

**Dual Tobacco Use in a Random Sample of UK Resident
Bangladeshi Men**

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Abstract

UK resident Bangladeshi men pose a public health challenge because of their preference for traditional tobacco use along side cigarette smoking. Studies investigating UK black and minority ethnic tobacco use have not had a primary focus on this issue. Furthermore, the extent and nature of dual tobacco use by Bangladeshi men had not been reliably established due to a reliance on self-report and a definitional confusion about paan with and without tobacco. This study aims to establish the prevalence of dual tobacco use by UK resident Bangladeshi men using a random survey design. It also plans to establish baseline information for dual tobacco use against the key determinants of a health inequality model. Psychosocial, health and nicotine related parameters of dual tobacco users are compared with cigarette only smokers and paan tobacco chewers. Risk factors for dual tobacco use have been explored through multivariate analysis.

Three hundred and twenty-five men of Bangladeshi origin were randomly selected using the Tower Hamlets Electoral Register and interviewed at home using a pre piloted questionnaire incorporating items used in other relevant UK studies. Expired carbon monoxide readings were recorded using a Bedfont CO monitor.

Dual tobacco was used by 22% of the sample, while 36% smoked cigarette only, 7% chewed paan tobacco only, and 35% did not use any form of tobacco. When dual tobacco users were compared with the cigarette smokers in bivariate analysis, there were significant differences in terms of self reported social class, age, education, employment, and health status. A multivariate analysis controlling for age, education status, social class, self reported health and social capital scores showed that only wife's tobacco use predicted dual tobacco use (OR=6.3).

The findings from this study confirm the diversity and social nature of dual tobacco use by UK Bangladeshi men. These observations need to be considered and integrated into the development and implementation of tobacco cessation interventions for UK Bangladeshi adults in public health programs.

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List of abbreviations

BMEG: Black and minority ethnic groups

CO: Carbon-monoxide

COPD: Chronic obstructive pulmonary disease

HMEG'99: Health Survey for England - The Health of Minority Ethnic Groups. 1999.

OR: Odds ratio

PPM: Parts per million

SMR: Standardised mortality rate

ST: Smokeless tobacco

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Chapter 1: Introduction

1.1 Background

My research interest in this topic has mirrored my professional development. An initial general interest and research experience in aspects of Bangladeshi lifestyle in East London has become more focused in recent years on the tobacco use of this community. I have been fortunate in being able to complement posts at Queen Mary University of London and University College London with policy work within the Department of Health as part of its Black and Minority Ethnic Tobacco Education Campaign (see Appendix VII).

1.2 The transitional nature of tobacco

Despite extensive use of modern manufactured cigarettes, traditional modes such as snuffing, chewing, dipping, chick pouching and smoking in the form of pipe, cigar, bidi and hukka (water pipe) are still being practiced by many groups (Lopez, 1990; Piha *et al.*, 1993). Bedi reported a range of South Asian tobacco products available in the United Kingdom market (Appendix I) (Bedi, 1996). The transitional nature of tobacco products is reflected in Kozlowski's comment '-it is difficult to predict what forms of tobacco use might dominate in the 21st century, but it is reasonable to expect that cigarettes may then be out of fashion' (Kozlowski, 1981).

The need for a redefinition of the nature of the tobacco problem and a re-examination of the goals and concepts and categories of tobacco use has been argued 'A broader conceptualization of prevalence and cessation is urged, one which takes account of cigar and pipe smoking as well as cigarettes. In addition to increasing overall prevalence somewhat, this approach drastically alters estimates of cessation rates and indicates that the often-claimed gender difference in cessation is myth rather than reality' (Jarvis, 1991). The policy implications that follow has been noted in a review '--prevention and cessation efforts need to be directed against all forms of tobacco, including smokeless tobacco (ST) use, cigar and pipe smoking' (Nelson *et al.*, 1996).

For UK Bangladeshi men their tobacco use pattern can be fairly complex due to a number of unique factors within which tobacco is used, exchanged, and discontinued in the community (Bush *et al.*, 2003;Croucher and Rahman, 2005). The presence of these wide varieties of tobacco variants makes the option for dual tobacco use, such as cigarette smoking and ST use much easier. Several local level studies have reported dual tobacco use in UK Bangladeshi men as a secondary outcome (Vora *et al.*, 2000;Pearson *et al.*, 1999). However, the true prevalence of dual tobacco use had not been established in these studies due to conceptual and methodological gaps in defining and measuring dual tobacco use.

This study aims to establish dual tobacco use prevalence in UK Bangladeshi men employing robust methodologies such as a gender specific representative study sample, use of a culturally sensitive questionnaire instrument and chemical validation using Carbon Monoxide (CO) monitor.

1.3 Evidence for dual tobacco use

Since 1920s cigarette consumption has exceeded other forms of tobacco use due to mass production and lower pricing strategies (Auth and Warheit, 1986). ST became mainly a rural habit, especially among workers in textile mills, coalmines and other industrial sites where smoking was inadvisable. The aesthetic, practicability and sanitary drawbacks of ST contributed to its decline. However an end of the cigarette era has been predicted because of the health and environmental impact of cigarette smoking (Kozlowski, 1981).

Despite these general observations, tobacco related studies from the United States suggest that many young people use more than one form of tobacco concurrently, such as ST and smoking. Results from a survey of 3,023 adolescents in United States indicated that over 60% of boys had tried ST, and 7% used it daily (Ary *et al.*, 1987). ST use was related to the use of other drugs, with 83% of male daily users indicating concurrent use of alcohol, marijuana, and/or cigarettes. Another study (Horn *et al.*, 2000) among 9th grade students from the same country reported 20% were smokers only, 6% were ST users only and 10% were ‘conjoint’ users. Male students were more likely to use both cigarettes and ST.

Unlike smokers only or ST users only, lack of knowledge about health consequences of tobacco was a significant determinant among conjoint users. Another survey of young people (Escobedo *et al.*, 1997) again from the United States reported that cigarette smoking was also associated with high-risk behaviour such as using ST, having multiple sexual partners and not using bicycle helmets.

Longitudinal data from northern Sweden indicated a transitional nature of tobacco use, especially amongst men (Rodu *et al.*, 2003). Snus (a type of oral tobacco popular in Sweden) was the most stable form of tobacco use for men (75%); only 2% of users switched to cigarettes and 20% quitted tobacco altogether. Smoking was less stable (54%); 27% of smokers were tobacco-free and 12% used snus at follow-up. Combined use (smoking and snus) was the least stable (39%), as 43% switched to snus and 6% switched to cigarettes.

Another prospective population study from Denmark (Lange *et al.*, 1992) comprised of 6,511 men and 7,703 women, selected randomly from the general population claimed that there were 2,986 plain cigarette smokers, 3,222 filter cigarette smokers, 1,578 smokers of cheroots/cigars, 433 male pipe smokers and 773 respondents used more than one type of tobacco. A study of smoking and tobacco use by U.S. military personnel indicated that one-fifth of the cigarette smokers also used ST and that two-fifths of the cigarette users smoked a pipe or cigar. Among non-smokers of cigarettes, about one-tenth of the respondents used ST and/or smoked a pipe or cigars (Ballweg and Bray, 1989).

Similar findings have been reported from elsewhere. A survey from Algeria claimed that among the men 77% used tobacco: 49% smoked cigarettes, 15% chewed tobacco, and 13% used both (Skander and Larbaoui, 1989). Another investigation in 100 northern Thai villagers (Reichart *et al.*, 1988) claimed that the majority of miang (a preparation of fermented tea leaves and tobacco) chewers were 'multi-habituees' in that this habit was combined with other oral habits such as paan quid chewing, banana cigar and Thai cigarette smoking and alcohol consumption. Among women the most prevalent habit combination was miang chewing and 'khi yo' cigar smoking whereas men showed a more

differentiated habit pattern. Another survey (Pindborg *et al.*, 1984) from Hainan Island, China reported ninety-five percent of the study population chewed paan. In men this habit was supplemented with either smoking cigarettes or hukka. However, it was not apparent whether this study sample added tobacco in their paan quid.

Studies from South Asia also corroborate this. A study (Jindal *et al.*, 1982) reported that amongst the tobacco users 48% had smoked only cigarettes, 28% only bidis, 19% both cigarettes and bidis. However, the complexities of dual tobacco use have yet to be explained in the UK resident Bangladeshis.

1.4 The Bangladeshis in East London

Bangladeshis first came to the United Kingdom (UK) in large numbers during the 1960's. Before that, there had been a small community of Bangladeshi ex-seamen in Tower Hamlets since 1920 (Adams, 1987). Men who arrived during the 60's were industrial workers and then involved in the garment and catering trades. A large majority of them are from the Sylhet region of Bangladesh and belong to a particular faith group (Gardner and Shakur, 1994). According to a report by Office of the Deputy Prime Minister (Office of the Deputy Prime Minister, 2004a), Tower Hamlets was the second most deprived local authority of England in 2004 (Appendix II: A map of Tower Hamlets).

The Bangladeshi population in Tower Hamlets has nearly quadrupled to 65,549, around 33% of total population of the area, within the last twenty years (Brown, 2000; HMSO, 1987). This rapid rise in population was attributed to high fertility rates and continued migration (Brown, 2000). Fifty five percent of the Tower Hamlets Bangladeshi population was less than 18 years of age and 33% of the working age men were unemployed at the time of the 2001 Census.

In general, Bangladeshis in UK experience poorer health compared to the other black and minority ethnic groups (BMEG). This has been attributed to the disparities in occupational social class, material living conditions and local area deprivation (Chandola, 2001). An analysis of national ethnic data reported that the mortality among Bangladeshi

men was significantly higher {Standardised mortality rate (SMR) 118, 95% CI 111-126} than the levels prevalent in England and Wales (Balarajan and Raleigh, 1997). Cancer mortality overall was lower than expected in both sexes, with the exception of cancer of the liver and gall bladder. Bangladeshi men had experienced high mortality from diabetes (SMR 685, 95% CI 529-874), coronary heart disease (SMR 148, 95% CI 134-163) and cerebro-vascular disease (SMR 267, 95% CI 222-319); they also experienced excess deaths from cirrhosis of the liver (SMR 254, 95% CI 175-357).

1.5 Paan-tobacco use and smoking in UK Bangladeshis

Paan with tobacco use and smoking was high in UK Bangladeshis compared to the other BMEG (Rudat, 1994). Cigarette smoking was reported to be predominantly a male practice and highest amongst all the cultural groups living in UK. Health Survey for England - The Health of Minority Ethnic Groups '99 (HMEG '99) reported that 44% of Bangladeshi men smoked cigarette and 19% chewed paan tobacco daily irrespective of daily use of other tobacco forms. However, the true prevalence of dual tobacco use might not have been established in the HMEG '99 (reported prevalence 12%) due to a conceptual gap in separating paan with and without tobacco (HMEG '99, 1999).

An investigation (Pearson *et al.*, 1999) of 158 over 40 years old Bangladeshis from Tower Hamlets reported that paan was chewed by 78% of the sample with significantly more females than males adding tobacco to their quid and chewing more frequently than males. Ten percent of the male sample used both paan-tobacco and cigarettes on a regular basis. A study of 296 Bangladeshi females living in West Yorkshire, aged 25 years and over found 95% chewed paan (Summers *et al.*, 1994). Tobacco was added on its own by 60% and as a component of zarda (shredded tobacco: Appendix I) by 27%. The prevalence of cigarette smoking was reported to be around seven percent in that study sample. Another study from Birmingham (Bedi and Gilthorpe, 1995) reported a total of 92% of males and 96% of females of Bangladeshi origin chewed paan on a daily basis with 39% and 82% respectively added tobacco within their quid. There was a general acceptance of the use of tobacco, that is, males on the whole, smoking and females chewing tobacco.

An investigation by a Tower Hamlets medical practice reported that the prevalence of paan chewing amongst adult Bangladeshis was over 80% with no sex difference. Men were more likely to smoke tobacco than women (men = 57%, women = 11%), but over half the women added tobacco to their paan quid (Ahmed *et al.*, 1997). A national survey reported 45% of Bangladeshi men and 54% women used paan on a regular basis (Nazroo, 1997). However, the prevalence of dual tobacco use was not investigated in that survey. The same survey also reported that 49% Bangladeshi men and less than 1% Bangladeshi women were current smokers. Bangladeshi men had the highest cigarette smoking rate amongst all the UK cultural groups and far above the national average (23%).

