CHAPTER III

RESEARCH METHODOLOGY

3.1 Study Design

As the main aim of the study was to find out the prevalence of betel nut chewers among young students in Thimphu and the factors prompting this practice, this research was designed as a cross-sectional, descriptive study.

3.2 Study Area

This study is confined to the Higher, Middle and Lower Secondary Government Schools within the main town of Thimphu, Bhutan. By 'main town' I refer to the area starting from Changzamtok in the south to India House in the north. Places like Lungenphug in the south of Thimphu town and Taba and Dechencholing in the north were excluded from the study.

The Government Secondary schools within the given area were the following five:

a) Yangchenphu Higher Secondary School,

b) Lungtenzampa Middle Secondary School,

c) Motithang Midldle Secondary School,

d) Changangkha Lower Secondary School, and

e) Zilukha Lower Secondary School

3.3 Study Population

The target population, after final assessment in February 2005, amounted to 3,309 students from Grades 7 up to 11 in the above mentioned Lower, Middle and Higher Secondary government schools in Thimphu. They belonged to 96 class rooms as shown in Table 2.

Table 2: Population distribution among grades and schools in the main town of Thimphu.

Grades	No. of Class-rooms	ZLSS[1]	CLSS[2]	LMSS[3]	MMSS[4]	YHSS[5]	Total	Pop. %
7	13	160	245	132	-	-	537	16.2
8	14	145	165	168	-	-	478	14.4
9	33	-	-	224	526	370	1,120	34.0
10	28	-	-	182	355	333	870	26.3
11	8	-	-	-	-	304	304	9.2
	96	**305**	**410**	**706**	**881**	**1,007**	**3,309**	**100.1**

[1] Zilukha Lower Secondary School
[2] Changangkha Lower Secondary School
[3] Luntenzampa Middle Secondary School
[4] Motithang Middle Secondary School
[5] Yangchenphu Higher Secondary School

3.4 Sample Size

The sample size was calculated using the following formula.

$$n = \frac{N z^2 p q}{d^2 (N-1) + z^2 p q}$$ (Daniel, 1987)

n = sample size

N = population size (3,309)

z = reliability coefficient at 95% CI = 1.96

p = proportion of betel users assumed 30% = 0.3

q = 1-p = 0.5

d = absolute precision of difference = 0.05 or 5% (acceptable error)

Substituting the formula with actual figures gives the following equation:

$$n = \frac{3{,}309(1.96)^2 \times 0.3 \times (1-0.3)}{(0.05)^2 (3{,}309-1) + (1.96)^2 \times 0.3 \times (1-0.3)} = 294$$

Adding 10% for any possible drop-outs, the sample size became 294+34 = 328

3.5 Sampling Method

Step 1. As the Government schools share the same characteristics in Thimphu, no comparison of the results among schools was done. Hence all the schools were treated as one homogenous group differing only among Grades as clusters. For this reason, the stratified cluster sampling method was used by stratifying students from each Grade as clusters. Then using the percentage of students from each Grade in the target population, the proportion of sample for each Grade was derived as shown in Table 3.

Table 3: Comparison of the distribution of target population among Grades 7 to 11 with the distribution of the sample population among the same Grades

Grade	Population Proportion	Required Sample	Actual Sample	Proportion of Sample
7	16 %	53	45	13 %
8	15 %	47	50	15 %
9	34 %	112	124	36 %
10	26 %	86	91	26 %
11	9 %	30	35	10 %
Total	**100 %**	**328**	**345**	**100 %**

Step 2. To give equal chance to the schools in selecting Grades, Grades were randomly selected from among the chosen schools as shown in Table 4 using the sample size for each Grade generated by *Step 1* above:

Table No. 4: Results of the random selection of Grades from among Schools

Schools Grades	ZLSS[1]	CLSS[2]	LMSS[3]	MMSS[4]	YHSS[5]	Results of Random Selection
7	X	X	X	-	-	1 classroom from Changkha
8	X	X	X	-	-	1 classroom from Zilukha
9	-	-	X	X	X	3 classrooms from Yangchenphu
10	-	-	X	X	X	3 classrooms from Motithang
11	-	-	-	-	X	1 classroom from Yangchenphu

[1] Zilukha Lower Secondary School
[2] Changangkha Lower Secondary School
[3] Luntenzampa Middle Secondary School
[4] Motithang Middle Secondary School
[5] Yangchenphu Higher Secondary School

As apparent from Table No. 4 above, Grades 7 and 8 were randomly selected from Lungtenzampa, Changangkha, and Zilukha schools; Grade 9 and 10 from Yangchenphu, Lungtenzampa, and Mothithang schools. Sample for Grade 11 was from Yangchenphug.

