Use of Smokeless Tobacco by Low Socio-Economic Populations and Risk Factors Associated with it

Final Report

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Submitted by

Dr. Md. Shahjahan
Daffodil International University
Dhaka, Bangladesh

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Bangladesh Center for Communication Programs
House #08, Road #03, Block #A, Section #11
Mirpur, Dhaka-1216, Bangladesh.

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Principal Investigator
Dr. Md. Shahjahan

Co-Investigator
Prof. Dr. M. Mizanur Rahman

Research Team
Prof. Dr. M. Kabir
Md. Mokhlesur Rahman
Dr. ABM Alauddin Chowdhury

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Md. Shahjahan
Principal Investigator

ACRONYMS

BBS	Bangladesh Bureau of Statistics
BCC	Behavioral Change Communication
BCCP	Bangladesh Center for Communication Programs
BMRC	Bangladesh Medical Research Council
BSCIC	Bangladesh Small and Cottage Industries Corporation
Co-I	Co-Investigator
FCTC	Framework Convention on Tobacco Control
FGD	Focus Group Discussion
GATS	Global Adults Tobacco Survey
GIS	Geographical Information System
HIES	Household Income Expenditure Survey
LOE	Level of Effort
MPOWER	
M	Monitor tobacco use and prevention policies
P	Protect people from tobacco smoke
O	Offer help to quit tobacco
W	Warn about dangers of tobacco
E	Enforce bans of tobacco advertising, promotion and sponsorship
R	Raise taxes on tobacco.
PI	Principal Investigator
SD	Standard Deviation
SLT	Smokeless Tobacco
SPSS	Statistical Package for Social Sciences
TV	Television
WHO	World Health Organization

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EXECUTIVE SUMMARY

Despite the national and international collaborative efforts and commitment of World Health Organization through Framework Convention on Tobacco Control (FCTC), prevalence of tobacco consumption is facing an increasing trend. If disaggregated analysis on smokeless forms and smoked forms are reviewed prevalence of smokeless tobacco remain static.

Cost, social acceptability and non-stringent rule in smokeless product sales have made people to choose and continue on smokeless tobacco use. This study is aimed to investigate the use of smokeless tobacco among low socio-economic populations around Dhaka city to investigate in-depth situation in this context.

Both quantitative and qualitative approaches were adopted for this study. A total of 459 smokeless tobacco users were interviewed using systematic random sampling technique. Four focus group discussions (FGD) were also conducted in the area. Each FGD comprised of average 8 participants and in total there were 33 participants.

Socioeconomic and demographic characteristics of the respondents showed that the mean (±SD) age was 43.2(±11.3) years. About 22 percent of the respondents had no formal education, while only 4 percent had HSC or higher level of education. Service and business were the primary occupations of men, while about one-third of the female respondents were housewife followed by 11 percent garment workers. The median monthly income of the respondents' family was Tk. 8000 and the average family size was about 5 (mean 4.6 with SD±1.8). Very few respondents had access to newspapers and radio; however majority (61 percent) had access to television.

To supplement the quantitative information, qualitative tools were applied and explored the hidden factors those are associated with the use of smokeless tobacco. Among FGD participants, three-quarters were male and rest were female with mean age of 30 years. About half of them were school teachers (50 percent) with higher educational background (having Bachelor/Master degree).

From the focus group discussions it is revealed that most of the participants heard about the adverse health effects of SLT use. Participants' knowledge varied according to the types of SLT addiction, e.g. betel leaf with *Zarda* is the common form which followed by betel leaf with *Sadapata* and *Gul* or *Nossi*. They also mentioned that poor

and low-income smokers are not fully aware of the dangers of SLT use. They mentioned that SLT especially *Zarda* and *Gul* may have little flavors that make exhilarating for the users initially, poses numerous health risks.

Related to shifting from SLT business into others, participants felt its need but mentioned of various constrains on the process of switching to other business. In this regards, most of the respondents emphasized on the government initiations. Government can provide license to few betel leaf sellers in each locality. These enlisted betel leaf sellers will be monitored by the government deployed authority.

Nearly half of the users initiated of using SLT at very young age 15-24 years and about one-third of the respondents initiated at age 25-34 years. The mean age of initiation of SLT use was found to be 24.7(±9.3) years that is significantly higher ($p<0.006$) in Demra (26.5±9.9 years) than Tongi (23.0±8.3 years). The mean length of use of SLT 17(±0.1) years and similar situation was observed in both the study areas. The mean number of SLT use was 9.0(±7.2) which is significantly higher in Demra (16.3±10.9) than that of Tongi (10.6±7.2). Among the respondents, 22 percent are smoking cigarette/*bidi* along with using SLT.

About 61 percent women have used SLT during their pregnancy and the rate is higher in Demra (68.4 percent) than Tongi (51.7 percent). Nearly one-in-four of the respondents reported that they tried to give up SLT use in the past and about 29 percent did not feel any necessity to give up SLT use, while 26 percent had a plan to quit SLT use in future, as claimed. The analysis shows that 22 percent of the respondents are currently suffering from dental decay and the rate is higher in Demra (23.9 percent) as opposed to Tongi (19.7 percent). It was also found that over 27 percent males are suffering from dental problems compared to 17 percent female respondents. Oral infection rate was significantly ($p<0.001$) higher among males (7 percent) than females (4 percent).

About 20 percent respondents of Demra and 24 percent of Tongi believe that SLT use can cause heart disease and such perception is higher ($p<0.001$) among males (33.6 percent) than that of females (10.2 percent). In the study, significantly higher proportion of respondents of Demra knew about the adverse health effects of SLT use than the respondents of Tongi ($p<0.001$). About 46 percent mentioned of duodenal ulcer, 43 percent mentioned of cancer, 40 percent of oral infection, 27 percent of stone/scratch on teeth and 26 percent mentioned of heart disease that can occur due to prolonged SLT use.

To explore the impact of knowledge on SLT use, chi-square analysis was done and significant association was found by gender ($p<0.001$), sufferings from any disease ($p<0.002$), ever tried to quit SLT use ($p<0.008$) and plan to quit of using SLT in near future ($p<0.001$).

The respondents were asked about the factors that influence a person to become addicted with SLT and found that, more than one factor influences a respondent in SLT use. Among the factors peer influence (more than half), easy availability (over one-third), removing bad odor (one-third), influence of elderly family members (31 percent), parental influence (31 percent), lower price of SLT products (one-fourth) are most influencing among the respondents, as observed. The respondents of Demra shows higher response rate in every factors in comparison to that of Tongi area.

To investigate the relationship between age of initiation and SLT use we carried out chi-square analysis and found significant association with gender ($p<0.01$), current age of SLT user ($p<0.001$), other household members using SLT products ($p<0.008$), length of SLT use ($p<0.001$) and frequency of SLT use per day ($p<0.002$).

To identify the important determinants logistic regression was performed. The dependent variable was whether they have the knowledge on adverse health effects of SLT use. The independent variables were age, gender, any family member using SLT, sufferings any diseases due to use of SLT and access to media. The analysis suggests that male respondents were 2.7 times more knowledgeable in comparison to females ($p<0.001$) and the respondents suffering from SLT related diseases were 3.7 times more knowledgeable than the respondents without diseases ($p<0.001$).

Factors like low cost, social acceptability and non-stringent rules in smokeless tobacco product sales made people to choose or shift over smokeless tobacco have also influence on the use of SLT. Cultural acceptability of smokeless tobacco has led to high prevalence of SLT use especially among economically poor. Tobacco cessation counseling and warning on tobacco health hazards, especially smokeless tobacco, have to be emphasized through use of mass media and developing communication messages which would make people aware about the health hazards of SLT.

CHAPTER I

Introduction and Background

1.1 Introduction

Since the introduction of the Framework Convention on Tobacco Control (FCTC), several countries have been a significant decline in the prevalence of cigarette smoking (Myers, 2013). Most countries in South Asia also ratified their polices in the line of FCTC. However, there is a lack of knowledge on the exiting policy framework relates to smokeless tobacco. It is not surprising, therefore, that smokeless tobacco has been neglected policy area and smokeless products remain inexpensive and widely available to people in South Asia including poor.

In Bangladesh, some studies conducted on smoked form of tobacco use and its impact on health, but we did not found any study on smokeless tobacco. This study is undertaken to fill up the gaps in knowledge to consider strategies and develop communication to reach about the consequences of health problems emerged from smokeless tobacco.

1.2 Background

Smokeless tobacco (SLT) is the tobacco consumed orally, not smoked. It has been in use for as long as other forms of tobacco consumption and its use has been increased (Rogozinski, 1990). The main types of SLT in Western countries are chewing tobacco and oral snuff. SLT use is the leading preventable cause of premature death and disease worldwide, and its impact is even more pronounced in low- and middle-income countries (World Health Organization, 2011). South Asia is a major producer and net exporter of tobacco. Over one-third of tobacco consumed regionally is smokeless. Traditional forms like betel quid, tobacco with lime and tobacco tooth powder are commonly used. Tobacco leaf production has been increasing steadily for many decades, and has doubled since 1960s (World Bank Economics of Tobacco, 2003). The increasing demand for tobacco in Bangladesh is being met by imports, especially from India (Deb U, 1997).

Increasing use has been reported not only among men, but also among vulnerable groups such as children, teenagers, women of reproductive age and by immigrants of South Asian origin wherever they have settled. Habitual betel quid chewing is commonly practiced by men and women in Bangladesh, India, Pakistan and Sri Lanka, while tobacco smoking is much more common among men in these countries compared to women, except for certain small geographic areas (Gupta and Ray, 2003)**.**

1.3 Problem statement

About one in every three adults smokes and the majority are in developing countries (800 million) and most of them are male (700 million). Smokeless tobacco use in South Asia raises various concerns. In South Asia, the use of smokeless tobacco is common. The various forms are chewed, sucked or applied to teeth and gums **(***IARC,1985;* Bhonsle RB, Murti PR and Gupta PC,1990**)**. Generally sun or air cured smokeless tobacco can be used by the person itself in unprocessed, processed or manufactured form. It can be used by the person with lime, with areca nut or in a betel quid (*pan*). The distribution of tobacco consumption is not uniform; it is disproportionately higher in lower socioeconomic groups, poor, semi skilled manual occupation groups, unemployed and poor with no education. In south Asia including Bangladesh traditional values do not permit smoking by women, but there is no such taboo against using smokeless tobacco. The use of chewing tobacco, *bidis* and cigarettes is widespread in Bangladesh and an estimated 70 percent of the tobacco produced is used for cigarettes and *bidis*, 20 percent is consumed as chewing tobacco and the remaining 10 percent is used in other forms of tobacco (Global Adult Tobacco Survey- Bangladesh Report, 2009).

In Bangladesh, tobacco use has become not only a major contributor to the country’s high morbidity, but also the biggest drains to the nation’s economy. Several national studies in Bangladesh have shown high prevalence of both smoking (e.g., cigarettes, *bidis*) and use of smokeless tobacco (e.g., betel quid with tobacco, *khoini, gul, zarda* ; GATS Bangladesh Report, 2009).

In Bangladesh 43.3 percent of adults (41.3 million) currently use tobacco in smoking or smokeless form. Among them 26.4 percent of men, 28 percent of women and overall 27.2 percent (25.9 million adults) currently use smokeless tobacco (GATS Bangladesh Report, 2009). Another study showed that, an estimated 20–30 percent woman in rural Bangladesh is using smokeless tobacco **(**Islam N, 1994**)**.

1.4 Rationale of the research

In developing countries, tobacco consumption is mainly done in two forms: smoked tobacco products and smokeless tobacco. Most commonly used smokeless tobacco products include - tobacco *pan masala*, tobacco with lime, and tobacco with pan and betel quid **(**Gupta *et. al.,* 2003**)**. Prevalence of smokeless tobacco consumption in India is 20 percent. It is significantly higher in males than in females (28 percent among males and 12 percent among females) and in rural population as compared to urban population **(**Rani *et al.*, 2003**)**. Easy affordability, lesser cost and misconceptions regarding its useful health effects are important contributory factors for increased smokeless tobacco consumption. The major health consequences associated with smokeless tobacco use in South Asia include cancers of several sites (e.g. the upper respiratory and digestive tracts). It is also responsible for poor reproductive outcomes. In addition, use of areca nut, often chewed with tobacco, can predispose to diabetes mellitus and aggravate asthma **(**Prakash *et al.*, 2003**)**.

Bangladesh is one of the largest producers of tobacco in the world, smokeless tobacco products are used by men, women, adolescent and children. New forms of highly addictive packaged smokeless tobacco products such as *Zorda*, *Gul*, *Sadapatha* are not expensive and rates of use are higher in low-income urban communities.

There is a strong association of smokeless tobacco consumption with occurrence of adverse cardiovascular occurrence like myocardial infarction, stroke and ischemic heart disease have been studied in detail in western population. Results from these studies offer a mixed picture with some showing increased incidence of these adverse events while others showing no such association **(**Pandey *et. al.*, 2009**).** Similarly, contradictory results have been seen in studies evaluating increased risk factors for cardiovascular diseases in smokeless tobacco consuming population **(**Ernster *et al.,* 2009**;** Siegel *et al*., 1990).

Accessibility of tobacco products is an important environmental factor that influences tobacco initiation (Lynch *et al*., 1994; Forster *et al*., 1998). In many studies, one of the strongest risk factors for tobacco using is exposure to peers, especially close friends, who use smokeless tobacco (People, 1994, Meijer *et al*., 1996, Gritz *et al*., 1998). Parents who use smokeless tobacco are more likely than those who do not to have children who use tobacco (Conrad *et al*., 1992, Jackson, 1998). Studies found that children in grades Four through Six were almost three times as likely as to have use tobacco in the past 30 days if they lived with an adult tobacco user (Morris et al.,1993) and adolescents were about two times more likely to have use tobacco daily if one or both parents use tobacco (Green *et al*., 1991).

In the light of above review, this study is aimed to investigate the use of smokeless tobacco among the low socio-economic populations around Dhaka city to investigate in-depth situation in this context.

1.5 Objectives of the study

1.5.1 General Objective:

The purpose of the study is to investigate the use of smokeless tobacco and the risk factors associated with it.

