

Betel Nut Chewing Behavior among the Local Residents of Sylhet Metropolitan City, Bangladesh

Sabrina Farida Chowdhury

Abstract

Chewing betel nut is regarded as a sociocultural identity in many parts of Bangladesh, including Sylhet. But the habit has negative impacts on human health. Oral cancer is one of the deadliest consequences. Hence, this research aimed to address the betel nut chewing habit in Sylhet, Bangladesh. The study objectives were to estimate prevalence, identify the pattern of betel nut chewing, and assess the knowledge of it among local residents of the Sylhet metropolitan area of Bangladesh. It was a cross-sectional descriptive study that involved 330 subjects selected by convenience sampling. Data were collected by face-to-face interview method using a pre-tested questionnaire. Overall, 42.4% of the respondents chewed betel nuts. 51.4% of the respondents chew betel quid (with tobacco additives). The respondents' primary reason for chewing betel nut was their fondness for its taste. About 8.5% were past chewers, and the majority of them discontinued the habit from fear of future illness. Only 33.3% of the total respondents knew that betel nut chewing is harmful to health. Betel nut chewing is a deeply rooted habit bearing potential health risks. The responsible authority should essentially increase awareness against betel nut chewing and tobacco use through health education programs, and strict legislation should be developed to limit the open sale and prohibit betel nuts use to ensure the optimum health of the community.



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Introduction

Betel nut chewing is an age-old traditional and sociocultural practice witnessed in different geographical regions worldwide. The betel nut is sometimes referred to as the "Areca" nut. This betel nut is known by different names. The common words for it include "gua" in Sylhet, Bangladesh; "supari" in Hindi, India; "puwak" in Sri Lanka; "mak" in Thailand; "pugua" in Guam; "pinang" in Malaysia; and "Kunywet" in Myanmar (International Agency for Research on Cancer, 2004). The habit is known as betel nut or areca nut chewing. When crushed betel nut is accompanied by a mixture of tobacco, slaked lime, spices, and other ingredients, it is regarded as betel quid; and the practice is known as betel quid chewing (International Agency for Research on Cancer, 2004; NCI Dictionaries, n.d.). It has been reported that approximately 10 to 20 percent of the global population chews betel quid, indicating that nearly 600 million consumers chew betel nut globally (Gupta PC, 2002; Murphy & Herzog, 2015). Betel nut consumption is higher in South Asian nations and nations having immigrants or ancestry from the Indian subcontinent (Gupta & Ray, 2004; Tami-Maury et al., 2022). In fact, most South Asian countries demonstrate universal acceptance of the habit of chewing betel nut (Singh et al., 2020). In China, it has been assumed that the indigenous population's preferred activity is to chew betel nuts (H. Wen et al., 2022). Chewing betel nut is a part of the tradition, especially in the culturally driven community of Sylhet and the Chittagong Hill tracts of Bangladesh (Ahmed, 2017). Usually, the habit gets initiated by the chewer at an early age. Various studies suggest that chewers of betel nuts get encouragement for initiation of such practice owing to social acceptance and influence, tradition and cultural ties, peer pressure, lack of awareness, and easily accessible and available betel nut-related products (Auluck et al., 2009; Snigdha et al., 2021). Although the habit is widespread in social and cultural aspects of different parts of the world, including Bangladesh, it has profound negative health consequences and is carcinogenic to humans. Both betel nut without or combined with smokeless tobacco products poses a threat to the health and wellbeing of an individual. Eventually, the habit turns into addiction for many chewers and acts as a barrier inhibiting the attempt to quit it (Sotto et al., 2020). So far, to control and prevent betel nut use, many initiatives and strategies have been initiated, such as health education, media campaigns, banning betel nut and tobacco products, imposing a tax, and cessation program at individual and mass levels (ClinicalTrials.gov, 2020; Das et al., 2020). But these cessation initiatives are mostly part of tobacco cessation strategies, and thus, specific initiatives to address betel nut chewing behavior are limited and less evident globally. This is no exception for Bangladesh also. The use of betel nut and tobacco products is increasing day by day and taking the form of an epidemic. According to reports, tobacco-related illnesses claim over 1.61 lac lives in Bangladesh (TBS Report, 2022). Although Bangladesh has a smoking and tobacco control law that prohibits the public advertisement of tobacco products and promotes the use of health-related warnings on product covers, specific initiatives to control betel nut or betel quid chewing are not evident. So, to limit and diminish the use of the betel nut, appropriate and timely initiatives should be taken by the government of Bangladesh. The objectives of the present study were to estimate the prevalence and pattern of betel nut chewing and to find out knowledge related to it among the local residents of Sylhet metropolitan city of Bangladesh. The implication of the findings of this study will assist in giving the concerned local authorities baseline data for undertaking essential intervention and setting up research priorities as well as for a future in-depth investigation.