Step 3. After choosing the Grades in this way from a school, again the classrooms were randomly selected from the chosen schools as each Grade in a school were divided into several sections which are termed as 'classrooms' in this study.

As whole classrooms were used instead of getting the exact number of sample students from each Grade, the final sample turned out to be larger (345) than the actual calculation (328) given above.

3.6 Research Instrument

3.6.1 The questionnaire

For collecting the required data, a self administered questionnaire was used. The questionnaire covered all aspects of the enquiry.

Part I of the questionnaire related to general socio-demographic information like gender, age and Grade of the student.

Part II deals with parents, step-parents, guardians, elder brothers and sisters, male and female friends, and even teachers who served as role models for the individual students.

Part III attempted to define the social economic status to which an individual belongs. The ability of the parents or guardians to speak and write fluently in English was taken as a proxy because with this ability makes the people accessible to a lot of information. The traditional non-English education exposes a person more towards the religious practices and limits his or her exposure to modern knowledge. Social and economic status are combined because in Thimphu, the higher the income, the higher the social status tends to be, since this study did not assess clergymen. Hence, the questionnaire asked the students to mention the occupation of their father, mother, or guardian (if they were not living with parents). The occupations were classified into four categories, Group 1 for senior white collar, Group 2 for white collar, Group 3 for blue collar, and Group 4 for self employed people. From this information, the study attempted to determine broadly the social and economic status of parents.

Part IV looked at the cultures that approved or disapproved betel chewing habit. As the main language spoken in the family broadly differentiates the cultural background of the students, the students were asked to mention which language was mainly used in the family from among the four main languages spoken in the country. This was found to be an indirect but effective way to find out the dominant culture in the families even if the parents originally belonged to different cultures.

Part V consisted of only two questions to find out if the student also chews or smokes tobacco.

Part VI looked at the negative affect (mood swings) aspect of the student within a period of one month before the data collection. For measuring negative affect, psychiatric co-morbidity (depression) (Part VII), and stress (Part VIII), the established instruments developed by psychiatrists were used.

For negative affect, the instrument consisted of 12-questions about an individual's mood in the past one month, especially with regard to lack of perceived control, negative self-concept, and pessimism.

The frequency of depression as psychiatric co-morbidity measures six depressive symptoms experienced during the past one year. This measure provided a brief index of depressive symptoms and it does not yield a diagnosis of depression.

In this study, stress is measured by negative life events that cause stress in adolescent life. The 20-item checklist of negative life events consists of 11 items for events that occurred to family members (e.g., "Somebody in my family had a serious illness.") and 9 for events that occurred directly to the adolescents themselves (e.g., "I had a serious accident.").

The internal consistencies and construct validities of these instruments have been well tested before they were deposited in public domain by the Cancer Centre, University of California, San Diego, USA. These instruments have already been used for substance use researches especially in the youth. Table 5 below gives the details of these instruments.

Table 5: List of instruments for measuring negative affect, depression, and stress and their internal consistencies

Instruments of measure	(Cronbach's alpha coefficient)	Reference Source
Negative affect	0.88	Wills *et al* (2002)
Depression	0.72	Choi *et al* (1997)
Stress (negative life events)	0.71	Wills *et al* (2001)

Part IX of the questionnaire dealt with the actual prevalence of betel nut use including the level of use and the types of betel nut products preferred by an individual. This part also looks at whether a respondent is a past user (who has stopped now), current user, relapsed case (a respondent who had stopped the use, but resumed the habit again), or one who has never used it.