1.5.2 Specific objectives:

The specific objectives of the study are to:

i. Investigate initiation of using smokeless tobacco and pattern of use;
ii. Investigate their awareness on health of effects of smokeless tobacco;
iii. Investigate the gender differential use of smokeless tobacco;
iv. Estimate prevalence of risk in smokeless tobacco;
v. Identify risk factors influencing smokeless tobacco uses by low income people.

This study covered the component of the World Health Organization (WHO) Monitor tobacco use and prevention policies from MPOWER package (Monitor tobacco use and prevention policies; Protect people from tobacco smoke; Offer help to quit tobacco; Warn about dangers of tobacco; Enforce bans on tobacco advertising, promotion and sponsorship; and Raise taxes on tobacco).

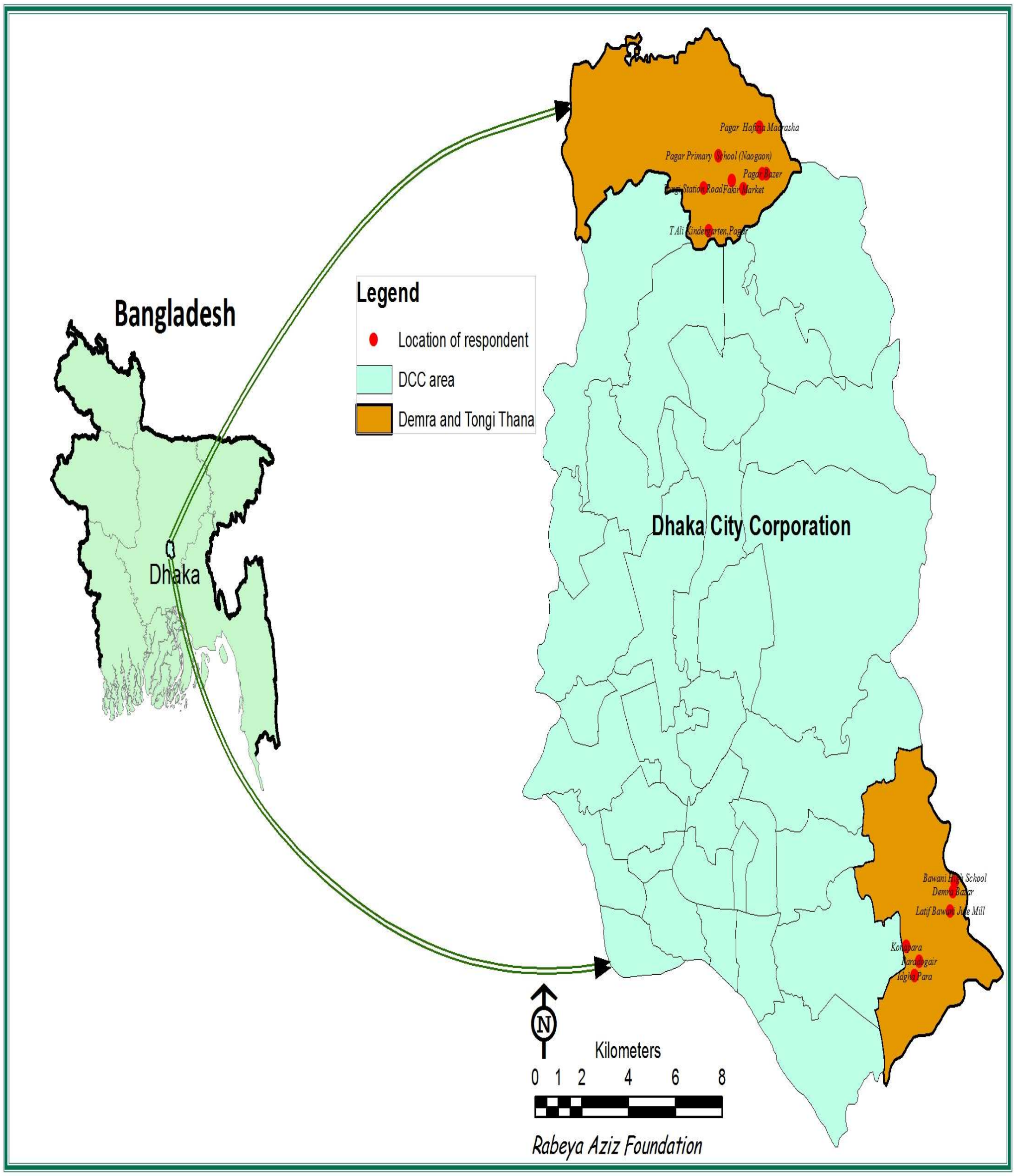
CHAPTER II

Methodology

2.1 Study Design:

This Cross-sectional study was conducted to understand the use of smokeless tobacco by low socio-economic people and the risk factors associated with it. Both quantitative and qualitative approaches were used in this study.

2.2 Map of the study area derived from Dhaka City


Pagar Hafizia Madrasha
Pagar Primary School (Naogaon)
Pagar Bazer
Tongi Station Road
Fakir Market
T Ali Kindergarten, Pagar
Bangladesh
Dhaka
Legend
● Location of respondent
DCC area
Demra and Tongi Thana
Dhaka City Corporation
Bawani High School
Demra Bazar
Latif Bawani Jute Mill
Konapara
Paradogair
Idgha Para
N
Kilometers
0 1 2 4 6 8
Rabeya Aziz Foundation

2.3 Study area

This study covered two areas, viz. Demra and Tongi, adjacent to Dhaka Metropolitan city of Bangladesh. These two adjacent areas of Dhaka were selected for the study as these are industrials areas and easily approachable. Traditionally this cohort of population use smokeless tobacco higher than others (Gilani *et al.*, 2013). Usually in Industrial areas, low income people live and supposed to use smokeless tobacco more frequently than others.

2.4 Eligibility of Respondents:

People lived in Demra and Tongi industrial areas those use smokeless tobacco and meet the following inclusion as well as exclusion criteria were chosen for this study.

Inclusion criteria

- Smokeless tobacco user (with or without smoking habit)
- Age 15 years and above
- Both male and female
- Physically able and willing to participate

Exclusion criterion

- Very sick or very old person
- Temporary migrant (guest)

2.5 Study Period: Total study period was 9 months (March-November, 2014)

Sample size

The sample size was determined by using the following formula.

$n=z^2pq/d^2$ [× design effect]; Where,

n= desired sample size

z = 1.96 (at 95% confidence interval)

p = Prevalence of smokeless tobacco = 27.2% [GATS, 2009]

q = 1-p

d = precision level

Design effect = 1.5

$= (1.96)^2 (0.272) (0.728)/ (0.05)^2$[× design effect]

= 304.3 × design effect = 459 (Approx)

About 459 SLT users were the respondents who selected from both Demra and Tongi. Both male and female respondents from two areas were considered.

2.6 Sampling Technique

An enumeration survey was conducted prior to actual data collection to identify the target population by sex. Enumeration checklist was developed to list eligible household members. The checklist contained Line number, Name of the person, Relationship with household head, Gender, Education, Habit of smokeless tobacco use and Number of SLT users in the family. A sampling frame was constituted with this information segregated by sex. A systematic sampling technique was used to reach the target sample from this sampling frame.

2.7 Survey Instruments

Quantitative data were collected at household level using semi-structured questionnaire. The questionnaire was pre-tested in a non-sample site in an industrial area within Dhaka city with draft Bangla version of the instruments to get feedback on the suitability, appropriateness and sequencing of the questions.

Four focus group discussions (FGD) were conducted in the sample areas (two from each area) among the local influential, school teachers, women representatives and SLT sellers using pre-defined checklist. The qualitative information used to supplement the findings of the quantitative data.

2.8 Data Collection Approach

As this study is a mixture of both qualitative and quantitative approaches, 226 in Demra (107 males and 119 females) and 233 in Tongi (116 males and 117 females) respectively were selected for interview. The face-to-face interview technique was used to collect information from respondent SLT users.

For qualitative information, 8-10 participants were selected for each FGD from local elites, female representatives and shopkeepers (SLT sellers). A checklist was used to conduct the FGD keeping the objectives of the study in mind.

Twenty four persons were recruited based on their experiences and educational qualifications. Two days extensive training was held to train the field data collectors. The field staffs were informed about the background of this study, objectives, methodology, individual sections of the data collection instruments, interviewing techniques, etc. Mock interviews were conducted among themselves to get acquainted with the questionnaire. Field trial on the questionnaire was conducted in a city slum near Tejgaon industrial area. Based on the performance 16 field investigators and four supervisors were finally selected for the study.

2.9 Data analysis plan

The collected data were edited, coded and entered into a database using SPSS software. Analysis was done targeting the study objectives by considering the indicators. Descriptive analysis of all relevant variables was done using measures of central tendency, Association and differentials within/between variables was tested using appropriate test. Logistic regression was conducted to find out the factors influencing smokeless tobacco uses among low income peoples.

2.10 Ethical Issues

Before starting the data collection, the interviewers briefed the respondents about the objectives of the study to make him/her mentally ready for specific question. An informed written consent was signed from the respondents before interview and was ensured not to disclose their personal information.

The following variables were considered at the time of preparing data collection instruments:

Broad category of the variables	**Selected variables**
Socio-demographic variables	Age, gender, education level, occupation, marital status, Family History of SLT, Income, religion, Living area, Family members, Numbers of Members used SLT, Mobile use.
Use related variables	History of initiation, Type of SLT use, Frequency of SLT use, duration of SLT use.
Risk factors related variables	Age, dental caries, periodontal disease (gingivitis), aphphthous ulcer, oral cancer, oral infection.
Factors influencing use of SLT	Accessibility of SLT, Availability of SLT, Parental SLT use, Sibling tobacco use, Peer tobacco use, Pricing of SLT, Pregnancy, Vomiting.

2.11 Operational Definitions

Low socio-economic populations: The household Income expenditure survey 2010 of BBS suggested that TK. 1250 per person per month is categorized as the poor living in low socio economic areas at national level that translates to an average income of TK. 5500 per family per month.

Low Income people in the Industrial belt: As per definition of BBS, per capita earning of Taka 1250 or less is considered as low income group people (HIES, 2010). It would be much higher due to inflation and other factors over time. However, in the industrial areas in the periphery of the capital, scope of earning of such group of people is much higher than that of the rest of the country. We found that the income of our respondents is about 46 percent higher than that of the reference cut-off point.

Industrial Area: The areas where usually employees of industries along with their relatives reside. In the proposed study, Tongi and Demra are considered as Industrial areas. There are Pharmaceuticals, Garments, Steel and Re-rolling and many other Industries. In these areas they produce essential commodities.

Demarcation of the study area: First hand information was gathered by visiting the spots of the study area. Two adjacent area of Dhaka city, viz. Tongi and Demra, were selected for the study as these are industrials areas, easily approachable and traditionally they use smokeless tobacco higher than others.

2.12 Response Rate

Study Area	Total Sample	Total number reached	Percent of sample covered
Demra	230	226	98.3
Tongi	230	233	100.3
Total	460	459	99.8

The response rate was 99.8 percent due to absence of respondent at the time of interview. The interviewer's repeatedly attempts to catch the listed person but was failed, particularly in Demra four listed person could not reached.

CHAPTER III

Quantitative outcomes

This study finding will provide a picture on smokeless tobacco in urban settings adjacent to Dhaka city where using smokeless tobacco among men and women are common. Besides, it has been a recent tendency that males giving up smoking and take smokeless tobacco as an alternative without understanding the consequences on health like dental caries, oral cancer, etc. This study finding will provide a direction of conducting larger study which will provide strategies and policies to address the issues.

3.1 Socio Demographic Information:

Socioeconomic and demographic characteristics help in comparing findings with similar characteristics in other independent researches. This will also help in explaining the causal relationship of findings of two different study locations. Individual-level characteristics include age, education, occupation and monthly income, while household-level variables include dwelling house characteristics, sanitation and access to mass media, etc. In the case of selecting background characteristics, our interest lies on the variables those may have direct impact on the dependent variables. Some variables are important from the demographic point of view, while some others are from socioeconomic point of view.

Table 3.1: Distribution of respondents by age, gender, education and occupation

Variable	Demra (n=226)		Tongi (n=233)		Total (n=459)	
	Number	Percent	Number	Percent	Number	Percent
Age						
≤25	4	1.8	10	4.3	14	3.1
26-35	48	21.2	68	29.2	116	25.3
36-45	95	42.1	87	37.4	182	39.7
46-55	37	16.4	45	19.3	82	17.8
56-65	25	11.1	21	9.0	46	10.1
66+	17	7.5	2	0.9	19	4.1
Mean±SD	45.0±11.7		41.4±10.6		43.2 ±11.3	
Gender						
Male	107	47.3	116	49.8	223	48.6
Female	119	52.7	117	50.2	236	51.4
Education						
Illiterate	56	24.8	43	18.5	99	21.6
Can sign only	77	34.1	87	37.3	164	35.7
Primary	39	17.3	40	17.2	79	17.2
Secondary	38	16.8	36	15.5	74	16.1
SSC	7	3.1	17	7.3	24	5.2
HSC and above	9	4	10	4.3	19	4.2
Occupation						
Housewife	93	41.2	55	23.6	148	32.2
Service	41	18.1	62	26.6	103	22.4
Business	59	26.1	34	14.6	93	20.3
Garments worker	5	2.2	46	19.7	51	11.1
Day labor	22	9.7	22	9.4	44	9.6
Skilled labor	4	1.8	3	1.3	7	1.5
Others	--	--	11	4.7	11	2.4

Age is an important characteristic for describing demographic situation of the respondents. As shown in Table 3.1, more than one-third of respondents belong to 36-45 years age group with mean age of 43.3 (±11.3) years. The average age of respondents in Demra is little higher than that of Tongi (45.0±11.7 vs. 41.4±10.6). Around 22 percent respondents had no education and another 36 percent can sign only. Only 4 percent of the respondents had HSC and above education. Service and business were the primary occupations of men in the industrial area accounts for 22 percent and 20 percent respectively, while about 32 percent of the female respondents were housewife and 11 percent were garment workers, as reported.

