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Areca nut use among a Chinese ethnic minority, and its health implications

Xiang Zhao¹ (ORCID: 0000-0003-1054-9462)

Gareth Davey^{1,2} (ORCID: 0000-0001-7237-2741)

1. Research Centre for Languages and Cultures, School of Foreign Languages and Literature, Yunnan Normal University, Kunming, Yunnan Province, China
2. College of Arts and Sciences, Webster University Thailand, 143 Moo 5, Tambon Sampraya, Cha-am, Phetchaburi Province, Thailand

Corresponding author: Dr. Xiang Zhao

Address for correspondence: Research Centre for Languages and Cultures, School of Foreign Languages and Literature, Yunnan Normal University, Kunming 650500, Yunnan Province, China.

Areca nut use among a Chinese ethnic minority, and its health implications

Most of the world's areca nut (*Areca catechu*) users reside in south and southeast Asia where further research is urgently needed (Gupta & Warnakulasuriya, 2002). Since it is difficult to generalize about substance use and misuse in these large and diverse societies, here we report on areca nut consumption among Dai—an ethnic minority in geographical proximity in Burma, China, Laos, Thailand, and Vietnam (Moerman, 1966)—to understand more about the practice and its associated beliefs, and to highlight the importance of cultural and social context in designing culturally-appropriate control strategies (Galea, Nandi, & Vlahov, 2004). Specifically, we focus on Dai in China, a population of approximately 1.25 million that resides predominantly in Yunnan Province—a region with a high prevalence of areca nut use (Zhang & Reichart, 2007). Dai are typically contrasted to Han (the dominant ethnic group) in terms of their cultural heritage, including literacy in Dai language, adherence to Theravada Buddhism, and festivals such as the Water Splashing Day. Based on our long-term research on Dai, as well as a review of literature, we begin this commentary with a discussion of the history, common knowledge, and traditional medical applications of areca nut, followed by a consideration of its social functions, changing epidemiology, and challenges and suggestions for future strategies to curb consumption.

Like other types of substance use, it is important to appreciate the history and long-standing traditions of areca nut use that underpin its importance and popularity among specific populations. Archeological investigations in caves in Northern Thailand indicate that areca nut practices have a long history among Dai, dating back tens of thousands of years (Durrant & Thakker, 2003). This is reiterated in ancient Chinese texts, and also oral tradition which attribute the antiquity and therapeutic benefits of areca nut as valued attributes. For example, a well-known folk story goes like this:

Once upon a time, there was an elderly couple in Xishuangbanna. Due to family issues, they felt exhausted and had no appetite. Even when they took a bite of sticky rice, they felt something stuck in the throat. One day, while the old man was weaving a bamboo basket under an areca tree, he saw a branch of ripe areca nuts in front of him. He then tried one to quench his thirst. Unexpectedly, his problems suddenly disappeared. He gladly shared this news with his wife, believing that areca nut was a sign from a Dai spirit that wanted them to live longer. The kind man did not keep it a secret, and helped other Dai people with similar symptoms. From Wen (1984).

Although academic literature emphasizes the negative health implications of areca nut (and other substances such as tobacco and opium), it is traditionally regarded as beneficial for health and a remedy for ill-health, as exemplified in the above folk story and in published accounts of folk medicine. Dai folk herbalists we have interviewed in our field site in Yunnan typically prescribe betel quid—consisting of areca nut, betel leaf (*Piper betle*), lime (calcium hydroxide), and sometimes other ingredients such as tobacco—as a treatment for health issues such as toothache, gum problems, itchiness, sore throat, and hemoptysis. Our search of pharmacopoeia about Dai medicine show that areca nut has also been used to treat abdominal distention, diarrhea, indigestion, and malaria; and a decoction of areca nut, brezel wood (*Biancaea sappan*), licorice (*Glycyrrhiza uralensis*), and dong quai (*Angelica sinensis*) is a treatment for panic disorders (Yunnan Institute of Materia Medica, 2008). Areca nut has also been used in the folk medicine of Han Chinese since ancient times (i.e., Traditional Chinese Medicine; China Pharmacopoeia Committee, 2015; Mair, 1983).

Its use as a folk medicine has important connotations. Beliefs about areca nut and positive health and wellbeing are intertwined, whereas negative appraisals of areca nut (and traditional use of other substances such as tobacco) are uncommon, a major challenge for future health education and promotion. Our research has shown that Dai draw on folk beliefs and stories about substance use and health when interpreting their own health, cause and effect, and making life decisions (Zhao & Davey, 2015), and they generally have limited knowledge of health determinants and risk factors, and are unaware that areca nut is a health risk and carcinogen. Media in China have questioned the inconsistent portrayal of areca nut as a medicine and a carcinogen by the China Food and Drug Administration (Ma, Bei, & Long, 2018). Experts in traditional medicine argue that its medicinal application is different to recreational use, for example the former is applied differently (e.g., as a powder) or does not include additional harmful ingredients (Ma, Bei, & Long, 2018; Wang & Zhang, 2018). However, this argument overlooks evidence that areca nut is a carcinogen, similarities between the medicinal and recreational uses of areca nut we have observed in our field site, and also the harmful substances included in the medical application of betel quid (e.g. tobacco to treat gingivitis).

