

Original Research Article

Factors associated with betel quid chewing among adolescents living in Nattalin township, Bago region, Myanmar

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ABSTRACT

Background: Betel quid (BQ) chewing is a common practice in Myanmar. BQ chewing is a risk factor for oral health problems and is associated with multi-organs cancer. The earlier age and the larger quantity of BQ per day enhance more health risks. The main aim of this study was to find out the prevalence and to identify the factors associated with BQ chewing practice among the adolescent population.

Methods: Cross-sectional quantitative (primary) study was conducted on 160 adolescents (10-19 years) in Nattalin township in Myanmar using interviewed structured questionnaire. All data analysis was done by using statistical package for the social sciences (SPSS) statistical software.

Results: The prevalence of BQ chewing adolescents was 28.2% of the total sample (n=160). The BQ chewer group contained more males than females. The earliest age of starting BQ chewing was 6 years old. Socio-demographic characteristics included age (equal or more than 15 years) ($p<0.001$), male ($p<0.001$), rural residence ($p=0.009$), working group ($p<0.001$), pocket money of more than 10000 kyats ($p<0.001$), having BQ used family members ($p=0.017$) and BQ used close friends ($p<0.001$) and the negative attitude ($p=0.006$) toward BQ chewing were the factors significantly associated with BQ chewing practice in this study.

Conclusions: In conclusion, more than one-fourth of the studied adolescents chewed BQ and the majority had a good knowledge level. Many more effective anti-BQ chewing interventions and strong behavioural change health promotion programmes emphasizing the dangers of BQ chewing habits for adolescents need to be developed nationwide.

Keywords: Betel quid chewing, Adolescents, Prevalence, Associated factors

INTRODUCTION

BQ chewing is an ancient practice. It has been over two thousand years although its source of origin is uncertain. Some literature stated that the custom originated first in South-East Asia. Later it has become very common and is also widely seen in the Central and South Asian countries as a social and cultural practice.¹ Nowadays, BQ chewing habits can also be seen in the communities immigrated to Australia, the United States of America (USA), the United Kingdom (UK) and Europe.² In Asia, Bangladesh, India,

Myanmar, Thailand, Sri Lanka, Nepal and Indonesia have a high prevalence of BQ use with tobacco. The prevalence of smokeless tobacco use in the form of BQ chewing in Myanmar was 51.4%.³ BQ use is a kind of substance abuse and at present, BQ chewing practice became the fourth substance abuse problem in the world ranking after smoking, alcohol consumption and caffeine.² BQ chewing has many bad effects on health and is a risk factor for oral diseases including oral leukoplakia, submucous fibrosis, gum disease and especially oral cancer.^{4,5} In the studies of Reichart et al and Rao et al, oral cancer is one of the sixth

commonest cancers in Asia and one of the leading causes of morbidity and mortality.^{6,7} BQ chewing is also related to other cancers such as cancers of the oesophagus, pharynx, uterus, liver and biliary tracts.⁸ Besides, it is linked with general and central obesity and low birth weight in the newborn of the pregnant mothers.^{9,10} It is also related to type 2 diabetes mellitus, metabolic syndrome, hypertension, heart disease and chronic kidney disease.^{8,11}

In Myanmar, according to Oo et al, oral cancer occurred in 363 persons per 100,000 populations in the years of 1963 to 1972 and the incidence rate has increased in both sex within the six years duration from 2002 to 2007. The incidence was estimated to be 2.1 per 100,000 populations in 2007 and contributing to 3.5% of whole-body cancers and found more in the patient who chewed BQ and smoked for at least 10 years. It is the 6th commonest cancer in males and 10th in females.¹² Balaram et al stated that the age of starting BQ chewing and the amount of BQ chewed per day enhance the development of oral cancer.¹³ If BQ chewing was started at an earlier age (before the age of 20 years) and more than 10 quids were chewed per day, there would be more chance to get oral cancer. 30% of the adult population used smokeless tobacco mainly in the form of BQ during the period 2009 according to the WHO (2011).¹⁴ The prevalence of smoking is decreasing (22% in 2009) as a result of anti-smoking activities but the consumption of smokeless tobacco is still high. BQ chewing which is the most common form of smokeless tobacco use is high among school children and about 9.8% of adolescents aged between 13- and 15-years old use it.¹⁵ Reichart and Way described that BQ chewing becomes popular among teenagers. It is a warning sign for Myanmar adolescents as well.⁶ Because based on the WHO (2014) data, the adolescent (10-19 years) population of Myanmar in 2005 was 15% of the total population and the youth (10-24 years) was 28%. In 2017, the United Nations Population Fund, Government of Myanmar (2017) described that almost half of the total population in Myanmar (46.5%) was below 25 years.¹⁶ Obviously, the future of Myanmar is depending on nowadays youth and the health and social well-being of adolescents are of great concern. Therefore, this study was interested in estimating the BQ use prevalence and examining the BQ-associated factors among adolescents.

