



ORIGINAL RESEARCH ARTICLE

CONSUMPTION OF SMOKELESS TOBACCO AND ARECA NUT AMONG ADOLESCENTS OF BHAKTAPUR, NEPAL

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ABSTRACT

**Background:** Smokeless tobacco use is prevalent in Nepal, and various Smokeless tobacco products are widely available in the country. Areca nut chewing habit is common in Nepal especially in the Terai region adjoining India. This study was aimed to assess the Smokeless Tobacco use and betel nut chewing among adolescents of Bhaktapur and to assess their knowledge about Oral Submucous Fibrosis (OSMF).

**Methods:** Cross-sectional study was performed among adolescents (age group 10-18) years studying in high schools and colleges in Bhaktapur. Random sampling methods was carried out to select 400 adolescents after taking written consent for questionnaire. Descriptive statistical analysis was done using SPSS version 16.

**Results:** Among 400 adolescents, only 24 (6%) admitted to using smokeless tobacco and tobacco based products. One hundred sixty-two (40.5%) participants had experienced betel nut chewing where the most common form was betel nut alone. Sixty one (37.8%) of them had tried at special traditional functions. OSMF was never heard before among 392 (98%) of participants.

**Conclusions:** Smokeless tobacco usage was seen to be less among the participants but areca nut chewing was comparatively high. Traditional functions and predominant usage of betel nut chewing at home emphasizes the need for awareness of harmful effect of betel nut chewing in any forms to be reinforced at one's home and community. Knowledge about OSMF was seen to be scanty in the adolescents.

INTRODUCTION

Smokeless tobacco (SLT) use is prevalent in Nepal, and various SLT products are widely available in the country. According to the Global Youth Tobacco Survey (2011), the use of SLT was seen to be 16.2% in the youth aged 13-15 years.<sup>1</sup> According to the Tobacco Control and Regulation Act, use of any tobacco products are prohibited in all public places. The sale of any form of tobacco to children under 18 years and pregnant women is prohibited.<sup>2</sup>

Areca nut chewing habit is common in Nepal especially in the Terai region adjoining India. Areca nut is one of the two main basic constituents of betel quid (wrapped areca nut, catechu paste and slaked lime in a betel leaf). It is chewed in various forms; plain supari, sweet supari, pan masala and in the form of gutkha. Gutkha is the preparation of crushed tobacco, areca nut, lime, catechu and flavoring agents. The independent role of areca nut in oral cancer is well documented in the literature.<sup>3-7</sup> Even though various studies have been done in the Terai region of Nepal, the data on the hilly areas have not been published. The widespread selling of tobacco related product alarms the situation even in this region.

This study was aimed to assess the knowledge on consumption of smokeless tobacco and areca nut in adolescent population of Bhaktapur and to assess the level of awareness of Oral Submucous Fibrosis in same population.

METHODS

A Cross-sectional study was conducted among adolescents of age group 10-18 years after getting ethical clearance from Institutional Review Board, Kathmandu Medical College and Teaching Hospital (IRC Number: 181020197). Four schools and colleges of Bhaktapur who were ready to participate were selected with convenience sampling after taking consent from the Principle.

List of total eligible students were made and 100 students were selected by lottery method from each school from 21<sup>st</sup> October, 2019 to 21<sup>st</sup> February, 2020. The sample size was calculated as:  $n = 4pq/l^2 = 400$ ; adding 10% non-response where p was taken as 81.6% and 5% error.<sup>8</sup>

Adolescent from whom assent has been taken and whose parents or guardian had given written consent for question-

naire were included in the study while those who were under psychological medication were excluded. Independent variable taken were age, gender, and dependent variable were consumption of smokeless tobacco, areca nut, level of awareness. A standardized questionnaire was developed which was adapted from WHO surveys and the Youth Tobacco Survey, 2011.<sup>1</sup> The original questionnaire was written in English and translated into Nepali language and changed back to English by few experts on both Nepali and English language. Pilot study was done among 40 adolescents who were not included in the main study to check if any modification was to be done in the questionnaire. Self-administered questionnaire was distributed among selected participants and collected. The doubts of the participants were clarified by the investigators during the filling of the questionnaire. The data was collected and only descriptive statistical analysis was done using SPSS version 16.