Literature Review

Betel nut chewing has a long history that dates back at least 2000 years. It is most prevalent in South and South-eastern Asia, including South-eastern China, Hainan Island, Taiwan, China, the Pacific Islands, and East Africa. It is also widespread in areas where people from South Asia have immigrated, such as the UK, the Malay Peninsula, eastern and southern Africa, Europe,

and North America (Gupta PC, 2002; International Agency for Research on Cancer, 2012; Murphy & Herzog, 2015; TM MACK, 2001). However, betel nut chewing is particularly a popular and widespread oral habit in Taiwan, India, Myanmar, Sri Lanka, and many Southeast Asian countries, including Bangladesh (Flora et al., 2012; Gupta PC, 2002; International Agency for Research on Cancer, 2004; Mahanta et al., 2015). Several sociocultural and personal factors influence the betel quid chewing habit. These include the demographic, ethnicity, and psychosocial factors; its availability and accessibility-related factors; and public policy among the chewers across the globe (Lumukana & King, 2003). W.M Ghani et al. reported in their study that educational qualification, ethnicity, smoked tobacco like a cigarette, drinking alcohol, and social norms were the major factors that contributed to the initiation of betel nut usage (Ghani et al., 2011). On the other hand, Heck, Julia E. et al. reported older, low socioeconomic status, and smoking was associated with betel nut chewing in Bangladesh (Heck et al., 2012). There are contradictory views on gender-based consumption of betel nut chewing. W.M Ghani et al. and Heck, Julia E et al. reported that females chewed betel nut more than males in Malaysia and Bangladesh (Ghani et al., 2011; Heck et al., 2012). But, numerous studies supported that male prefers to chew betel nut more than females (Rajan et al., 2007; C. P. Wen et al., 2005). Wen, CP et al. reported that Chinese males consume betel primarily, whereas the consumption of betel nuts by the female is less likely (C. P. Wen et al., 2005). The frequency of betel nut chewing varies among the chewers. Many chew betel nut regularly; some may occasionally chew during a day or during various ceremonies. In some regions of India, nearly one in three children and teens routinely or sporadically eat raw or packaged betel nut products, according to a 2003 UN News report (UN News, 2003). Overall, four factors have been identified by Auluck A. et al., which are thought to be the basis for the inclination toward and acceptance of chewing betel nut. These are social acceptance of betel nut chewing, religious convictions, purported health advantages, and BQ addiction (Auluck et al., 2009). Betel chewing is a traditional practice that has been integrated into social and cultural activities and ceremonies for a long time (Khawaja et al., 2006). Regarding the religious perspective, in Hinduism, the betel nut is considered a 'divine fruit' and a vital ingredient for worshipping in religious ceremonies (Bedi & Scully, 2014). It is customary to provide smokeless tobacco products and betel nuts to guests in auspicious social gatherings, weddings, and other religious events. Cindy Sui and Anna Lacey (2015) reported that offering and chewing betel nut is a crucial part of many Asian cultures (Sui & Lacey, 2015). In the Southern Asia region, it is often believed to have therapeutic benefits. It is used for diverse purposes, including as an astringent and breath refresher (Murphy & Herzog, 2015). The research is done to determine why adolescents begin chewing betel nuts in Taiwan, and Myanmar cited curiosity and self-initiation, family member and peer pressure, spending leisure, tension or stress in the family, and leisure as some of the reasons for initiating betel nut chewing (Wang et al., 2003; Yangon, 2019). An oral cancer patient from Taiwan named Mr. Qiu Zhen Huang responded to the question of why he chewed betel nuts with the response that he had initiated betel nut chewing behavior because everyone at his work did it and to build good relations with them (Sui & Lacey, 2015). Chewing Betel nut is a trendy and long traditional habit in Bangladesh; mainly, it is a vital part of the culture in Sylhet, Chittagong, and Barisal (Ahmed, 2017). Festivals and occasions are often considered incomplete in some parts of Bangladesh without having betel quid; thus, guests are welcomed with it (Ahmed, 2017; Yousuf, 2017). According to the recent report of "Global Adult Tobacco Survey (GATS)", nearly 20 million Bangladeshi adults have the habit of consuming betel quid combined with tobacco (Islam, 2022). Although betel nut chewing has a substantial global acceptance from different social groups of other geographical regions, it is undoubtedly a harmful behavior that has profound negative consequences on health. Betel nut chewers' oral and overall health have been linked to several long-term detrimental health impacts due to their continuous use. The consequences on the oral cavity include dental discoloration and