Areca nut use is also an important social activity among Dai, especially in family gatherings and auspicious occasions such as ceremonies and festivals and when honoring individuals. For example, when inviting a guest to a meal or one's house in the past, a plate of fruit and betel quid ingredients was typically served as a greeting; it is also given to guests at weddings (Wang,

2014). One well-known saying is ‘a feast without areca nut is not really pepped up’, a reference to its perceived role as a digestion aid and a social tool. Areca nuts symbolized love and affection in courtship and romantic relationships; in the famous Dai adage, “Seeing a beast without a spear, meeting a beauty without an areca nut box”, the areca nut box refers to the traditional way Dai men expressed their love by gifting an elegant box containing areca nuts (usually made of silver or plaited rattan; Figure 1), and the woman in return passed him a wallet with areca nuts, and together they bit one nut from the exchanged containers, as its two halves symbolized a match had been made (Wang, 2014).

Areca nut consumption socially is governed by ‘giving face and eyes’, a Dai belief similar to Han face-work, which prizes social harmony and respect for others and devalues public expressions of disagreement or confrontation, and is part of broader and complex social behavior. For example, the first betel quid consumed in a gathering is typically passed to the oldest person or most valued guest, and the second to the youngest person, as a mark of courtesy and respect as well as acceptance by others of a different social status (Wang, 2014). Accepting or refusing an offer of betel quid is like accepting or refusing to shake hands when greeting in Western culture, a collaborative stage-managing of social actions to give ‘face’ and ‘eyes’ to everyone. It is likely these social norms contribute to consumption levels. For example, our previous research found that face-work and impression management pressures people to accept and smoke offered cigarettes to live up to social expectations and avoid causing offence, even when they do not want to smoke, and that people find it difficult to quit smoking amid strong and persistent social expectations, which supports a high smoking prevalence (Davey & Zhao, in press). Like tobacco smoking, there is an areca nut consumption culture among Dai, putting it as a socially normative and desirable practice. This highlights a need to challenge social conventions around substance use, encourage reflective and critical thinking about its mediators such as social interaction, and provide assistance for people to find alternative, culturally acceptable means of rejecting offers to use substances. It also implies that interventions to curb areca nut use could prioritize families and the community in a social norms approach to behavior change, in agreement with our previous research on lay health beliefs among Dai which shows that closeness and quality of family and community relationships (e.g. ‘care and love from family’, ‘family harmony’, ‘getting together at festivals’; Davey & Zhao, 2018) are more salient in their definitions of health than biomedicine’s focus on the body and individual. The importance of social life in areca nut use contrasts to biomedical approaches to health interventions (e.g. social cognition models of behavior change) that emphasize individual cognitive processes at the expense of cultural and social contexts.

Although no epidemiological data on areca nut use in China are available, inferences can be made on its declining prevalence among Dai. Amid the country's recent economic and social development, and rising popularity of Western culture and material products, people have been experiencing and assimilating social changes, and new values and products have become widespread. For example, expensive gifts and overseas honeymoons are replacing the custom of expressing love through areca nuts, and folk healing practices are now eclipsed by Western biomedicine that has been increasing in availability and popularity since the 1980s (Davey & Zhao, 2018). The introduction of Western dental care practices and related teeth aesthetics (e.g., white and neat teeth as desirable) has led the disappearance of a previously ubiquitous custom whereby women dyed their teeth through long-term betel quid chewing. In the past, a young woman engaged to be married began chewing betel quid to gradually blacken her teeth and redden her lips, which came to symbolize the status of being married, whereas white teeth were regarded as immature and ugly (Yue, 2005; Lin, 1981). The practice was so common that ancient Chinese Han historical texts referred to Dai as “Black Teeth” (黑齒), as well as areca nut growers and consumers, as markers of their ethnic identity (Figure 2).

