and narcotics, all the euphorics that grow on trees, the hallucinogens that are in berries or can be squeezed from roots – all, without exception, have been known and systematically used by human beings from time immemorial." Aldous Huxley

1. Khat: the bitter sweet leaves

In Islamic countries, alcohol consumption is generally a socially unacceptable practice. At the Horn of Africa chewing the leaves of the khat tree is both socially and culturally accepted. Consequently, khat usage is wide spread in the region and the practice has now become the proverbial "door in the wall" – or escape mechanism – that many people use to cope with the full range of difficult life experiences such as long term unemployment and traumatic life events (Odenwald et al., 2009; Bhui and Warfa, 2007). But khat consumption is known to have serious ramifications on public health in countries like Somalia, Ethiopia and Yemen (UNODC, 2009). Khat abuse and associated health risks are also a growing concern in Europe, North America, Middle-East, New Zealand and Australia where immigrants from African and Arab communities bring with them the habit of khat chewing (Bhui et al., 2006). In Britain, there are first reports of use by young people of non-migration background placing it in the pathways toward health risk behaviors among young people in general (Holligan, 2009).

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Table 1
Features of khat use that are seen as problematic.

Patterns of khat use	Vulnerable user groups	Socio-cultural aspects
Early onset of khat use in life	Children, adolescents	Loss or non-existence of traditional knowledge on khat, including about the inherent dangers.
High amount of use per day or per session	Women during pregnancy and breast-feeding	Loss or non-existence of social norms and control mechanisms.
Prolonged time using it (e.g. more than 24 h in a row without sleep)	People with pre-existing psychotic disorders or previous psychotic episodes	
Excessive frequency of khat use (e.g. daily use)		

Khat production, trade and consumption are dramatically increasing and recent estimates suggest that world-wide there are more than 10 million daily khat users (Al-Motarreb et al., 2002). The demographics of khat users are changing as well. Individuals are starting to use at younger ages and women, who previously were socially prohibited from using the drug, have started using it significantly, even during pregnancy and while breast-feeding (Khawaja et al., 2008).

Although current scientific evidence in the field is limited, the available epidemiological studies suggest that, while associations between moderate or socially regulated use of khat and health problems is weak, excessive use may lead to the development of severe somatic and mental disorders (Warfa et al., 2007; Al-Habori, 2005). Main features of problematic khat use are shown in Table 1. In light of these findings, the current trend demonstrating that khat use patterns are changing rapidly from socially regulated use to unrestricted, excessive abuse is troubling.

Like the actual taste of it, khat is a bitter-sweet issue. On the one hand, there are strong social ties to the habit of chewing khat. For instance, in Yemen, Somalia, Kenya and Djibouti, it is considered an integral part of local cultures and traditions that serve both recreational and social purposes. On the bitter side, it has a potential for harm and abuse. So khat use may be pathological or illegal or damage financial and social health, or its use may simply reflect a cultural practice that connects khat chewers with their culture and with others like them. Therefore, appropriate interventions do not come easy.

In the present commentary, we call for a balanced and informed response to the growing concerns about this neglected psychoactive drug that possibly is a contributory factor in widespread social and psychological suffering in several countries where there are virtually no specialist mental health services and systems (Odenwald, 2007; Bhui and Warfa, 2007) and that more and more develops into the economic backbone for millions of farmers and traders. Three decades of futile discussions (International Narcotic Control Board, 2006) have not led to sustainable measures being taken while in a downward spiral, suffering related to abuse and economic dependency on the khat sector has become ever more severe and widespread.

We provide a focused review of khat and its health effects. We will identify the strengths and weaknesses of the current evidence and then recommend potential actions and strategies to address significant gaps in scientific knowledge and understanding of current patterns of khat use and the socio-economic and health impacts.