erosion (World Health Organization. Regional Office for the Western Pacific, 2012), periodontal diseases (Parmar et al., 2008; Sumanth et al., 2008), oral pre-cancerous lesions like erythroplakia, leukoplakia, oral sub mucus fibrosis with reduced mouth opening (Hashibe et al., 2000; Trivedy et al., 2002) and temporomandibular joint pathology (Trivedy et al., 2002). It is a good fact that the betel quid is carcinogenic to humans. Each ingredient in betel quid plays a part in developing oral cancer. The smokeless tobacco usually contains the following components- nitrosornicotine and 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone as components; betel nut contains arecoline and 3-(methylnitrosamino) propionitrile, while lime provides reactive oxygen radicals (Nair et al., 2004). At first, it was asserted that chewing betel nut alongside tobacco products could cause cancer. However, the UN News reports that betel nut consumption without tobacco may also increase the risk of oral cancer, according to the Monographs Programme of the International Agency for Research on Cancer (IARC), a division of the World Health Organization (International Agency for Research on Cancer, 2004; UN News, 2003). Furthermore, the International Agency for Research on Cancer (IARC) extensively reviewed the available literature on betel nut chewing. It concluded that betel quid combined with tobacco (Group 1), betel quid without tobacco (Group 1), and areca nut, often known as betel nut, cause human cancer (Group 1). It may be mentioned that oral cavity cancer is the sixth most common malignancy worldwide (Hamner et al. 1986; Parkin et al. 2005). In Bangladesh, oral cancer is a significant public health issue, much like in other parts of the world. About 68.5% of the cancer patients tended to chew betel leaf, according to Debnath et al. in their study titled "Impact of Tobacco Smoking, Betel Quid Chewing, and Alcohol Consumption Habits in Patients with Oral Cavity Cancer in Bangladesh" (Debnath et al., 2017). Chewing betel nuts has consequences beyond only dental health; it has profound general health consequences. Various works of literature have proved the link between betel nut chewing with metabolic syndromes (Guh et al., 2006; Yen et al., 2006), hypertension (Heck et al., 2012; Tseng, 2008), diabetes mellitus (Tseng, 2008; Tung et al., 2004), and obesity (Lin et al., 2009). Betel nut chewing may also be associated with metal toxicity in humans. Chewing betel nut has been linked to manganese exposure, which raises the possibility of manganese neurotoxicity in Bangladeshi citizens, according to a study conducted there (Al-Rmalli et al., 2011). Besides, it may result in adverse mental health consequences like the experience of delusions, psychosis, and hallucinations among the habitual betel nut chewers (BURTON-BRADLEY, 1966). Habitual betel nut users experience withdrawal symptoms like anxiety, mood swings, sleep disturbance, difficulty in concentration, etc. (Australian Drug Foundation, 2006; BURTON-BRADLEY, 1966). Bangladesh has undertaken substantial efforts to control tobacco usage. But, from prohibiting the advertisement of tobacco products to increasing tobacco taxation, most of the initiatives are targeted at tobacco use and smoking behavior only. A study reports huge adult Bangladeshi population consumes betel quid along with tobacco; therefore, specific measures should be taken to control and ban betel nut habit in this region (Islam, 2022).