METHODS

This study intended to find out the proportion of adolescents who chewed BQ in Nattalin Township and also the influencing factors on those adolescents for getting BQ chewing habit. Besides, this study wanted to identify the association between the knowledge and attitude of adolescents and their BQ chewing practice. Therefore, primary quantitative research using a cross-sectional (descriptive) study design was the most appropriate one for this study. The study population was the adolescents who were living in Nattalin Township and the study period was four months duration from February 2020 to May 2020. Inclusion criteria for the participants were adolescents (age

10-19 years), who live in the rural or urban areas and who were able and willing to participate in the interview.

The sample size for this quantitative data collection was calculated using the formula,

$$n = \frac{z^2 pq}{d^2}.$$

The estimated proportion of BQ chewing among adolescents was taken from the prevalence of BQ chewing among adolescents in the Taiwan study which was 9.6%.¹⁸

In the formula, the required sample size for this study was 134 adolescents.

$$n = \frac{(1.96)^2 (0.096)(1 - 0.096)}{(0.05)^2} = 134.$$

When considering a 20% non-response rate, the calculated actual total sample size for this study was (the sum of required sample size (134) and 20% non-respondents (26) equals to 160 adolescents.

In selecting the study sample, the rural and urban population proportions of Nattalin Township were based. In the first stage, among the total 4 quarters from the urban area, 1 quarter was selected by a simple random sampling method. Similarly, among the total 357 villages from the rural area, 3 villages were selected (simple random sampling method). Then the population registration books of the selected quarter and villages were collected from the particular public health departments and the addresses of the households which had adolescents were listed. In the second stage, the households were selected randomly from the lists using a simple random sampling method. From each selected household, only one eligible adolescent was interviewed. The lottery method was used to choose one in those households where there was more than one adolescent.

In collecting the data, a structured questionnaire was used. The questionnaire was based on the questionnaires used in the previous studies and WHO survey questionnaires. As the questionnaire was originally written in English, it was translated into the Myanmar version and tested for reliability, validity and interviewing time management on 20 adolescents in Yangon. Cronbach's alpha values of three sections: demographic characteristic section, knowledge and attitude of adolescents' section and BQ chewing practice section, were 0.88, 0.89 and 0.86 respectively. The data collecting method was the face-to-face individual interview. At the start of the data collecting process, the adolescents and their parents were openly explained the purpose and the procedure of the study, their rights to refuse or withdraw from the study whenever they wished, the procedure of maintaining anonymity, confidentiality and all the information written in informed consent. After the adolescent had decided to participate or after the

parents had given their permission, they were asked to sign the written informed consent.

All the data entry and analysis were done by using statistical package for the social sciences (SPSS) statistical software. Simple descriptive statistics that included frequency (n) and percentage (%), mean, median and standard deviation (SD) were done to describe the socio-demographic characteristics, knowledge, attitudes and practices of the participated adolescents. A Chi-square test was performed to determine which factors are statistically associated with the betel chewing habits among the study adolescents by considering p value (0.05) and significance at <0.05.