2. What is behind the growing international khat concerns?

Fresh khat leaves and shoots contain the stimulant cathinone which is a Schedule I drug as defined by the international classification of drugs under the International Convention on Psychotropic Drugs of 1971. In its purist form, cathinone's potential for dependence is even higher than amphetamines (Kalix, 1992). In the khat leaves, the more harmful component of cathinone degrades within 48 h following harvest and leaves behind less harmful substances (cathine, norephedrine). With moderate use, these leaves have not been shown to have serious or dangerous side effects in healthy users (Advisory Council on the Misuse of Drugs, 2005). Thus, the leaves do not fall under the international classification system (WHO Expert Committee on Drug Dependence, 2006). Despite the swift breakdown of cathinone into less harmful substances, policy makers and legislators still have serious concerns about khat use and its potentially addictive properties. Decades ago the process of harvesting and transporting the leaves was much more complicated and time consuming. Today, khat is produced with irrigation farming, fertilizers and pesticides and fresh khat leaves are marketed to the public at a much faster rate using newly built roads and air-transport. Recent epidemiological reports have shown that khat leaves, indeed, produce dependence (Awas et al., 1999; Kassim and Croucher, 2006). In many parts of the 'khat belt', the leaves have become the every-day drug of the general population. There is now a growing group of seemingly addicted heavy khat users who chew on a daily basis. They begin using early in the day and continue without interruption until late into the night, often using it in public settings. Such a binge can last for several days and might be cut with alcohol or benzodiazepines (Odenwald et al., 2007a,b). In Box 1 , we report some terms of the 'khat language' used today in Somaliland. Experts will easily recognize parallels to the 'amphetamine language'. The different khat chewing sessions that nowadays exist in Somaliland illustrate that the time of khat consumption is not restricted any more. The traditional khat

Box 1: Khat-related expressions in Somaliland
(Khat is the common name at the Horn of Africa; it is also referred to as qat in Yemen, chad in Ethiopia, miraa in Kenya, mairungi in Uganda)
'Mirquaan': 'Feeling high' that includes euphoria, stimulated thoughts and grandiose feelings. Duration, approximately 1–3 h.
'Haddaar': Typical phase of depressed mood that follows mirquaan and that motivates the user to continue khat intake.
'Bah': Literally translated "plastic bag", term to denominate a state of suspicion, fearfulness, paranoid ideas and illusions, which emerges during or after severe intoxication. Typically, at night, just after the end of a prolonged khat session, when the sleepless khat chewer walks home or to get the 'fix', he 'misinterprets' the sounds and shapes of the plastic bags and other litter as hyenas or enemies lying in an ambush.
'Xaraaro': Typical after-effects that are experienced the next day after khat chewing, including nervousness, headache, but also feeling of craving, that are experienced at the time of day when the chewer usually start his consumption.
'Dubaab': This term refers to vivid and unpleasant dreams, often with the sensation of being suffocated, which heavy chewers experience in the night after a day without chewing.

chewing session after lunch is called "barje" or "qayil"; it traditionally ends with the evening prayer (around 6 p.m.). In recent years, early morning consumption has emerged, which is called "ijabane", translated straightforward "opens your eyes", which usually takes place in town nearby the khat market. Several other new khat sessions can be observed today. The pre-lunch session from about 11 a.m. to 1 p.m. is called "xareedin" ("luxury chewing"). After the evening prayer, chewers might go to town and buy another share of khat; this session is referred to as "biyoraacis" ("chew with water"). Chewing in the late evening and throughout all night until sunrise is called "qarxis" ("explosion").

A number of studies have shown that khat use is associated with severe physical consequences such as lower birth weight of newborn babies to khat chewing mothers or an increased risk of certain forms of cancer or coronary heart diseases (Al-Habori, 2005). However, causal relationships are difficult to establish because of the presence of confounding variables like poverty, famine, war, and the concomitant use of other substances, like nicotine. More recent studies are also emerging reporting associations between khat use and aggressive, anti-social and criminal behaviors due to the disinhibitory effects (Banjaw et al., 2006; Philpart et al., 2009; Odenwald et al., 2008; Alem and Shibre, 1997).

In the mental health domain, studies show that khat is functionally used by people with Posttraumatic Stress Disorder (PTSD) and other mental disorders to achieve temporary relief from their symptoms (Bhui et al., 2003; Odenwald et al., 2009); and that excessive khat use is associated with the development of psychotic symptoms which may be brief or persistent (Odenwald et al., 2009; Odenwald, 2007; Warfa et al., 2007). Odenwald et al. (2009) recently illustrated the causal mechanism for khat-induced paranoid symptoms among combatants. Furthermore, there is initial evidence that early onset of khat use in life and excessive khat use might be a substantial risk factor for the development of schizophrenia-type disorders (Odenwald et al., 2005).

Khat is also linked to relapse or deterioration of pre-existing chronic psychotic disorders (Bhui et al., 2003; Bimerew et al., 2007). Fig. 1 shows how khat use might be associated with symptomatic exacerbation in chronic psychosis. We show the scores of the Positive Symptoms subscale of the Brief Psychiatric Rating Scale (BPRS; Overall and Goreham, 1962) for 15 male chronic psychotic patients, comparing those who tested positive with those testing negative for amphetamines and its metabolic derivatives in a urine test. None of the patients had had any medication, or amphetamine, for months prior to the test and all but one had consumed khat during their lifetime. Six of them tested positive at the time of our interview. High amounts of khat must be consumed in the 48 h prior to testing in order to show a positive result. Still, twenty percent of the variance in psychotic symptoms is explained by testing positive or negative on metabolic derivatives of the khat alkaloids.

