Chewing of Betel Quid: Why Do Health Careproviders in Thimphu, Bhutan, Do it?

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Objective: *This cross-sectional study aimed to determine the prevalence of betel quid chewing and related factors including general characteristics, behavioral pattern, perception and social influences among health care providers in Thimphu, Bhutan.*

Material and Method: *A self-administered questionnaire was handed to 478 health care providers working in different units of health care centers in Thimphu during June-July 2010. A total of 391 (81.8%) questionnaires were returned. Chi-square test and multiple logistic regression were applied.*

Results: *The prevalence of current betel quid chewers among this group was 26.6%. Males chewed betel quid more than females (29.5%, 23.9% respectively). Forty-two percent of current chewers had no specific reasons for chewing betel quid, although 18.2% declared that they were addicted. Both friends and family members were key persons involved in influencing betel quid chewing. Marital status was significantly associated with betel quid chewing, married health care providers being 2 times more likely to chew betel quid (OR = 2.09, 95% CI = 1.02-4.28) than those of single marital status. Similarly, those coming from West Bhutan, were 2 times more likely to be currently using betel quid (OR = 2.71, 95% CI = 1.32-5.55) than other regions. Health care providers from families with more than half of their members chewing betel quid were 14 times more likely to be currently chewing it (OR = 14.52, 95% CI = 6.02-35.04) than families having none of their members chewing it. Health care smokers were more likely to chew betel quid than non-smoking ones (p-value = 0.012). Also occasional drinkers were 3 times more likely to be currently using betel quid (OR = 3.52, 95% CI = 1.78-6.96). Those who perceived a high barrier to quit chewing were about 2.6 times more likely to be current chewers of betel quid, than those who perceived less of a barrier to quit (OR = 2.62, 95% CI = 1.21-5.67).*

Conclusion: *The present study revealed betel quid chewing prevalence rate of 26.6%. Of the various factors considered under study, marital status, region of origin, family members chewing betel quid, status of smoking and drinking were statistically proven significant.*

Keywords: *Betel quid chewing, Health care providers, Thimphu*

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Chewing of betel quid is an ancient practice and is common in many Asian and Pacific countries. Approximately 600 million people (*i.e.* nearly 10% of the world's population)[1] are said to be chewing betel quid, although the habits of chewing varies from one region to another. Archaeological evidence from Thailand, Indonesia and Philippines claim that betel quid has been in use for more than four thousand years, although the composition of betel quid use does vary with geography[2]. Because of its ancient history, its usage is socially accepted among all sections of the society including women, and quite often in children[3]. Chewing areca nut is widespread in South Asia and in the Pacific region and is dramatically high with a prevalence of betel quid use among adults between 25% and 50%, with a peak of 80%-90% in some areas and among rural ethnic groups and having few differences in chewing of betel quid between men and women[1]. A previous study in Taiwan found that the habit of chewing betel quid was practiced widely, particularly in the aboriginal areas[4], many reports suggesting that this chewing habit starts at a young age[5]. However, a study in Thailand, found that the chewing habits had been given up among the younger people[6]. In Taiwan, the prevalence of betel quid chewing is as high as 16.9% (31% men and 2.4% women)[7]. In countries like the Solomon Islands, the

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prevalence of betel quid chewing in men is higher than in women (men 83%, women 68%), China, Xiangthang city under Hunan Province (men 39.4%, women 30.5%)[8], Mumbai, India (men 37.8%, women 29.7%), however, the trend is not always the same in countries like Cambodia where there is more prevalence among women than men (men 6.8%, women 40.6%) while in Karachi, Pakistan (men 27.9%, women 37.8%)[8] and among Taiwanese aborigines (men 60.6%, women 78.7%). From the current study, men were found to be using betel quid more than women at 29.5% and 23.9% respectively. In its most basic form, betel quid is comprised of three main components betel nut (areca nut), betel leaf and aqueous calcium hydroxide paste. It has been claimed that chewing betel quid produces a sense of wellbeing, euphoria, a warm sensation in the body and heightened alertness which helps chewers stay alert when working[9]. However, the adverse effect of the alkaloid arecoline (main component of betel nut) has been well documented[10]. The adverse health effects associated with areca (betel) nut use include oral and oropharyngeal cancer, oral premalignant lesions and conditions (oral leukoplakia and submucous fibrosis), gum disease and addiction[11,12]. The chewing of betel quid is also independently associated with a greater risk of cardiovascular disease[13]. Betel quid chewing is linked not only to the development of oral and esophageal cancer, hepatocellular carcinoma and liver cirrhosis[14], but also with diabetes mellitus type 2, hypertension and chronic kidney disease[12,15].