RESULTS

Characteristics of the respondents

The total participants were (n=160) including rural dwellers [119-(74.4%)], urban dwellers [41-(25.6%)], male adolescents [96-(60%)] and female adolescents [64-(40%)]. The age range was 10-19 years with a mean age of 14.48 (± 3.35). The study sample included single adolescents [149-(93.1%)], married adolescents [11-(6.9%)], the adolescents who completed primary school [80-(50%)], who completed middle school [55-(34.4%)], who completed high school (3.8%), who completed a university level (8.1%) and who only read and write (3.1%). Their occupational statuses were mentioned as students [108-(67.5%)], manual workers [49-(30.6%)] and dependents [3-(19%)]. Among study participants, almost all were living with their families, one with friends, one with relatives and another one was living alone. In their monthly-pocket money, approximately one-third got between 5000-10000 kyats, one-third got less than 5000 kyats and the rest got more than 10000 kyats per month. The social and environmental characteristics of the study participants were presented in Table 1.

Knowledge about BQ chewing and related consequences

Most of the participants 131-(81.9%) answered that they knew the ingredients of BQ and 46.9% knew the different types of BQ. 143-(89.4%) thought that people can get addicted to BQ chewing. When asked about the association between BQ chewing and health, the majority 154-(96.3%) said that BQ chewing is harmful to health. 121 (75.6%) were aware of the health hazards caused by BQ. When asking about the diseases caused by BQ chewing, oral cancer was the most commonly known (18.1%) followed by oral disease (6.9%), kidney disease (6.9%) and stomach disease (1.3%) respectively. Regarding the prohibited places of BQ chewing, 122-(76.3%) knew the prohibited places including hospitals, schools, pagodas and public buildings/offices/gardens but only 42-(26.3%) knew the municipal rules and regulations for restriction of BQ chewing and spitting in public places. 76.3% had heard about the awareness activities focusing on BQ chewing and 18.1% had learnt from health education and health

talk, 16.9% from social media (such as radio, TV and Facebook), 5.6% from pamphlets and 4.4% from newspapers and journals respectively.

Attitude towards BQ chewing

When exploring the attitude towards BQ chewing and health, the percentage of answering strongly agree and agree with the statement mentioning BQ chewing is harmful to health were 58.8% and 35.6% respectively. For the statement saying that BQ chewing can cause oral cancer, 56.3% strongly agreed and 39.4% agreed with it. Relating to the question that BQ chewing causes bad breath smell and can affect communication, the answer saying strongly agree and agree accounted for 35.6% and 36.9%. 51.3% strongly agreed that BQ chewing is wasting money. Related to the statement saying BQ chewing represents maturity, 13.5% agreed and 12.5% strongly agreed with the statement. To the statement that BQ chewing is stylish, 7.5% and 2.5% answered agree and strongly agree respectively. 8.8% and 4.4% answered agree and strongly agree with the statement mentioning that BQ chewing causes chewers active during working and studying. 56.3% strongly agreed that BQ chewing and spitting make an environmental nuisance. The respondents who strongly said BQ chewing should be avoided were 63.8% and those who strongly agreed with the prohibition of BQ chewing in public transport (bus, train, and ships) were 56.3%.

Defining the knowledge and attitude levels

For the eight questions for the knowledge section, the mean knowledge score was 5.68 with a standard deviation of ± 1.55 . Below the mean score was assumed as poor knowledge and equal to or above the mean score as good knowledge. The good and poor knowledge groups were 61.9% and 38.1%. In the ten questions for the attitude section, the mean score was 42.38 ± 5.12 SD. Below the mean score was taken as a negative attitude and equal to or above the mean score as a positive attitude, hence the negative and positive attitude groups accounted for 49.4% and 50.6% accordingly.

BQ chewing practice

Out of the total (160), 45 chewed BQ. Most chewers [38-(84.4%)] started chewing at the age between 12 and 18 years and 4-(8.9%) started at the age between 6 and 11 years while the other 3-(6.7%) started after the age of 18 years. The earliest age of starting BQ chewing was 6 years old. Most BQ consumers (62.2%) had a duration of chewing less than 2 years and 31.1% had 2-5 years, 6.7% had more than 5 years. The longest duration of BQ chewing was 10 years and the second longest was 7 years. Chewing every day and chewing between 1-3 days a week were commonly found in the BQ chewing groups which were 48.9% and 46.7% respectively. Only 2 participants chewed between 4 to 6 days a week. Regarding the quantity of BQ per day, 15-(33.3%) consumed between 5 to 10 quids while 17-(37.8%) chewed less than 5 quids and