Research Methods

Study Design

A descriptive cross-sectional study was carried out in Sylhet metropolitan city of Bangladesh between February 2022 and July 2022. The Sylhet is in the northeastern region of Bangladesh and is located on the north bank of the Surma River (DBpedia, n.d.). Sylhet was chosen as the study location because this area has a vast social and cultural acceptance of betel nut chewing (Ahmed, 2017).

Sample Population

Cochran's formula was used to estimate the study's minimum calculated sample size at 95% confidence interval (Cochran, 1977), taking betel quid chewing prevalence of 31% (Flora et al.,

2012). The calculated sample size (n) was 328.6, adjusted to 330. The respondents were selected by convenience sampling method. Participants were to be adults from Bangladesh who were at least 18 years old and who lived in the Sylhet metropolitan area and could understand and participate in the survey. Those who were non-local residents of Sylhet, refused to participate or were physically and mentally disabled, suffered from chronic diseases were excluded from the study.

Research Instrument and Data collection

A pre-tested questionnaire was first constructed in English and then translated into Bengali. Face-to-face interviews were used to gather data. The questionnaire contained four sections: (i) Socio-demographic information, (ii) Betel nut chewing behavior, (iii) Reasons for betel quid chewing and reason for quitting betel nut chewing, and (iv) Knowledge about harmful consequences of chewing betel nut. The question related to the reason for betel nut chewing was a combination of open and close-ended responses; close-ended responses were adapted from the RBCS scale of a previous study (Little et al., 2014; Myint et al., 2016). Betel nut consumption was assessed through four items: (i) betel nut chewing status, (ii) the type of betel nut chewed (i.e., betel nut alone, betel nut with betel leaf and lime but without tobacco, or betel-quid combined with tobacco), (iii) daily frequency of chewing, (iv) number of years as chewers.

Data Analysis

Statistical Package for Social Sciences (SPSS), version 16, was used to analyze the data. The frequency, mean, etc. descriptive statistics were used to describe the respondents' socio-demographic, behavioral characteristics, and knowledge.

Data Presentation and Data Quality Management

Tables are used to present the findings here. The supervision and comparison of unprocessed and printed data served to preserve data quality. Data consistency was also examined.

Ethical consideration

The author claims that all methods used to complete this project complied with the applicable national and institutional committees on human experimentation's ethical requirements and with the Helsinki Declaration of 1975 (World Medical Association, 2013). Before data collection, study participants' informed consent was obtained. Privacy, confidentiality, and anonymity were strictly maintained.

Result

The study comprises 330 respondents from the Sylhet metropolitan city, Bangladesh. Distinct responses are grouped into different tabulations for simple analysis and understanding of the data that has been gathered.

Socio-demographic characteristics

Table no. 1 shows that the majority belonged to the 18-30 years (49.7%) and more than 60 years (32.4%) age group; the mean age of the respondents was 35.6 years. Among the respondents, the majorities (60.3%) were male, and 39.7 percent were female. Most of the respondents were Muslim (89.1%) and married (51.5%). Regarding the educational qualification of the respondents, 95.4% were literate, and most respondents have completed higher secondary school certificate levels. About 57.3% of the respondents were employed and distributed in diverse occupations (Table-1).

Table-1: Socio-demographic characteristics of the respondents (N= 330)

Characteristics		Frequency (%)	
Age (in years) Mean age: 35.6	18-30	164 (49.7)	
	31-45	31(9.4)	
	46-60	28 (8.5)	
	>60	107 (32.4)	
Gender	Male	199 (60.3)	
	Female	131 (39.7)	
Religion	Islam	294 (89.1)	
	Hinduism	36 (10.9)	
Marital Status	Married	170 (51.5)	
	Unmarried	160(48.5)	
Educational Qualification	Illiterate	15 (4.6)	
	Literate	Primary Education	11 (3.3)
		Secondary Education	40 (12.1))
		Higher Secondary Education	69 (20.9)
		Graduation	123 (37.3)
		Post-Graduation	72 (21.8)
Employment Status	Unemployed	Student	52 (15.8)
		Homemaker	81 (24.5)
		No employment/ Retired	8 (2.4)
	Employed	Doctor	18 (5.45)
		Banker	31 (9.4)
		Teacher	22 (6.7)
		Public Service Holder	19 (5.8)
		Private Service Holder	20 (6.1)
		Engineer	23 (7)
		Businessman	36 (10.9)
		Driver	5 (1.5)
		Lawyer	6 (1.8)
		Nurse	5 (1.5)
		Housemaid	4 (1.2)

