

CHAPTER V

DISCUSSION AND CONCLUSIONS

5.1 Discussion

This study was designed to answer three broad questions about the practice of chewing betel nut among students from Grades 7 up to 11 in the Secondary Government Schools in the main town of Thimphu: (1) what is the prevalence of betel nut users? (2) What are the factors that affect the practice of betel nut use? And (3) what are the relationships between affecting factors and chewing betel nut? A total of 345 students (46.7% males and 53.47 % females) answered the questionnaires in February 2005.

The discussion here will be based on comparison of the findings of this study with three studies carried out in Taiwan because in no other place in the world studies were carried out for betel nut prevalence among school-going adolescents. There are various studies on betel nut but most of them are clinical studies dealing with harmful effects of *areca catechu*.

For the first research question, the over-all prevalence of betel nut users within the given one-year period was 59.1%. The life-time prevalence was 67.2 % with 8.1% of those who have stopped the habit for more than a year. The point prevalence (during the data collection time in February 2005) was 35.4 % which excludes all those who declared that they have stopped the habit for more than three months.² Unlike the betel chewing practices in adolescent students in Taiwan, girls tend to use more betel nut

² This classification of prevalence, based on the Global Youth Tobacco Survey instruments, was used as such a classification was considered meaningful to find out the current betel nut chewers and ex-chewers.

than boys in Bhutan. For example, Lu *et al* (1993) who carried out a similar prevalence study in the Changhua area in Taiwan among Junior High School students found that prevalence of betel nut use in male and female students were 9.2 % and 0.9 % respectively. Ho *et al* (2000) who conducted a study in southern Taiwan has found the betel nut chewing prevalence among males to be within the range of 0.9 % and 16.1 % with only (0.0 % to 5.6 %) among females. Wang *et al* (2003) also found statistically significant (p -value 0.001) difference in prevalence between males and females with males ranking higher. However, in Bhutan, among the current users within one year, prevalence among girls amounted to 106 (52 %) and among boys, 98 (48 %). Similarly among ex-users, only 7 (25 %) were males and 21 (75 %) were females and the difference was statistically significant with a p -value of 0.048. With the aim of finding a reason for this difference in case of Bhutan, separate analysis was done for males and females. But as the sample size was too small, the analysis was not useful. Several reasons may account of this difference between Bhutan and Taiwan but the most probable one may be that while Taiwan males think that betel nut chewing projects a “macho” image and enhances their social relationship (Wang *et al*, 2004), this has never been heard from males in Bhutan. Betel nut chewing in Bhutan, instead, signifies openness, friendship, homeliness and a moment of “relaxation and conviviality” (Pommaret, 2000). However suitably designed studies may explore the reasons for this difference in the future.

There were no statistically significant differences in the prevalence of betel nut chewing among students due to age, social status, whether or not the parents are English-educated, cultural background, status of negative affect in the students, the existence of

personal or family stress-causing factors, or depression. Although it was expected that there would be a significant difference in the preference of the type of betel nut preparation among different cultural groups, this hypothesis had to be rejected as such difference was not seen. However, there were significant differences in betel nut use among grades (p-value 0.001) with betel chewing percentage reaching the peak at grades 9 and 10 and gender (p-value 0.048).

There was also significant difference (p-value 0.008) in the preference between the two genders. Females used more betel nut than males. Males preferred traditional betel quid (betel nut, piper leaf, and lime), betel nut alone with or without lime, and the sweetened Indian *Mithra Paan* prepared by small shops while females preferred dry *supari* (chopped and dried betel nuts) and ready-made *supari* sachets from Indian factories.

Among the users, maximum numbers of students got introduced to betel nut chewing at the age ranges between 12-13 and 14-15 with introduction of 28 % of the students to betel nut at each of these two ranges. There were also 9.1 % of them who got introduced to betel nut use at ages less than 7 years. The highest number of users fell among those who chew betel nut regularly (but not daily) with 44.4 %. The next highest group consisted of those who chew betel nut on rare occasions with 40.1 %. The daily chewers consisted of only 1.3 %. In terms of usual places where students use betel nut, girls preferred secluded places like their own homes, friends' houses and also schools whereas the boys usually chewed in open places like social events, public places and other places like on the way to school. This shows that girls did not feel comfortable to

use betel nut in public places. When at home, friends' houses or at school, they were among known friends.