Table 3.2: Distribution of the respondents by marital status, family size and monthly income

Variable	Demra (n=226)		Tongi (n=233)		Overall (n=459)	
	Number	Percent	Number	Percent	Number	Percent
Marital status						
Married	211	93.4	200	85.8	411	89.5
Single	2	0.9	7	3.0	9	2.0
Separated /Divorced	1	0.4	5	2.1	6	1.3
Widow	12	5.3	21	9.0	33	7.2
Family Size						
≤ 3	48	21.2	61	26.2	109	23.7
4-5	117	51.8	128	54.9	245	53.4
6+	61	27.0	44	18.9	105	22.9
Mean ±SD	4.9 ±2.0		4.3 ±1.7		4.6 ±1.8	
Monthly Income (Family)						
≤ 3000			4	1.7	4	.9
3001-6000	62	27.4	26	11.2	88	19.2
6001-9000	105	46.5	63	27.0	168	36.6
9001-12000	28	12.4	71	30.5	99	21.6
12001-15000	10	4.4	36	15.5	46	10.0
15001+	20	8.8	33	14.2	53	11.5
Median	7000		10000		8000	
Respondent Income						
None	79	35.0	54	23.2	133	29.0
Up to 3000	5	2.2	11	4.7	16	3.5
3001-6000	66	29.2	62	26.6	128	27.9
6001-9000	66	29.2	99	42.5	165	35.9
9001-12000	8	3.5	2	.9	10	2.2
12001-15000	--	--	3	1.3	3	0.7
15001+	1	0.4	2	0.9	3	0.7
Mean	4340		5202		4779	
% of income spend for family						
None	126	55.8	47	20.2	173	37.7
1-20	9	4.0	3	1.3	12	2.6
21-40	3	1.3	2	.9	5	1.1
41-60	18	8.0	6	2.6	24	5.2
61-80	33	14.6	34	14.6	67	14.6
>80	36	15.9	141	60.5	177	38.6
Mean ±SD	31.5±39.8		69.1±37.5		50.7±43.0	

About 20 percent of the respondents had monthly income within Taka 6000 while nearly 37 percent had monthly income of Taka 6001-9000. Little over half of the respondents had family size 4-5 with mean 4.6(±1.8). About 90 percent of the respondents were married, and the median monthly family income is Taka 8000 and is higher in Tongi (Tk. 10000) than in Demra (Tk. 7000). The respondents spent 51(±43.0) percent of their income for the family, though 38 percent do not contribute their income for the family.

Table 3.3: Distribution of respondents by housing structure, water and sanitation facilities

Variable	**Demra (n=226)**		**Tongi (n=233)**		**Overall (n=459)**	
	Number	Percent	Number	Percent	Number	Percent
Floor						
Pucca	184	81.4	215	92.3	399	86.9
Kancha	40	17.7	12	5.2	52	11.4
Semi-Pucca	2	0.9	6	2.6	8	1.7
Wall						
Brick	154	68.1	182	78.1	336	73.2
Tin	70	31.0	49	21.0	119	25.9
Others	2	0.9	2	0.9	4	0.8
Roof						
Tin	182	80.5	214	91.8	396	86.3
Brick roof	43	19.0	17	7.3	60	13.1
Straw	1	0.4	2	0.9	3	0.7
Types of sanitary						
Sanitary	130	57.5	95	40.8	225	49.0
Ring slab	87	38.5	130	55.8	217	47.3
Kancha	9	4.0	8	3.4	17	3.7

About 87 percent of the respondents had *pacca* floor house, while 12 percent had *kancha* floor house. About 73 percent had brick wall house and the roof of 86 percent houses made of tin (Table 3.3). The finding showed that, 49 percent had sanitary toilet facilities and 4 percent of the respondents using *kancha* latrine.

Table 3.4: Distribution of respondents according to their access to mass media

Variable	Demra (n=226)		Tongi (n=232)		Overall (n=458)	
	Number	Percent	Number	Percent	Number	Percent
Read Newspaper						
Frequently/Once Daily	25	11.1	17	7.3	42	9.2
At least once in a week	4	1.8	--	--	4	0.9
Less than once week	1	0.4	--	--	1	0.2
Sometimes	44	19.5	64	27.5	108	23.5
Never	152	67.3	151	64.8	303	66.0
Listening Radio						
Regularly/Once Daily	29	12.8	31	13.3	60	13.1
At least once in a week	2	0.9	1	0.4	3	0.7
Sometimes	39	17.3	42	18.0	81	17.6
Never	156	69.0	158	67.8	314	68.4
Watching Television						
Regularly/Once Daily	142	62.8	137	58.8	279	60.8
At least once in a week	1	0.4	6	2.6	7	1.5
Less than once week	1	0.4	--	--	1	0.2
Sometimes	46	20.4	70	30.0	116	25.3
Not at all	36	15.9	19	8.2	55	12.0

Reaching of mass media was assessed by calculating the percentage of respondents those told that they read, heard and watches messages through newspapers, radio and television respectively. Little over 9 percent of the respondents read newspaper regularly, while 66 percent never read newspaper. Little over 13 percent of the respondents reported to listen radio regularly and 61 percent watched TV at least once a day.

3.2 Smokeless Tobacco Usage:

In Bangladesh, smokeless tobacco use is a part of the social custom where, traditionally, tobacco is offered during celebrations including marriage. Betel quid with tobacco is offered honoring a visitor in many families in Bangladesh (Khan *et al.*, 2014).

Table 3.5: Distribution of the respondents by age of initiation, duration of continuous use of SLT and frequency of uses

Variable	Demra		Tongi		Overall	
	Number	Percent	Number	Percent	Number	Percent
Age of initiation of SLT (Years)						
<15	13	5.8	19	8.2	32	7.0
15-24	81	35.9	119	51	200	44.0
25-34	87	38.0	71	30.4	158	34.8
35-44	29	12.8	15	6.5	44	9.7
45+	14	6.2	6	2.6	20	4.4
Mean ±SD	26.5±9.9		23.0±8.3		24.7±9.3	
n	224		230		454	
Duration of continuous use of SLT (Years)						
≤ 5	34	15.2	45	19.8	79	17.5
6-10	45	20.1	32	14.1	77	17.1
11-15	35	15.6	40	17.6	75	16.6
16-20	43	19.2	41	18.1	84	18.6
21-25	21	9.4	26	11.5	47	10.4
26-30	19	8.5	18	7.9	37	8.2
31+	27	12.1	25	11.0	52	11.5
Mean, ±SD	17.5±0.1		16.8±0.1		17.1±0.1	
n	224		227		451	
Frequency of use (Times)						
≤ 5	65	29.5	111	48.7	176	39.3
6-10	83	37.7	98	43.0	181	40.4
11-15	32	14.5	11	4.8	43	9.6
16-20	20	9.1	6	2.6	26	5.8
21+	20	9.1	2	0.9	22	4.9
(Mean ±SD)	11.4±8.9		6.8±4.0		9.0±7.2	
n	220		228		448	
Currently using cigarette/*bidi* along with SLT						
Yes	57	25.2	42	18.0	99	21.6
No	169	74.8	191	82.0	360	78.4
n	226		233		459	
Number of cigarettes smoked per day (Times)						
≤ 5	12	21.1	7	16.7	19	19.2
6-10	11	19.3	27	64.3	38	38.4
11-15	8	14.0	2	4.8	10	10.1
16-20	16	28.1	3	7.1	19	19.2
21+	10	17.5	3	7.1	13	13.1
Mean ±SD	16.3±10.9		10.6±7.2		13.9±9.8	
n	57		42		99	

Seven percent of the smokeless tobacco users initiated below 15 years of age. Nearly half of the users initiated at the age of 15-24 years and another one-third initiated at age 25-34 years. The mean age of initiation of SLT use was found to be 24.7(±9.3) years and by conducting independent sample t-test age of initiation was found significantly higher ($p<0.006$) in Demra (26.5±9.9 years) than Tongi (23.0±8.3 years). Overall mean length of SLT use was 17(±0.1) years and similar picture was observed in both the study areas. The mean frequency of SLT use per day was 9.0 times which are significantly higher in Demra (11.4 times) than that of Tongi (6.8 times). About 22 percent respondents are smoking cigarette/bidi along with using SLT.

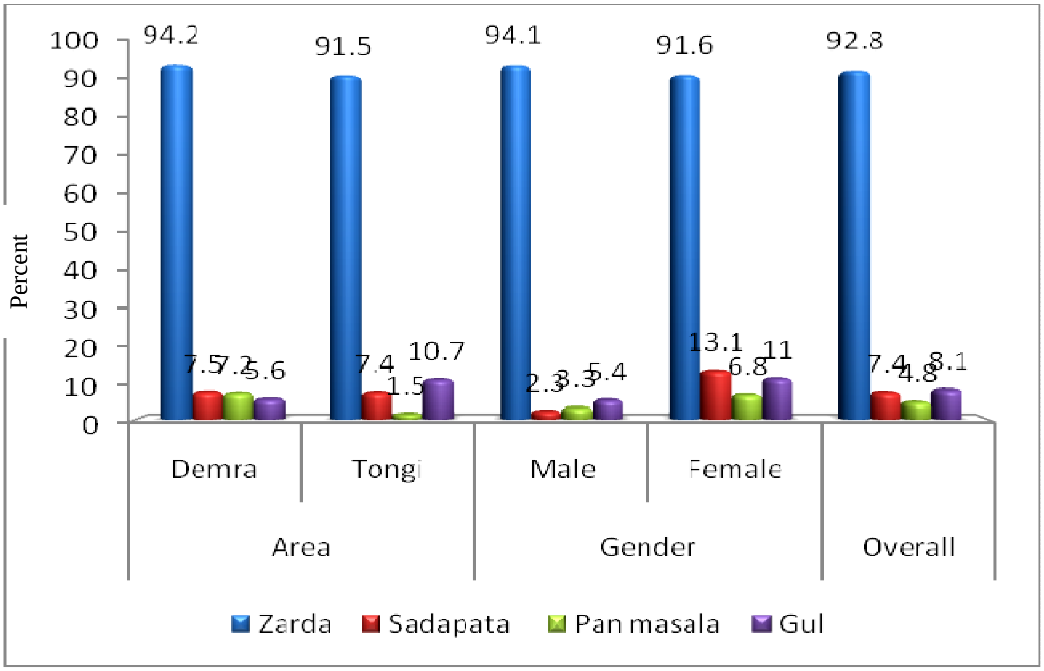


Figure 3.1: Distribution of respondents by type of SLT use by area and gender

The SLT users mostly use *zarda*, which is 94 percent in Demra and 92 percent in Tongi. Around 94 percent males uses *zarda*, while it is 92 percent among females as observed (Figure 3.1). Use of *sadapata* and *gul* is higher among females (13.1 percent and 11.0 percent respectively) in comparison to that among males (2.3 percent and 5.4 percent respectively) as found in the study.

Table 3.6: Percent distribution of regularly using SLT by other family members

	Father	Mother	Brother	Sister	Spouse	Others	Overall
Zarda	6.5	15.9	3.9	3.5	16.6	1.3	8.0
Sadapata	0.2	2.4	--	0.2	1.5	0.2	0.8
Gul	0.4	0.9	0.4	--	0.7	0.2	0.4
Panmasala	--	--	--	--	0.2	--	0.0
n	459	459	459	459	459	459	459

Table 3.6 shows the distribution of the household members regularly using different forms of smokeless tobacco. It is evident that the relatives of the SLT users are mostly taking *Zarda* (8.0 percent) followed by *Sadapata* (0.8 percent) and *Gul* (0.4 percent). It is also observed that mainly spouse of the SLT users are taking same product 17 as about percent of them are taking *Zarda*, about 2 percent using *Sadapata* and near about 1 percent are taking SLT in the form of *Gul*.

3.3 Risk Factors with use of Smokeless Tobacco:

Smokeless tobacco use is a popular habit in South Asian countries including Bangladesh. However, there are many misconceptions regarding the health benefits of SLT which are perpetrated by misleading claims from manufacturers, e.g. betel quid having curative effects for dental health (Flora *et al.*, 2012). In this section an attempt has taken to explore the risk factors of SLT use.

Table 3.7: Distribution of respondents on knowledge on effects of SLT use

Variable	Demra		Tongi		Overall	
	Number	Percent	Number	Percent	Number	Percent
Knowledge on Physical effects of SLT						
Yes	107	47.3	63	27.0	170	37.0
Maybe	40	17.7	53	22.7	93	20.3
No	17	7.5	16	6.9	33	7.2
Don't know	62	27.4	101	43.3	163	35.5
n	226		233		459	
Types of physical effect*						
Duodenal ulcer	62	47.0	50	43.9	112	45.5
Cancer	52	39.4	53	46.5	105	42.7
Oral ulcer	59	44.7	40	35.1	99	40.2
Stone/scratch on teeth	43	32.6	23	20.2	66	26.8
Heart disease /Hypertension	34	25.8	30	26.3	64	26.0
Respiratory problem	5	3.8	28	24.6	33	13.4
Aero digest	19	14.4	13	11.4	32	13.0
Loss of appetite	10	7.6	21	18.4	31	12.6
Dental decay	6	4.5	7	6.1	13	5.3
Stroke	6	4.5	6	5.3	12	4.9
Eye problem	5	3.8	2	1.8	7	2.8
Others	7	5.3	7	6.1	14	5.3
No response	15	10.2	--	--	15	5.7
n	132		116		248	

* Multiple responses considered

Overall, 37 percent of the respondents had knowledge on physical and harmful effects of SLT use. Another 20 percent are not sure if it creates health problem or not. However, 35 percent respondents do not know if it can cause any problem and another 7 percent mentioned that it does not create any health problem, as found from the study. Chi-square analysis showed that significantly higher proportion of the respondents of Demra knew about the adverse health effects of SLT use than that of Tongi ($p<0.001$). Around 46 percent of the respondents reported that duodenal ulcer can cause by using SLT. Another 43 percent mentioned that using SLT can cause cancer, 40 percent mentioned of oral ulcer, 27 percent said that stone/scratch on teeth can be appeared and 26 percent mentioned of heart disease/hypertension that can occur due to the use of SLT. Other problems mentioned by the respondents are respiratory problem (13.4 percent), aero digest (13 percent), loss of appetite (13 percent), dental decay (5 percent), and stroke (5 percent) as found from the study. Almost similar trend was observed in the both study areas other than respiratory problem which is 4 percent in Demra and 25 percent Tongi.