In adult Bangladeshi women who chew paan tobacco, a higher mean salivary cotinine score was associated with greater consumption frequency and chewing of leaf tobacco in paan (Croucher *et al.*, 2002). Above-average nicotine/cotinine dependence was associated with chewing paan quid with tobacco within 1 hour of waking up {Odds Ratio (OR) = 4.1, 95% CI 1.1-14.9} and the use of leaf tobacco (sada) rather than processed tobacco (OR = 3.9, 95% CI 1.1-12.8). Interventions using nicotine replacement therapy (NRT) and brief advice helped those women to stop or reduce paan tobacco chewing (Croucher *et al.*, 2003a). Oral pain and psychological distress were reported as the main barriers to successful paan tobacco chewing cessation (Croucher *et al.*, 2003b).

1.6 Tobacco use and public health

According to a WHO publication (WHO, 2005) tobacco is the second major cause of death in the world. It is currently responsible for the death of one in ten adults' worldwide (about 5 million deaths each year). If current patterns continue, it will cause some 10 million deaths each year by 2020. Half the people that use tobacco today - about 650 million people- will eventually be killed due to their habit.

The publication also reported that the economic costs of tobacco use are equally devastating. In addition to the high public health costs of treating tobacco-caused diseases, tobacco kills people at the height of their productivity, depriving families of breadwinners and nations of a healthy workforce. Tobacco users are also less productive

while they are alive due to increased sickness. The use of tobacco results in an annual global net loss of US\$ 200 thousand million, a third of this loss being in developing countries. Cigarette smoking causes more premature deaths every year in USA than AIDS, cocaine, heroin, alcohol (including drunk drivers), fires, car accidents, murder, and suicide – combined (McGinnis and Foege, 1993). Large-scale studies from India demonstrate a significant excess in all cause mortality among ST users compared to nonusers (Gupta and Ray, 2003).

The health consequences due to prolonged use of ST include cancer and precancerous condition of the oral mucosa and other adjacent sites, cardiovascular diseases, stress to the unborn infants of female users and periodontal diseases. The nicotine in tobacco juice irritates the stomach and can contribute to ulcers (Lamkin and Houston, 1998). The nature of the relationship between ST use and periodontal diseases is not clear. However, the evidence strongly suggests that it is associated with increased periodontal bone loss, attachment loss as well as periodontal pocket formation. One reviewer even suggested that a separated category for tobacco related periodontitis be created (Burgan, 1997).

A recent review by Critchley and Unal (Critchley and Unal, 2003) on the health effects of ST concluded that studies in India showed a substantial risk of oral or oropharyngeal cancers associated with chewing paan with tobacco. However, studies from other regions and of other cancer types were not consistent due to the fact that these studies were often not designed to investigate ST use, and many also had major methodological limitations including poor control for cigarette smoking and imprecise measurements of exposure.

Experience has shown that there are many cost-effective tobacco control measures that can be used in different settings and can have a significant impact on tobacco consumption. The most cost-effective strategies are population-wide public policies like bans on direct and indirect tobacco advertising, tobacco tax and price increases, smoke-free environments in all public and workplaces, and large clear graphic health messages on tobacco packaging. All these measures are recommended in the provisions of the WHO Convention on Tobacco Control along with primary care based tobacco cessation interventions (Crooks and Dwoskin, 1997).

1.7 Understanding tobacco use I: Nicotine dependence

Nicotine, the principal alkaloid in tobacco products, is generally accepted to be the active pharmacological agent responsible maintaining tobacco habit (Crooks and Dwoskin, 1997). The effect of nicotine in people is influenced by the rate and route of dosing and by the development of tolerance (Benowitz, 1996). Nicotine is a widely used drug of abuse (Stolerman and Jarvis, 1995). First, nicotine provides positive reinforcement by stimulating nicotinic receptors to promote high self-administration rates. Second, nicotine causes a negative reinforcement in the form of withdrawal symptoms when nicotine is withheld after chronic use.

Individual factors greatly influence the route and amount of nicotine absorbed in a body system. A few individuals with deficient C-oxidation of nicotine usually have slow metabolism of nicotine (Byrd et al., 1998). An ethnic difference in nicotine metabolism had also been observed (Benowitz and Jacob, III, 1997). Nicotine had been implicated for subjective satisfaction (Swan *et al.*, 1997), concentration, hit reaction time and composite measures of attentiveness (Levin *et al.*, 1998), tolerance development and desire for self-administration (Henningfield *et al.*, 1997), acute increase in both systolic and diastolic blood pressure (Soria *et al.*, 1996).

The nicotine withdrawal effects cited in the literature include craving for cigarette/tobacco and irritability (Jorenby *et al.*, 1996), anxiety and drowsiness, appetite, sleep disruption, difficulty in concentration, restlessness, weight gain, depression and impatience (Levin *et al.*, 1998; Wetter *et al.*, 1995). The severity of the withdrawal symptoms have a positive dose response relationship with the frequency and the intensity of tobacco use (Albrecht *et al.*, 1999).

1.8 Measuring Nicotine dependence

A person's nicotine dependence can be measured by self-report of type and pattern of tobacco consumption and by bio-chemical analysis of key physiological markers. The current literature has a mixed view on accuracy of self-report of tobacco/nicotine dependence. A review of 26 published studies assessed 51 comparisons between self-

report behaviour and biochemical measures (Colby *et al.*, 2000). The sensitivity and specificity of self-report ranged from 6% to 100% (mean=87%) and specificity ranged from 33% to 100% (mean=89%). Interviewer administered questionnaires, observational studies; reports by adults and simultaneous biochemical validation were associated with higher estimates of sensitivity and specificity. Another study indicated that the misclassification rate was particularly high in specific groups such as ethnic minorities and males (Simon *et al.*, 1996).

Accurate quantification of tobacco use status is useful for the individual tobacco user, and necessary for psychosocial studies which relate tobacco use to health or which are concerned with the efficacy of tobacco cessation methods. The chemical markers include nicotine and cotinine in plasma, urine and saliva (de L'Homme *et al.*, 1995; Simon *et al.*, 1996); carbon monoxide in exhaled air (Becona and Garcia, 1995), carboxyhemoglobin in blood (Suter *et al.*, 1995), thiocyanate in biological fluids (Bardy *et al.*, 1994), lead, cotinine/creatinine ratio and lactate dehydrogenase presence in membrane (Margolis *et al.*, 1997). Amongst these markers some are specific to tobacco smoking, such as carbon monoxide in exhaled air and carboxyhemoglobin in blood.

In the last decade, psychosocial researchers have acknowledged the importance of nicotine in maintaining tobacco dependence and in cessation difficulty. This has led to efforts to measure nicotine dependence using various psychosocial markers. One such well-known paper and pencil test of nicotine dependence is Fagerstrom Tolerance Questionnaire (FTQ). Several reviews have been published demonstrating its usefulness (Becona and Vazquez, 1998; Benowitz, 1999; Etter, 2005). This is an easy to administer, cheap and less invasive method of identifying cigarette related nicotine dependence and is adaptable to primary care settings. This has also been found equally effective in smokers of non-English and non-European origin (Becona and Vazquez, 1998; Kawakami *et al.*, 1998). However, when used to measure ST dependence it produced variable results with partial or no success. One report indicated that FTQ lacks cultural and structural items specific to the use of ST (Boyle *et al.*, 1995).

1.9 Understanding tobacco use II: Social inequality and tobacco

The adverse health effects of social inequality are now well documented (Wilkinson, 1992; Wilkinson, 1998). In all ages, genders and groups, people who have low income have poor health, and people with poor health have low income (Siegrist and Marmot, 2004). It is also evident in the case of tobacco use as Graham commented ‘smoking is acquiring a new social profile, as a habit it follows the contours of social disadvantage’ (Graham, 1994). Using data from the United Kingdom Marmot also confirmed an inverse association between socioeconomic position and consumption of cigarettes (Marmot, 1997).

Results from the Whitehall Study over the years consistently demonstrated that people who were at lower grades of employment smoked more cigarettes and had a greater smoking related disease burden than people who were at higher grades of employment (van Rossum *et al.*, 2000; Smith *et al.*, 1991; Marmot *et al.*, 1984). Comparative studies conducted elsewhere between blue-collar and white-collar workers also showed a similar pattern (Sorensen *et al.*, 2004; Howard, 2004). In the United States in 1997, the smoking prevalence among blue-collar workers was nearly double that among white-collar workers. Blue-collar workers reported more negative life events, especially work-related. Depressed mood and mental strain were related to increased tobacco consumption in blue-collar workers (Rose *et al.*, 1998).

Being unemployed is another risk factor for tobacco use (Broms *et al.*, 2004). A study from Scotland over 10,000 men and women found that the proportion of smokers and ever smokers were considerably higher in the unemployed. The unemployed smokers had begun to smoke at an earlier age. The authors attributed this greater use to a ‘complex interaction of financial and both current and previous social factors’ (Lee *et al.*, 1991). One review concluded that unemployment did not increase smoking, but unemployed men had a slightly higher smoking prevalence before unemployment (Lynge, 1997). Area deprivation is an independent factor for individual smoking irrespective of age and other known factors (Shohaimi *et al.*, 2003; Duncan *et al.*, 1999).

Social inequality has a strong gender dimension. Women, especially single mothers are more disadvantaged than many other demographic groups. An analysis (Graham and Der, 1999) of British Household Panel Survey found that female smokers were more disadvantaged than the broader population of women, both with respect to their socioeconomic circumstances and their psychological health.

This pattern is also visible in adolescents. Tobacco use is more frequent among those who have a low than those who have a high socioeconomic status. High socioeconomic status adolescents perceived a stronger association between smoking and a number of health-related disadvantages (de Vries, 1995). Low socioeconomic status adolescents viewed smoking as a way of meeting people. Moreover, smoking of low socioeconomic class mother had a strong influence on adolescent's smoking behaviour (Weinkam *et al.*, 1987).

Tobacco use rate is high in some of the socially excluded ethnic communities. A survey report claimed that of the New Zealand population Maoris had the highest smoking prevalence (40%) (Barnett *et al.*, 2004). A review of tobacco use by Alaskan natives concluded that Alaska Natives had a high prevalence of tobacco use, including both cigarettes and ST (Kaplan *et al.*, 1997). In India (Subramanian *et al.*, 2004), smoking and ST were systematically associated with socioeconomic markers at the individual and household level. Individuals with no education were 2.6 times more likely to smoke and chew tobacco than those with postgraduate education. Households belonging to the lowest fifth of a standard of Indian living index were 2.5 times more likely to consume tobacco than those in the highest fifth.

Several authors have stressed the need for understanding tobacco use holistically in the context of users' personal, familial, social and cultural situation (Croucher and Rahman, 2005; Struthers and Hodge, 2004). One such explanatory model, postulated by Dahlgren and Whitehead (Dahlgren and Whitehead, 1991), puts health inequality central to all health compromising behaviour and the health inequality is mediated through a series of personal, familial, social and cultural determinants which are distinctly layered.

1.10 Towards a theoretical framework: Layers of influence model

An individual's health may have many determinants ranging from biological to environmental. Dahlgren and Whitehead (Dahlgren and Whitehead, 1991) postulated that these determinants are layered, one on top of the other (Figure: 1.1). At the centre are individuals, endowed with age, sex and genetic factors that influence their final health potentials, but which could be considered as fixed. Surrounding the individual are layers of influences on health that could be modified.

The next layer presents personal behaviors that can be either health compromising or health promoting. Social and community influences on an individual's health are represented in the next layer. Mutual support within a community can sustain the health of its members in otherwise unfavorable conditions. Wider influences on a person's ability to maintain health are represented in the next layer. Factors include their living and working conditions and access to essential services. Overall, there are the economic, cultural and environmental factors as a whole, represented in the final layer. Factors in this layer, such as the economic state of the country and the labour market conditions, have influence on every other layer. Cultural factors also govern health behaviour such as gender difference in choice of tobacco type.