Further, among the users 26.7 % never made any effort to stop the habit, 20.7 % made efforts to stop but could not continue and resorted to chewing again. A total of 122 students (52.6 %) made efforts and actually stopped the habit. This indicates that despite their introduction to the habit, for some reason they are making efforts to stop chewing. Among those 122 students who declared that they had stopped the habit, 59% just completed 1-3 months cessation. Twenty-two students (18 %) stopped for 4-11 months. Thirteen percent of them have completed more than one year cessation without resorting to the habit and 4.9 % have completed cessation durations more than 2 years and 3 years respectively. As those who did not complete one year may join the relapsed group, the actual prevalence of betel nut users included these stoppers. Hence, 'ex-chewers' label was used for only those who have completed a duration of more than 1 year without using betel nut.

Concerning the factors affecting the use of betel nut, the analyses revealed that influences from selected role models, tobacco use (especially chewing), and gender have significant bearing on the use of betel nut by students.

One of the most important factors that influence betel nut chewing habit in students was the presence of role models around them creating an environment conducive to betel nut use.

At home students see their parents and older siblings using betel nut, at school they see close male and female friends and the teachers taking betel nut. The higher the number of role models, the more likely was student's tendency to use the stuff. The positive association between the number of role models surrounding the students and the students' tendency to use betel nut was highly significant with a p-value of 0.001 which was quite similar to the observation by Wang *et al* (2003) in their betel nut studies in Taiwan. Although they have used only parents as role models, they have observed "a significant difference (p-value 0.001) between the behavior of their parent and the prevalence in adolescence of betel nut chewing".

It was seen that tobacco use in Bhutan had a peculiarity that smoking was directly associated with education, which was also found by the studies conducted by the Ministry of Health (2001). The present study also observed that mixed forms of tobacco use (smoking and chewing tobacco by the same person) is more popular among males.

Like the findings in Taiwan studies, the association between tobacco use – especially the chewing habit - and betel nut use by students was also significant (p-value 0.01). All tobacco chewers (100%) and all those who chewed tobacco and smoked (100%) were betel nut chewers and 76% of smokers were also betel nut users. In case of Taiwan, Wang *et al* (2003) found that "there was a high percentage of betel nut chewing adolescent students with the related habits of smoking and drinking with $p < .001$ in each case".

A multi-regression analysis was carried out to assess the importance of factors that were found significant during bi-variable analyses. The important variables were tobacco use (odds ratio 3.444) and the influence from role models like parents (odds ratio 1.661), older brothers and sisters (odds ratio 2.429), male friends (odds ratio 2.232), and female friends (odds ratio 1.847). Difference in gender and the teachers' role model did not appear as important as they appeared to be during the bi-variable analyses.

Finally, this study also attempted to find the immediate motives for chewing betel nut by the students. The highest immediate motive was to relieve boredom as 72.8% of all users said that they chewed betel nut "when there is nothing better to do" or chewing betel nut was something to do when one was bored. Social motives like "fitting in with other people", "making it easier to be sociable with others", "enjoying a party", and "making social get-together more fun" ranked second with 62.1 % of users choosing these options. 58.2 % of the users chose the answers under affect regulation motives ranking it in the third position. Self-enhancement motives were in the last position as an immediate motive with 54.3 % of the students scoring positively in that category.

When the individual factors were looked at separately in the sample population, it was found that 55.9 % of the students had English-educated parents and that 92 % of the students live with their own parents and only 8 % live with guardians and this finding agrees with the policy of the Government that the schools in Thimphu should accept only those children with parents living in Thimphu. The small group staying with guardians may be those parentless ones who live with their closest relatives in Thimphu.

Negative affective state was found higher among girls though not statistically significant. However, the level of negative affect differs significantly among grades with a p-value of 0.001. Negative affect rises and peaks at the age range of 17-18 years and then falls in the next age range of 19-20 years. This too did not have significant association with betel nut use.