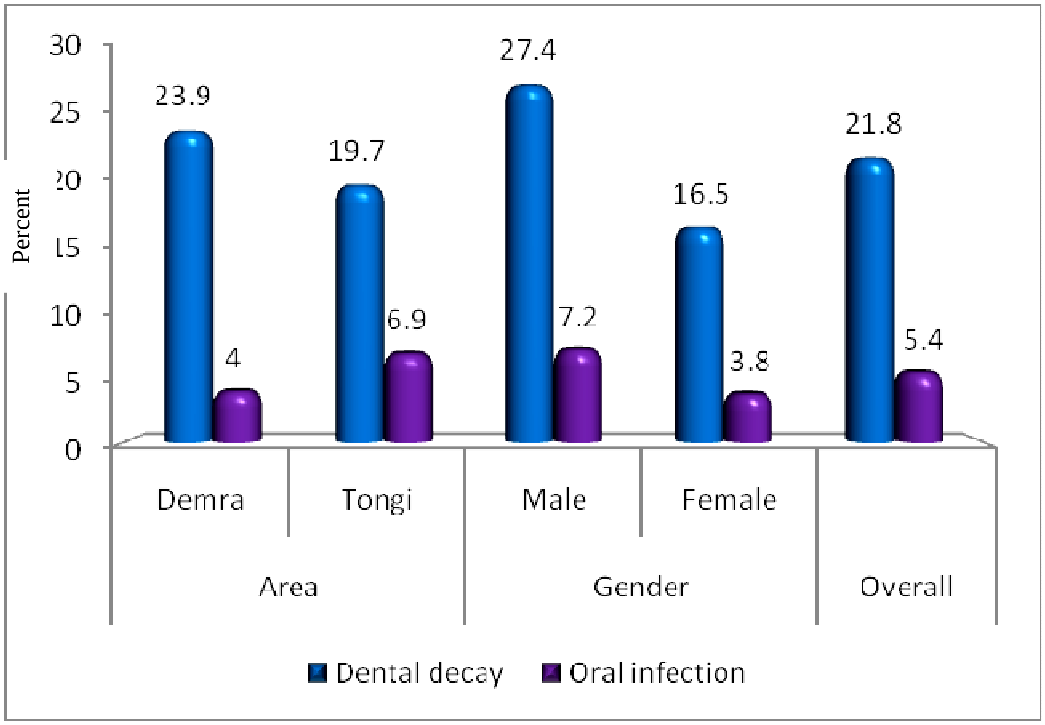


Figure 3.2: Distribution of respondents by suffering from selected diseases by area and gender

Around 22 percent of the respondents are currently sufferings from dental decay and the rate is slightly higher in Demra (24 percent) than Tongi (20 percent), as observed. It was also found that 27 percent males are suffering from the disease in comparison to 17 percent female respondents (Figure 3.2). It was revealed that 4 percent respondents from Demra and 7 percent from Tongi were suffering from oral infection and chi-square test suggested that the rate is significantly ($p<0.001$) higher among males than females.

Table 3.8: Distribution of the respondents by their Tooth Decay

Variable	Demra		Tongi		Overall	
	Number	Percent	Number	Percent	Number	Percent
Dental decay due to SLT use						
Yes	37	74.0	18	40.9	55	58.5
No	10	20.0	13	29.5	23	24.5
Don't know	3	6.0	13	29.5	16	17.0
N	50		44		94	
Tooth decay heard from*						
Doctor	25	83.3	11	55.0	36	72.0
Friends	4	13.3	8	40.0	12	24.0
Radio			1	5.0	1	2.0
TV	5	16.7	1	5.0	6	12.0
n	30		20		50	
Length of suffering from tooth decay						
<12 months	10	29.4	4	17.4	14	24.6
12-23 months	9	26.5	8	34.8	17	29.8
24-35 months	3	8.8	3	13.0	6	10.5
36-47 months	1	2.9	2	8.7	1	1.8
48-59 months	2	5.9	6	26.1	4	7.0
>=60 months	9	26.5			15	26.3
n	34		23		57	
Importance of treatment of tooth decay						
Treatment important	66	29.2	75	32.2	141	30.7
No idea about treatment	160	70.8	158	67.8	318	69.3
n	226		233		459	
eceived treatment of dental decay						
Yes	26	54.2	11	26.2	37	41.1
No	22	45.8	31	73.8	53	58.9
n	48		42		90	
ypes of treatment taken for tooth decay*						
Tablet/medicine	21	87.5	8	80.0	29	85.3
Filling	6	25.0	2	20.0	8	23.5
n	24		10		34	

* Multiple responses considered
n Valid number of responses

Of the respondents suffering from dental decay, 59 percent reported that the use of SLT is the cause of dental decay. Only 31 percent respondents emphasized on the treatment of dental decay, while the rest 69 percent do not have any idea on its treatment. Nearly 41 percent of the respondents received treatment for dental decay of their own (Table 3.8).

Table 3.9: Distribution of the respondents by the knowledge on mouth infection

Variable	Demra		Tongi		Overall	
	Number	Percent	Number	Percent	Number	Percent
Mouth infection due to SLT use						
Yes	7	77.8	6	42.9	13	56.5
No	1	11.1	2	14.3	3	13.0
Don’t know	1	11.1	6	42.9	7	30.4
n	9		14		23	
Length of suffering from oral infection(month)						
<12	3	42.9	2	16.7	5	26.3
12-23	1	14.3	3	25.0	4	21.1
24-35	2	28.6	2	16.7	4	21.1
>=35	1	14.3	5	41.7	6	31.6
n	7		12		19	
Knowledge on oral infection						
Taking urgent treatment	53	23.5	70	30.0	123	26.8
No idea about treatment/DK	173	76.5	163	70.0	336	73.2
n	226		233		459	
Received treatment of oral infection						
Yes	7	100.0	6	40.0	13	59.1
No	--	--	9	60.0	9	40.9
n	7		15		22	
Types of treatment taken for oral infection						
Tablet/medicine	7	100.0	2	33.3	9	69.2
Gel	1	14.3	1	16.7	2	15.4
Others			3	50.0	3	23.1
n	7		6		13	

Around half of the respondents with oral infection expressed that SLT use might be the cause behind it. Only 27 percent respondents underscored the importance of oral infection treatment, while the rest 73 percent do not have any idea on its treatment. About 59 percent of the suffered respondents received treatment for their infection (Table 3.9).

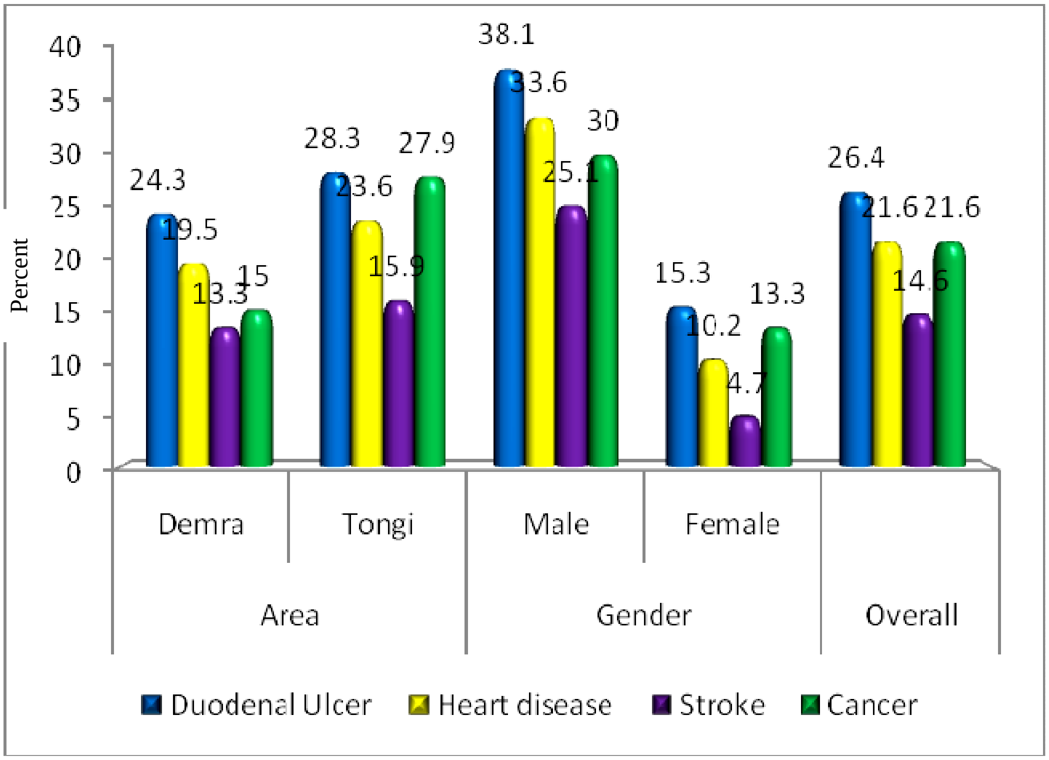


Figure 3.3: Distribution of respondents by knowledge on SLT effect by area and gender

The respondents were asked about their knowledge on the possibility of diseases that can occur due to SLT use (Figure 3.3). It was found that 24 percent respondents from Demra and 28 percent from Tongi admitted that duodenal ulcer can happen due to SLT use and chi-square test was conduct to test the difference in knowledge by gender and found that males (38 percent) have significantly higher ($p<0.001$) knowledge than females (15 percent). Moreover, 20 percent respondents of Demra and 24 percent of Tongi believe that SLT use can cause heart disease and the rate of such knowledge is significantly higher ($p<0.001$) among males (34 percent) than that of females (10 percent). About 22 percent respondents knew that oral cancer can occur due to SLT use, and significant variation was observed as 28 percent respondents of Tongi have such knowledge, while it is only 15 percent in Demra area ($p<0.001$). Significant difference was also found in the knowledge in this regard among gender as 30 percent males and 13 percent females mentioned that SLT use can cause oral cancer ($p<0.001$). When asked if it can cause stroke to its users, significantly lower proportion of respondents of Demra (13 percent) than that of Tongi (16 percent) could mention about it, while the rate is significantly higher among males (15 percent) than females (5 percent), as observed.

Table 3.10: Distribution of the respondents by their knowledge on heart disease

Variable	Demra		Tongi		Overall	
	Number	Percent	Number	Percent	Number	Percent
Suffered from heart disease						
Yes	8	4.3	5	3.5	13	4.0
No	163	88.6	131	92.9	294	90.5
Don't know	13	7.1	5	3.5	18	5.5
n	184		141		325	
Heart disease due to SLT use						
Yes	7	77.8	3	60.0	10	71.4
No	2	22.2	2	40.0	4	28.6
n	9		5		14	
Length of suffering from heart disease						
<12 months	3	1.3	1	33.3	4	44.4
24-35 month	--	--	1	33.3	1	11.1
>=36 months	3	1.3	1	33.3	4	44.4
n	6		3		9	

The study showed that 4 percent of the respondents had suffered from heart disease and all of them received treatment from medical doctors. About 71 percent of the respondents suffered from heart disease believe that use of SLT may be responsible of heart disease.

Table 3.11: Distribution of the respondents by their knowledge on stroke

Variable	Demra		Tongi		Overall	
	Number	Percent	Number	Percent	Number	Percent
Suffered from stroke						
Yes	4	2.3	2	1.5	6	1.9
No	159	92.4	131	95.6	290	93.9
Don't know	9	5.2	4	1.7	13	4.2
n	172		137		309	
Stroke disease due to SLT use						
Yes	3	100	1	50.0	4	80.0
No	--	--	1	50.0	1	20.0
n	3		2		5	
Heard of stroke due to SLT use from						
Doctor	3	100.0	--	--	3	75.0
Friends	--	--	1	100.0	1	25.0
n	3		1		4	
Length of suffering from stroke						
Mean ±SD	5.7±5.5		33.0±21.2		16.6±18.8	
n	3		2		5	

About two percent of the respondents reported to be suffered from stroke in the past. Most of the suffered respondents suspect that SLT use was responsible for the disease and heard of it from the doctor or friends, as revealed from Table 3.11.

Table 3.12: Distribution of the respondents by their knowledge on duodenal ulcer

Variable	Demra		Tongi		Total	
	Number	Percent	Number	Percent	Number	Percent
Suffered from ulcer						
Yes	7	5.4	7	6.2	14	5.8
No	119	92.2	94	83.2	213	88.0
Don’t know	3	2.3	12	10.6	15	6.2
n	129		113		242	
Ulcer disease due to SLT use						
Yes	6	85.7	3	42.9	9	64.3
No	1	14.3	1	0.4	2	14.3
Don’t know	--	--	3	1.3	3	21.4
n	7		7		14	
Ulcer disease heard from						
Doctor	5	100.0	3	100.0	8	100.0
Length of suffering from ulcer						
≤ 1 year	6	85.7	1	33.3	7	70.0
>1 year	1	14.3	2	66.6	3	30.0
n	7		3		10	

About six percent of the respondents were suffering from ulcer at the time of interview and most of them suspects of using SLT are responsible for the disease.

Table 3.13: Distribution of the respondents by their plan of quitting SLT use

Variable	Demra		Tongi		Overall	
	Number	Percent	Number	Percent	Number	Percent
Ever tried to give up SLT use						
Yes	60	26.5	53	22.7	113	24.6
No	125	55.3	89	38.2	214	46.6
Not feel necessary	41	18.1	91	39.1	132	28.8
n	226		233		459	
Any plan to quit SLT use in future						
Yes	66	29.2	55	23.6	121	26.4
No	66	29.2	63	27.0	129	28.1
Don’t know	94	41.6	115	49.4	209	45.5
n	226		233		459	

Nearly 25 percent of the respondents reported that they tried to give up the use of SLT in the past and about 29 percent of the respondents did not feel any necessity to give up SLT use. About 29 percent respondents of Demra and 24 percent respondent of Tongi had a future plan to leave SLT use as found from the study (Table 3.13).