13-(28.9%) chewed more than 10 quids. Of the total BQ chewers, two-thirds added tobacco to the BQ. Most of them got BQ from street vendors (84.4%) and only a few were supported by their friends and from home. Peer pressure was the commonest reason for BQ chewing (72.7%) and the second commonest reason was testing or curiosity (13.7%). The other reasons were having chewing family members, to reduce stress, to replace smoking and to get a better idea at work. Most of the betel quid chewers which was 38 out of 45 had tried to quit chewing betel quid within 6 months but they were not in success (Table 3).

Factors associated with BQ chewing practice

After analyzing the results by using the Chi-square test, the factors significantly associated with BQ chewing practice were found. In the individual characteristics, in age groups, older adolescents equal to or over 15 years of age were

strongly associated with BQ practice ($p<0.001$). In gender, males ($p<0.001$) and as well as rural dwelling adolescents ($p=0.009$) were also significantly associated with BQ chewing. Adolescents who got monthly pocket money of more than 10000 kyats ($p<0.001$) and working adolescents ($p<0.001$) were also strongly associated with BQ chewing practice. In social characteristics, BQ chewing practice was positively linked with having BQ chewing family members ($p=0.017$) and having betel quid used close friend ($p<0.001$). There was also an association between the negative attitude level and their chewing practice ($p=0.006$). Unexpectedly a reverse association of knowledge level ($p<0.010$) and BQ chewing was found in this study. The other individual and social factors included education, marital status, parent's education, parent's occupation, having BQ chewing father and mother and the environmental factor which was a discussion about BQ chewing and health hazards within 6 months were not significant (Table 4).

Table 1: Characteristics of the participated adolescents (n=160).

Variables	N	%
Age group in years		
10-12	53	33.1
13-15	42	26.3
16-18	39	24.4
19	26	16.3
Mean $\pm$ SD, 14.48 $\pm$ 3.35 (range 10-19)		
Gender		
Male	96	60
Female	64	40
Residence		
Rural	119	74.4
Urban	41	25.6
Education		
Illiterate	1	0.6
Only read and write	5	3.1
Primary school passed	80	50
Middle school passed	55	34.4
High school passed	6	3.8
University student	13	8.1
Working status		
Dependent	3	19
Student	108	67.5
Worker	49	30.6
Monthly pocket money (kyats)		
Less than 5000	57	35.6
5001-10000 (~3.5-7 USD)	50	31.3
More than 10000	53	33.1
Father's education		
Only read and write	16	10.0
Primary school passed	87	54.4
Middle school passed	39	24.4
High school passed	8	5.0
University student	2	1.3
Graduate	7	4.4

Continued.

Variables	N	%
Mother's education		
Illiterate	3	1.9
Only read and write	24	15.0
Primary school passed	91	56.9
Middle school passed	31	19.4
High school passed	2	1.3
University student	1	0.6
Graduate	8	5.0
Betel quid chewing history of father		
Yes	89	55.6
No	67	41.9
Betel quid chewing history of mother		
Yes	30	18.8
No	130	81.3
Betel quid chewing history of family members		
Yes	109	68.1
No	51	31.9
Betel quid chewing history of close friends		
Yes	80	50
No	80	50
Discussion of betel quid within 6 months		
Yes	21	13.1
No	139	86.9

Kyats=Myanmar currency

Table 2: Attitude of the participated adolescents (percentage) towards betel quid chewing.