Notable depression was found in 5.5 % of students as against 15 % in the United States (Choi *et al*, 1997). Given Bhutan's slower pace of life when compared to United States, this finding may ring true.

There was no difference in gender in terms of personal and family stress. Given a score ranging from 1 to 20, maximum number of students (77.1 %), scored the lowest range (1-5) and almost the whole of the rest (18 %) were within the next higher range (6-10). Although there were two more ranges (11-15 and 16-20) above, almost none of the students had stress level up to those levels which means the stress levels in the students were less than half the possible level. The majority of this stress (72 %) was combined familial and personal stress. Single family stress was higher (14 %) than single personal stress (9 %).

Further analysis revealed that the score of the stress is significantly (p-value 0.024) associated with the English education of the parents. Children of English-educated parents had far less amount of stress than the children of parents who are not English-educated. Does that mean that English-educated families have more harmonious family life that gives less stress to their children? Or, is it because the Education system in

Bhutan uses English medium and the children of English-educated parents perform better at school and have less personal stress? It may also be that the English-educated parents earn better so that their children are not bothered by financial stress in the family. However, the stress level has no significant association with betel nut use by the students and these questions are better left for the Education sector in Bhutan to explore in the future.

5.2 Scope and Limitations of the Study

This study was confined to the students of Grades 7 up to 11 in the government secondary schools in the main town of Thimphu and, therefore, it does not represent the entire student population in Thimphu, Bhutan.

As the school settings among government secondary schools in Thimphu are identical, no attempt was made to compare the findings among different schools.

Although the design of the study was cross-sectional and it was not supposed to describe the variations of the betel nut chewing practice over time, respondents have been asked to look into their past. The result of such retrospective views – especially on when they had started chewing or whether they have ever chewed in the past - may be subject to recall bias.

It is acknowledged that studies of this nature may face effects of a social-desirability bias. However, the entire data was collected anonymously with a self-administered

questionnaire by data collectors who had no connection with the schools. It was noticed that the students had no problems in dealing with very personal and sensitive aspects.

5.3 Conclusions and Recommendations

This study revealed that there were no statistically significant differences in the prevalence of betel nut chewing among students due to age, social status, whether or not the parents are English-educated, cultural background, status of negative affect in the students, the existence of personal or family stress-causing factors, or depression. The significant factors which did influence the betel nut chewing prevalence in a students in order of their importance were a) male friends, b) older brothers and sisters, c) female friends, d) tobacco use, whether chewing or smoking, and e) parental influence. As may be concluded from this, the presence of role models around a child forming an environment conducive to betel nut chewing is very important. The use of tobacco comes next although whether it is the tobacco use that affects the betel nut use or whether it is *vice versa* remains to be further explored.

Although tobacco-chewing goes along with betel nut, smoking has a peculiarity of its own showing that it is directly associated with modern English education. However, the data for this study pertains to the period February 2004 to February 2005. With the nationwide smoking ban in effect since 17 December 2004, the habit of smoking may further decline.

It was seen that students get introduced to betel nut use even before they attain 7 years of age and that 31.5 % of the students chewed betel nut before they reached the age of

12 years. As per the findings, the majority of students get introduced to betel nut in the ages ranging from 12 to 15. In view of these findings, prevention programs may have to start in the primary schools so that many students can be prevented from starting the habit. The intervention programs should basically try to minimize the influences of the social environment and control their betel use at home. It may be recollected here that more than 60 % of students chew betel nut while at home.

As the study indicated a high percentage of those who tried to stop chewing betel nut, future studies could go one step further and explore the reasons for this effort as occurrence of health problems due to betel chewing may not be so obvious to this group. This will be useful in formulating intervention programs for the future.

And finally, broader surveys could be conducted in future to look at the betel chewing situation in all adult population in the country no matter whether they are students, dropouts, or non-educated villagers with special attention to the difference in the betel chewing practice among genders. It may also be interesting to explore why children of parents who are not English-educated score more in the negative life events (stress) score.