Table 3.14: Heard about bad effects of SLT and its source

Variable	Demra		Tongi		Overall	
	Number	Percent	Number	Percent	Number	Percent
Heard about bad effect of SLT use						
Yes	97	42.9	65	27.9	162	35.3
No	95	42.0	137	58.8	232	50.5
Wrong knowledge	34	15.0	31	13.3	65	14.2
n	226		233		459	
From where						
Relatives	75	77.3	51	78.5	126	77.8
Community leaders	6	6.2	12	18.5	18	11.1
Brother/sister	7	7.2	9	13.8	16	9.9
Others	32	33.0	26	40.0	58	35.8
n	97		65		162	

A little over half of the respondents never heard about bad effect of SLT use and another 14 percent wrongly mentioned that they have heard of it through radio, television or newspapers though none of such program offered by the mentioned media. Among the respondents, those heard of bad effect of SLT use, 78 percent heard from relatives (Demra 75 percent and Tongi 79 percent), 11 percent from community influential (Demra 6 percent and Tongi 19 percent) and 36 percent heard from other sources (Table 3.14).

Tables 3.15: Distribution of the respondents by their opinion on health hazard due to SLT use during pregnancy

Variable	Demra		Tongi		Overall	
	Number	Percent	Number	Percent	Number	Percent
Health hazard during pregnancy						
Yes	46	20.4	66	28.3	112	24.4
No	129	57.1	65	27.9	194	42.3
Don't know	51	22.6	102	43.8	153	33.3
n	226		233		459	
Types of hazard*						
Abortion	14	32.6	16	26.2	30	28.8
Low birth weight	22	51.2	28	45.9	50	48.1
Still birth	23	53.5	33	54.1	56	53.8
Pre-aclampsia	--	--	2	3.3	2	1.9
Others	9	20.9	18	29.5	27	26.0
n	43		61		104	

* Multiple responses considered
n Valid number of responses

Little over 24 percent opined that use of SLT may cause health hazard during pregnancy and 33 percent did not have any idea on the possible health effect of SLT use during pregnancy. Among the possible problems that can occur due to SLT use during pregnancy were reported to have still birth (54 percent), low birth weight baby (48 percent) and spontaneous abortion (29 percent) as mentioned by the participants.

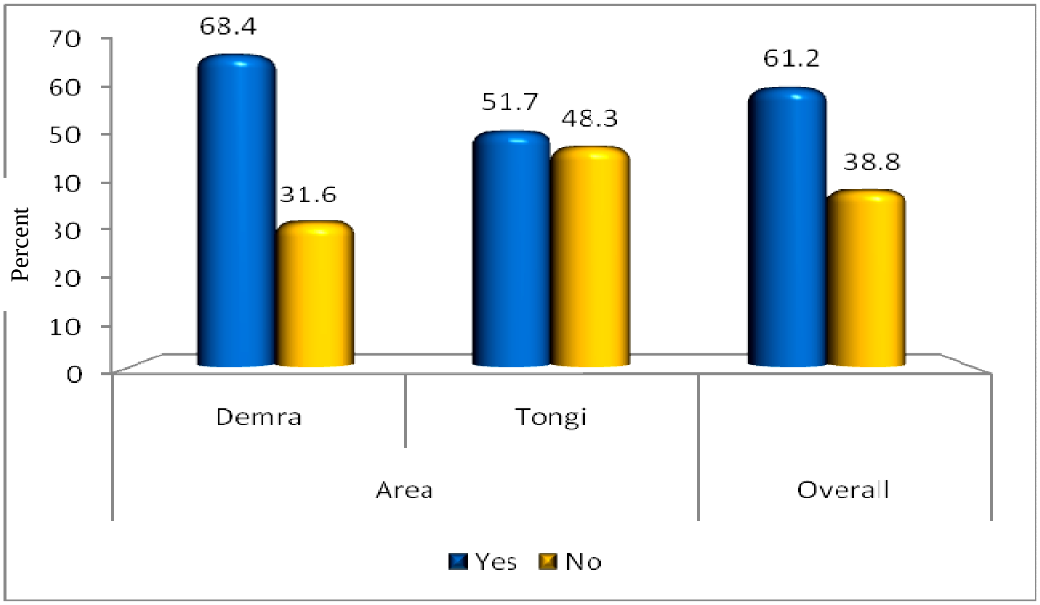


Figure 3.4: Distribution of female respondents by use of SLT during their pregnancy by area

The study revealed that 61 percent women have used SLT during their pregnancy and the rate is higher in Demra (68 percent) than Tongi (52 percent) and is shown in Figure 3.4.

3.4 Factors influencing use of Smokeless Tobacco:

In this section, an attempt has been made to analyze the relationship between level of use of smokeless tobacco and demographic variables to consider strategies for identifying risk factors associated with it.

Table 3.16: Distribution of the respondents by their opinion on factors influencing SLT use

Variable	Demra		Tongi		Overall	
	Number	Percent	Number	Percent	Number	Percent
Peer Influence	134	59.3	108	46.4	242	52.7
Easy availability	114	50.4	60	25.8	174	37.9
Remove bad mouth odour start use SLT	111	49.1	44	18.9	155	33.8
Elderly people of Family	64	28.3	78	33.5	142	30.9
Parental Influence	84	37.2	58	24.9	142	30.9
To relieve of toothache	73	32.3	45	19.3	118	25.7
Lower Price of SLT	76	33.6	31	13.3	107	23.3
Relieve from nausea during pregnancy	70	31.0	25	10.7	95	20.7
Brother-Sister Influence	46	20.4	36	15.5	82	17.9
Family influence	45	19.9	33	14.2	78	17.0
After leaving smoking	32	14.2	12	5.2	44	9.6
Advertisement	5	2.2	3	1.3	8	1.7
Others	5	2.2	4	1.7	9	2.0
n	226		233		459	

The respondents were asked about the factors that influence a person to become addicted with SLT use. It needs to mention that, more than one factor influences a respondent in SLT use as found in our study. Among the factors peer influence (52.7 percent), easy availability (37.9 percent), removing bad odor (33.8 percent), influence of elderly family members (30.9 percent), parental influence (30.9 percent), relieve from toothache (25.7 percent), lower price of SLT products (23.3 percent) are most influencing among the respondents, as found from the study.

Wide range of variation was found in the influencing factors of SLT use among the areas as, 59 percent respondents of Demra and 46 percent of Tongi mentioned of peer influence, 50 percent of Demra and 26 percent of Tongi mentioned of easy availability of SLT, 49 percent of Demra and 19 percent of Tongi mentioned of removing bad mouth odor, 37 percent Of Demra and 25 percent of Tongi mentioned of parental influence, 28 percent of Demra and 34 percent of Tongi mentioned of influence of elderly people of the family. The respondents of Demra shows higher response rate in every factors in comparison to that of Tongi area.

Table 3.17: SLT used per day among regular SLT users by selected demographic characteristics

Demographic Characteristics	Number of SLT used on average per day[1]				
	<5	5-9	10-15	≥16	p-value
Overall	29.6	37.3	23.3	9.8	
Gender					
Male	24.7	39.5	26.0	9.9	0.05
Female	34.3	35.2	20.8	9.7	
Age (years)					
15-24	36.1	47.2	16.7	--	0.095
24-44	31.5	36.9	18.9	12.6	
45-64	25.1	36.4	30.1	8.1	
65+	32.1	32.1	25.0	10.7	
Education Level					
Illiterate	25.9	38.0	27.0	9.1	0.137
Primary	32.9	45.6	13.9	7.6	
Grade VI and above	36.9	29.9	21.4	12.8	
Marital Status					
Married	29.9	35.8	23.6	10.7	0.119
Others	27.1	50.0	20.8	2.1	
Duration of SLT use					
≤5 years	54.4	34.2	8.9	2.5	<0.001
6-15 years	32.9	34.2	19.7	13.2	
16-25 years	15.3	44.3	30.5	9.9	
≥26 years	19.1	36.0	33.7	11.2	
Any other HH member using SLT					
Yes	28.0	30.1	25.2	16.8	0.240
No	36.1	34.9	19.3	9.6	
Suffering from any disease					
Yes	25.6	32.8	28.0	13.6	0.112
No	31.1	38.9	21.6	8.4	

[1] SLT includes *Zarda, Sadapata, Gul, Panmasala*

To explore the effect of SLT use per day among regular SLT users, chi-square analysis was carried out and found significant association with gender (p<0.05) and duration of SLT use (p<0.001).

Table 3.18: Duration of regular SLT users by selected demographic characteristics

Demographic Characteristics	**Duration of regular SLT use[1]**				
	≤5 years	**6-15 years**	**16-25 years**	**≥26 years**	**p-value**
Overall	17.5	33.7	29.0	19.7	
Gender					
Male	16.8	37.3	28.2	17.7	0.435
Female	18.2	30.3	29.9	21.6	
Age (years)					
15-24	50.0	47.2	2.8	--	<0.001
24-44	21.6	47.7	27.5	3.2	
45-64	7.1	16.6	39.1	37.3	
65+	7.1	10.7	14.3	67.9	
Education Level					
Illiterate	12.3	28.0	34.1	25.7	<0.001
Primary	21.3	41.3	24.0	13.3	
Grade VI and above	27.0	41.7	20.9	10.4	
Marital Status					
Married	17.2	35.2	28.8	18.7	0.161
Others	20.0	20.0	31.1	28.9	
Any other HH member using SLT					
Yes	21.7	27.7	25.3	25.3	0.135
No	14.7	40.6	27.3	17.5	
Suffering from any disease					
Yes	13.6	31.2	27.2	28.0	0.045
No	19.0	34.7	29.8	16.6	
Ever tried to give up SLT use					
Yes	18.6	36.3	26.5	18.6	0.735
No	14.6	35.2	28.2	22.1	
Any plan to give up SLT in near future					
Yes	20.7	32.2	27.3	19.8	0.738
No	12.5	37.5	29.7	20.3	
Not decided	15.1	37.0	26.0	21.9	

[1] SLT includes *Zarda, Sadapata, Gul, Panmasala*

To explore the effect the duration of regular use of SLT, chi-square analysis was conducted to investigate the association and found significant association with age (p<0.001), education level (p<0.001) including a moderate association with the sufferings from any disease (p<0.045).

Table 3.19: Knowledge of SLT users on adverse health effect by selected demographic characteristics

Demographic Characteristics	Knowledge of SLT user				
	Yes	**May be**	**No**	**Don't know**	**p-value**
Overall	51.8	27.7	10.1	10.4	
Gender					
Male	71.4	16.2	4.9	7.6	<0.001
Female	26.6	42.7	16.8	14.0	
Age(years)					
15-24	61.5	23.1	7.7	7.7	0.263
24-44	56.4	27.6	7.7	8.3	
45-64	42.7	30.6	14.5	12.1	
65+	59.1	18.2	4.5	18.2	
Education Level					
Illiterate	45.9	32.8	9.8	11.5	0.071
Primary	50.0	22.2	14.8	13.0	
Grade VI and above	64.8	20.9	7.7	6.63	
Marital Status					
Married	52.6	28.4	9.5	9.5	0.096
Others	40.9	18.2	18.2	22.7	
Any other HH member using SLT					
Yes	52.1	26.8	9.2	12.0	0.340
No	39.8	34.9	12.0	13.3	
Suffering from any disease					
Yes	59.7	30.6	4.0	5.6	0.002
No	47.1	26.0	13.7	13.2	
Ever tried to give up SLT use					
Yes	62.8	23.9	9.7	3.5	0.008
No	46.5	30.0	10.3	13.1	
Any plan to give up SLT in near future					
Yes	68.6	21.5	4.1	5.8	<0.001
No	41.9	24.0	18.6	15.5	
Not decided	44.4	44.4	4.2	6.9	
Duration of SLT use					
≤5 years	61.5	17.3	9.6	11.5	0.265
6-15 years	54.3	27.6	9.5	8.6	
16-25 years	47.8	35.6	10.0	6.7	
≥26 years	44.9	26.1	11.6	17.4	
Number of SLT use per day					
<5 times	49.5	28.4	13.7	8.4	0.372
5-9 times	47.3	29.1	10.9	12.7	
10-15 times	53.7	31.7	4.9	9.8	
≥16 times	65.9	14.6	9.8	9.8	

[1] SLT includes *Zarda, Sadapata, Gul, Panmasala*

To explore the impact of knowledge on SLT use, chi-square analysis was done and significant association was found with gender ($p<0.001$), sufferings from any disease ($p<0.002$), ever tried to give up SLT use ($p<0.008$), plan to give up use of SLT in near future ($p<0.001$).

Table 3.20: Age of initiation of SLT use by selected demographic characteristics

Demographic Characteristics	Age of initiation of SLT use					p-value
	≤19 years	20-24 years	25-29 years	30-34 years	≥26 years	
Overall	19.3	25.5	22.6	16.4	16.2	
Gender						
Male	16.8	21.8	29.5	16.8	15.0	0.01
Female	21.6	29.0	16.0	16.0	17.3	
Present Age (years)						
15-24	50.0	33.3	16.7	--	--	<0.001
24-44	19.7	28.0	26.1	17.0	9.2	
45-64	12.4	23.1	21.3	19.5	23.7	
65+	17.9	10.7	10.7	14.3	46.4	
Education Level						
Illiterate	21.5	24.9	18.8	18.4	16.5	0.460
Primary	17.3	28.0	25.3	13.3	16.0	
Grade VI & above	15.7	25.2	29.6	13.9	15.7	
Marital Status						
Married	18.2	26.6	23.6	16.7	14.8	0.210
Others	28.9	15.6	13.3	13.3	28.9	
other HH member using SLT						
Yes	21.0	28.0	23.1	13.3	14.7	0.008
No	15.7	19.3	13.3	28.9	22.9	
ering from any disease						
Yes	16.8	24.8	22.4	21.6	14.4	0.437
No	20.2	25.8	22.7	14.4	16.9	
tried to give up SLT use						
Yes	17.7	25.7	25.7	13.3	17.7	0.460
No	19.7	24.4	18.8	19.7	17.4	
plan to give up SLT in near future						
Yes	17.4	27.3	22.3	13.2	19.8	0.014
No	27.3	20.3	14.8	18.8	18.8	
Not decided	8.2	28.8	27.4	23.3	12.3	
ation of SLT use						
≤5 years	3.8	11.4	24.1	20.3	40.5	<0.001
6-15 years	17.1	22.4	25.0	19.1	16.4	
16-25 years	19.1	35.9	23.7	13.7	7.6	
≥26 years	37.1	28.1	15.7	12.4	6.7	
uency of SLT use per day						
<5 times	11.5	23.1	18.5	20.8	26.2	0.002
5-9 times	22.5	24.5	20.7	18.9	12.4	
10-15 times	25.2	25.2	25.2	11.2	13.1	
≥16 times	15.6	33.3	35.6	6.7	8.9	

[1] SLT includes *Zarda, Sadapata, Gul, Panmasala*

To investigate the relationship between age of initiation and SLT use, chi-square analysis was carried out and found significant association with gender (p<0.01), current age of SLT user (p<0.001), any other HH member using SLT (p<0.008), duration of SLT use (p<0.001) and number of SLT use per day (p<0.002).