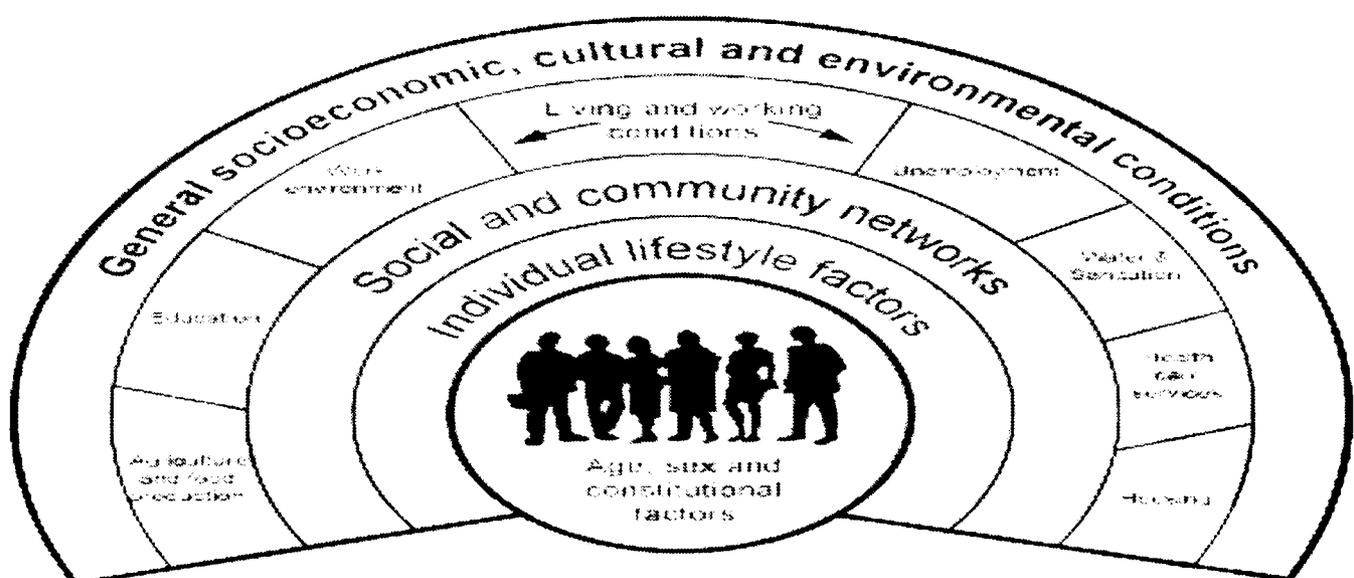


Figure 1.1: Layers of influence on health model

Source: http://www.empho.org.uk/products/khi2004/0_Report/determinantsofhealth1.htm

1.11 Theoretical framework

The high prevalence of tobacco use in Bangladeshi men in the UK is a challenging public health issue (Nazroo, 1997;HMEG '99, 1999). In addition, the tobacco use pattern of Bangladeshi men may be complex due to a number of currently unexplained and probably unique factors, such as the presence of a diverse variety of culturally endorsed tobacco variants and a cross gender acceptance of ST use. The next chapter will review the literature and identify gaps in understanding Bangladeshi adult men's dual tobacco use. For example, only two studies conducted in East London have reported dual tobacco use as a secondary outcome (Ahmed *et al.*, 1997;Pearson *et al.*, 1999).

It is proposed that the use of tobacco by Bangladeshi man can only partially be explained through the explanatory models derived from theories of nicotine addiction. The current dual tobacco use in Bangladeshi men can be better understood in the wider context of individual, social and environmental determinants.

The aim of this study is to establish dual tobacco use prevalence in UK Bangladeshi men.

The three objectives to compliment this aim are to:

- Objective 1: establish baseline information for dual tobacco use against the key determinants of social inequality in health as proposed in the layers of influence model
- Objective 2: compare dual tobacco users with cigarette smokers, paan tobacco chewers, and people who use none from the same group against psychosocial, health and nicotine dependence parameters, and
- Objective 3: identify key risk factors for current dual tobacco use compared to the other two Bangladeshi tobacco use categories, e.g., cigarette smoking and paan tobacco chewing.

Identification and better understanding of a dual tobacco user group could open the possibilities for prospective investigation studying long term health consequences of using more than one form of tobacco concurrently and lead to the formulation of an effective tobacco control strategy.

A better understanding of dual tobacco in UK Bangladeshi men could be developed by exploring the following assumptions:

1. There are some Bangladeshi men who smoke cigarette and also use paan-tobacco concurrently
2. A dual tobacco dependent person would demonstrate psychosocial characteristics comparable to that of a smoker and/or a paan tobacco chewer
3. Dual tobacco use in Bangladeshi men can be located in the wider context of individual, social and environmental determinants as structured in layers of influence model. These are:
 - a. the influence of age and gender
 - b. the lifestyle factors which dictate dual tobacco use
 - c. coexisting health and social capital correlates in relation to the dual tobacco use
 - d. living and working conditions and their influence on dual tobacco use
 - e. co existing environmental and cultural conditions in relation to the dual tobacco use
 - f. pathways for dual tobacco uptake and maintenance

The theoretical framework outlined in this chapter will place the findings from this study within a wider psychosocial context within which dual tobacco is used and exchanged by UK resident Bangladeshi men.

Chapter 2: Literature Review

2.1 Introduction

The theoretical framework proposed in the previous chapter allows the findings from this study to be located within a wider psychosocial context. This chapter presents a review of the relevant literature to further clarify issues and to address the aim and objectives linking dual tobacco use and the wider body of evidence.

2.2 Endowed Characteristics

2.2.1 Tobacco use and age

Both smoking and ST use are mostly initiated and established at a young age (HEA, 1994). Four of every five persons who use tobacco currently start the habit before they reach adulthood. Early initiation predicts longer duration and heavier daily consumption. Most smoking initiation take place between the age of the 16 and 17 years and reaches its pinnacle by 24 years (Sugathan *et al.*, 1998). For ST initiation by Indian adolescents (Sinha *et al.*, 2003), the average age of initiation was much earlier, at 10 years. On the other hand, the age of paan-tobacco initiation was 24 years in a sample of UK Bangladeshi women (Croucher *et al.*, 2003a).

A cross sectional survey of 315,598 individuals aged 15 years or older from 91,196 households of India reported tobacco consumption increased up to the age of 50 years and then levelled or declined (Rani *et al.*, 2003). Another sample of 13,558 men and women aged 25-64 years of Delhi, India reported that compared with cigarette smokers, people who smoked bidi or chutta were older and married (Mohan *et al.*, 2002).

Earlier initiation predicted early onset of tobacco related illnesses. A life table approach was used to estimate the cumulative incidence of smoking-related disease using data from the 2000/01 Canadian Community Health Survey (Chen, 2003). For both sexes, the younger the individuals were when they became daily smokers, the sooner they were diagnosed with chronic obstructive pulmonary disease (COPD), heart disease or rheumatoid arthritis. Even when education, household income and number of cigarettes

smoked per day were taken into account, adolescent starters were at increased risk of these diseases compared with never-smokers.

A national survey of UK BMEG (Rudat, 1994) reported that amongst Bangladeshi women consumption of paan-tobacco increased greatly with age, from 31% of younger women (aged under 50 years) to 76% of older women (aged 50 years and over). Amongst men the increase was from 40% to 62% respectively.

2.2.2 Gender and tobacco use

Amongst South Asians there is a marked gender difference in tobacco choice. In Bombay, India, 99,598 individuals were interviewed (60% women, 40% men). Among women, prevalence of tobacco use was high (58%) but almost solely in the smokeless form. Among men, 69% reported current tobacco use and 46% were smokers. The most common ST practice among women was mishri (44% of ST users) and among men paan with tobacco (27%). Chewing paan without tobacco was rare (< 0.5% of smokeless users) (Gupta, 1996).

Marked education (illiterate vs. college educated) and occupation (unemployed vs. professional) specific gradients were observed among male bidi smokers and female ST users (Sorensen *et al.*, 2005). A similar pattern was observed in Pakistani medical students (17% male smokers versus 4% female smokers) (Piryani and Rizvi, 2004). Table 2.1 presents a list of distribution of basic types of tobacco habits by gender in seven areas of India.

Area	Male users (% total men)				Female users (% total women)			
	Chewed or applied	Smoked	Mixed	Total users	Chewed or applied	Smoked	Mixed	Total users
Mainpuri, Uttar Pradesh	21	41	20	82	9	11	1	21
Bhavnagar, Gujarat	9	56	6	71	15	*	*	15
Ernakulam, Kerala	14	45	22	81	38	1	1	39
Srikakulam, Andhra Pradesh	4	70	7	81	3	64	*	67
Singbhum, Bihar	17	50	14	81	26	5	2	33
Darbhanga, Bihar	28	24	26	78	7	41	4	51
Pune, Maharashtra	53	6	2	62	49	*	*	49
Goa	3	61	5	69	23	24	2	49
Mumbai (urban), Maharashtra	46	14	10	69	57	*	*	57.5
Trivandrum (urban), Kerala	27	56	nr	83	26	2	nr	28

* Prevalence < 0.5%; nr, not reported.

Table 2.1 Distribution of basic types of tobacco habits in seven areas of India: Source: (Gupta and Ray, 2003).

This table clearly demonstrates how different Indian cultural groups prefer different forms of tobacco with a large proportion of female participants in ST and male participants in smoking forms (Gupta and Ray, 2003). One compelling reason for such a high popularity of ST in South Asian women is the relatively recent (17th Century) adoption of tobacco into the ancient habit of paan chewing. Smoking is still a taboo for many South Asian women, whereas use of ST is not (Bush *et al.*, 2003).

Amos and Haglund (Amos and Haglund, 2000) in their historical review also demonstrated, for Western women how smoking had been transformed from a social stigma to a desirable lifestyle factor. They reported that in 19th century women smokers were viewed as ‘fallen’, with smoking the occupational symbol of prostitution. So

widespread was the social stigma attached to women smoking that as late as 1908 a woman in New York was arrested for smoking a cigarette in public.

In a review on tobacco and gender, Grunberg concluded that the gender differences in overall tobacco use clearly exist. In general, men were more likely to use tobacco products than were women. However, this simple generalization, ignoring type of tobacco products, time, and culture, masked many more interesting gender differences in tobacco use. There were clear gender differences in tobacco use of specific tobacco products within some cultures but not others. Yet these differences had changed across time, including narrowing and widening of this gender gap, depending on culture and tobacco product (Grunberg *et al.*, 1991). The gender difference in tobacco-dependence treatment efficacy was also observed in another review (Piper *et al.*, 2001). Bangladeshi men living in UK have been reported to be the most active in cigarette smoking alongside paan tobacco chewing, yet there is no evidence of dedicated primary research that has explored the dual tobacco use pattern of this group.

2.3 Individual and Lifestyle Factors

2.3.1 Tobacco use and self reported health

Cigarette smoking caused more premature deaths every year in USA than AIDS, cocaine, heroin, alcohol (including drunk drivers), fires, car accidents, murder, and suicide – combined (McGinnis and Foege, 1993). Large-scale studies from India demonstrated a significant excess in all cause mortality among ST users compared to nonusers (Gupta and Sankar, 2003). The evidence for adverse health effect of tobacco is well established. This section reviews the literature relating to studies that have linked tobacco use with self reported health.

A Canadian 1998-99 survey examined underlying factors contributing to differences in prevalence of smoking among subgroups of women and men, and its effects on self-reported indicators of health (Kirkland *et al.*, 2004). Current women smokers and current and former men smokers were less likely to report ‘very good’ or ‘excellent health’ compared with never smokers (OR: 0.8, 99%CI: 0.7-0.1; OR: 0.4, 99%CI: 0.4-0.6: OR:

0.7, 99%CI: 0.6-0.9 respectively). Women who were current smokers had increased odds of needing health care and not receiving it (OR: 1.5, 99%CI: 1.1-2.1). A Dutch study (Prokhorov *et al.*, 2003) found that the association between education and self-reported health was reduced when controlling for smoking for men. Among women, smoking was not such a mediator. The OR for men with primary education to report less than good health was reduced from 2.9 (95% CI: 1.2-6.3) to 2.6 (95% CI: 1.1-6.1) when current smoking was taken into account and to 2.1 (95% CI: 0.9-5.0) when lifetime smoking was controlled for.