Betel Nut Chewing Behavior

Table-2: Betel Nut Chewing Behavior of the respondents

Betel Nut Chewing Behavior		Frequency (%)	Total no. of respondents
Betel Nut Chewing Status	Current chewers (regular/occasional)	140 (42.4)	N=330
	Non-chewers	162 (49.1)	
	Past chewers	28 (8.5)	
Type of betel nut chewing (Current Chewers)	Only betel nut	20 (14.3)	N=140
	Betel nut with betel leaf (without tobacco products)	48 (34.3)	
	Betel quid (Betel nut, tobacco products, lime wrapped in betel leaf)	72 (51.4)	
Type of betel nut chewing Past Chewers)	Only betel nut	6 (21.4)	N=28
	Betel nut with betel leaf (without tobacco products)	8 (28.6)	
	Betel quid (Betel nut, tobacco products, lime wrapped in betel leaf)	14 (50)	
Frequency of chewing (in a day)	Once	9 (6.4)	N= 140 *Regular chewers 33.3% (n=110)
	Twice	30 (21.4)	
	Thrice	17 (12.1)	
	Four times	21 (15)	
	Five times	15 (10.7)	
	>Five times	18 (12.9)	
	Occasional	30 (21.4)	
Duration of chewing (in years)	1-10	87 (62.15)	N=140
	11-20	21(15)	
	21-30	11 (7.85)	
	31-40	14 (10)	
	>40	7 (5)	
Betel nut chewer in family	Yes	250 (75.8)	N=330
	No	80 (24.2)	

Table no. 2 shows that 42.4% were current betel nut chewers (regular and occasional), and 8.5% were past betel nut chewers. Most of the respondents (75.8%) reported having betel nut chewers in their family. Among the betel nut chewers, maximum current betel nut chewers (51.4%, 72 out 140) and past betel nut chewers (50%, 14 out of 28) reported having the habit of chewing betel quid (betel nut, smokeless tobacco products, lime, etc. wrapped with betel leaf). Among the current chewers, the frequency of chewing was reported twice a day for the majority of respondents (21.4%), and maximum chewers (62.15%) belonged to the 1-10 years group in terms of duration of chewing (Table-2).

Reasons for initiating and quitting betel nut chewing

The reported reasons for chewing betel nut among the current chewers were its taste (43.6%), liking to keep something in the mouth (17.9%), influenced by family members (17.1%) and friends (6.4%), belief that chewing helps in decision making (5.7%), exciting to chew (1.4%) and as a part of the culture (7.9%) of Sylhet (Table-3). Table No. 4 lists the reasons former betel nut chewers give for discontinuation of the habit. Out of 28 past chewers, 53.6% quit betel nut chewing for fear of future illness and 21.4% by doctor's advice. Other reasons for leaving betel nut chewing were the high expense of betel nut and associated products; and staining of teeth.

Table-3: Reasons for betel nut chewing among current betel nut chewers (N=140)

Reasons for betel nut chewing (Current Chewers)	Frequency (%)
Likes the taste	61 (43.6)
Likes keeping something in the mouth	25 (17.9)
As family members chew	24 (17.1)
As friends chew	9 (6.4)
Helps in decision making	8 (5.7)
Exciting	2 (1.4)
Part of culture	11 (7.9)
Total	140 (100)

Table-4: Reasons for quitting betel nut chewing among the past chewers (N=28)

Reasons for quitting betel nut chewing (Past chewers)	Frequency (%)
Fear of future illness	15 (53.6)
Doctor's Advice	6 (21.4)
Expense	2 (7.1)
Teeth staining	5 (17.9)
Total	28 (100)

Knowledge about harmful consequences of chewing betel nut

The participants in this study were questioned about their knowledge of the adverse effects betel nut chewing has on health. According to table no. 5, out of 330 respondents, only 33.3% knew that betel nut chewing is harmful to health, and a vast number of respondents (58.5%) didn't know about it. Among the respondents who knew that betel nut chewing causes harm to health, majorities (86.4%) reported 'Oral Cancer' as an oral health consequence of betel nut chewing (Table-5).