Empirically, many of the Bhutanese in all walks of life chew betel quid especially among the older generations. There is negligible evidence to support the exact prevalence and factors associated with its chewing. Doctors, nurses and paramedics are generally known as the helping professions who are on the front line when problem arises. Society looks up to health care providers as the source of information as well as role models for maintaining good health. In order to understand why Bhutanese people chew betel quid, beside its cultural and traditional reasons, it is as important to determine the prevalence of betel quid chewing and the factors associated with it among the health care providers, who are directly or indirectly involved in maintaining the health of the Bhutanese people. Therefore desirable change is expected from 'Self', when health is directly or indirectly related to happiness and is regarded as an important domain, as is maintained in the philosophy of 'Gross National Happiness'.

Therefore, the purposes of the present study are to determine the prevalence of betel quid chewing among health care providers and determine associations between general characteristics, perceptions and social influences on betel quid chewing and betel quid chewing among the health care providers in the capital city of Thimphu, Bhutan. This will then help to provide baseline information to the concerned authorities and allied organizations for the necessary intervention, as well as to the future researchers who might conduct studies on the related issues. It is also to assess perception and social influence of health care providers on chewing of betel quid.

Material and Method

The entire strength of health care providers working within the health care centers in Thimphu as of 2009 was taken into consideration. Therefore, no sampling formula was applied in the present study. Due to their unavailability at the time of data collection, self-administered questionnaire was handed to 478 health care providers only working in different units of health care centers in Thimphu. A total of 391 (81.8%) questionnaires were returned. All the health care providers work in different units of the health care centers within the capital city Thimphu. Thorough examination of the questionnaire was carried out under the expertise of preceptor and co-preceptor particularly in regard to clarity of language used, accuracy and completeness of the content. Pre testing of the questionnaire was then applied to Bhutanese fellow mates who were studying in and around universities of Bangkok, Thailand, sharing similar characteristics to that of the present study population. Reliability was tested and Cronbach coefficient of alpha for perceptions on chewing of betel quid was found to be 0.710. Data were analyzed by descriptive statistics and Chi-square test and multiple logistic regression were used to identify association of the variables. The research was reviewed and approved by the Ethics Committee for Human Research, Faculty of Public Health, Mahidol University and the Ministry of Health, Bhutan.

Results

Among the 391 participants who completed the questionnaires at the health care centers of Thimphu, Bhutan, the prevalence of current betel quid chewers was 26.6%, ex-chewers made up 16.9% and non-chewers 56.5%, as shown in Table 2. About 84.6% of the betel quid chewer preferred traditional doma-paney and tsuney (areca nut, betel leaf and paste of aqueous slaked lime). Concerning the habit of chewing,

Table 1. General characteristics of the health care providers in Thimphu, Bhutan

	Number	Percentage
Age group in years	387	100
20-29	183	47.3
30-39	140	36.2
40-49	52	13.4
50+	12	3.1
Mean ± SD	32.23 ± 7.94	
Median	30.00	
Min-max	21-63	
Sex	391	100
Male	190	48.6
Female	201	51.4
Marital status	390	100
Single	87	22.3
Married	291	74.6
Divorced	12	3.1
Level of education	391	100
Certificate	195	49.9
Diploma	116	29.7
Bachelor's degree	56	14.3
Master's degree & specialization	24	6.1
Type of work	391	100
Technician	156	39.9
Nurse	139	35.5
Others	96	24.6
Region of Bhutan	369	100
East	171	46.3
Central	102	27.6
West	96	26.0
Total family members	385	100
0-3	38	9.9
4-5	168	43.6
6-7	91	23.6
8-9	55	14.3
10+	33	8.6
Family member chewing betel quid	390	100
No	158	40.5
Yes	232	59.5
Ratio of family member chewing betel quid	389	100
None	158	40.6
0.01-0.49	155	39.8
0.50-0.99	66	17.0
1.00	10	2.6
Smoking status of the respondents	391	100
Never smoke	289	73.9
Ever smoked	71	18.2
Currently smoking	31	7.9
Drinking alcohol status	391	100
Non drinker	228	58.3
Ex-drinker	75	19.2
Occasional drinker	88	22.5