Studies relating to tobacco use and self reported disease specific conditions indicated that smokers suffered disproportionately from respiratory illness (Arday *et al.*, 1995), COPD, heart disease & rheumatoid arthritis (Chen, 2003), bowel disease(Regueiro *et al.*, 2005), mental illness (Almeida and Pfaff, 2005;Kessler, 2004), functional impairment (Stovring *et al.*, 2004), nutrition deficiency (Walmsley *et al.*, 1999) and a range of other comorbidities (Tammemagi *et al.*, 2004). Information relating to the self reported health of dual tobacco users remains unexplained in the literature.

2.3.2 Tobacco use, self reported oral health and dental service utilization

Tobacco use is a risk factor for a range of oral conditions including oral cancer, oral mucosal lesions, periodontal disease and impaired healing after periodontal treatment, gingival recession, and coronal and root caries (Johnson, 2001;Winn, 2001). Available evidence suggests that the risks of oral diseases increased with greater use of tobacco and that quitting decreases risk. This section reports the relationship between tobacco use and self reported oral health.

A postal survey of a random sample of 1,200 Finns found that nonsmokers reported more frequent healthy oral health behaviors than did daily smokers, with the exception that no difference in tooth brushing frequencies existed among women (Telivuo *et al.*, 1995).

Daily smoking was associated with increased use of sugar in tea or coffee, and with more frequent alcohol consumption. Fewer daily smokers than nonsmokers considered smoking to have harmful effects on oral health.

Both brushing and flossing were also affected by tobacco use. A sample of 34,897 adult dental patients from Oregon, USA, self completed questions about frequency of brushing and flossing and perceived oral health problems. Tobacco users brushed and, particularly, flossed much less frequently than did nonusers. Compliance with daily flossing regimens was particularly low among ST users. Tobacco users also reported more oral health problems (Andrews *et al.*, 1998).

A study (Morin *et al.*, 2005) of 13,357 US dentate adults aged 20-79 years found 34% of individuals in the study sample reported having an unfavorable perception of their dental health by qualifying it as 'fair' or 'poor'. Forty seven percent of smokers had an unfavorable dental health perception, compared to 28% of non-smokers. An interaction between smoking and race/ethnicity was found in logistic regression modeling. Stratified results showed that cigarette smoking was not a significant predictor for an unfavorable oral health perception among individuals who self-identified as Mexican American, but smoking was a significant predictor for an unfavorable oral health perception among those who identified as non-Hispanic black or non-Hispanic white.

A comparison between Chinese- and Russian-speaking immigrant elders living in Boston, USA found that education, length of stay in the U.S., social support and smoking behaviour were significant predictors for the use of dental services among Chinese. However, among Russian elders, age, income, and denture use predicted utilization of dental services (Wu *et al.*, 2005). An analysis (Timothe *et al.*, 2005) of 4,619 pregnant women of USA aged 18 to 44 years who participated in the 1999 and 2002 state-based Behavioural Risk Factor Surveillance System found that income and smoking status were significant predictors for not using dental care. Pearson *et al.*, (1999) assessed the use of dental services recruiting 158 adult Bangladeshis from four general medical practices' waiting areas in Tower Hamlets. The study found that 25% of the whole sample had never visited a dentist. They were significantly more likely to be women, who also thought regular check-ups were of little value. In their use of health services 73% experienced language difficulties and 33% of the sample were tobacco smokers.

An increase in self reported oral pain after tobacco cessation has been reported. A study amongst female Bangladeshi paan-tobacco users who had stopped oral use of tobacco found that compared to those aged 18-39 years, those aged 40 years and older had poorer oral health. The prevalence of self-reported oral pain was 26% at baseline and 52% at one-week follow-up (Croucher *et al.*, 2003b). Another case control study reported that current tobacco users were at increased risk of experiencing a range of painful oral symptoms. They also found that behavioral impacts associated with oral pain were sensitive to differences in tobacco use status (Riley, III *et al.*, 2004). However, oral health issues of dual tobacco users were not explored.

2.4 Social and community network

2.4.1 Marital status and tobacco use

A recent review of marital status and health concluded that regardless of population subgroups or health indicator married adults were generally found to be healthier than adults in other marital status categories (Schoenborn, 2004).

A cohort of 4,475 Finnish men was followed up for the occurrence of cancer during the period 1964-1980 (Tenkanen and Teppo, 1987). Of particular interest was the interaction of migration or marital status with smoking. For cancers at all sites, not married urbanized smoking men had the greatest risk. This pattern was mainly due to high risk of cancers of the lung and larynx among the urbanized men, with a risk peaked among urbanized not married smokers. The pattern persisted even when the number of cigarettes smoked was adjusted.

The smoking rate was found to be higher in divorced people compared to those who never married or those who remained married. Divorced women had a strongly elevated risk of lung and cervical cancer due to higher rates of smoking (Kvikstad *et al.*, 1994; Lau *et al.*, 2003). Emotional problems evoked by marital disruption were cited as one of the many possible explanations (Eriksen *et al.*, 1999). Even current smoking status among married women was a strong predictor of future divorce (Fu and Goldman, 2000). Bereavement or death of a spouse may trigger an increase or relapse of tobacco use. A

Swedish study found that smoking rates increased in widowed elderly men as a means of coping (Mellstrom *et al.*, 1982). However, religiosity was found to buffer this effect in a comparable Japanese sample (Krause *et al.*, 2002).

2.4.2 Influence of family and friends on tobacco use

The family unit is the primary source of transmission of basic social, cultural and genetic factors that may shape individual differences in tobacco use. Two separate, but somewhat overlapping lines of research characterize the role of familial factors in tobacco use: genetic epidemiological studies and risk-factor research (Avenevoli and Merikangas, 2003).

The impact of parental tobacco use on children has been widely studied. A large body of literature indicates that parental tobacco use has a positive affect on children's tobacco status (Fergusson *et al.*, 1995; Maes *et al.*, 1999; Patton *et al.*, 1998; Soldz *et al.*, 2003; Williams and Covington, 1997). Some studies contradicted this (Boomsma *et al.*, 1994; Bauman *et al.*, 2001). A review of these studies calculated risk ratios that ranged from 1.6 to 2.1 when both parents smoked and from 1.4 to 2.2 when at least one parent smoked (Flay *et al.*, 1994).

Although studies on smoking transmission have shown stronger parental effect when both parents smoke, mothers have been found overall to be more influential than fathers and this effect has been particularly evident in girls (Kandel *et al.*, 1994). The stronger effect of maternal role modelling on daughters than for sons is believed to be the main factor. However, Green *et al.* reported a paradoxical finding. Based on data collected from a cohort of young people and their mother's resident in the West of Scotland, they found no evidence that children of lone mothers smoked more because their mothers did. Their conclusion was 'the familial transmission of smoking behaviour appeared to be less apparent in households headed by lone, than the cohabiting mothers' (Green *et al.*, 1990).

Several studies have suggested that smoking among adult role models might be less important in some ethnic/racial groups (Dusenbury *et al.*, 1992; Epstein *et al.*,

1998;Feigelman and Lee, 1995). The literature also indicated that the effects of parental smoking on adolescent smoking were limited to adolescents of European and Asian descent (Landrine *et al.*, 1994;Sussman *et al.*, 1987). The strongest association between familial smoking and adolescent experimental smoking existed for White girls (Robinson *et al.*, 1998). Although statistically significant, the effect of familial smoking on experimental smoking for Black girls and boys was considerably smaller.

Although the literature related to familial influences on adolescent tobacco use reviewed above are mainly smoking related, there are a handful of studies that indicated ST initiation and maintenance might also be influenced by family members (Noland *et al.*, 1996;Boyle *et al.*, 1997). Adolescent ST users reported higher family and friend use of ST and had the beliefs that school and parental sanctions were not high for ST use (Robinson *et al.*, 1998). A study by Noland et al. (Noland *et al.*, 1996) of tobacco growing families found that a boy who personally grew tobacco and had at least one parent who used tobacco was 10.2 times more likely to have used ST in the last 7 days than a boy from a non-growing household in which neither parent used tobacco. Users reported more lenient rules at home regarding ST use than nonusers did.

Irrespective of parental tobacco use, parent children interaction and parenting style have been reported to greatly influence adolescent tobacco use (Glendinning *et al.*, 1994). Harsh parental discipline and lack of warmth were important contributing factors (Biglan *et al.*, 1995). Both general parenting practices and smoking-specific discussion and punishment were significantly related to adolescents' smoking uptake (Chassin *et al.*, 1998). Negative life events such as parental unemployment, accident or sudden illness were reported to be risk factors for adolescent tobacco use (Wills *et al.*, 2001;Wills *et al.*, 2004).

Sibling smoking is predictive of adolescent smoking (Sugathan *et al.*, 1998;Hopfer *et al.*, 2003). It is even more predictive when older siblings smoke (Bauman *et al.*, 2001). Wang et al. reported higher OR for adolescents' smoking behavior for same-sex smoking siblings or friends than for opposite-sex smoking siblings or friends (Wang *et al.*, 1995).

A review (Hopfer *et al.*, 2003) of 19 twin and adoption studies of adolescent substance use concluded that a shared environment contributed to adolescent substance use consistently across all adolescent samples and common shared environmental factors influenced tobacco use.

Spouses or long-term partners form a special group of 'best friends' who may have a significant influence on each other's tobacco use. Studies reported spouse similarity for several variables, including current smoking (Price *et al.*, 1981). In a comparative study between married and surrogate pairs, Venters *et al.* (Venters *et al.*, 1984) found that more married pairs than surrogate pairs tended to both smoke or both not smoke. Among smokers, married pairs were more similar than surrogate pairs in daily number of cigarettes smoked. Among ex-smokers, married pairs were more similar than surrogate pairs in the year they quit smoking. Younger couples with the least amount of education were most concordant and showed the greatest smoking rate. They suggested that married couples respond similarly to a shared environment made up of daily practices, social life, and leisure activities. A similar finding was reported by other studies from USA and Europe (Dzegede *et al.*, 1981; Metzner *et al.*, 1989), Japan (Lee, 1995) and Hong Kong (Lau *et al.*, 2003).

In a large survey among women in the USA, the odds that a woman's spouse smoked at the time of survey were 5.5 times greater if she was a current smoker than if she did not smoke (Ogden *et al.*, 1997). Moreover, in a Dutch study, the correlation between husband and wife for current smoking status ($r = 0.4$) was larger than for smoking history ($r = 0.2$) (Boomsma *et al.*, 1994). In contrast, Graham *et al.* (Graham and Der, 1999) concluded that partner's smoking status was not a predictor of tobacco consumption among women. An analysis of female participants in the Whitehall study found that participants' exercise and particularly smoking habits were related to their spouse's social class, independently of their own grade of employment (Bartley *et al.*, 2004). Partner's education was also implicated in a separate Dutch study (Monden *et al.*, 2003).

Similarity of smoking between spouses could be due to several factors including similarity at the time the relationship began, or phenotypes might have converged during the years of marriage because of reciprocal influences or shared living conditions. Price *et al.* (Price *et al.*, 1981) suggested that for smoking the convergence of phenotype was the most likely explanation. Venter *et al.* (Venters *et al.*, 1984) suggested that married couples respond similarly to a shared environment made up of daily practices, social life, and leisure activities. Living with an ex-smoker or never-smoker increased the likelihood of quitting, compared to being single or living with a partner who smoked (Monden *et al.*, 2003). A large body of research and review also suggested that partner/spouse support helped tobacco cessation (Park *et al.*, 2004; Key *et al.*, 2004; Curry *et al.*, 2003). The importance of these findings for dual tobacco use has yet to be explored.