## RESULTS

Among the 400 adolescents, 24 (6%) admitted to using chewing tobacco, smokeless tobacco and tobacco-based products. Among the 24 participants, 13 (54.2%) were between 12 to 14

years of age when they first used it (Table 1).

**Table 2: Responses of the participants who used chewing tobacco, snuff, dip**

How old were you when you used chewing tobacco, snuff or dip for the first time?	n (%)
1. Never	0 (0%)
2. <-8	1 (4.2%)
3. 9-11	5 (20.8%)
4. 12-14	13 (54.2%)
5. 15-17	4 (16.6%)
6. 18-19	1 (4.2%)
During the past 30 days on how many days, did you use smokeless tobacco?	
1. 0	8 (33.4%)
2. 1-2	7 (29.2%)
3. 3-5	2 (8.3%)
4. 6-9	2 (8.3%)
5. 10-19	1 (4.2%)
6. 20-29	2 (8.3%)
7. All 30 days	2 (8.3%)
During the past 30 days, how did you get your own chewing tobacco, snuff/dip	
1. I did not use it during past 30 days	8 (33.4%)
2. I bought it myself	7 (29.2%)
3. I had someone else buy it for me	0 (0%)
4. I burrowed it	1 (4.2%)
5. Someone gave it to me without asking	4 (16.6%)
6. I took it from a store or another person	3 (12.4%)
7. I got it some other way	1 (4.2%)
During the past 30 days, where did you buy SLT	
1. Did not buy	12 (50%)
2. Convenience store	1 (4.2%)
3. Grocery store	9 (37.5%)
4. Drug store	0 (0%)
5. Some other place not listed here	2 (8.3%)
<b>Total</b>	<b>24 (100%)</b>

**Table 1: Demographic details of the participants**

Age groups (years)	n (%)
10-12	45 (11.2%)
13-15	175 (43.8%)
16-18	180 (45%)
Total	400 (100%)
<b>Sex</b>	
Male	173 (43.2%)
Female	227 (56.8%)
Total	400 (100%)
<b>Grade</b>	
6-8	129 (32.2%)
9-10	135 (33.8%)
11-12	136 (34.0%)
Total	400 (100%)

On questioned about the usage of smokeless tobacco during the past 30 days, two (29.2%) had used for all thirty days. Seven (29.2%) had got their own chewing tobacco, snuff or dip themselves. Nine participants (37.5%) had bought their smokeless tobacco from a grocery store (Table 2)

**Table 3: Responses of the participants who did betel nut chewing**

If yes, Questions answered for experiencing betel nut chewing	n (%)
Which form of betel nut chewing have you tried?	
1. Betel nut alone	85 (52.4%)
2. Paan (betel quid)	70 (43.2%)
3. Gutkha	3 (1.9%)
4. Others	4 (2.5%)
How long have you been chewing?	
1. 0-12 months	101 (62.3%)
2. 1-2 years	33 (20.4%)
3. >2 to 3 years	5 (3.1%)
4. >3 years	22 (13.6%)
During the past 30 days, how many days did you use betel nut chewing	
1. 0	91 (56.2%)
2. 1-2	53 (32.7%)
3. 3-5	4 (2.5%)
4. 6-9	6 (3.7%)
5. 10-19	2 (1.2%)
6. 20-29	2 (1.2%)
7. All 30 days	4 (2.5%)
Why have you tried or experienced areca nut products?	
1. Curiosity	27 (16.7%)
2. Peer pressure	23 (14.2%)
3. To impress opposite sex	2 (1.2%)
4. To freshen my mouth	25 (15.4%)
5. Parental influence	8 (4.9%)
6. Grandparents influence	4 (2.5%)
7. Family/relatives influence	2 (1.2%)
8. To relieve stress	1 (0.6%)
9. To relieve boredom	1 (0.6%)
10. At special traditional functions	61 (37.8%)
11. Others	8 (4.9%)
What is the preferred time for areca nut product use?	
1. After school hours	7 (4.3%)
2. During play hours	18 (11.2%)
3. On the way to school	1 (0.6%)
4. During school hours	4 (2.5%)
5. At home	118 (72.8%)
6. Others	14 (8.6%)
How often do you chew betel nut?	
1. Once a day	47 (29%)
2. Twice a day	7 (4.3%)
3. Three times a day	6 (3.7%)
4. >three times a day	5 (3.1%)
5. All day	0 (0%)
6. Once a week	14 (8.6%)
7. Week-ends only	31 (19.2%)
8. others	52 (32.1%)
Total	162 (100%)