Statement	Strongly agree frequency	Agree frequency	Uncertain frequency	Disagree frequency	Strongly disagree frequency
	N (%)	N (%)	N (%)	N (%)	N (%)
Betel quid chewing can cause a waste of money	82 (51.3)	70 (43.8)	2 (1.3)	2 (1.9)	3 (1.9)
Betel quid chewing is harmful to health	94 (58.8)	57 (35.6)	2 (1.3)	2 (1.3)	5 (3.1)
Betel quid chewing represents maturity	20 (12.5)	22 (13.8)	15 (9.4)	48 (30.0)	55 (34.4)
Betel quid chewing cause active during working and studying	7 (4.4)	14 (8.8)	9 (5.6)	55 (34.4)	75 (46.9)
Betel quid chewing is stylish	4 (2.5)	12 (7.5)	2 (1.3)	57 (35.6)	85 (53.1)
Betel quid chewing can cause oral cancer	90 (56.3)	63 (39.4)	2 (1.3)	2 (1.3)	3 (1.9)
Betel quid chewing can cause a bad mouth smell and can affect communication with people	57 (35.6)	59 (36.9)	5 (3.1)	16 (10.0)	23 (14.4)
Spitting from betel quid can cause a nuisance to the environment	90 (56.3)	56 (35.0)	1 (0.6)	6 (3.8)	7 (4.4)
People should avoid betel quid chewing	102 (63.8)	53 (33.1)	0 (0)	5 (3.1)	0 (0)
Betel quid chewing should be prohibited in public transport vehicles	90 (56.3)	60 (37.5)	0 (0)	9 (5.6)	1 (0.6)

Table 3: Frequencies of betel quid chewing practice among the participants.

Variables	N	%
Betel quid chewing status		
Current chewer	45	28.1
Non-chewer	115	71.9
The starting age of betel quid chewing (years)		
<12	4	8.9

Continued.

Variables	N	%
12–18	38	84.4
>18	3	6.7
Minimum age-6 years, maximum age-19 years		
Duration of betel quid chewing (year)		
<2	28	62.2
2-5	14	31.1
>5	3	6.7
Minimum-1 year, maximum-10 years		
How many days in a week do you chew		
Every day	22	48.9
1-3	21	46.7
4-6	2	4.4
How many betel quid do you chew per day?		
<5	17	37.8
5-10	15	33.3
>10	13	28.9
Where do you usually get betel quid?		
Betel quid shop	38	84.4
At home	3	6.7
Friends	4	8.9
Reason for chewing betel quid		
Testing	6	13.7
To reduce stress	3	6.8
Peer pressure	32	72.7
Betel quid chewing family member	2	4.5
To replace smoking	1	2.3
Add tobacco in betel quid		
Yes	33	73.3
No	12	26.7
The expense for betel quid per day (kyats)		
<500	27	61.4
500–1000	10	22.7
>1000	7	15.9
Attempt to quit chewing within 6 months		
Yes	38	84.4
No	7	15.6

Table 4: Associated factors of betel quid chewing practice of the respondents.

Variable and category	Betel quid		Chi-square	P value	OR
	Chewing (%)	Not chewing (%)			
Age group (years)					
≥15	37 (56.9)	28 (43.1)	44.912	<0.001*	14.37
<15	8 (8.4)	87 (91.6)			
Gender					
Male	42 (43.8)	54 (56.2)	28.986	<0.001*	15.82
Female	3 (4.7)	61 (95.3)			
Residence					
Urban	18	23	6.788	0.009*	2.67
Rural	27	92			
Education					
Low education	21 (24.4)	65 (75.6)	1.264	0.261	0.67
High education	24 (32.4)	50 (67.6)			
Working status					

Continued.

Variable and category	Betel quid		Chi-square	P value	OR
	Chewing (%)	Not chewing (%)			
Worker	34 (69.4)	15 (30.6)	59.489	<0.001*	20.61
Dependent	11 (9.9)	100 (90.1)			
Pocket money (Kyats)					
<5000	11 (19.3)	46 (80.7)	33.479	<0.001*	
5000-10000	4 (8.0)	46 (92.0)			
>10000	30 (56.6)	23 (43.4)			
Father chewed BQ					
Yes	25 (28.1)	64 (71.9)	0.001	0.971	0.99
No	19 (28.4)	48 (71.6)			
Mother chewed BQ					
Yes	11 (36.7)	19 (63.3)	1.333	0.248	1.63
No	34 (26.2)	96 (73.8)			
Family member chewed BQ					
Yes	37 (33.9)	72 (66.1)	5.730	0.017*	2.76
No	8 (15.7)	43 (84.3)			
Close friend chewed BQ					
Yes	42 (52.5)	38 (47.5)	47.026	<0.001*	28.37
No	3 (3.8)	77 (96.2)			
Discussion about BQ within 6 months					
Yes	6 (28.6)	15 (71.4)	0.002	0.961	1.03
No	39 (28.1)	100 (71.9)			
Attitude					
Negative attitude	30 (38.0)	49 (62.0)	7.489	0.006*	2.69
Positive attitude	15 (18.5)	66 (81.5)			
Knowledge					
Poor knowledge	10 (16.4)	51 (83.6)	6.712	0.010*	0.36
Good knowledge	35 (35.4)	64 (64.6)			