2.4.3 Social capital and tobacco use

Social capital comprises the resources available to individuals and groups through social connections and social relations with others. It is a collective resource that may accumulate over time and facilitates the accomplishment of objectives including health promoting behaviour such as avoiding tobacco use (Lindstrom *et al.*, 2003a).

A study (Lindstrom *et al.*, 2003b) to investigate the influence of contextual and individual factors on daily tobacco smoking found that neighbourhood factors accounted for 3% of the crude total variance in daily tobacco smoking. However, individual social capital, measured by social participation, only marginally affected the total neighbourhood variance in daily tobacco smoking. In fact, no significant variance in daily tobacco smoking remained after the introduction of the individual factors other than individual social capital in the model.

A follow up study by the same group also reported that the baseline daily smokers that remained daily smokers at the one year follow up had significantly increased OR of non-participation in study circles in other places than at work, meeting of organisations other than unions, theatre/cinema, arts exhibition, church, sports events, large gatherings of relatives, and private parties compared to the reference population (Lindstrom *et al.*,

2003a). The baseline daily smokers that had become intermittent smokers at the one year follow up had significantly increased OR of non-participation in church services. The baseline daily smokers who had stopped smoking had increased OR of non-participation in having attended a meeting of organisations other than labour unions during the past year, having been to a theatre or cinema, and of having visited an arts exhibition during the past year. All three categories of baseline daily smokers had significantly decreased OR of non-participation in night clubs and other evening entertainments.

2.5 Living and working conditions

2.5.1 Education and tobacco use

Lack of formal education has been consistently found as a strong predictor for tobacco use across culture and gender. An examination of the association between education level and smoking status in a community-based sample of working adults reported a strong educational gradient in smoking status (Wetter *et al.*, 2005a). The prevalence of current smoking was almost threefold higher among individuals with less than a high school degree (11 years of education) than among individuals with at least a college degree (37% versus 14%), while the percentage of never smokers among individuals with less than a high school degree was less than half that of individuals with at least a college degree (29% versus 60%). The study report concluded that the educational gradient in smoking status was extremely robust and education uniquely contributed to the prediction of smoking status over and above the effects of demographics, job status, and job related characteristics. Another analysis of cross-sectional data on a total of 48,694 men and 52,618 women aged 16 years and over from 11 countries of the European Union in 1998 has demonstrated that both education and income were related to smoking within the European Union at large (Huisman *et al.*, 2005).

Total years of education for those who did not have a high school degree also predicted higher tobacco use. An analysis of the US 1983 to 1991 National Health Interview Survey for participants aged 25 years and older were categorised into two groups: persons with 0 to 8 years and persons with 9 to 11 years of education. After 11 years of education, the likelihood of smoking decreased and that of smoking cessation increased with each

successive year of education. These results persisted after statistical adjustment for age, sex, ethnicity, poverty status, employment status, marital status, geographic region, and year of survey (Zhu *et al.*, 1996). Parents' (Fagan *et al.*, 2005), partners and family member's level of education have also been found to have impact on current tobacco use (Monden *et al.*, 2003).

Population education level is also a determinant of current tobacco use. A cross-sectional study of 7,415 men, aged 35-59 years, from 15 population samples was carried out in 1998 in China (Lu *et al.*, 2002). The population samples were divided into 2 groups according to the proportion of men with college or above education attainment: group I had an average 26% of men with college or above education attainment, and group II had an average 2% of men with college or above education attainment. In group I, the percent of ever smokers, current smokers, deeper smoker, and ever smokers with cessation due to disease and the average number of cigarettes per day for the smokers were significantly lower than in group II. The percent of current smokers and the number of cigarettes decreased with increased education attainment in both groups. Taking the men with college or above education attainment in group I as reference, the OR of smoking for those with high school education in group I was 1.8 (95% CI: 1.5-2.1), for those with middle school or lower education in group I was 2.0 (95% CI: 1.7-2.5), for those with college or above education in group II was 1.4 (95% CI: 0.9-2.1), for those with high school education in group II was 1.7 (95% CI: 1.4-2.1), and for those with middle school or lower education in group II was 2.4 (95% CI: 2.1-2.8). This study demonstrated that smoking behaviour was affected by both individual education attainment and population education level.

Education also predicted cessation success. Data on 451,386 men and women 25-79 years old from nine European countries showed greater declines in smoking and tobacco consumption among tertiary educated men and women compared with their less educated counterparts (Giskes *et al.*, 2005). Studies conducted in USA also showed a similar pattern for tobacco cessation in relation to education (Wetter *et al.*, 2005b; Wray *et al.*,

1998). Amongst the BMEG, the lack of education had been implicated for higher tobacco use and less success in cessation attempts (Samet *et al.*, 1992; Winkleby *et al.*, 1995).

A study (Sorensen *et al.*, 2005) conducted in Bombay, India found that OR for overall tobacco use according to education level (after adjustment for age and occupation) showed a strong gradient. Risks were higher among participants with no formal education (male OR = 7.4 & female OR = 20.9) than among college educated participants. Marked education- and occupation-specific gradients were observed among male bidi smokers and female ST users. Another study from India (Subramanian *et al.*, 2004) reported that individuals with no formal education were 2.7 times more likely to smoke and chew tobacco than those with postgraduate education. However, the impact of education on simultaneous use of both smoking and ST had not been reported in that study.

Low education had been found to be a strong predictor for dual tobacco use in Native Americans (Spangler *et al.*, 2001). A telephone survey among 400 adult Lumbee Indians reported that 214 (60%) individuals did not currently use tobacco, 104 (26%) currently smoked, 74 (18%) currently used ST, and 19 (5%) used both products. Compared to exclusive users of either tobacco product, dual tobacco users were intermediate in age and had a lower level of education. Logistic regression analysis showed that younger age and infrequent church attendance predicted exclusive cigarette smoking, while older age and less education predicted exclusive ST use. Dual tobacco use was predicted only by less education. The information about education's effect on dual tobacco use by South Asians in their country of origin in general and those living abroad in particular remains unclear from the current literature.

2.5.2 Employment status and tobacco use

Results from the Whitehall Study have consistently showed that people who were at lower grades of employment smoked more cigarette and had greater smoking related disease burden than people who were at higher grades of employment (van Rossum *et al.*, 2000; Smith *et al.*, 1991). Compared with the highest grade (administrators), men in the lowest grade had 3 times the mortality rate from coronary heart disease, from a range of

other causes, and from all causes combined. There were clear employment-grade differences in health-risk behaviours including smoking, diet, and exercise (Marmot *et al.*, 1984).

Comparative studies between blue-collar and white-collar workers also showed a similar trend (Sorensen *et al.*, 2004;Howard, 2004). In the United States in 1997, the smoking prevalence among blue-collar workers was nearly double that among white-collar workers. Blue-collar workers reported more negative life events, especially those that were work-related. Depressed mood and mental strain were related to increased tobacco consumption in blue-collar workers and increased alcohol consumption in white-collar workers. There are indications in the literature that blue-collar workers were more exposed to environmental smoke (Howard, 2004;Moussa *et al.*, 2004).

Being unemployed is another risk factor for tobacco use (Broms *et al.*, 2004;Lee *et al.*, 1991). The unemployed smokers had begun to smoke at an earlier age. French unemployed male smokers had a higher prevalence of depression (Khlat *et al.*, 2004). One review claimed unemployment did not increase smoking, but unemployed men had a slightly higher smoking prevalence before unemployment (Lynge, 1997).

2.5.3 Social class and tobacco use

Graham commented ‘cigarette smoking in the EC is likely to become a habit increasingly linked to low socio-economic status’(Graham, 1994). Using data from the United Kingdom Marmot has also asserted this (Marmot, 1997).

In some industrialized countries, smoking was more frequent in high social classes during the first half of this century. This pattern of tobacco consumption is now more likely to be shown in developing countries (Stellman and Resnicow, 1997). In developing countries being marginally employed can be a factor for increased tobacco use. A survey of the smoking practices in three townships in Cape Town found that men in higher paid occupations smoked more than those in low paid occupation. Unemployment, however, was not associated with smoking prevalence in that study (Strebel *et al.*, 1989).

The literature on tobacco use amongst high socio-economic groups is limited. One study among Mensa club members, a proxy indicator of relative social advantage, reported a tobacco use rate half that of the general population (Ray, 1985). Another study indicated that high achiever high class people smoked more than relatively low achieving people of the same class background (Cloetta, 1987). A survey from Barcelona, Spain (Borrell *et al.*, 2000) claimed that women in the high social classes were more likely to smoke. Smoking cessation was more likely to be successful among men in the higher classes.

In India (Subramanian *et al.*, 2004), smoking and ST are systematically associated with socioeconomic markers. Households belonging to the lowest fifth of a standard of living index were 2.5 times more likely to consume tobacco than those in the highest fifth. ‘Scheduled tribes’ and ‘scheduled castes’ were more likely to consume tobacco than other caste groups. The socioeconomic differences were more marked for smoking than for ST.

Finally, the relationship between social disadvantage and tobacco use can be summarised as ‘a marked gradient in smoking prevalence along the lines of socio-economic structure has emerged over the past 20 years.--there is a strong and approximately a linear association between smoking and social class as indexed by occupational status’ (Jarvis, 1994).

2.5.4 Housing and tobacco use

Shaw has identified a range of factors, acting at different levels, directly and indirectly, through which housing inequality affects health behaviour including smoking (Shaw, 2004). In the UK housing tenure (whether the house is owner occupied or rented) has consistently been found to be associated with a number of measures of health (Ellaway and Macintyre, 1998).

A case –control analysis of acute myocardial infarction events of data from the Scottish MONICA Project in North Glasgow showed that both men and women in public housing were at higher risk than home owners, but that some of this increased risk was related to the higher smoking levels of council housing tenants (Shewry *et al.*, 1990). Survey data

from Chicago, USA indicated that young Black female smokers living in public housing were heavier smokers and had weaker motivations to quit, health beliefs and social environment less conducive to cessation, and less knowledge of where to get help to quit than other young Black female smokers in metropolitan Chicago (Manfredi *et al.*, 1992). Another study (Breeze *et al.*, 2004) on quality of life showed that the excess risk of poor quality of life for independent people renting rather than owning their home ranged from 27% for morale to 62% for self care. Self reported health problems plus smoking and alcohol consumption accounted for half or more of the excess, depending on the outcome.

The Chicago study reported above (Lacey *et al.*, 1993) conducted a follow up focus group to assess factors related to smoking and the women's willingness to participate in cessation programs. The findings revealed several barriers to smoking cessation. These barriers were linked to the difficult daily existence and environment of these women. The barriers included (a) managing their lives in highly stressful environments, (b) major isolation within these environments, (c) smoking as a pleasure attainable with very limited financial resources, (d) perceived minimal health risks of smoking, (e) commonality of smoking in their communities, (f) scarcity of information about the process of cessation available to them, and (g) belief that all they needed was the determination to quit on their own. The women emphasized that smoking cessation would be more relevant to them if it was a part of broader social support initiatives geared to improve their lives.

2.6 General environmental and cultural conditions

2.6.1 Living conditions, local environment and tobacco use

Area deprivation is an independent risk factor for individual smoking irrespective of age and other known factors (Shohaimi *et al.*, 2003; Duncan *et al.*, 1999; Shohaimi *et al.*, 2004). Boys and girls from deprived neighbourhoods were more likely to have tried smoking, to eat a high fat diet, and to be overweight (Shohaimi *et al.*, 2003). Hopfer *et al.* concluded that a shared environment contributed to substance use consistently across all adolescent samples and common shared environmental factors influenced tobacco uptake and use (Hopfer *et al.*, 2003). Multivariate age adjusted OR for current smoking

in men was 1.84 for high versus low area deprivation level. For women, the OR for current smoking was 1.68 for high residential deprivation (Shohaimi *et al.*, 2003). The EPIC-Norfolk Study (Shohaimi *et al.*, 2003) in 1993-1997 found that social class, educational level, and residential deprivation level independently were related to the cigarette smoking habit in both men and women. The multivariate age adjusted OR for current smoking in men was 1.8 (95% CI 1.6 to 2.1) for high versus low area deprivation level. For women, the OR for current smoking was 1.7 (95% CI 1.5 to 1.9) for high residential deprivation.