**Table 4: Knowledge about Oral Submucous Fibrosis in those who have heard about it**

<b>If yes, questions about oral submucous fibrosis</b>	<b>n (%)</b>
What do you think is the effect of oral submucous fibrosis?	
1. Normal movement of jaw	1 (12.5%)
2. Inability to open the jaw	3 (37.5%)
3. Halitosis (bad breath)	4 (50%)
What do you think is the causative agent of this disorder?	
1. Alcohol	3 (37.5%)
2. Chewing areca nut	0 (0%)
3. Chewing betel quid	1 (12.5%)
4. Chewing areca nut and betel quid	4 (50%)
Where do you think this disease is prevalent?	
1. South Asia	7 (87.5%)
2. USA	0 (0%)
3. Europe	1 (12.5%)
What type of disease is OSMF?	
1. Acute lesion	0 (0%)
2. Chronic progressive lesion	8 (100%)
Are you aware that OSMF is a potentially malignant disorder?	
1. Yes	3 (37.5%)
2. No	2 (25%)
3. Not sure	3 (37.5%)
Do you think the treatment of OSMF will be effective after the onset of severe reduction in mouth opening?	
1. Yes	1 (12.5%)
2. No	2 (25%)
3. Not sure	5 (62.5%)
In case of early diagnosis, what treatment do you think will be given?	
1. Abstaining from alcohol and chewing habits	4 (50%)
2. surgery	4 (50%)
Do you think this disease could lead to the death of patient?	
1. Yes	5 (62.5%)
2. No	0 (0%)
3. Not sure	3 (37.5%)
Which gender in your opinion are more affected by OSMF?	
1. Male	7 (87.5%)
2. Female	1 (12.5%)
Total	8 (100%)

Those who experienced betel nut chewing were 162 (40.5%) participants. Among those who used it, the most common form of betel nut was betel nut alone 85 (52.4%). The participants who were using for >3 years were 22 (13.6%). During the past 30 days, 4 (2.5%) had been using it for all 30 days. The most common reason for use of areca nut was at special traditional functions seen in 61 (37.8%) of participants. Family members influence was also seen; Parents among eight (4.9%) and grandparents among four (2.5%). Majority of the participants preferred time for areca nut product use was at home 118 (72.8%), while play hours was the time for 18 (11.2%) of the participants.

Forty-seven (29.1%) of the participants chewed once a day (Table 3). Among the 162 participants who had betel nut chewing habit, 115 (71%) of them had tried to give up the habit. Majority 350 (87.5%) participants did not smoke while 84 (21%) of the participants consumed alcohol. Awareness that betel nut chewing may cause mouth cancer was seen among 253 (63.3%) of the participants.

Oral Submucous fibrosis was never heard before among 392 (98%) of participants. Among the eight participants who had heard about it, only three (37.5%) thought it causes inability to open the jaw and four (50%) thought causative agent was chewing areca nut and betel quid. Five of them (62.5%)

thought OSMF could lead to death of patient (Table 4).

## DISCUSSION

Tobacco use has been attributed to be one of the leading causes for the growing burden of non-communicable diseases.<sup>9,10</sup> After the Tobacco product control and regulation act 2010, Nepal has regulated strong policy which enforces smoke free health care facilities, education institutions, government facilities, restaurants, offices and public transport. Yet the proper implementation still poses a challenge to the government.<sup>2</sup> Due to high taxation on smoking tobacco products and low taxation on smokeless tobacco (SLT) products, increasing trend might be seen towards SLT products among the consumers.<sup>11</sup> Our study showed only 6% of the participants consuming SLT and its products which is lesser in compared to studies done by Nipun et al<sup>11</sup> where the prevalence was seen to be 40.1%. Similar lower prevalence was seen among 8% in eastern part of Nepal by Pradhan et al<sup>12</sup>, Global Youth Survey, 2011 which had 16.2% and 21.2% in western part of Nepal indicating that the distribution of tobacco consumption in Nepal varied not only across the population subgroups but geographic regions as well. SLT was found to be more prevalent in Terai areas closer to India<sup>13,14</sup> and the lower prevalence in our study could be due to the geographic location.