The final part or Part X was to assess the immediate motives for using betel nut. A 15-item inventory, developed by Wills (1999 and 2002) was used. Substance use prompted by social motives (items 1-4), self-enhancement motives (items 5-8), boredom relief motives (items 9-10), and affect regulation motives (items 11-15). This scale was useful in the case of betel nut also because the immediate motives for the use of substances like tobacco, alcohol, and betel nut appears to be same.

3.6.2 Reliability Test

For reliability of questionnaires, pre-test was done among 35 students from Grade 9 students from Lungtenzampa Middle Secondary School before the actual data collection. This school was included in the target population of the study but on random selection, no sample was chosen from this school. The internal consistency of the rating scales for all variables amounted to Cronbach's alpha coefficient of 0.79.

3.6.3 Validity Test

Cross-cultural validity of the adolescent psychology-related instruments was reviewed by Dr Panrapee Suttiwan, Assistant Professor and Deputy Dean for Research and Planning, Faculty of Psychology, Chulalongkorn University.

Content validity for the rest of the instruments was reviewed by 3 experts in the light of the given operational definitions. Further, the instruments relating to the actual prevalence of betel nut use in the schools were adopted from WHO's Global Youth Tobacco Survey instruments.

3.6.4 Data collection

To obtain authenticity for data collection from the schools and the support of the school authorities, the Secretary of the Ministry of Education approached and clearance was

obtained (letter no. MoE/ 2004/2236 dated 15 November 2004). The Ministry not only gave the requested permission but also asked the researcher to share the findings of the study.

In order to ensure timely response and clarity, data collection was carried out under close supervision. For this purpose, nine research assistants were recruited and trained before data collection. The research team remained in the classes while the students were answering the questionnaires firstly, to give proper direction on how to fill the questionnaire and clarify words and terms that any student found difficult to understand and secondly, to ensure the return of the questionnaires after the students have completed the job.

In order to obtain free and frank answers from the students, none of the research assistants were from the schools. The students were further assured that their individual answer scripts will not be revealed to anyone by the researcher.

3.7 Data Analysis

Descriptive statistics, frequency and percentage were calculated to find out the characteristics of the target population and the immediate motives for chewing betel nut. For hypothesis testing, Chi Square and binary logistic regression analyses were used to find association between:

- betel nut chewing environment and the habit of betel nut chewing in students.

- social status, education, cultural background, and the habit of chewing betel nuts by students, and
- negative affect, depression, and stress levels and the betel nut chewing habits in students.

Finally, a multi-variable analysis was carried out to asses the importance of all those variables which were found to be associated with betel nut chewing during the bi-variable analysis.

3.8 Scope and Limitations of the Study

It would have been better if the study could include the whole adolescent population in Thimphu so that comparison can be made in the prevalence of betel nut use among the students of government schools, private schools, formal schools, vocational students, and also other youngsters in Thimphu. A complete picture of the betel nut use among the adolescent population of Thimphu would have been then possible. Due to limitations imposed by time and resources, this study was confined only to the students from five secondary government schools in main town of Thimphu. Hence, the findings of the study will be applicable only to the government secondary schools that are included in the study population. One may not be able to infer the findings from this study to the general school-going adolescent population in Thimphu district.

3.9 Benefits of the Study

This study is the first step taken to look at the betel nut chewing problem in Bhutan. If this study gives a picture, however small, of the betel nut chewing habit among the school students in Thimphu and (a) attract the attention of the public health executives

to youth and betel nut use and (b) show some of the important factors that influence the youngsters in the school in taking up the habit, the study would have achieved its objectives. Bhutanese people have already started complaining about this habit in *Kuensel*online, the web-page of Bhutan's bi-weekly newspaper, *Kuensel*. These comments have not been taken seriously so far as the arguments against betel nut use are not based on scientific studies but on mere observations.

3.10 Ethical Considerations

The participating students have received full explanation about the survey including its benefits. They were also ensured confidentiality, freedom to withdraw if they wanted to, and access to the final report. They were also explained that the information collected from them will be of no use for any other purpose than the openly explained one.