nearly half (50%) of the current chewers admitted of chewing and swallowing remnants only and about 70.2% of the current chewers reported using it whenever they are among friends. Both ex and current chewers of betel quid mostly started between the age of 20 and 24. Men have the tendency to chew betel quid more than women (29.5% and 23.9% respectively). From the logistic regression analysis as shown in Table 4, non-single chewers have double the risk of chewing betel quid when compared to single marital status chewers (OR = 2.09, 95%CI = 1.02-4.28). Those coming from West Bhutan were two times more likely to be current betel quid chewers than those from other regions of the country (OR = 2.71, 95%CI = 1.32-5.55). It is noteworthy that health care workers with more than half of the family members chewing betel quid are about 9 times more likely to be current chewers of betel quid than health care providers having less than half of the family members chewing betel quid and 14 times more likely to chew betel quid when compared to non-chewing families (OR = 14.52, 95%CI = 6.02-35.04). About 73.9% of the health care providers reported that they had never smoked, while 18.2% had previously smoked and about 7.9% of them are currently smoking. On the other hand, 58.3% reported that they had never drunk alcohol, while 22.5% of them were occasional drinkers. Smoking and drinking was found to be significantly associated with betel quid chewing at p-value of 0.012, p-value < 0.001, with current drinkers 3 to 3.5 times more likely to be current chewers of betel quid (OR = 3.52, 95%CI = 1.78-6.96). Table 3 summarizes results pertaining to the level of perception and social influence on chewing of betel quid. As for perceived barrier to quit chewing betel quid, those having a high level of perceived barrier to quit are 2 times more likely to be current chewers when compared to low level of perceived barrier (OR = 2.62, 95%CI = 1.21-5.67). Current chewers, who continued chewing, had no specific reasons (41.8%), although 18.2% admitted of addiction.

Discussion

This is the first study to investigate the

Table 2. Status of betel quid chewing among 391 health care providers in Thimphu

	Number	Percent
Status of betel quid chewing		
Non chewer	221	56.5
Ex-chewer	66	16.9
Current chewer	104	26.6

Table 3. Level of perception and social influence of 391 health care provider in Thimphu

Perception & Social influence	Low		Moderate		High	
	Number	Percent	Number	Percent	Number	Percent
Susceptibility and severity	141	36.1	209	53.5	41	10.5
Benefit of quit chewing of betel quid	15	3.8	55	14.1	321	82.1
Barrier of quit chewing of betel quid	157	40.2	109	27.9	125	32.0
Social influence	357	91.3	29	7.4	5	1.3

Table 4. Factors significantly related to current chewing of betel quid among 391 health care providers

Variables included in the last step	B	S.E(B)	Estimated OR	95% CI for OR	
				Lower	Upper
Marital status (Single as ref)	0.735	0.366	2.09	1.018	4.275
Region of origin (East as ref)					
Central	0.091	0.364	1.10	0.537	2.235
West	0.996	0.366	2.71	1.321	5.548
Ratio of family member chewing betel quid (None as ref)					
< 0.5	1.632	0.398	5.11	2.341	11.164
≥ 0.5	2.676	0.449	14.52	6.018	35.044
Drinking status (Non-drinker as ref)					
Ex-drinker	1.233	0.395	3.43	1.581	7.440
Occasional drinker	1.258	0.348	3.52	1.779	6.961
Perceived barrier (Less barrier as ref)					
Moderate	1.374	0.367	3.95	1.924	8.113
High	0.961	0.394	2.62	1.207	5.666
Constant	-4.863	0.621			