Table-5: Knowledge about harmful consequences of betel nut chewing among respondents

Knowledge Question (s)	Response (s)	Frequency (%)	Total no. of respondents
Betel nut chewing is harmful to health	Yes	110 (33.3)	N=330
	No	27 (8.2)	
	I Don't Know	193 (58.5)	
Oral health consequences of betel nut chewing	Oral Cancer	95 (86.4)	N=110
	Gum Disease	15 (13.6)	

Discussion

The betel nut chewing is an age-old tradition and predominantly prevails in South and South-eastern Asia; it is also observable in regions where immigrants from South Asia have settled, such as the UK, the Malay peninsula, Eastern and Southern Africa, Europe, and North America (Gupta PC, 2002; International Agency for Research on Cancer, 2012; Murphy & Herzog, 2015; TM MACK, 2001). Betel nut chewing habit ranks the fourth most common addictive practice globally, following tobacco, alcohol and caffeine consumption (Winstock, 2012). It often develops substance dependence among betel nut chewers (Karim, 2018). Betel nut chewing is also prevalent in Bangladesh. This study found that the prevalence of betel nut chewing among the local residents of Sylhet metropolitan city was 42.4%, including both regular and irregular betel nut chewers (Table-1). The prevalence of betel nut chewing among regular chewers was 33.3%. This finding is consistent with a study conducted in Bangladesh, where Meerjady S Flora et al. reported that the prevalence of betel nut chewing is 31% among rural and urban Bangladeshi residents (Flora et al., 2012). The finding of this study concurs with the results of Julia E et al., where the prevalence of betel nut chewing was 33.2% (Heck et al., 2012), and the findings of Rahman et al., where the prevalence of betel nut chewing was reported 30.3% (Rahman et al., 2006). The prevalence of betel nut chewing varies among rural and urban residents. Meerjady S Flora et al. reported in their study that the prevalence of betel nut chewing was 43.2% among rural residents and 19.1% among urban residents of Bangladesh (Flora et al., 2012). In another report, Eswar N. reported that according to their rural oral screening, about 40% of adult villagers of Kishoreganj, Bangladesh used betel nut with slaked lime and tobacco in various combinations (Eswar, 2002). Both male and female chew betel nut in Bangladesh. According to a survey conducted in 2009, the betel nut was used by both men (23.5%) and women (25.2%) in Bangladesh (World Health Organization, 2009). The study by Meerjady S Flora et al. reported 29.8 percent male and 31.8% female chewed betel nut in Bangladesh (Flora et al., 2012). Usually, the betel nut is consumed alone or by wrapping it with betel leaf, adding tobacco in South Asian Countries (Gupta & Ray, 2004). In the current study, 51.4% of chewers reported adding smokeless tobacco products while chewing betel nut with betel leaf (Table-2). This is much lower than the findings of Julia E Heck et al., where 82.5% of respondents reported chewing betel nut with tobacco (Heck et al., 2012). Several pieces of literature argued that there is gender variation in types of betel nut consumption. Global Adult Tobacco Survey (2009) says that Bangladeshi males primarily consume betel nut with both smoke and smokeless tobacco, while females primarily consume betel quid with smokeless tobacco (World Health Organization, 2009). The frequency of betel nut chewing was twice a day for most of the respondents and varied in between once to more than five times (in a day) in this current study (Table-2). The finding is consistent with finding of Syed et al. where highest proportion of respondents from Pakistan were found to chew betel nut twice in a day (Syed et al., 2016). But the finding of the present is inconsistent with finding of Meerjady S Flora et al., the study found average frequency of chewing was 5.15 times per day (Flora et al., 2012). The majority of the current study reported that the duration of betel nut chewing is between 1-10 years (Table-2). The average chewing period was 10.7 years among betel quid users, as reported by Julia E Heck et al. (Heck et al., 2012). Many sociocultural factors play a role in initiating and adopting the betel nut chewing habit. The respondents of this study reported their reasons for betel nut chewing are fondness of its taste, preference for keeping something inside the mouth, peer pressure, facilitating decision-making ability, finds it exciting to chew as a part of their culture (Table-3). It may be mentioned that 75.8% of respondents in the current study reported that they have betel nut chewers in their family (Table-2). The reasons reported in this study are consistent with the findings of several works of literature and reports (Auluck et al., 2009; Hussain et al., 2018; Wang et al., 2003). Having a betel nut chewer family member poses a significant risk of initiating betel nut chewing habits among non-betel nut