New York City's neighbourhood of Harlem is a deprived area and has mortality rates that are among the highest in the United States. A study (Northridge *et al.*, 1998) of 695 Harlem adults found that the self-reported prevalence of current smoking was strikingly high among both men (48%) and women (41%). The 21% of respondents without working telephones, an indicator of material deprivation, reported an even higher prevalence of current smoking (61%). An investigation from Dhaka, Bangladesh reported that 29% of students and 68% of slum dwelling male adolescents were regular smokers (Ahsan *et al.*, 1998). The report concluded that smoking was common among the 'middle-class' male teenagers and even more prevalent among the youths from nearby slums.

Homeless people represent an extremely disadvantaged group in terms of displacement and poor living conditions. An investigation of cardiovascular risk factors in a representative sample of Canadian homeless adults reported the prevalence of smoking among homeless subjects (78%), significantly higher than in the general population (Lee *et al.*, 2005).

A qualitative study in two deprived neighbourhoods in Scotland (Wiltshire *et al.*, 2001) investigated strategies for maintaining consumption levels in the face of increasing cigarette prices. They concluded that purchasing contraband tobacco was viewed as rational in the face of material hardship. Smokers in deprived areas perceived a lack of support to help them to stop smoking. Cigarette and tobacco smuggling was therefore

viewed positively by low income smokers as a way of dealing with the increasing cost of cigarettes.

2.6.2 Migration and tobacco use

Migration, movement of persons from one country or locality to another, is a complex and stressful life event (2005). People who go through this may experience a range of health disadvantages and often tend to adopt health compromising coping behavior such as smoking (Carballo *et al.*, 1998). In Israel compared to the indigenous Jewish population, the Jews who emigrated from the former Soviet Union began smoking at an earlier age (Baron-Epel and Haviv-Messika, 2004).

A study (Ma *et al.*, 2004) examined the relationship between acculturation and smoking in Asian American homes. A sample of 1,374 participants was selected using a stratified-cluster proportional sampling technique. Vietnamese respondents had the highest rate of smoking in the home (45%), followed by Cambodians (44%), Koreans (42%), and Chinese (30%). Predictors of smoking in the home were living in the United States five or fewer years, less acculturation, being female, being foreign born, having a family size of four or more, being Korean, Vietnamese, or Cambodian, and being smokers. The same variables predicted allowing visitors to smoke in the home, excluding being female.

Another study investigated differences in smoking behavior between US-and Mexican-born ever smokers and examined the influence of US culture on smoking initiation. More men than women reported current smoking; rates among US-born women were higher than those among Mexican-born women. Smoking rates among US-born men were higher than earlier published rates among Hispanics and non-Hispanic Whites but similar to rates among African Americans. Older age, male gender, a higher level of acculturation, more than a high school education, and residing in a census tract with a higher median age predicted a history of smoking among US-born participants. Among Mexican-born participants, older age, male gender, a higher level of acculturation, and younger age at migration predicted history of smoking (Wilkinson *et al.*, 2005).

Migration from rural to urban areas or from one region to the other might affect tobacco use. A study of 16,738 African Americans reported current smoking was lower among African Americans moving to non-central cities than in central cities after adjusting for several sociodemographic covariates (King *et al.*, 1999). In a Chinese study (Chen *et al.*, 2004) of rural migrants living in cities 52% males and 11% females reported cigarette use. Smoking levels were positively associated with age, education, income, migration years, number of cities in which the migrants had worked, living in rental properties, and number of jobs held. An UK cohort who migrated from North of England to the South demonstrated higher risk taking behaviour including smoking (Wannamethee *et al.*, 2002). Other studies from Russia and Finland (McKee *et al.*, 1998) reported a similar pattern. Smoking was more common among those moving in urban areas than in rural areas.

A Swedish study found a higher smoking rate among Finnish immigrants than the general population (Dotevall *et al.*, 2000). A similar pattern was observed in Turkish people living in Germany (Porsch-Oezcuemez *et al.*, 1999) and Bangladeshi and Pakistani migrants living in the United Kingdom (Bhopal *et al.*, 1999; West *et al.*, 2004; Bush *et al.*, 2003). Despite this strong evidence there is very little understanding of why and how migration exacerbates smoking. Explanations that have been advanced so far include stress associated with the migration process (McCarthy *et al.*, 2003; Chen *et al.*, 2004), acculturation (Shelley *et al.*, 2004), trauma in the country of origin prior to migrating (Hulanicka *et al.*, 1999) and a general sense of displacement (McCarthy *et al.*, 2003). Explanations for dual tobacco use in a migrant community have yet to be explored.

2.6.3 Culture and tobacco use

Cultural factors influence virtually all aspects of human life. Different populations use different forms of substance, in different ways, resulting in different effects and different kinds and rates of associated problems (Nichter, 2003). Opium was never proscribed or considered a dangerous substance in India, where it was grown and used indigenously for ritual and medicinal purpose, but it quickly became a major social problem in China when

introduced externally from India (Fan, 2003; Zhao *et al.*, 2004). The external introduction of a substance into a culture that does not have established social and political mechanisms for regulating its use often creates problems. Tobacco is used throughout the world, but culture shapes the specific methods and patterns of use. For example, in India it is smoked in bidis, chewed in Zarda with paan, whereas in Indonesia it is blended with clove to make kretik and in Cuba it is smoked in hand rolled cigars. Smokers in Syria smoke tobacco together in a narghile (water pipe), whereas smokers in Southeast Asia smoke it in a suipa (clay pipe).

Tobacco use rates vary markedly across cultures, nations, BMEG, gender, and other demographically defined groups. For example, smoking prevalence rates vary substantially between gender in some nations but not in others (Figure 2.1). In South Asia, there is a large gender discrepancy in smoking. It is even larger in China (63% of men and 4% of women), whereas in Brazil the discrepancy is much smaller (38% of men and 29% of women). Among Native Americans in the United States, the prevalence of smoking is higher among women (43%) than among men (29%). Figure 2.1 shows the prevalence of cigarette smoking among some of the world's most populous nations (Corrao *et al.*, 2000).

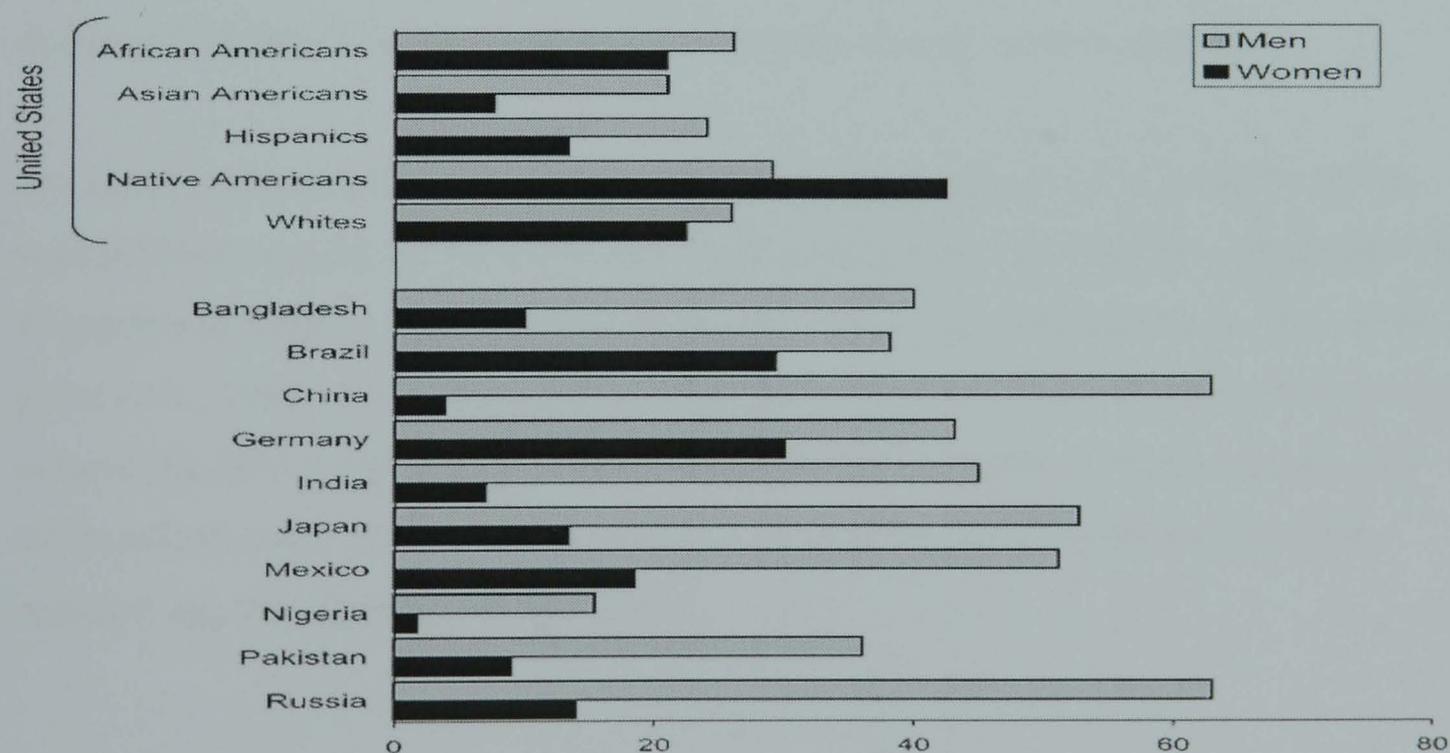


Figure 2.1: Smoking rate by gender and culture
 Source: (Corrao *et al.*, 2000).

For ST use in South Asia, this gender discrepancy disappears dramatically. Table 2.1 (page 29) clearly demonstrated how different cultural groups of India prefer different forms of ST with a large proportion of female participants (Gupta and Ray, 2003).

Smoking is still a taboo for many South Asian women.

The family unit is the primary source of transmission of basic psychosocial factors that may shape individual differences in tobacco use. Parenting styles and respect for elders are two key factors highlighted in the Surgeon General's Report as important influences for smoking behavior (Shelton, 1998). Shakib et al. suggested that the strategies that parents use to prevent their children from experimenting with risk behaviors such as smoking might depend on the parents' integration into the culture in which they live (Shakib *et al.*, 2003). Parents who are familiar with the culture in which they live are likely to be more aware of a culture specific situation that might place their children at risk for experimenting with tobacco.

The percentage of white and African-American young female smokers was roughly comparable in 1987: 28% among whites, 20% among African-Americans. In 1991, 25% of white and 12% of black women smoked (Moon-Howard, 2003; Payne and Diefenbach, 2003). Differences between white and African-American youth cultures may explain this disparity in statistics as black culture views heavier women as more attractive.

In a culture without policies restricting youth tobacco purchases (or in a culture where such policies exist but are not enforced), children might become familiar with the process of purchasing tobacco at an early age by buying tobacco for their parents or other adults (Choi *et al.*, 1992). On the other hand, in a culture where prohibitions on youth access to tobacco are strictly enforced, many adolescents might be unable to obtain tobacco, and are therefore unable to try tobacco, until they or their friends have reached the legal purchase age (Stead and Lancaster, 2002).

2.6.4 Religion and tobacco use

Levin reviewed the literature related to religion and health and concluded that there is ample empirical evidence of religion's effect on morbidity and mortality. This protective epidemiologic effect appears – “regardless of the religious measure used or the outcome under study, and this relationship (between religion and health) manifested in study populations regardless of age, sex, race, ethnicity, nationality, study design or the period of time during which the study was conducted (Levin, 1996).

Most of the world religions have views on how alcohol should be used in the society. The texts of most of the world's major religions predate tobacco's worldwide spread. In recent time, many religious scholars have reinterpreted religious texts and issued official statements about whether or not tobacco use was consistent with their doctrines. Statements from a WHO meeting on Tobacco and Religion reflected these views (WHO, 2003).