characteristics of betel quid chewing among health care providers in Bhutan, although a study among school children was conducted previously. The prevalence of betel quid chewing among the current study population was rather low (26.6%) compared to the previous study among school going children (59.1%)[16]. It could be because they are health care providers and must have had knowledge about the consequences related to betel quid chewing. In fact, 42.1% among the non-chewers admitted that they are health care providers and need to be a role model to the public. Direct proportionality was found with higher the number of family members chewing betel quid and the status of currently chewing betel quid. Families having more than half of their members chewing betel quid were found to be 14 times more likely to be current users of betel quid, when compared to families having none of their members chewing betel quid. This result was consistent with the findings in Taiwan among adolescents students whose family members chew betel quid who are more likely to use betel quid than students whose family members do not chew it[17]. Unlike western culture, most Bhutanese live in an extended family and as such the families are more likely to have a strong influence on their chewing betel quid. Chewing in men (29.5%) was found to be more prevalent than in women (23.9%), which is consistent with many of the findings from research done in various countries. This may be attributed as men are most likely to be outgoing and be found in the company of friends where substances are likely to be abused. However, the present study has found no significant association between betel quid chewing and social influence.

Married health care providers are twice as likely to chew betel quid as those of single marital status. This may be because of the strong influence from family members on the chewing of betel quid. Further in-depth and exploratory study are required pertaining to this

issue. Although no statistical significance was found between educational attainment and chewing of betel quid, a current study found, that the greater the educational attainment, the higher the proportion of chewing betel quid. They were also less likely to give up chewing. This finding was in contrast to the previous finding, where betel quid consumption decreases with educational attainment[5,18]. The negative health behavior of smoking and drinking were also significantly associated with betel quid chewing, and in fact, smokers have double the rate of chewing betel quid, while occasional drinkers were 3.5 times more likely to chew betel quid than non-drinkers. The findings were consistent to that of previous findings by Wangchuk N, Tovosi S et al and Yap SF et al[8,16,19].

Generally, it's understood that, higher the level of perception on susceptibility and severity of the disabilities caused as a result of risk behaviors, better the adoption of positive health behavior. Similarly more the perceived benefit of quit chewing of betel quid, lesser will be the number of chewers as presumed. Current study revealed that those with a low level of perceived susceptibility and severity of betel quid chewing have higher tendency to use betel quid. About one-fifth still disagrees that quitting chewing of betel quid can reduce long term disabilities that the habit may cause and help increase quality of life. This shows that knowledge related to consequences of betel quid chewing is still lacking and therefore requires creating awareness. Nearly one-fifth of the current betel quid users admitted that quitting is not possible as a result of their addiction and as such, those with a higher level of perceived barrier to quit were found to be more than 2 times as likely to abuse the quid. Individual or group counseling through a behavioral modification program should be initiated especially among current betel quid users, to help reduce the incidence of Bhutanese citizens suffering from consequences as a result of its chewing or help to prevent these unhealthy habits. However, chewing betel quid has played a vital role in various cultural rituals, facilitating social interactions and strengthening social ties. In fact, Bhutanese called betel quid as "trozey" or a conversational starter. Betel quid is a traditional offering on all occasions and ceremonies in Bhutan, although the history of how chewing of betel quid became an important part of Bhutanese culture still remains unknown[20]. Nevertheless, current study denies its strong social influence, as low level of social influence (91.3%) was detected, but friends and family members however, have a strong influence on the chewing of betel quid. Both ex and current chewers reported abusing quid usually with friends. The findings were consistent with that of a study in Taiwan[21].

Conclusion

The present study was conducted with the purpose of determining the prevalence rate and factors associated with betel quid chewing among health care providers in Thimphu city, Bhutan. The present study revealed betel quid chewing prevalence rate of 26.6%. Of the various factors considered under study, marital status, region of origin, family members chewing betel quid, status of smoking and drinking were statistically proven significant. If reducing the habit is given priority, individual or group counseling through initiation of a behavior modification program should be encouraged, and at the same time, an awareness campaign on prevention of betel quid chewing should be created using different forms of media in conjunction with concerned allied organizations. The present study also suggested that, sale and chewing of betel quid in public places be restricted through proper rules and regulation. Betel quid chewing is similar to any other substance abuse and is a wakeup call to all the health care providers that positive behavioral change should begin from self, especially when they are at forefront promoting and maintaining good health of the Bhutanese nation.

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Potential conflicts of interest

None.