Table 3.21: Logistic regression analysis with knowledge on adverse effect of using SLT as dependent variable

Independent variables	β*	p value	OR**	95% CI for Exp (B)	
				Lower	Upper
Age	0.017	0.329	1.017	0.983	1.052
Duration of SLT use	0.008	0.614	1.008	0.977	1.041
Gender					
Male	1.002	<0.001	2.723	1.510	4.912
Female					
Family members using SLT					
Yes	-0.093	0.754	0.911	0.510	1.629
No					
Suffers from any disease					
Yes	1.317	<0.001	3.730	1.857	7.492
No					
Access to media					
Yes	-0.750	0.184	0.472	0.156	1.430
No					
Constant	-3.564	<0.001	0.028		

* Coefficient ** Odds Ratio

Table 3.21 shows the logistic regression analysis considering the knowledge on adverse effect of using SLT as dependent variable and age, gender, family member using SLT, sufferings any of the selected diseases and access to media as independent variables. It shows that male respondents are 2.7 times more knowledgeable in comparison to females (p<0.001). Respondents suffering from SLT related diseases are 3.7 times more knowledgeable than the respondents without diseases (p<0.001).

Table 3.22: Logistic regression analysis with respondents suffering from any disease as dependent variable

Independent variables	β*	p value	OR**	95% CI for Exp (B)	
				Lower	upper
Age	0.023	0.033	1.023	1.002	1.045
Frequency of SLT use	0.014	0.315	1.014	0.987	1.043
Gender					
Male	0.267	0.282	1.305	0.803	2.121
Female					
Number of factors influencing SLT use	0.077	0.220	1.080	0.955	1.222
Access to Media					
Yes	-0.093	0.754	0.911	0.510	1.629
No					
Constant	-2.066	<0.001	0.127		

* Coefficient ** Odds Ratio

Table 3.22 shows the logistic regression analysis considering the respondent suffering from any of the selected diseases as the dependent variable and age, gender, frequency of SLT use, number of factors influencing SLT use and access to media as independent variable. The analysis suggests that age of respondent is associated with suffering from any of the selected diseases ($p<0.033$).

CHAPTER IV

Qualitative outcomes

As a part of the study, four FGDs were conducted in the study area to have a deeper look of the situation and to explore the hidden factors those are associated with Smokeless Tobacco (SLT) use.

Almost a fifth of the worlds' tobacco is consumed in smokeless form. (Gupta *et al.*, 2004). Its consumption is particularly common in South Asia, where an increasing array of smokeless tobacco is widely available. In our country comparatively a big proportion of women with low socio-economic backgrounds use SLT than men and rural area have higher prevalence compared to urban areas (Tabinaj Investigation Report, 2013). Mindful of the growing public health threat from smokeless tobacco, warranted the need to identify policy and knowledge gaps and proposed strategies to address these issues.

The aim of focus groups is explicitly to use group interactions which is particularly useful for exploring their knowledge, views and experiences, and that can be used for examining not only what they think and how they think, but also their opinion about deliberate use of SLT in the industrial area. In Bangladesh, a vast number of adult males and females consume tobacco in some form or other. Recent study reported that SLT use is the highest in the industrial areas (Mazurek *et al.* 2014). Some studies also reported that tobacco consumption is higher in lower socio-economic classes with less educated group (Chandrashekhar Sreeramareddy *et al.* 2014, Hosseinpoor *et al* 2012, Palipudi *et al* 2012, Mathur et al. 2008).

The team conducted four FGDs, two each from Tongi and Demra study area. Demra is one of the old industrial areas of Bangladesh, and, Tongi features a Bangladesh Small and Cottage Industries Corporation (BSCIC) industrial area, which produces BDT 1500 crore of industrial products annually. The respondents were communicated by local representative with the help of research team. Respondents were comprised of different section of people as SLT users, SLT seller, teachers, females and elite people of community. Participants were briefed on the purpose of FGD. The facilitators prepared questions and asked to the participants during discussions. Based on the discussions, our summary observation is given below.

4.1 Socio-economic characteristics:

A total of 33 informants participated in four FGD sessions, of them 25 were male (76%) and 8 female (24%). The mean age of the participants was 30(±6.8) years. There were 08-09 persons in each FGD session, and half of them were school teachers, followed by equally one-quarter from SLT sellers and community influential. The educational background of respondents spans all the levels of education with only one-tenth have had primary education and majority with higher educational backgrounds who are either teachers or community influential.

4.2 SLT use and Perception:

Betel leaf with Zarda is a common form of tobacco addiction in the community. In addition to that, Sadapata, Gul, Nossi are also used as other forms of smokeless tobacco consumption. From the discussion it revealed that most of the informants heard about the adverse health effects of SLT use.

> *A SLT seller said "Gul and Zarda 100% harmful for health. It is more dangerous to chew SLT than smoking cigarette. It also occur air pollution".*

> *One of SLT users said, "We are using SLT by chewing it directly, so, it is more harmful than cigarette. Our appearance showed our weakness".*

In our country comparatively a big proportion of women with low socio-economic background using SLT than men, and rural area have higher prevalence compared to urban areas (UBINIG, 2013); and the participants of this study also mentioned of similar pattern of SLT use in the area. They believe that poor and low-income people are not fully aware of the dangers of smoked or smokeless tobacco use.

> *Another respondent said, "Smokeless tobacco is harmful for health. Production, supply should be stopped immediately".*

> *Another respondent said "Smokeless tobacco is less costly and easily accessible compare to cigarette which is costly and socially unacceptable".*

> *A SLT business man told "My wife suffered from stroke once but still using SLT. Sudden stroke paralyzed one side and lose her ability to walk properly. I tried my level best to stop SLT use of my wife, but in vein. I informed all the health risks and health effects of SLT use but still she*

Number of Sadapata-eating people is decreasing as zarda with varied flavors is readily available to allure its users, they observed. However, they reported that sadapata and gul consumers are more common in rural people than urban people. Informants mentioned that more women eat Zarda than men, though they may not aware that Zarda is another form of tobacco. They also reported that eating together with Zarda and Gul exposures is more common in women than men. A few participants mentioned that gul is relatively cheaper and available than other addictive things. So initially people feel convenient to choose Gul and gradually become addicted.

4.3 Types of health effects from SLT use:

Replying to the query about the knowledge on health effects of SLT use, the participants mentioned that SLT especially Zarda and Gul may be little flavorsome for the users but it poses numerous health risks such as oral cancer, lung cancer, tooth decay, cardiovascular diseases, tongue infections, mouth infections, vision loss, mouth ulcer, liver cirrhosis, etc. Smokeless tobacco contains nicotine, an addictive substance and its use carries health risks that are similar to smoking. Among different form of SLT, Gul is most dangerous one as observed. They argued that use of SLT has no health benefit but have huge economic losses in terms of purchasing SLT products and also of different physical problems associated with it. A few participants mentioned that 'tobacco' means not only 'cigarette', it should make understand to all that Zarda, Gul and Sadapata are also other form of tobacco consumed. Like smoking cigarette, taking Zarda, Gul and Sadapata are also major causes of premature death. Few informants mentioned that SLT eaters can lost all sense of food-taste perception due to their eating habit of SLT. A number of respondents' opined smokeless tobacco causes economic losses of its users as it involves expenditure of money to purchase these unhealthy products.

> *A school teacher told "his father left cigarette and started chewing betel leaf with Zarda immediately and after some days he started to use Gul, Shadapata with betel leaf along with Zarda. After retirement from job he used to pressurize his*

> *One of the informants said "Although mouth is the gateway to health. We infected our mouth by eating Zarda and Gul."*

4.4 Chewing tobacco and subsequent addictions:

A number of informants' opined that peer, family, curiosity and hospitality are most important factors influencing SLT initiation. Responding on the process of initiation and addiction of SLT by the users, they identified five different routes of initiation and gradual addiction as follows:

> *One of participants said, "If any person or even a young student chew smokeless tobacco it never looks odd but if one of them smoke cigarette in front of them it is so odd and unaccepted as well."*

> *One of the respondents said "When they get offer to eat SLT, they should reject it very first time, so that second time he may not get such kind of offer."*

1. *During quitting process of Smoking:* Usually smokers prefer SLT products instead of cigarette during quitting process. They usually start to eat betel leaf with Zarda to quit smoking. Some smokers start Gul in the process of quitting cigarette, though Gul has dangerous addiction.

> *One participant said, "I found many students from renowned school/ colleges start it due to peer's influence and gradually become addicted. They may have curiosity about its taste."*

2. *Out of curiosity:* Some people start SLT use at their very young age just out of curiosity about its taste. Usually they start after being offered from their friends and gradually become addicted. Few participants mentioned that only betel is not tasty to eat. To make it delicious they add Zarda with betel leaf curiously. Gradually they increase the quantity of Zarda as they are in addiction process. Sometimes SLT sellers become annoyed to them due to their unethical demands for more and more zarda with a betel khili (betel-leaf rolled into a cup having lime). Some of SLT users opined that they saw their parents to eat zarda and then they started SLT use and become addicted.

> *One shopkeeper said "If the quantity of Zarda seemed not enough for the customers, they became angry."*

3. *Offered from seniors:* Elderly women as grandmother (*Dadi*, *Nani*), mother and mother-in-law (*Shashuri*) influences young women to use SLT. They offer betel leaf with Zarda, Shadapata, etc. during gossiping, and suggest young women to chew betel leaf with zarda/sadapata during pregnancy to avoid nausea as well. On the advice from others, some people use Gul to get relief from toothache and gradually become habituated with it. One of participants opined that Gul never reduce pain but create addiction. Another informant mentioned that young people start to eat zarda and gul by social influence and gradually become addicted. He also opined that awareness of guardians in this regard can reduce SLT use. One of informants said on the advice of grandmother his aunt started to eat zarda to reduce toothache and become addicted.

> *One of the respondents said "people love to offer Betel leaf with SLT to guests and visitors as a sign of hospitality. But none offer a cigarette for smoking during visiting relatives or neighbors."*

4. *Hospitality Culture of Bangladesh:* Culturally, betel leaf is widely used in social, cultural and religious events as a symbol of hospitality. The participants mentioned that visiting neighbors, relatives or friends are offered by betel leaf with SLT as a gesture of honor. Use of smokeless tobacco is culturally accessible for everybody and everywhere. Few informants opined, if young people use SLT openly, it does not make any problem in the present cultural context, but if they smoke than it is not culturally accepted. Few participants opined that eating betel leaf and nut is a popular and social customs of our country. Betel leaf, areca nut, *zarda* still brought and offered at engagements and wedding ceremony.

> One of female respondents said "elder SLT addicted people can live without staple food but cannot live without SLT."

5. *With the intention of becoming addicted:* Some people may start out with the intention of becoming addicted to Smokeless tobacco. One of informants mentioned due to unhappy family life and due to evil companies people may start using *gul*, *zarda*, *sadapata*, etc. for addiction. Some participants mentioned that initially they start cigarette smoking after some days they start to use *Gul*, *Sadapata* and become addicted.

4.5 SLT use during pregnancy and perceptions of related risks:

Asking about the knowledge on the practice of SLT use during pregnancy and perceived related risks the participants told that, use of smokeless tobacco during pregnancy increases the risk of baby born with low birth weight and miscarriage. However, most of the women in the study area used to visit doctor during pregnancy as qualified doctors are available in these areas and they can get treatment in low cost or free of cost. They further observed that, the practice of using SLT on the advice of elderly family members during pregnancy is decreasing as most of the residents of the area came from other parts of the country and living as nuclear family limiting the scope of getting advice from elderly family members. Some of the respondents mentioned illiterate people (those never been to school for formal education) use it due to their ignorance. Some of them also mentioned that many pregnant women eat due to the influence of elderly people like grandmother (*Dadi*, *Nani*), mother and mother-in-law (*Shashuri*).

4.6 Intention of shifting of SLT selling to other business:

The participated SLT sellers were asked if they will shift to other business on request of the local people. They mentioned that they can stop selling SLT products by switching to other business if they get support from the influential and local people. But all SLT sellers need to stop selling such products and proper monitoring by the government authority can ensure it. The shopkeepers mentioned that, sometimes they need to open the cork of *Gul* canister to show the quality to their customers. Initially its smell causes breathing problem like shortness of breath and gradually they are used to it, though they know that it is harmful for their health. A few informants opined if they shift this business due to government policy, in that case the government should take responsibility to rehabilitate them.

> *One of the respondents said "To reduce the number of SLT users we have to aware all community people including children about the health hazards and bad effects of betel quid chewing with tobacco."*

4.7 Suggestions related to reducing SLT users in the community:

Participants have given following suggestions to reduce the number of SLT user in their locality:

1. Children should be informed about the adverse health effects of SLT through their family. It is important to make sure kids understand the dangers of tobacco use as well as make them understand that chewing tobacco can lead to nicotine addiction, oral cancer, gum disease and an increased risk of cardiovascular disease, including heart attacks. Giving proper information about the risks of SLT can help them to protect from these unhealthy habits.

One participant said "Preventing efforts and discouraging the production of tobacco can reduce the number of SLT users effectively".

2. Health risks of SLT use should be included in the text books at school level.
3. Government should take better policy to control this harmful SLT use. They should take initiative to make public awareness through media campaign about the adverse health effects of SLT use.
4. Betel leaf seller/ shop-owner should have registration or license with a precondition that license will be cancelled and penalty will be imposed if they sell any form of tobacco (*Zarda*, *Gul*, *Sadapata*, etc.) in their shop.

One participant said, "Like alcohol seller, SLT seller should have registration or license. And some necessary laws should be introduced to restrict them to sell such harmful SLT products."