Kyats- Myanmar currency, OR- odds ratio, *significant, significant p value=0.05.

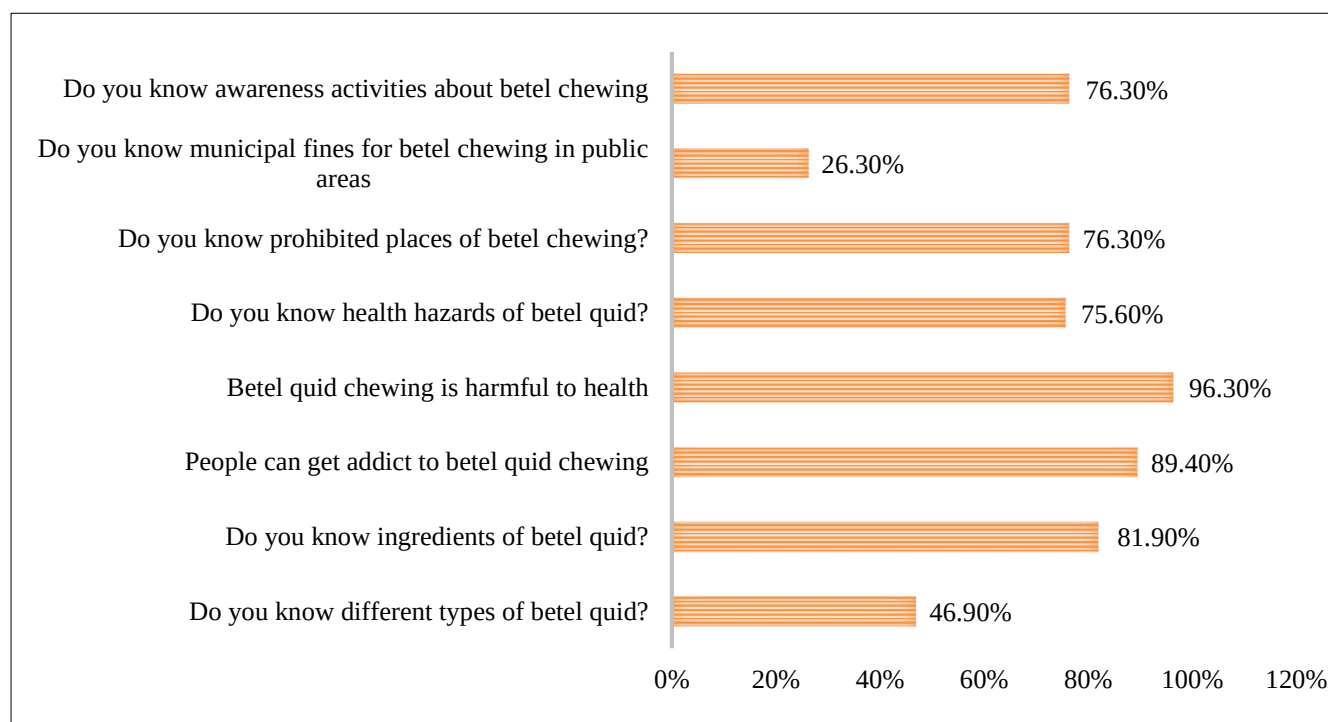


Figure 1: Percentages of good knowledge about betel quid chewing.

DISCUSSION

In Myanmar, many studies related to BQ chewing were done but most were conducted among adults. No or limited studies were done focusing on adolescents with BQ chewing. This study provides new information that BQ chewing is an uprising practice not only in adults but also among adolescents.