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การเคี้ยวหมาก: ทำไมบุคคลากรผู้ให้บริการสุขภาพที่ปฏิบัติงานเมืองทิมพูประเทศภูฏานจึงเคี้ยวหมาก

นิดุ๊บ ดอร์จิ, อรนุช ภาชื่น, ฉวีวรรณ บุญสุยา

วัตถุประสงค์: *การศึกษาภาคตัดขวางนี้เพื่อหาความชุกของการเคี้ยวหมาก และปัจจัยที่มีความเกี่ยวข้องซึ่งประกอบด้วยคุณลักษณะทั่วไป แบบแผนพฤติกรรม การรับรู้และอิทธิพลจากสังคมของบุคคลากรที่ให้บริการสุขภาพ เมืองทิมพู ประเทศภูฏาน*

วัตถุและวิธีการ: *ผู้วิจัยได้ส่งแบบสอบถามจำนวน 478 ฉบับให้บุคคลากรผู้ให้บริการสุขภาพที่ปฏิบัติงานในเมืองทิมพู ระหว่างเดือนมิถุนายน ถึง กรกฎาคม พ.ศ. 2553 ได้รับการตอบกลับจำนวน 391 ฉบับ (ร้อยละ 81.8) สถิติที่ใช้ คือ การทดสอบไคสแควร์และการวิเคราะห์ถดถอยพหุแบบลอจิสติก*

ผลการศึกษา: *พบความชุกของการเคี้ยวหมากในกลุ่มตัวอย่างร้อยละ 26.6 โดยเพศชายเคี้ยวมากกว่าเพศหญิง (ร้อยละ 29.5 และ 23.9 ตามลำดับ) ร้อยละ 42 ของผู้ที่เคี้ยวหมากไม่ได้ระบุเหตุผลเฉพาะที่ทำให้เคี้ยวหมาก แต่ร้อยละ 18.2 ยอมรับว่าตนเองติดการเคี้ยวหมาก เพื่อนและสมาชิกในครอบครัวมีอิทธิพลต่อการเคี้ยวหมาก สถานะภาพสมรสคู่ มีโอกาสเคี้ยวหมากถึง 2 เท่าของกลุ่มตัวอย่างที่โสด (OR = 2.09, 95% CI = 1.02-4.28) กลุ่มตัวอย่างที่มีภูมิลำเนาจากภูฏานตะวันตกมีโอกาสเคี้ยวหมากเป็น 2 เท่าของผู้ที่มาจากภูมิภาคอื่น (OR = 2.71, 95% CI = 1.32-5.55) กลุ่มตัวอย่างที่มีสมาชิกในครอบครัวมากกว่าครึ่งเคี้ยวหมากมีโอกาสถึง 14 เท่า ของผู้ที่สมาชิกครอบครัวไม่เคี้ยวหมาก (OR = 14.52, 95% CI = 6.02-35.04) กลุ่มตัวอย่างที่สูบบุหรี่จะเคี้ยวหมากมากกว่าผู้ไม่สูบบุหรี่ (p-value = 0.012) กลุ่มตัวอย่างที่มีการดื่มสุราเป็นครั้งคราว มีโอกาสเคี้ยวหมากเป็น 3 เท่า ของผู้ไม่ดื่ม (OR = 3.52, 95% CI = 1.78-6.96) ผู้ที่รับรู้อุปสรรคในการเลิกเคี้ยวหมากสูง มีโอกาสจะกระทำพฤติกรรมนี้ 2.62 เท่าของผู้ที่รับรู้อุปสรรคต่ำกว่า (OR = 2.62, 95% CI = 1.21-5.67)*

สรุป: *จากผลการศึกษานี้ระบุความชุกของการเคี้ยวหมากในกลุ่มบุคคลากรที่ให้บริการสุขภาพซึ่งปฏิบัติงานในเมืองทิมพูถึงร้อยละ 26.6 สถานภาพสมรส ภูมิลำเนา จำนวนสมาชิกในครอบครัวเคี้ยวหมาก พฤติกรรมการสูบบุหรี่และดื่มสุรา รวมถึงการรับรู้อุปสรรคในการเลิกเป็นปัจจัยที่มีความสัมพันธ์กับการเคี้ยวหมาก อย่างมีนัยสำคัญทางสถิติ*