Islam, Christianity, Judaism, Buddhism, Hinduism, and Baha' 'i' do not specifically forbid smoking but do state that it is inconsistent with the religious ideals of not deliberately harming one's body and avoiding intoxicating and addictive substances that can impair judgment. The Church of Jesus Christ of Latter-Day Saints (the Mormon) advises church members to avoid tobacco (Nichter, 2003). Sikhism holds a firm view against tobacco (2002). Traditional Native American religions have used tobacco in culturally restricted ways for healing and ceremonies but did not approve habitual, everyday smoking outside the spiritual context (McDonley, 2004).

The relationship between religious practice and tobacco use has been considered in several cultures. Koenig reported an inverse relationship between smoking and religiosity across many groups (Koenig, 2001). A population study found that those who considered themselves not religious consumed more cigarettes (Khavari and Harmon, 1982). Another study carried out in the West of Scotland found that current religious affiliation was related to tobacco use in a number of ways (Mullen *et al.*, 1996). Fewer Protestant men reported smoking (24%), compared with both Catholics (40%) and those professing no

religion (37%). A similar pattern was seen for women (36% of Protestants, 49% of Catholics and 55% of the non-religious were self-rated smokers). A high rate of tobacco use has been consistently found among Muslims, compared to Hindus, all across India (Jussawalla and Jain, 1979;Jussawalla *et al.*, 1985). This relationship holds for male Muslim South Asians living in UK. In Germany male Turkish Muslim immigrants smoked more than any other migrant community (Porsch-Oezcuemez *et al.*, 1999).

For youth tobacco initiation, religiosity has been found to be a strong protective factor (Porsch-Oezcuemez *et al.*, 1999). Religious practices can create opportunities for smoking cessation for specific occasions such as Ramadan or Lent (Farren and Naidoo, 1996). There is evidence of successful anti tobacco campaigns using religious institutions (Islam, 1998;Smith and Umenai, 2000).

2.7 Summary

The literature reviewed in this chapter can be summarised into the following points:

- Age and gender affect tobacco uptake and use pattern
- Current and former tobacco users are less likely to report ‘very good’ or ‘excellent health’ compared with never users and less likely to report frequent healthy oral health behaviors
- Married adults are generally found to be less active in tobacco use than adults in other marital status categories
- Parental tobacco use, parenting style, family structure, sibling’s, friends’ and partner/spouse’s tobacco use all have been reported to have strong influence on current tobacco use
- Lack of formal education has been consistently found as a strong predictor for tobacco use across culture and gender
- People who are at lower grades of employment smoke more cigarettes and have a greater smoking related disease burden than people who are at higher grades of employment
- There is an inverse association between social class and consumption of tobacco. This relationship holds irrespective of gender, age and ethnicity

- People who live in social housing tend to smoke more than those who are owner occupiers
- Area deprivation is an independent risk factor for individual tobacco use irrespective of age and other known factors
- People who go through a migration process experience a range of health disadvantages and often tend to adopt health compromising coping behavior such as tobacco use
- Culture shapes the specific methods and patterns of tobacco use
- Religiosity has been found to be a strong protective factor and religious practices can create opportunities for tobacco cessation for specific occasions such as Ramadan or Lent.

2.8 Gaps in the evidence

The literature reviewed has identified considerable gaps in understanding dual tobacco use in the context of aim and objectives stated above. The key areas from where these gaps originated can be divided into three broad categories: conceptual, methodological and information. These are listed in the page 52:

Conceptual

- Lack of agreed upon definition of dual tobacco use (dual tobacco, conjoint tobacco, concurrent tobacco, multi-tobacco, multiple tobacco, 'multi-habitué. combined user, etc)
- Absence of evidence/recommendation about diagnostic criteria or assessment approach to identify and validate dual tobacco use status
- Lack of cultural awareness to separate paan with and without tobacco
- Lack of established self report instruments dealing with dual tobacco use

Methodological

- Lack of primary research in relation to the dual tobacco use
- Absence of use of robust methodologies such as random population surveys
- A considerable variation in the scientific quality of the empirical research dealing with dual tobacco use
- The little research that has dealt with dual tobacco use has been carried out in the United States and India and are mostly concerned with adolescents. Caution should be used in transferring conclusions from these studies to other population groups and to the UK public health systems
- Lack of gender specific targeting for dual tobacco research
- Lack of tobacco related primary research targeting UK BMEG

Information

- Lack of information regarding age and gender's influence in relation dual tobacco use such as age and gender influence
- Lack of information of the lifestyle factors that dictate dual tobacco use
- Lack of information of the coexisting health and social capital correlates in relation to the dual tobacco use
- Lack of information regarding living and working conditions and their influence on dual tobacco use
- Lack of information of the co existing environmental and cultural conditions in relation to the dual tobacco use

The aim of this study is to establish dual tobacco use prevalence in UK Bangladeshi men employing robust methodologies such as a gender specific representative study sample, use of a culturally sensitive questionnaire instrument and chemical validation using Carbon Monoxide (CO) monitor. Its specific objectives are to:

- establish baseline information for dual tobacco use against the key determinants of social inequality in health as proposed in layers of influence model
- compare dual tobacco users with cigarette smokers, paan tobacco chewers, and people who use none from the same group against psychosocial, health and nicotine dependence parameters
- identify key risk factors for current dual tobacco use compared to the other Bangladeshi tobacco use categories

The next chapter presents a methodology to address these gaps.

Chapter 3: Methodology

3.1 Introduction

The preceding chapter reviewed the literature that is relevant to this study. A need for primary research that establishes prevalence of dual tobacco use by UK resident Bangladeshi men has been demonstrated. A substantial gap in the literature explaining dual tobacco use in the context of social inequality and nicotine addiction has also been presented. The purpose of this chapter is to present the methodology by identifying the rationales which frame this study and the assumptions which guide the choice of methods. The theoretical assumptions underlying this research have been proposed in Chapter 1.

3.2 Methodological Considerations

The aim of this study is to establish dual tobacco use prevalence in UK Bangladeshi men. Its specific objectives are to establish baseline information for dual tobacco use against the key determinants of social inequality in health as proposed in layers of influence model, and compare dual tobacco users with smokers, paan tobacco chewers, and people who use none from the same group against psychosocial, health and nicotine dependence parameters. Risk factors for dual tobacco use will also be explored through multivariate analysis. In order to achieve the aim and objectives a random population survey method has been selected.

3.2.1 Sampling process

In a random survey, the sample is selected from a population in an unbiased manner. This allows the results of the research to be generalised statistically to the larger population. It requires the following three key elements:

1. A clear case-definition; in this case a Bangladeshi man who were over the age of 18 years
2. A sampling frame from which to select cases: Tower Hamlets Electoral Register, the most comprehensive list of adults aged over 18 living in the area was utilised
3. A random (unbiased) selection method. I have identified over five thousand Muslim-Bengali male names and their addresses from the Electoral Register in the

light of a study that has identified South Asian Muslim names from an electoral roll in Glasgow (Ecob and Williams, 1991) and,

4. A STATA random number generator routine was used to generate a random sample of 325 men from the list (Boston and Sumner, 2003).

Random sampling is the purest form of probability sampling. Each member of the population has an equal and known chance of being selected. The advantage of simple random sampling is that it is simple and easy to apply when a small population is involved. Employing random sampling method in tobacco related survey research is common and used in some recent studies (John *et al.*, 2004; Johnson *et al.*, 2004). The statistical methods include estimation of the percentage, mean, standard deviation (S.D.), standard error (S.E.), which is the standard deviation of the sample mean and OR.

3.2.2 Mixed methodologies

Increasingly, tobacco related researches are adopting mixed methodologies. Quantitative research focuses on verifying or falsifying a priori hypotheses through the exploration of mathematical functional relationship. On the other hand, qualitative research puts greater emphasis on the ‘process and meanings’ that are not investigated in terms of quantity or frequency (Nichter *et al.*, 2004).

This study has employed qualitative methodologies through literature analysis and four focus groups discussion at its early stage of survey instrument development. The aim of adopting a qualitative methodology at the instrument development and validation stage was to inform the survey by providing a well tested and robust survey instrument. These methods correspond to those developed and used in a study of nicotine dependence in UK female Bangladeshis (Croucher *et al.*, 2002) and were recommended as:

1. Developed specifically for the Bangladeshi tobacco users
2. Personal familiarity- I was directly involved in that study from the beginning
3. This study was intended to complement the earlier study with female users to unfold a possibly complex tobacco use scenario that exists in Bangladeshi families

After piloting these methods with Bangladeshi men and making minor changes in the questionnaire in the light of outcomes resulting from the qualitative approach, the study followed the rigid discipline proposed by random survey research. One methodological advantage this study can claim over the earlier study with female Bangladeshis is that this study with Bangladeshi men selected its sample using the purest form of randomisation whilst the earlier study used a quasi-randomised sample. Another advantage of this study was the precision of the instrument achieved by reviewing what worked well and what questions did not work in the past studies.

3.3 Items generation and instrument validation

The item generation and instrument validation phase passed through five stages before it was finalized. These are literature review and analysis, item selection, focus groups, pilot study and item finalization. A flowchart presented in the page 57 demonstrates the process:

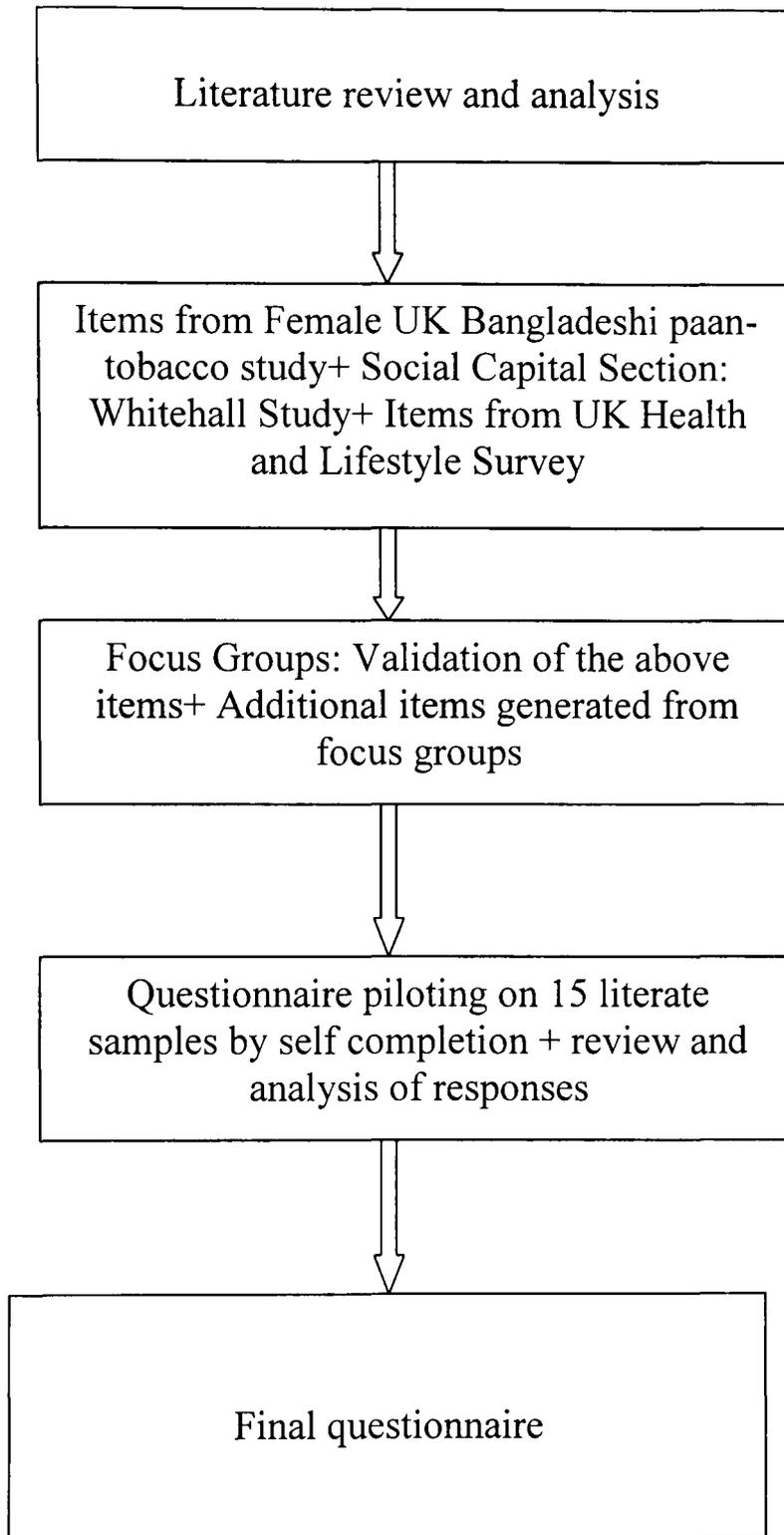


Figure 3.1: Items generation and instrument validation flowchart

3.3.1 Literature Review and analysis

The tobacco related literature is vast and diverse. A search with the keyword ‘tobacco’ on Ovid-Medline alone generates over a hundred thousand smoking related and several thousand ST related entries. The rationale for carrying out a search as proposed in the literature (Mulrow *et al.*, 1988) are to:

- 1) reduce a vast body of literature into palatable and focused categories
- 2) recognise and avoid pitfalls the of previous work
- 3) justify and refine hypotheses as presented in Chapter 1.
- 4) decide on the sample sizes, data collection and statistical techniques for a study, and,
- 5) establish the generalisability of the final outcomes of the study.