5. Some of participants informed that there are many advertisements in the printed, electronic and billboard against the smoking but there is no advertisement against of smokeless tobacco use. Media should frequently publicize the severe health effects of SLT at peak hours. Usually media publicize this kind of anti-tobacco campaign at off peak hour if they are asked to do so.
6. An initiative can be taken by the local youths to make their catchment area SLT and smoke free zone with the support of advocacy group or NGO. Group meetings, posters, festoons, banners, billboards, etc. can be used for this purpose. People of the area may be requested not to use SLT or cigarette openly. After

rigorous publicity a provision of penalty may be imposed for breaking the rules by the residents.

7. Imam of Mosque can play important roles to reduce the number of SLT users as most of them do not use SLT with betel quid. During Jummah-prayer they can highlight the serious health effects of SLT in their speech.
8. It needs to make understand that SLT is equally harmful as cigarette. Awareness of people should be developed through workshops/seminars on the direct and indirect health effects of using SLT.

> *One of the participants mentioned that "SLT products are cheaper, and affordable by the least advantaged members of*

9. As a big number of women SLT users are from rural area, a team/organization can be formed with the aim to inform them the health effects of using SLT as well as to develop their awareness in this regard.

> *One participant said, "Gul is relatively cheaper. So many people may able to use it regularly."*

10. Doctors used to mention about healthy food during ANC visit but they should specifically advice not to use any form of tobacco including SLT.
11. It needs to increase the price of SLT. The government should impose high tax on tobacco products to rein in soaring consumption of the harmful products for the sake of public health.

> *A respondent said "Smokeless Tobacco is less costly and easy accessible compare to smoking which is costly and socially unacceptable".*

12. SLT production should be controlled. Incentives should be given to tobacco farmers to help them to switch to alternative cash-crops farming.

4.8 Conclusion

It is time to carry out awareness raising program for policy makers and for the creation of new law as well as for implementation of existing amended law as the smokeless tobacco products are part of definition. It should also be an important issue at the time of national budget preparation for imposing high taxes on *Zarda*, *Gul*, *Sadapata*, etc.

CHAPTER V

Discussion and Conclusion

5.1 Discussion

Since tobacco use has been reported to be higher among the poor and less educated people, both disease burden as well as economic burden due to tobacco use will disproportionately affects them (Kalaiselvi *et al.,* 2014). The major objective of this study is to address various aspects of smokeless tobacco use, awareness of harmful effects of tobacco and its implications on health hazards of the poor.

This investigative study will help to implement the law for the control of use of the smokeless tobacco products as well as to raise awareness about the existing law.

A total of 459 samples were studied, of them 226 in Demra (male=107, female= 119) and 233 in Tongi (male=116, female=117) respectively. These two industrial areas were chosen as these areas are adjacent to the capital city and low-income people are living in these areas and are more vulnerable to use smokeless tobacco.

Socioeconomic and demographic characteristics of the respondents showed that the mean (±SD) age was 43.2(±11.3) years. About one-fourth of the respondents had no formal education, while only 4 percent had HSC or higher level of education. Service and business were the primary occupations of men in the study area, while about one-third of the female respondents were housewife followed by 11 percent garment workers. The median monthly income of the respondents' family was Tk. 8000 and the average family size was below 5 (mean 4.6 with SD±1.8). The study showed that, access to news papers, radio and TV accounts for 9 percent, 13 percent and 61 percent respectively.

The data shows that use of *gul* is 5 percent in this study area, which is higher than previous Bangladeshi studies 2 percent **(**Flora *et al.,* 2009*;* Rahman *et al.,* 2006*)*. This finding indicates that this rate was much lower than in Mumbai, India where *gul* use was as high as 26 percent (Katharine *et al.*, 2004*).* Use of *sadapata* and *gul* was higher among females (13 percent and 11 percent respectively) in comparison to that among males (2 percent and 5 percent respectively). But no significant gender differentials were observed in the prevalence of *gul* use in other studies in Bangladesh (Flora *et al.*, 2009*)*.

An USA study found that gender is highly related to SLT users (4 percent), where males found the largest group of SLT users with the prevalence rate of 8 percent, while among females it was near to 1 percent (Alaska Department of Health and Social Services, 2008).

The mean age of SLT users was 24.7(±9.3) years and it was significantly associated with the age of initiation of SLT use (p<0.001). Another study in Bangladesh showed that the average age at the onset of SLT use was 31.5 years (Hossain *et al.*, 2014). This was more or less similar with our study findings. A study in Alaska also showed that age is related to SLT use; those under 45 years had a higher prevalence (7 percent) than those over 45 years (3 percent). The under 45 group also is also major users of the SLT ((Alaska Department of Health and Social Services, 2008)**.** Duration of use of SLT was 17.1(±0.1) years. Earlier initiation would be expected to increase the disease burden by increasing users' duration of lifetime exposure to carcinogens (Hossain *et al.*, 2014)**.**

The age at onset of SLT use was 25 years and 86 percent of the current consumers reported of using either Jorda or Sadapata. The chi-square analysis suggests that current consumption of SLT is associated with age, education, occupation, income and marital status of the respondents.

In this study, 22 percent respondents were smoking cigarette/bidi along with using SLT. A survey in Pakistan showed that 27 percent of males smoked cigarettes, whereas 4 percent additionally taking other forms of tobacco (Sara Ijaz Gilani *et al.,* 2012)**.** This finding differs from our study findings as our study population was SLT users rather than the general population. Another study showed that, 10 percent and less than 1 percent among women reported habit of smoking and chewing (Mehta *et al.,* 1696). Dual use of cigarettes and SLT has increased six fold in smokers over the last decade (Alaska Department of Health and Social Services, 2008)**.**

Around 22 percent of the respondents are currently suffering from dental decay and the rate is slightly higher in Demra (24 percent) than Tongi (20 percent). It was also found that 27 percent males are suffering from the disease in comparison to 17 percent female respondents. Oral infection rate was significantly ($p<0.001$) higher among males (7.2 percent) than females (4 percent). According to WHO, oral cancer is the most common cancer caused by smokeless tobacco use. Due to high use rate of SLT use, South East Asia Region carries the highest burden of oral cancer as over 95,000 cases each year suffer from it; half of those are caused by tobacco (World Health Organization)**.** Oral cancer affects the poor class (World Health Organization)**,** who has a greater exposure to smokeless tobacco and is consistent with the present study findings.

Around 20 percent respondents of Demra and 24 percent of Tongi believes that SLT use can cause heart disease and this perception is higher ($p<0.001$) among males (34 percent) than that of females (10 percent).

Smokeless tobacco use is the crucial risk factor for non-communicable and communicable diseases. A study in Dhaka concluded that tobacco consumption-either through chewing or smoking –was a vital factor in the development of oral cancer (Mehta *et al.,* 1969)**.** Studies conducted in Asia showed that mortality risk for women who consume smokeless tobacco is higher than that for men (World Health Organization)**.** In the present study, significantly higher proportion of respondents of Demra knew about the adverse health effects of SLT use than that of Tongi ($p<0.001$). Around 22 percent mentioned of cancer, 5 percent of oral infection, 22 percent of stone/scratch on teeth can occur due to SLT use.

The study revealed that, 61 percent women have used SLT during their pregnancy and the rate is higher in Demra (68 percent) than Tongi (52 percent). Consumption of smokeless tobacco during pregnancy is associated with low birth weight babies (Gupta *et al.*, 2004)**.**

One in four respondents reported that they tried to give up the use of SLT in the past and about 29 percent of the respondents did not feel any necessity to give up SLT use. Twenty six percent of the respondents have a future plan to quit SLT use as found from the study. Lack of awareness and campaign contribute to the low percentage of respondents to quit SLT. The percentages of users who made an attempt to quit SLT in the past were very low in Bangladesh (25 percent), India (35 percent) and Thailand (22 percent) (World Health Organization).

Logistic regression analysis was conducted considering if the respondents knew the adverse effects of using SLT as the dependent variable and age, gender, family member using SLT, sufferings from any of the selected diseases and access to media as the independent variables. The analysis suggests that male respondents are 2.7 times more knowledgeable in comparison to females ($p<0.001$); respondents suffering from SLT related diseases are 3.7 times more knowledgeable than the respondents without selected diseases ($p<0.001$).

5.2 Conclusion

The initiation of SLT use is very easy as it is acceptable and influenced by the society, family and peers. People of any age can easily purchase all smokeless products. There is serious lack of knowledge on the exiting policy framework related to smokeless form of tobacco and is almost a neglected policy area. SLT products remain inexpensive and widely available to people in South Asia including Bangladesh. Tobacco cessation counseling and warning on tobacco health hazards has to be equally focused for smokeless forms of tobacco.

5.3 Recommendations

- Screening for tobacco consumption during regular health center visits should concentrate smokeless forms. Health care providers involved in tobacco cessation should help the clients in selecting right choice of alternatives.

- Awareness creation programs on health hazards of tobacco campaigns should reach at the door steps of socio economically disadvantaged population.

- Successful public health approach toward tobacco control should be concurrent to control of both smoke and smokeless forms, not replicating with one another.

- Awareness creation, legislative and surveillance measures should equally focus on smokeless products.

5.4 Policy Implications

Since awareness on health risks of smokeless tobacco is not known widely, the Health Directorate of MoHFW should immediately consider appropriate policy strategies to disseminate messages about its consequences on health similar to the cigarette packets on health risks warring.

In addition, mass media and print media can also play significant role on health risks associated with various types of cancers due to smokeless tobacco. The Ministries of Health, Information and Education should work together how a policy strategy can be taken to combat with the problem.

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ANNEXURE-A

QUESTIONNAIRE

Demra 1	Tongi 2

ID Number

Use of Smokeless Tobacco by Low Socio-economic Populations and Risk Factors Associated with It

Daffodil International University (DIU)

Daffodil Tower (DT) - 05 4/2, Sobhanbagh, Dhanmondi
Dhaka - 1207

Informed Consent

Title of Study: Use of Smokeless Tobacco by Low Socio-economic Populations and Risk Factors Associated with It

Principal Investigator:
Name: Dr. Md. Shahjahan
Department: Public Health, Daffodil International University
E-mail:drshahjahan@daffodilvarsity.edu.bd

Date
Dear Research Participant
Assalamu alaikum

We are conducting a study on behalf of the Department of Public Health under Daffodil International University (DIU). The purpose of the study is to investigate the use of smokeless tobacco and the risk factors associated with it.

Smokeless tobacco (SLT) is consumed orally and it has been in use for as long as other forms of tobacco consumption and its use has been increased (Rogozinski, 1990)**.** Users of smokeless tobacco are at an increased risk for certain types of cancer, most notably cancer of the oral cavity including cancers of the cheek, gums, lips, tongue, and floor and roof of the mouth. One of the main purposes of this research is to identify the risk factors which are associated with it.

Bangladesh Centre for Communication Programs (BCCP) is supporting to conduct this research.

Participation in this study is voluntary. It will involve an interview of approximately **20 minutes** in length. You may decline to answer any of the interview questions if you wish so. Further, you may decide to withdraw from this study at any time without any negative consequences by advising the researcher. All information you provide is considered completely confidential. Your name will not appear in any thesis or report resulting from this study, however, with your permission anonymous quotations may be used. Only researchers associated with this project will have access of collected data. There are no known or anticipated risks to you as a participant in this study.

If you have any questions regarding this study, or would like additional information to assist you in reaching a decision about participation, please feel free to ask**.**

I would like to assure you that this study has been reviewed and received ethics clearance. I hope that the results of my study will be of benefit to those organizations directly involved in the study, other voluntary recreation organizations not directly involved in the study, as well as to the broader research community. There are no costs to you for your participation in this study. There is no monetary compensation to you for your participation in this study.

If you give your consent to participate in this study, we can start your interview now.

____
Name of the Respondent
Mobile Phone Number:

Name: Date ☐☐☐☐☐☐

Section – A

Socio-economic & Demographic

Sl No	Questions	Coding Categories	Code
1.1	How old are you?	.... Years	☐☐
1.2	Sex	Male = 1 Female = 2	☐
1.3	What is you educational status?	Never been to school = 1 Can sign only = 2 Primary (Class I-V) = 3 Secondary (Class VI- IX) = 4 SSC = 5 HSC = 6 Degree = 7 Masters = 8 Others = 9 (Specify)...................	☐
1.4	What is your occupation?	House wife = 1 Agriculture = 2 Service = 3 Buissiness= 4 Student = 5 Garments worker = 6 Daily Labour= 7 Others = 9 (Specify)..................	☐
1.5	Marital status	Unnmarried =1 Married =2 Seperated =3 Divorced =4 Widowed/Widowerd = 5 Reluctant to answer = 6	☐
1.6	Number of family members	....	☐☐
1.7	What is your monthly family income?	....................................Tk.	☐☐☐☐☐

1.8	What is your monthly income?	....................................Tk.		☐☐☐☐☐
1.9	How much do you spend by yourself from your income?	....................................Tk.		☐☐☐☐☐
1.10	What percentage (%) of money do you spend by yourself from your income on family expenses	....................................Tk.		☐☐☐☐☐
1.11	What is the structure of your house	Floor	Kancha=1 Pucca = 2 Kancha-Pucca = 3 Wood-Bamboo = 4 Others=9	☐
		Wall	Tin = 1 Brick = 2 Thatched = 3 Others=9	☐
		Roof	Tin = 1 Brick = 2 Thatched = 3 Others=9	☐
1.12	What types of latrine do you use?	Kancha Latrine = 1 Sanitary = 2 Ring Slab = 3 Pucca = 4		☐
1.13	How many times do you read Daily newspaper/ Magazine?	Regularly/At least once a day =1 At least once in a week = 2 Less than once in a week= 3 Sometimes = 4 Never = 5		☐
1.14	How many times do you listen Radio?	Regularly/At least once a day =1 At least once in a week = 2 Less than once in a week= 3 Sometimes = 4 Never = 5		☐
1.15 **M**	Usually when do you listen Radio?	Morning = 1 Afternoon = 2 Evening = 3 Night = 4		☐

1.16	How many times do you watch Television?	Regularly/At least once a day =1 At least once in a week = 2 Less than once in a week= 3 Sometimes = 4 Never = 5	☐
1.17 **M**	Usually when do you watch Television?	Morning = 1 Afternoon= 2 Evening= 3 Night = 4	☐