In general, the evidence is mixed and more studies with more robust designs are needed. But the tendency is clearly emerging that excessive khat use and use by vulnerable groups is, indeed, noxious.

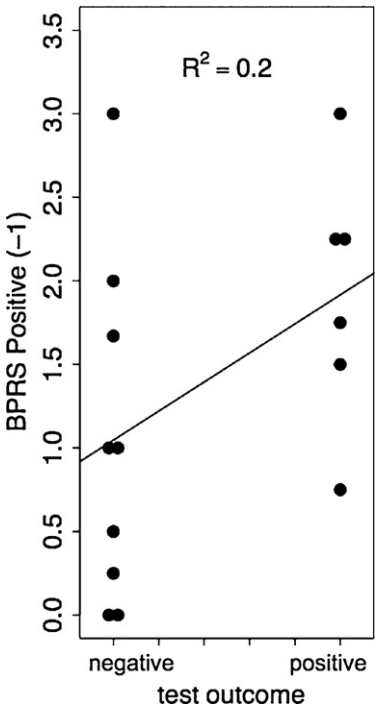

Fig. 1. Chronic psychotic patients with negative or positive amphetamine (urine) test and their scores in the BPRS Positive Subscale. On *y*-axis, BPRS-scores minus 1 are plotted. Note that those with a negative test outcome have also chewed khat but obviously not or not much during the last 2 days.

3. Achieving a balance between prohibition and de-regulation

From colonial times to the present, the khat problem has far too often been addressed by all-or-nothing solutions. Khat is either banned or a laissez-faire-position was prevailing. In the past, bans were attempted in several countries, especially during colonial times (Warfa et al., 2007) and a strong movement calls for the reactivation of this ban by scheduling khat leaves under the international conventions. Currently, political and economic stakeholders on national levels object to bans and worry that a hidden agenda lurks behind any hint of change. This fear rises from the fact that khat is a very lucrative cash crop and that the countries themselves, including millions of farmers and traders, depend on its sale for their livelihood. Today both positions seem to neutralize each other.

Some more economic facts: In Ethiopia, khat is the second largest export commodity (Hailu, 2007); the proportion of the national GDP from khat, for instance, exceeds public expenses for health (Anderson et al., 2007). In Yemen, the area under khat has expanded 13-fold within the last three decades and today the khat sector produces ten percent of the national GDP and employs one in seven working men (The World Bank, 2005). Unlike other cash crops the khat market is local and regional, without substantial involvement of multinationals and their pressure for low prices. To the producers, khat is preferable to coffee and annual food crops because of the reasonable and stable market prices at sale and because of the robustness of the plant against climatic extremes (Feyisa and Aune, 2003). Thus, khat growing local communities do better than non-khat growing neighbors (Seyoum et al., 1986). Any measures for regulating khat consumption, therefore, should consider the economic context of producing countries' and will need to assure khat farmers an alternative source of income.

From a cultural perspective legally prohibiting khat use in the khat belt is also an unacceptable solution for many people. Chewing khat is a long-standing tradition with high cultural value that dates back centuries (Krikorian, 1984). In 'khat belt' countries its use remains a part of many traditional rites and religious practices. In immigrant communities in the West it is said to strengthen cultural identity. Many users only consume low to moderate amounts of khat and this does not lead to problems (Pennings et al., 2008). It also serves as a socially acceptable way of relaxing from and coping with severe and repeated stressors that people from African countries have experienced (Zarowsky, 2000). It provides 'a door in the wall' for people who abstain from alcohol (Carrier, 2005) and also might have beneficial mental health effects when used with moderation and in a traditional khat use setting (Numan, 2004).

On the other hand, its use *per se* is often seen as a criminal behavior by the Western media because it is declared an illegal substance, for example in the USA, Denmark, Sweden, France, Germany, Australia and New Zealand. Consequently, the general ban of khat in countries like the UK is a controversial issue.