Nowadays, blackened teeth are deemed unattractive and undesirable, in line with Western beauty ideals and the availability of cosmetic dentistry and orthodontic treatment. Such changes have meant that areca nut consumption has declined in recent decades, and is largely confined to people age 50 and above. Also, although many young Dai have tried areca nuts, they are unable to prepare betel quid from scratch—a process involving drying and slicing the nut into small pieces—and they regard the flavor to be too strong, especially when mixed with tobacco, the demise of long-standing custom. We have also noted a similar change in traditional tobacco use, as home-made cigarettes (which require time, skill, and land to produce) are unpopular among young people, and have been replaced by commercial factory-made cigarettes (Zhao & Davey, 2015). Also, older Dai have told us they are finding it more difficult to source some of the ingredients in betel quid, for example some people substitute betel leaf with other plants, or recycle plastic bottles and aluminum lids for storing areca nuts rather than using special boxes, although areca nuts are now manufactured commercially and readily available from stalls and online (a search by the authors of Taobao.com, a popular online retailer in China, reveals many areca nut products can be purchased cheaply and easily). Despite these changes among Dai, there have been reports in other societies in Asia of increasing areca nut consumption in the processes of modernization (Strickland, 2002), which highlights the importance of studying specific populations and the cultural and societal changes they are

experiencing.

The declining popularity of areca nut use among Dai is important for understanding the cessation of addictive behavior, especially as it was not guided by an intervention but changing contextual factors such as customs and social norms. This is particularly important for locations in Asia and China where consumption is increasing (e.g. India and Taiwan; Gupta & Warnakulasuriya, 2002), and also for other addictive substances such as tobacco use where attempts to reduce its incidence have been unsuccessful due to a failure to appreciate its connections to broader social concerns (Zhao, White, & Young, 2019). It is also important to note that policies and laws did not contribute to the decline of areca nut use among Dai, as only one Chinese city (i.e., Xiamen) has a specific anti-areca nut policy that strictly bans its production, sale, and use. However, the declining prevalence we have observed may be limited to the younger generation, as people aged 50 or above still carry on areca nut chewing customs, and hence the associated health risks may still be relevant for older people. Limited attention on this issue means that substance abuse and associated health issues have been overlooked, highlighting the need for an age-sensitive approach in future research and practice tailored to the specific needs and characteristics of older drug users, as well as the consequences of unrecognized substance abuse (e.g., substance use among older people can be associated with complications such as cognitive impairment, decreased ability to metabolize drugs, comorbid medical or mental health concerns, and intolerance of and/or susceptibility to the effects of substances).

This commentary describes areca nut use among a Chinese ethnic minority, and its implications for cessation and health, and in doing so contributes to current knowledge on the practice, and underscores the need for health professionals to engage with the culture, society, and health beliefs of different populations when formulating innovative oral health promotion strategies to address health risks. We have highlighted how areca nut consumption is embedded in complex social meanings and practices, and the dynamic and changing nature of substance use and culture, and also identified gaps in knowledge and an urgent need for further research and practice. This is particularly important for ethnic groups with a distinct cultural heritage, and also in developing societies in China where health beliefs and practices, like other aspects of culture and society, are undergoing marked change as long-standing traditions are being shaped by new fashions. A major challenge is to reduce the harmful effects of areca nut use even though it is highly valued in Dai culture. Our findings also show the limitations of simply importing approaches developed within medical science or Western culture which could be at odds with Dai beliefs. For example, although it is reasonable to argue that Dai have a limited

knowledge of the negative health implications of areca nut use, such an inference aligns to a biomedical perspective of health rather than a Dai perspective that emphasizes sociality and family relationships and long-established healing customs rather than the individual and physical body. The prominence of social relationships in areca nut use, and also in Dai lay understandings of health (Davey & Zhao, 2018), as well as the distance between Dai health beliefs and Western biomedicine, also imply that common psychological approaches to health promotion and intervention, grounded on the individual, might be inappropriate. Community health assessment and improvement activities, based on a consideration of social and cultural context and collaboration among community partners, are needed to identify and prioritize key health needs and issues, and develop long-term, innovative public health strategies (Centers for Disease Control and Prevention, 2019; Goodman & colleagues, 1996; Rice, 1993). Further research and practice is also urgently required, as data and evidence-based studies on areca nut use are sparse, and it would be valuable to know the extent of substance use and misuse among Dai, and how they experience related oral health issues, to devise appropriate control strategies.

Declaration of interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

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Figure 1. Areca boxes made from silver (a) and plaited rattan (b) produced by Dai in the late Qing dynasty in China, and used in courtship and storage of areca nuts. Photos reproduced with permission from Jun Wang (photographer) and Yunnan Provincial Museum (owner).



Figure 2. A Chinese ink wash painting in the early nineteenth century which depicts Dai as agriculturists planting areca nut trees, and living by water. It illustrates how areca nut use was recorded as one of the key markers of Dai in the past. Reproduced from the 夷人圖說目錄 (*Yi Ren Tu Shuo Mu Lu*). Source: T61785860 (seq. 84, v.2.). Houghton Library, Harvard University.