Section – B

SLT Use

Sl No	Questions	Coding Categories	Code	
2.1	Do you eat Smokeless Tobacco (SLT) such as *Zarda*, *Sadapata*, *Gul*, *Nassi*, Tobacco mixed betel leaf?	Yes =1 No= 2 .	☐	
	If answer is 'No', then close this interview here			
2.2	At what age you have started chewing tobacco?	....	☐☐	
2.3	At what age you have started chewing tobacco regularly?	....	☐☐	
2.4	Currently how many times do you chew tobacco mixed paan?	..............................times	☐☐	
			How often	Frequency in a Day
.5	What types of smokeless tobacco do you use every day?	1| Zarda(1 = Regular, 2 = No, 3= Sometimes)	☐	☐☐
		2| Shadapata (1 = Regular, 2 = No, 3= Sometimes)	☐	☐☐
		3| Gul (1 = Regularl 2 = No, 3= Sometimes)	☐	☐☐
		4| Nassi = (1 = Regular, 2 = No, 3= Sometimes)	☐	☐☐
		5| Tobacco Mixed Paan (1 = Regular, 2 = No, 3= Sometimes)	☐	☐☐
		6| Others=9 (Specify)	☐	☐☐

2.6	How many members in your family use smokeless tobacco?		Male.................... Person/s	☐	
			Female................. Person/s	☐	
				How often	Frequency in a Day
2.7	If your answer is 'Yes', please tell us who are using smokeless tobacco?	1. Father	1| Zarda(1 = Regular, 2 = No, 3= Sometimes)	☐	☐☐
			2| Shadapata (1 = Regular, 2 = No, 3= Sometimes)	☐	☐☐
			3| Gul (1 = Regularl 2 = No, 3= Sometimes)	☐	☐☐
			4| Nassi = (1 = Regular, 2 = No, 3= Sometimes)	☐	☐☐
			5| Tobacco Mixed Paan (1 = Regular, 2 = No, 3= Sometimes)	☐	☐☐
			6| Others=9 (Specify)	☐	☐☐
		2.Mother	1| Zarda(1 = Regular, 2 = No, 3= Sometimes)	☐	☐☐
			2| Shadapata (1 = Regular, 2 = No, 3= Sometimes)	☐	☐☐
			3| Gul (1 = Regularl 2 = No, 3= Sometimes)	☐	☐☐
			4| Nassi = (1 = Regular, 2 = No, 3= Sometimes)	☐	☐☐
			5| Tobacco Mixed Paan (1 = Regular, 2 = No, 3= Sometimes)	☐	☐☐
			6| Others=9 (Specify)	☐	☐☐
		3.Siblings	1| Zarda(1 = Regular, 2 = No, 3= Sometimes)	☐	☐☐
			2| Shadapata (1 = Regular, 2 = No, 3= Sometimes)	☐	☐☐
			3| Gul (1 = Regularl 2 = No, 3= Sometimes)	☐	☐☐
			4| Nassi = (1 = Regular, 2 = No, 3= Sometimes)	☐	☐☐

			5| Tobacco Mixed Paan (1 = Regular, 2 = No, 3= Sometimes)	☐	☐☐
			6| Others=9 (Specify)	☐	☐☐
		4.Others=9 (Please Specify)............	1| Zarda(1 = Regular, 2 = No, 3= Sometimes)	☐	☐☐
			2| Shadapata (1 = Regular, 2 = No, 3= Sometimes)	☐	☐☐
			3| Gul (1 = Regularl 2 = No, 3= Sometimes)	☐	☐☐
			4| Nassi = (1 = Regular, 2 = No, 3= Sometimes)	☐	☐☐
			5| Tobacco Mixed Paan (1 = Regular, 2 = No, 3= Sometimes)	☐	☐☐
			6| Others=9 (Specify)	☐	☐☐
2.8	Do you smoke Cigarette/ Bidi together with Smokeless Tobacco?		Yes = 1 No= 2 (If "No", go to question 3.1)	☐	
2.9	If Answer is "Yes", how many times do you smoke in a day		……….Times a day	☐☐	

Section – C

Risk factors

Sl No	Questions	Coding Categories	Code
Knowledge and awareness about health effects of SLT use			
3.1	Do you think that smokeless tobacco can affect your health?	Yes=1, Can affect=2 No=3, Don't Know (DK) = 4, (If No/DK, go to question no 3.3)	☐

3.2 M	What kind of health harms can be happened due to chewing tobacco (One or more answers to be)	Cancer=1 Mouth infection=2 Stomach infection =3 Loss of taste = 4 Loss of appetite= 5 Dental stone/plaque = 6 Stroke = 7 Ulcer = 8 Heart disease = 10 Others = 9(Specify).........	☐☐☐☐
3.3	At present do you have dental decay?	Yes=1, No=2, Don’t Know (DK) = 3, (If No/DK, go to 3.28)	☐
3.4	Do you think this dental decay caused by smokeless tobacco?	Yes=1, No=2, Don’t Know (DK) = 3, (If answer is No/DK, go to question no 3.7)	☐
3.5 **M**	How did you know that this dental decay caused by smokeless tobacco?	Medical Doctor =1 Friends = 2 Radio = 3 Television= 4	☐☐☐☐
3.6	How long have you been suffering for dental decay? (Insert ’0’, if it is less than 1)	............Month/..........Years	☐☐☐ Months
3.7	Do you have any ideas about the treatment of dental decay?	Taking treatment emergency =1 No idea about treatment= 2 DK=3	☐
3.8	Presently do you are in treatment due to dental decay?	Yes=1, No=2, (If answer is ’No’, go to question no 3.10)	☐
3.9 **M**	What types of treatment are you taking for dental decay? (One or more answers to be)	Tablet/Gel/Medicine = 1 Filling/ Pudding = 2 Others = 9 (Specify)...........	☐☐☐
3.10	Are you suffering from mouth-infection?	Yes=1, No=2, DK = 3, (If No/DK, go to question no 3.13)	☐
3.11	Do you think this mouth infection is caused by the use	Yes=1, No=2, DK = 3,	☐

	of smokeless tobacco?	(If No/DK, go to question no 3.13))	☐
3.12	How long have you been suffering from mouth-infection due use of Smokeless Tobacco? (Insert ’0’, if it is less than 1)	............Month/..........Years	☐☐☐ Months
3.13	What is your idea about the treatment of mouth-infection?	Taking treatment emergency =1 No idea about treatment= 2 DK=3	☐
3.14	(If 3.10 quetions answer is Yes) Are you taking treatment for mouth infection?	Yes=1, No=2, (If answer is No, go to question no 3.16)	☐
3.15 **M**	What types of treatment are you taking for mouth-infection? (One or more answers to be)	....	☐☐☐☐
3.16	Do you think Smokeless tobaco can causes mouth cancer ?	Yes=1, No=2, DK = 3, (If answer is No/DK, pl go to question no 3.22)	☐
Observation: If 3.10 quetions answer is ’Yes**’,** see white patches in the mouth, whether he/ she has pain when chewing or swallowing, whether he/she has mouth burning symptoms			
3.17	Have you ever been examined by doctor due to this problem?	Yes=1, No=2, (If answer is ’No’, please go to question no 3.22)	☐
3.18	What types of treatment did you take due to this problem?	....	☐
3.19	Reasons why this problem happened?	....	☐
3.20	How long are you in treatment?	.............Month/........Years	☐☐ Months
3.21	What was the name of this problem said by doctor?	Cancer= 1 Ulcer/ mouth Infection = 2 Others = 9(Specify)…….....	☐

3.22	Do you think Smokeless tobaco can causes heart dusease?	Yes=1, No=2, DK = 3,	
3.23	Have you ever suffered from heart diseases?	Yes=1, No=2, DK = 3, (If answer is No/DK, pl go to question no 3.27)	☐
3.24	Do you think Smokeless tobaco can causes heart diseases?	Yes=1, No=2, DK = 3, (If answer is No/DK, pl go to question no 3.27)	☐
3.25 **M**	How did you know Smokeless tobaco causes your heart disease? One or more answers to be)	Medical Doctor =1 Friends = 2 Radio = 3 Television= 4	☐☐☐☐
3.26	How long have you been suffering from heart disease? (Insert ’0’, if it is less than 1)	............Month/..........Years	☐☐☐ Months
3.27	Do you think Smokeless tobaco can cause stroke ?	Yes=1, No=2, DK = 3, (If answer is No/DK, pl go to question no 3.32)	☐
3.28	Have you ever suffered from a stroke?	Yes=1, No=2, DK = 3, (If No/DK, go to no 3.32)	☐
3.29	Do you think Smokeless tobaco caused your stroke ?	Yes=1, No=2, DK = 3, (If No/DK, go to no 3.32)	☐
3.30 **M**	How did you know Smokeless tobaco caused your stroke? (One or more answers to be)	Medical Doctor =1 Friends = 2 Radio = 3 Television= 4	☐☐☐☐
3.31	How long have you been suffering from stroke? (Insert ’0’, if it is less than 1)	............Month/..........Years	☐☐☐ Months
3.32	Do you think Smokeless tobaco can cause ulcer ?	Yes=1, No=2, DK = 3, (If No/DK, go to no 3.32)	☐
3.33	Have you ever suffered from ulcer?	Yes=1, No=2, DK = 3, (If No/DK, go to no 3.32)	☐
3.34	Do you think Smokeless tobaco caused your ulcer ?	Yes=1, No=2, DK = 3, (If No/DK, go to no 3.32)	☐
3.35 **M**	How did you know Smokeless tobaco caused your ulcer? (One or more answers to be)	Medical Doctor =1 Friends = 2 Radio = 3 Television= 4	☐☐☐☐

3.36	How long have you been suffering from ulcer? (Insert ’0’, if it is less than 1)	............Month/..........Years	☐☐☐ Months
3.37	Have you ever tried to quit chewing smokeless tobacco?	Yes=1 No=2	☐
3.38	Do you have plan to quit chewing smokeless tobacco in future?	Yes=1 No=2 DK=3	☐
3.39	Within how many days you want to stop chewing smokeless tobacco?	............Month/..........Years	☐☐ Months
3.40	Have ypu ever heard the adverse effescts of smokeless tobacco use?	Yes=1 No=2	☐
3.41 **M**	If answer is yes, then from which source you have heard? (One or more answers to be)	Father/Mother = 1 Siblings = 2 Relatives = 3 Community leader = 4 Radio = 5 Television= 6 Newspaper = 7 Billboard = 8 Others = 9	☐☐☐☐
3.42	Is there any risk in using tobacco during pregnancy?	Yes=1 No=2	☐
3.43 **M**	Do you think what types of risks are inherent in using smokeless tobacco during pregnancy? (One or more answers to be)	Abortion = 1 Low birth weight = 2 Still birth = 3 Pre-eclamsia = 4 Others = 9 (Specify)...........	☐☐☐☐
3.44	(Only for female) Do/ did you use smokelesss tobacco during your pregnancy?	Yes=1 No=2	☐

Section – D

Factors influencing use of SLT

	Questions	Coding Categories	Code	
			Yes	**No**
4.1	What are the factors influences you to use smokeless tobacco?	a. availability of SLT	1	0
		b. family support	1	0
		c. older family members use	1	0
		d. parents use	1	0
		e. siblings use	1	0
		f. friends use	1	0
		g. low price	1	0
		h. impact of advertisement and publicity	1	0
		i. during pregnency Oedma- Naussea/Vomiting tendency-	1 1	0 0
		j. after leaving off cigerette started chewing tobacco	1	0
		k. to reduce toothache started chewing tobacco	1	0
		l. to reduce bad mouth-odour started chewing tobacco	1	0

……………………	……………………………	………………………….
Signature of the Respondent	**Name & Signature of the Interviewer**	**Signature of the Field Superviser**

ANNEXURE-B

FGD Guidelines

Use of Smokeless Tobacco by Low Socio-economic Populations and Risk Factors Associated with It

Guidelines for Focus Group Discussion

- What is your idea about the adverse health effects of SLT?
- Do local people know the adverse health effects of SLT? If yes, describe their knowledge on health effects of SLT.
- Among the informants those mentioned that 'SLT has adverse health effects', ask them, what are the health effects of SLT have?
- What measures can be taken to reduce the number of SLT users in your community?
- Do you know betel shop may harm for your health? If you know it, then explain what do you know about that?
- Usually do you say something to the SLT users?
- If answer is 'yes', please write down their advices in this regard.
- If answer is 'no', please ask them why they dont advice them.
- Do women use SLT during pregnancy?If yes, what is the percentage of SLT users during pregnancy? Do you think SLT have the risk of harms if women use it during their pregnancy?
- If people suggest you to change your business, will you accept it?
- What types of facilities do you want to get so that you can close your present (SLT shop) business?
- Usually how people initiate chewing tobacco and get addictions gradually? What types of initiate we can take to reduce/ stop SLT users.
- If you have any suggestions or opinions in this regard please mention here details.

Participants Information

Sl No	Name	Age	Education	Occupation	How long staying	Social status in the Community

ANNEXURE-C

Enumeration Survey Form

Study Title: **Use of smokeless tobacco by low socio-economic populations and risk factors associated with it**

Study Area: **Demra and Tongi**

Selection criteria of study population

Inclusion criteria

- Smokeless tobacco user
- Age 15 years and above
- Sex: both male and female
- Physically able and willing to participate

Exclusion criteria

- Very sick or very old patients
- Temporary migrants (guests)

Sl No	Name of HH Member	Number of member in the family	Number of member use SLT	Mobile Number	HH Holding address	Monthly Income

ANNEXURE-D

Pictures

Picture 1: The Honorable Vice Chancellor Professor Dr. M. Lutfar Rahman is inaugurating the data collection training. Prof Dr. S.M. Mahbub-Ul-Haque Majumder, Dean (FAHS), Prof Dr. M. Mizanur Rahman (Co-Investigator), Dr. Md. Shahjahan (Principal Investigator), Prof Keramat Ali (PH), Mr. Gautam Shuvra Bishwas (BCCP) were present on the occasion

Picture 2: Training on field investigators/Supervisors/dental surgeon on data collection technique held on August 03-04, 2014 at Virtual Class Room, DIU

Picture 3: Focus Group Discussion (FGD) at Tongi

Picture 4: FGD participants are writing their socio-demographic data spontaneously at Demra

Photo 5: Dental Surgeon Dr. Nahid Farjana is collecting data from a respondent

Photo 6: A SLT user is providing information to the field investigator