Here, one should not forget that historically bans do not solve the problem. In the past, khat prohibition did not work. It is simply impossible to shut all of the doors in the walls. If banned, monitoring and controlling its use would be much more difficult and the group of excessive users could continue to grow and there would be little way to monitor this change. The price is likely to increase making it a more valuable commodity but one that poorer people will either not take up or take up with greater financial strain. Furthermore, if banned, more dangerous substances, such as synthetic stimulants, might be used in its place depending on past experience in various regions. What makes more sense is to compare khat use with the use of alcohol in Europe or the US than to compare it with illicit drugs like amphetamines or cocaine. Despite the lack of a ban, alcohol consumption is regulated by social and legal norms. For instance, alcohol use by a 12-year old would be considered unacceptable by most people, irrespective of legal enforcement. This is not much different from the traditional regulations of khat that have been widely lost over the course of decades that saw civil wars, famine and large economic and social changes. One might, in the higher income countries, argue that alcohol and nicotine are equally culturally sanctioned (Bhui and Warfa, 2007), used safely by the majority but add considerably to health burdens and social and health costs. Regulation is now very active for alcohol and nicotine, and a similarly measured response may be better than a total ban.

4. Steps towards a balanced international khat policy

The present international position on khat is confusing and divided. For example, the scheduling of khat leaves have been advocated for by some key players in the field of drug and alcohol abuse, while others wanted to avoid the banning of it – the recent experience with the UNGASS Review which had aimed to update the international conventions is one example of this: in the end, the khat topic was not discussed. The situation in many countries of the 'khat belt' is similar. Because positions are extreme, they the khat issue is not addressed from a neutral and holistic perspective. In doing so, public health polices and strategies to tackle khat-related challenges have been neglected significantly.

But based on the above reviewed evidence, we identify current problematic khat use as a potential major barrier to the health and human development in Somalia, Ethiopia, Kenya, Yemen and Djibouti. Thus, we call for a swift and balanced international action to address the growing public health threats caused by the changing patterns of khat use. First and foremost, national governments and international organizations need to become active. Instead of discussing scheduling and banning, the harm-reduction approach should guide this action. In this complex situation, we need a neutral dialogue, a platform that allows all stakeholders to express their position and listen to the others. This is only possible with a powerful actor that manages to motivate all stakeholders and to moderate the process. In order to overcome these barriers, we propose that an inter-agency framework be set up, one which includes WHO, UNODC and INCB as well as other organizations like UNDP and the World Bank. The goal would be to develop a comprehensive strategy that incorporates health aspects as well as cultural and economic questions. This inter-agency steering committee should produce recommendations and act as a moderator of the process.

One option for bridging differences is to hold consensus-forming conferences that involve all stakeholders: producers of khat, scientists, governments, NGOs. Our hope is that such a process would result in a written consensus acknowledging the economic and cultural importance of khat that – at the same time – expresses the concerns of excess khat use and a recognition that abuse can lead to adverse health consequences especially in vulnerable groups. Such a document could then support international and national policies.

At the same time, there is a lack of data to answer essential khat-related questions. Current evaluations are based on data often collected decades ago when khat use patterns were still mostly traditional ones. Indicators need to be developed and monitoring systems need to be set up that are adequate for khat, i.e. for a legal drug in countries without well-developed health systems. But also population-based research is needed to document and understand current use patterns and their consequences. The place of khat in the life course of individuals at risk of poor health and social problems needs to be understood. And of course, we need more detailed investigations of the clinical outcome.

Today, we can already point out some clear messages: (1) excessive khat use (prolonged, high amounts) and (2) onset early in life need to be prevented; (3) certain vulnerable groups need to be protected from the negative effects of khat, e.g. people with mental disorders; and (4) the quality of khat leaves needs to be controlled (e.g. their content of noxious chemicals). Thus, currently it seems to be justified to start implementing harm-reduction measures and awareness campaigns to educate people about the potential dangers of khat use. It would be justified to legally reduce excesses such as banning khat use from psychiatric clinics and schools, to prohibit use by minors, or to establish maximum concentrations for pesticides and cathinone, e.g., via standardized and licensed production and sale. Also, capacities of medical systems need to be furthered, treatment facilities need to be aware of khat-related disorder and able to respond appropriately by referring the individuals to drug rehabilitation units, for example. Much work has to be done to develop, built up and evaluate culturally adequate addiction treatment services. It is already possible for INCB, WHO and UNODC to motivate and support governments to do that. Finally, the growing economic dependency on khat needs to be reduced, not just because of medical concerns but also because this would be wise from a trade and industry point of view.

Like any door in the wall, regulation of khat is not a simple issue, but steps need to be taken now to respond to a changing world of khat abuse. After all, as Huxley pointed out in the last paragraph of *Doors*, "*The man who comes back through the Door in the Wall will never be quite the same as the man who went out*". Indeed, he may be wiser and happier, if social awareness and intervention prevents him from going insane. This may be also true for the international debate on khat when it finally would have overcome the barriers or found the key to open the lock.

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