The prevalence of BQ chewing amongst adolescents

The prevalence of BQ chewing adolescents was more than one fourth (28.1%) of the study sample and this was the same as that of the study done on the Bangladesh adolescents who lived in East London and apparently higher than that of the Taiwan where it was 9.6% and that of Gujarat, India where the prevalence was 22.8%.¹⁷⁻¹⁹ But compare to Saipan in Micronesia where the prevalence was 63.4% and Karachi where it was 42.6%, the result of this study was a lower prevalence.^{20,21} If compared to the study done on Myanmar adults, the prevalence in this study was quite lower than 55% in Yangon and 71% in Kayin State.^{22,23} Adolescence is the developmental period and it is also challenging with various big changes. It is a vital time for a person to taste or to get engaged in healthy behaviour.²⁴ Only the healthy behaviour is established in this period, then better health can be expected and the potential risk of chronic diseases can be reduced or removed in future adulthood. Prevention of diseases, early detection and treatment of the diseases for better health and well-being are included in adolescent health. Trends in BQ use prevalence among adolescents could not be available in this cross-sectional design. But definitely, more prevalence in BQ chewing occurs, more predisposed to get BQ chewing related health problems which will turn to a burden for health care services and lead to health financing problems. Besides increased morbidity among adolescents is one of the sources of reducing productivity that may affect the future of the nation.

Socio-demographic characteristics and BQ chewing

Among the adolescents who engaged in BQ chewing practice, socio-demographic characteristics were the factors that had an association with the BQ chewing practice. Out of total chewers, the numbers of boys who chewed BQ were more than 10 times higher than that of girls. It is undeniable that male adolescents chewed BQ more than female adolescents. That was a significant gender difference. This finding was in agreement with other studies done in Taiwan, Saipan, Gujarat and Karachi. The percentages of boy and girl chewers were 6.6% and 1.5% in Taiwan, 73% and 54% in Saipan, 99.12% and 0.88% in Gujarat, 63.9% and 36.1% in Karachi respectively.¹⁸⁻²¹ The reason that girls chewed BQ less than boys in this study is probably due to the norms. In Myanmar, there are various cultural and social norms that girls and boys, women and men have to practice throughout their lives. Though certain restrictions for females have been loosening up at present time there are still some social and cultural norms. For instance, men can

turn to alcohol or smoking or even to extra-marital sex as their outlet for relieving their stress or frustration. On the other hand, alcohol drinking, smoking or BQ chewing are considered inappropriate behaviour for girls and women. Decency and modesty are the norms for girls and women to follow. If they break with these norms they probably are left out of society or they may endure hardship.²⁵ For better from the worst, this norm probably prevents girls from getting BQ-related diseases.

Regarding the starting age of BQ chewing, 6 years old was found as the earliest age in this study. The age of the first experience in this study was in accord with the study done in Mandalay, Myanmar in which some participants had begun chewing at 6 years old.²⁶ Compared to the other foreign studies, the age of starting BQ use in this study was earlier than the Taiwan adolescents (started at 7 years old), the Bangladesh adolescents living in East London (started at 9 years old), the adolescents from Saipan and Karachi (started at 10 and 11 years respectively).^{17,18,20,21} Moe et al reported that in Myanmar, BQ exposure used to happen at an early age especially when a senior family member was a chewer.²⁷ During taking care of the younger ones, the senior caregiver gave the pre-chewed BQ as a sign of love and sharing with the younger ones. Sometimes the younger was asked to go buy the quid from the vendor for the senior chewers. In this way, they grew up in a BQ chewing culture and they were involved in the habit without notifying themselves.

The rural residence had a significant association with BQ chewing practice among adolescents in this study. This finding was comparable to the finding of the study in Taiwan.¹⁸ But contrary to the finding of the study in Than-Daung Town by Ar-Kar et al in which BQ chewing was found more abundantly in urban dwellers.²³ Health behaviour is connected to education level. Better education gets better health because education assists people in making the decision of choosing healthy behaviour for a better life. It was also noted from the papers of Lin et al and Lee et al that lower education levels and blue-colour jobs were highly related to BQ chewing and abuse.^{5,9} But in this study, the education level was not included in the associating factor like in other adult studies by Ar-Kar et al and Myint et al.^{22,23} As the study population was still of school-going age and half of them were currently in middle school. That is a possible reason that the education level in this study is not in association with the practice like in other studies. Adolescents in the working group and adolescents who got pocket money of more than 1000 kyats (approximately USD 7) per month were found positively related to the BQ chewing practice in this study. By working or from family, adolescents got money to spend as they wish for their leisure.