Provision of unrestricted access to tobacco products in the shops especially to the adolescents including minors, and its open use in public places pose a great challenge to the implementation of the regulations of the anti-tobacco law in Nepal.<sup>12</sup> Nine participants of this study (37.5%) had bought their smokeless tobacco from a grocery store similar to the study done by Pradhan et al<sup>12</sup> which also quoted shops to be the most common source. Seven (29.2%) adolescent in the present study had bought their own chewing tobacco themselves indicating the easy access apart from the policy.

Nearly half (54.2%) were between 12 to 14 years of age when they first used smokeless tobacco products in our study which indicated the decline in initiation of SLT in the population. These findings show similarity for study<sup>12</sup> where the mean age was 13.58 (SD= 2.11) years. It was alarming to see one of the participants starting before the age of 8 years, which might be due to the growing popularity of the smokeless products accessible and available in small attractive sachets.

Being a multicultural and multi-ethnic country, Nepal is largely seen as an ambivalent society regarding alcohol use. Eighty-four (21%) of the adolescents in this study consumed alcohol which was less in comparison to a study<sup>15</sup> done in Bhaktapur which showed 56% among the youth. Residing in an area where Newari culture predominates, alcohol is served routinely in traditional functions and children are exposed at their home from their early days.

Fifty participants (12.5%) of this study did smoking which was similar to study<sup>12</sup> where the prevalence was 16.46% for current smokers. These findings are more than as observed by

GSHS survey 2015, which was 7.2% for tobacco users and 5% for cigarette smokers. Adolescents' habitual smoking not only becomes a gateway to all kinds of substance abuse but also causes various health problems including upper respiratory infection, immature lung development, reduced maximum vital capacity, and lung cancer.<sup>16</sup> The adverse effects of consuming alcohol and smoking must be disseminated to the adolescent of Bhaktapur.

Betel nut is the fourth most common addictive substance in the world.<sup>17</sup> Chewing betel quid and areca nut is considered as a part of custom and tradition in some of the communities throughout the Indian subcontinent including Nepal and Pakistan.<sup>18</sup> About 40% of the participants in this study had tried betel nut chewing which was slightly higher than study done by Wazir et al<sup>8</sup> which showed prevalence of 30.4% in Parsa district of Nepal. This finding might suggest that the trend of consuming betel nut might be increasing in hilly regions too. It was alarming to know that 2.8% of the participants thought it to be beneficial to health.

The most common form was supari alone 85 (52.4%) as every household normally tend to have in Nepal. In this study, 61(37.8%) had tried them at traditional functions while only 23(14.2%) had peer pressure in contrast to findings by Wazir et al<sup>8</sup> where prevalent reasons were taste and by Dere et al.<sup>19</sup> where craving was followed by taste.

Though less, the parents, grandparents and relatives were quite influential in our study depicting the use of betel nut usage to be difficult to control from one's home. Majority of the participants 118 (72.8%) preferred areca nut use at home which indicated the easy availability. Most of the participants 115 (71%) had tried to give up the habit that was similar as seen in study by Khan et al.<sup>20</sup>

Study done at Biratnagar among OSMF patients showed its close association with the use of chewing tobacco like gutkha, pan and areca nut.<sup>21</sup> Most of the participants 253 (63.3%) were aware that betel nut chewing might cause mouth cancer yet 392 (98%) had never heard of Oral Submucous Fibrosis before the study. Among those who said to have known did not have the exact information about OSMF.

Sample size could be larger and students from other districts could be included so that the attitude and knowledge could be generalized to whole population.

## CONCLUSION

Smokeless tobacco usage was seen to be less among the participants but areca nut chewing was comparatively high. Traditional functions and predominant usage of betel nut chewing at home emphasizes the need for awareness of harmful effect of betel nut chewing in any forms to be reinforced at one's home and community. Knowledge about Oral Submucous Fibrosis was seen to be scanty in the adolescents. The availability of smokeless tobacco products and areca nut products in shops

still highlights the challenge for effective implementation of anti-tobacco law.

**CONFLICT OF INTEREST:** None

**FINANCIAL DISCLOSURE:** None

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