chewing family members. Numerous pieces of the literature suggest that family and other peer groups contribute significantly to the initiation of betel nut chewing behavior. According to Vishal Khandelwal et al., the behavior of chewing betel nuts was picked up by the betel nut chewers from their peers or siblings (Khandelwal et al., 2013). Studies done in Taiwan and Myanmar to investigate the causes of betel nut chewing among adolescents found that peer pressure and family relationships are some other causes (Wang et al., 2003). The majority of the study participants of the present study cited their fondness for betel nut as their reason for chewing (Table-3). Again, betel nut chewing preferences are influenced by social acceptance, religious convictions, perceived health advantages, and addiction (Auluck et al., 2009). According to a report, betel nut chewers find betel nut exciting, and energy is likely due to the natural alkaloids in the nut, which release adrenaline (Healthline, 2022).

Besides the other reasons, culture is also a reason for betel nut chewing habits among betel nut chewers of different socioeconomic backgrounds. Cindy Sui and Anna Lacey reported in 2015 that betel nut is offered and chewed as a crucial part of many Asian cultures (Sui & Lacey, 2015). In this study, residents of Sylhet also reported their local culture as one reason for the betel nut chewing habit (Table-3). Meerjady et al. reported in their study that there are no social restrictions against betel nut chewing in Bangladesh, and the habit has existed as a traditional practice for a long time (Flora et al., 2012). This present study found 8.5% past betel nut chewers among the local residents of Sylhet. The majority of the past chewers reported that they used to consume betel nuts with smokeless tobacco products (Table-1). In this study, the reported reasons for discontinuing chewing betel nut were fear of future illness, doctor advice, high expenses of betel quid, and resultant teeth staining. These findings are in agreement with the results of Nidup, D. (Nidup, 2017); The author reported that fear of the ill effects of chewing and existing health-related problems of the chewers, as the primary reasons for quitting betel nut chewers. Other reasons for leaving betel nut chewing reported in studies include parental and peer disliking betel nut chewing, high expenses of betel nut and tobacco products, teeth staining and advice of medical personnel, etc. (Murphy & Herzog, 2015; Nidup, 2017). The chronic use of betel nut is associated with many adverse health consequences. The harmful effects of long-term betel nut chewing on general health include hypertension, metabolic syndromes, adverse pregnancy outcomes like placental abnormalities, spontaneous abortion, pre-term birth, etc. (Guh et al., 2006; Heck et al., 2012; Yang et al., 2001; Yen et al., 2006). Besides, according to the Australian Drug Foundation, habitual betel nut users may often experience withdrawal symptoms like anxiety, mood swings, irritability, sleep disturbance, difficulty concentrating, etc. (Australian Drug Foundation, 2006). Betel nut chewing habit may rarely but can affect the mental health of the chewers also. According to Burton-Bradley (1966), Betel nut usage may cause an immediate, transient toxic psychosis following auditory hallucinations and delusions (BURTON-BRADLEY, 1966). According to a study, 88.25% of Bangladeshi rural adult betel quid chewers were dependent on betel quid, which indicated their substance dependence (Karim, 2018). The habit of betel nut chewing is also responsible for oral health consequences like teeth staining, dental erosion, periodontal diseases, pathology of the temporomandibular joint, oral sub mucus fibrosis and reduced mouth opening, pre-cancerous lesions like erythroplakia, leukoplakia and oral cancer (Hashibe et al., 2000; MJ, 1946; Parmar et al., 2008; Sumanth et al., 2008; Trivedy et al., 2002). Earlier it was believed betel nut combined with tobacco was responsible for human cancer. But very recently, it has been proved that chewing betel quid without tobacco may also act as an independent risk factor for developing oral cancer (Jacob et al., 2004; UN News, 2003). Despite the deadly established consequences of the betel nut chewing habit, very few chewers are aware of it. About 66.7% of respondents in the current study were unaware that betel nut chewing is a harmful habit for health (Table-5). This is relatively lower than the rate of unawareness among Indian