Social and environmental characteristics and BQ chewing

Social characteristics such as having BQ chewing family members and close friends were the factors strongly associated with BQ chewing practice among the

adolescents in this study. Many studies also proved that sibling or relative use of BQ and peer use were very commonly seen as associated factors with BQ use among adolescents.^{18,23} Hussain, Zaheer and Shafique mentioned that the BQ habit contributed by a friend made the adolescent 9 times more attracted to chew it.²¹ Also, the commonest reasons for initiating BQ chewing in this study were peer pressure and curiosity. This was also in agreement with the study of Wang et al.¹⁸ All these curiosity, peer pressure and family use are dangerous factors because they may lead the adolescent into an addictive problem sooner or later. Hence it is important for an adolescent to have a respectable mentor to guide and lead him in the right way or to share the knowledge so that the adolescent can make the right choice for a better life.²⁴ Environmental characteristics such as availability of BQ and knowledge-based discussion sessions about BQ chewing and related consequences were the factors that also need to be considered in the chewing practice among the adolescents. The majority of the adolescent chewers in this study got the product easily from the street vendors or street sellers. The same was found in the study done in Karachi.²¹

Attitude and knowledge and BQ chewing habit

In this study, there was no difference in the attitude level of the respondents. Each half of the total respondents had negative and positive attitudes equally. It was not surprising that these attitudes supported adolescents in engaging in BQ chewing practice. This negative attitude of the adolescents toward BQ chewing was a significantly associated factor for the practice in this study. This finding was comparable with Moe et al's finding in which chewing was perceived as stylish, sexually attractive and mature.²⁶ Also, there was a significant association between knowledge level and BQ chewing practice. Other studies mentioned that the lack of knowledge sessions or low knowledge level was the associated factor for the chewing habit among adolescents.^{21,23}

BQ chewing practice

In South-East Asia, BQ with tobacco is the commonest form of smokeless tobacco use.¹⁸ Hussain, Zaheer and Shafique stated that the BQ chewers who added tobacco were 14 times more possible to get addicted and develop dependency.²¹ In the present study, 73.3% of the total BQ chewers added tobacco to the BQ and that was actually higher than the use in Karachi (1.37%) and in Bangladesh adolescents (12%).¹⁷ If compared to the study in Myanmar, it was even close to the finding in adult use in Yangon which was 85%.²⁸ In addition, the long term use of BQ (more than 10 years), the larger amount of consumption (more than 10 quid) and the early starting age (6 years old) were also found in this study. All these findings were quite alarming to the public health professionals for the upcoming morbidity and mortality of the related diseases in future.

CONCLUSION

In conclusion, the prevalence of BQ chewing adolescents was more than one-fourth of the total study samples. Most adolescents in this study had a good knowledge level about BQ chewing and its negative health impact but there is no difference in attitude level. The factors associated with BQ chewing among adolescents were age group (older adolescents who are equal to or more than 15 years old), male gender, urban residence, working group, getting monthly pocket money (more than 10000 Myanmar kyats), having betel quid chewing family members and having betel quid chewing close friends. The negative attitude of the adolescents towards BQ chewing was also significantly associated with BQ chewing practice among them. The commonest reason for BQ chewing given by the adolescents in this study was peer pressure and the second common reason was curiosity. There is no association between the knowledge and attitude level of the adolescents. Unexpectedly, there is an association between the knowledge level and their BQ chewing practice. These factors associated with the BQ chewing habit among adolescents give important information for the school-based strategy to do raising awareness and anti-BQ chewing interventions. The findings suggested that many more effective anti-betel quid chewing interventions and strong behavioural change health promotion programmes emphasizing the dangers of BQ chewing habits for adolescents need to be developed nationwide.

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