respondents, where 70.4% of betel nut chewers were unaware of the harmful effects of betel nut chewing (Khandelwal et al., 2013). The respondents of the current study who knew that betel nut chewing (n=110) is harmful to health reported oral cancer and gum diseases as the oral health consequences of betel nut chewing. In Vishal Khandelwal et al.'s study, the respondents reported oral cancer and oral sub mucus fibrosis as oral health consequences of betel nut chewing (Khandelwal et al., 2013). Acknowledging that the habit of chewing betel nut without or combined with smokeless tobacco products poses a threat to the well-being of betel nut chewers, the government of Bangladesh should take appropriate and timely initiatives. The government is committed to making Bangladesh a tobacco-free country by 2040. As a part of tobacco control initiatives, it has enacted the "Smoking and Tobacco Products Usage (Control) Act, 2005", and amended it in 2013. The act prohibits all advertisement, promotion, and sponsorship of tobacco products, including point of sale, and mandates that graphic health warnings in Bengali should cover at least half of the front and back of the packaging for smoking and smokeless tobacco (The Union, 2020). Bangladesh became the first nation to ratify the "WHO Framework Convention on Tobacco Control (FCTC)" in the year 2003 (WHO, 2017). Like tobacco control initiatives, the government of Bangladesh should undertake policy specifically for controlling and preventing betel nuts usage, consider raising the price of betel nut, lime, betel leaf and smokeless tobacco products and impose taxes to restrain the trade of such products. Furthermore, nationwide initiatives should be taken to increase awareness by utilizing different communication channels like social media, television etc. regarding the harmful consequences of betel nut among betel nut chewers, general public and adolescents to discourage adoption of this harmful habit.

Conclusion

Chewing betel nut is a deep-rooted cultural and traditional practice in Bangladesh. But as suggested by various pieces of research, the habit of chewing betel nut is associated with significant health risks. In fact, it has been labeled as a carcinogen by the World Health Organization. Practically, the initiative and implications for limiting chewing betel nuts and selling betel nut, leaf, and tobacco products are less evident. Bangladesh carries the burden of betel quid and tobacco-related diseases. Although there are few studies in this area, the findings were generalized. There is no prior research conducted in Bangladesh specifically focusing on culture-driven areas of the country where betel nut chewing is highly prevalent. Therefore, the current research has addressed the betel nut chewing behavior of local residents of Sylhet metropolitan city as it is one of the culture-dominant regions of Bangladesh. Like previous studies, this study also highlighted respondents' lack of awareness about the harmful consequences of betel nut chewing behavior. So, health policies targeting increasing awareness, particularly through health education, are essential. Social media and television are popular source of information obtainment. Therefore, these should be used in awareness-creating activities to convey warning messages related to its hazardous effects among the betel nut chewers as well as the community people of BN chewing culture dominant regions of Bangladesh. Besides, strict legislation prohibiting the open sale and use of such betel nut and smokeless tobacco products should be developed and implemented. Anti-betel quid chewing initiatives, including behavior change programs, should be undertaken for current chewers. As the habit is traditionally rooted, further anthropological studies should be carried out to design appropriate educational campaigns. The present study's findings can be used as baseline data for future extensive research in this regard. Because of the small sample size and convenience sampling method used in the current study, it is possible that the results do not accurately reflect the total population. So, a further large-scale study should be conducted.

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Declaration of conflict

The author has no apparent conflicts of interest to declare.

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