Considering the rationales stated above an extensive search was carried out using online resources such as Ovid-Medline, PubMed and PsychLIT. The search criterion included years of publication (1980 to 2005), adopting the search terms tobacco, concurrent tobacco, dual tobacco, ST, smoking, paan-tobacco, Bangladeshi, South Asian, health, oral health, etc. and the language ‘English’. Other library resources such as books, journal articles, reports, working papers and newspaper items have supplemented the search. The literature was sub-grouped and analysed using a qualitative text analysis package (Guizzo *et al.*, 2003). Using the themes identified in the literature (see page 57) four focus groups were carried out.

3.3.2 Focus Group

In order to ascertain culture and structure specific items relevant for identifying tobacco dependence focus group interviews were conducted using a guide/checklist generated from critical appraisal of relevant literature and items extracted from previous five focus group exercises with the female paan-tobacco users of the same cultural group (Croucher *et al.*, 2002). This guide was used to sensitively elicit personal, structural and experiential issues of importance to the Bangladeshi tobacco users.

The focus group is a special type of group in terms of purpose, size, composition and procedure (Barbour, 2005; Vogt *et al.*, 2004). A focus group is typically composed of 4 to

12 participants who are selected because they have certain characteristics in common that relate to the topic of focus group. Furthermore, the focus group is repeated several times with different people. Typically, a focus group study consists of a minimum of three focus groups but could involve as many as several dozen groups. The focus group interview works because it taps into human tendencies. Attitudes and perceptions relating to concepts, habits, lifestyle and culture emerge as a result of interaction with other people. The intent of the focus group is to promote self-disclosure and consensus among the participants (Krueger, 1994).

The focus group discussion guide used in the study covered the following points:

1. what type of tobacco they use currently
2. what type of tobacco they have used in the past
3. when and how they started using tobacco
4. when and how they use tobacco currently
5. who else in the family use tobacco
6. how and when they use tobacco when they are in social gatherings
7. do they feel like giving up tobacco use
8. what are the difficulties they face when they make attempts to give up tobacco
9. what type of family and social support they receive when they attempt to give up tobacco
10. what type of institutional support they get when they attempt to give up tobacco
11. what type of family and institutional support they expect in order to give up tobacco

The participants were adult males, aged between 18 to 80 years, who reported using more than one form of tobacco. Twenty seven men were recruited using theoretical sampling, a method of systematic non-random sampling of participants possessing specific characteristics selected to aid the development of theory (Coyne, 1997). This method is commonly used in qualitative research. The first group consisted of employees and owners of an Asian grocery shop that also sold cigarettes, paan-tobacco and other culture specific tobacco products. The group discussion was conducted inside the shop after

closing of the day's trading. The second group members were recruited from an elderly daycare centre. All the participants of the second group were over 55 years. Some of them had used dual tobacco in the past and some continued the habit during the time of the group interview. The third and the fourth groups were identified through informal network and interviews were conducted at a participant's home in each case. Discussions were conducted and moderated in Bengali/Sylheti. Interviews were tape-recorded. The average length of interviews was roughly around an hour. Recorded tapes were subsequently transcribed and translated into literal English.

Most of the items generated and validated in the study with Bangladeshi female paan tobacco chewers were revalidated through these focus groups (Croucher *et al.*, 2002). Two new items that have emerged from the focus groups with the Bangladeshi male tobacco users were incorporated into the questionnaire:

1. many of them swallow paan juice because spitting is not acceptable practice in the UK culture
2. some of the paan tobacco chewers carry a box containing paan when they leave home for a long time

The Bengali translated items that had been revalidated in the last two of the previously described focus groups were included in the pilot questionnaire.

3.3.3 Questionnaire Piloting

A notable strength of this study is that most of the questions used in this survey were taken from previously conducted studies such as the Whitehall Study (Marmot *et al.*, 1991) and Health and Lifestyle Survey Tobacco Use section (Thompson *et al.*, 1999). These items, translated in Bengali, were previously validated (Croucher *et al.*, 2002). The questionnaire thus twice validated was piloted again, through self completion, on an opportunistic sample of 15 Bangladeshi men who were able to read Bengali language. Data generated from the pilot study was analysed to check for effectiveness of the individual items. Results from the analysis demonstrated that the questions were mostly

understood and ordering of the linked questions were appropriate (for details of the questions please see Section 3.7: Measures and also Appendix III).

3.4 City and East London Ethics Committee approval

Once satisfied with the questionnaire instrument, an application together with a copy of the questionnaire, a brief description of the project, a copy of bilingual consent form and an information leaflet, was made to the City and the East London Research Ethics Committee. It was approved in March, 2001.

3.5 The Survey

3.5.1 Sample Size

The sample size calculation was based on Cochran's proposed formula for survey research (Cochran, 1977). Both Al Subaihi (Al Subaihi, 2003) and Whitley (Whitley and Ball, 2002) have recommended this.

$$n = A / (E^2 + (A/N))$$

where:

$$A = 3.8416 PQW$$

n = minimum sample size required (approximate)

P = assumed population prevalence for smoking in %

Q = assumed population prevalence for paan-tobacco use, in %

E = maximum acceptable random sampling error, in %

W = the likely design effect

N = population size

(The value 3.8416 is 1.962, corresponding to 95% probability of not exceeding E)

Given the level of significance α being 5%, power of the test 95%, and the assumed prevalence of cigarette, paan tobacco and dual tobacco at the rate of 45%, 35% and 15% respectively in the Bangladeshi men (N=5398), it has been calculated that a sample of 260 adult males would enable the establishment and comparison of prevalence in these three groups. Allowing for 20% variation, the sample size was increased up to 325.

3.5.2 Selection Criteria

The following inclusion criteria were applied:

- men of Bangladeshi origin
- resident in Tower Hamlets Borough
- aged 18 years and over
- willingness to participate
- capable of verbally answering all the questions and able to blow the CO monitor at required speed and volume

The selected person was contacted at his home address and his general health was assessed by asking a simple question ‘Do you currently have any health condition that might prevent you from participating in this research?’ If the person was found to be too ill or if he had speech or hearing impairment, he was excluded and replaced by another man as described in the next section.

3.5.3 Sampling

Five thousand three hundred and ninety eight Bangladeshi men living in Tower Hamlets had been identified from their names from the local Electoral Register. Potential volunteers for the study were identified through simple randomisation using a STATA-6 random number generator routine. This process continued until 325 Bangladeshi adult male volunteers were identified and interviewed.

3.6 Data collection

3.6.1 Introduction

In the light of aims and objectives stated previously the specific data collection objectives were to:

- establish the point prevalence of dual tobacco use
- administer an interviewer led questionnaire consisting of various psychosocial, health and nicotine dependence items

- collect respondents expired carbon monoxide (CO) concentration to confirm smoking status

3.6.2 Fieldwork preparation

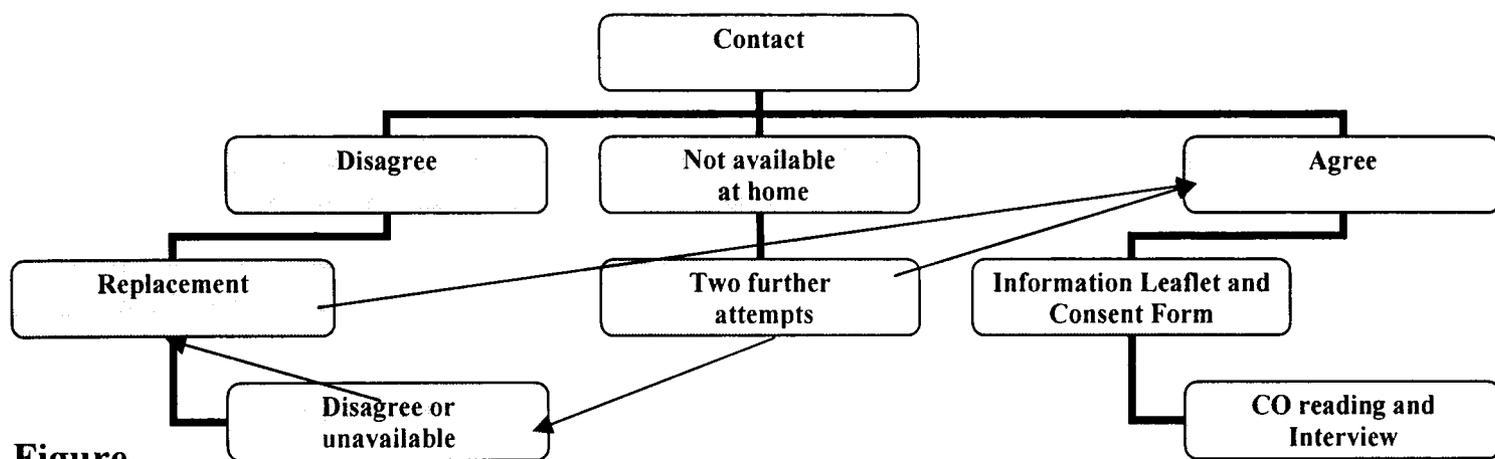
Sixty seven percent of interviews were conducted by me (218 out of 325). I am familiar with the items in the questionnaire instrument as I was involved from the very beginning of the earlier study with the female Bangladeshi tobacco users. Additionally, the instrument modified and adopted for this study was piloted several times by me. A proportion of the interviews (33%) were carried out by a data collector who also had involvement in the previous study. He was given training on data collection procedure prior to commencing the interviews. An expired CO reading was recorded using a Bedfont EC50-MICRO Carbon monoxide monitor. The Smokerlyzers used for CO reading were several times calibrated with the similar machines used by East London PCT's smoking cessation team.

3.6.3 Interviewing Process

The Tower Hamlets Borough was subdivided into electoral wards using a local map (Appendix II). Each of the selected respondent's address was pinpointed. A data collection route map was devised for the respondents belonging to each of the electoral wards.

Once an address was located, attempts were made to contact the respondent by knocking his door. If available, the purpose of the study was explained in plain Bengali and the potential volunteer was invited to take part. If agreeable, he was given an information leaflet explaining the study procedure, a consent form was signed, and a CO reading was taken before the interview. If the selected respondent was not available at home, one of the family members was asked to suggest a time when the respondent might be available at home and an information leaflet was left behind with an indication of time of the subsequent visit. When the selected person refused to take part, the next nearest address from the list was approached and the non-participant was replaced using the method

described in the Sampling section. The following diagram presents a flow chart of the recruitment and interviewing process:



Figure

3.2: Recruitment Flow Chart

All the interviews took place at the respondent's home, except for two cases. On one occasion, a respondent asked to be interviewed at his business premises next day, where the interview was conducted. On another occasion a respondent invited me to his nearest café as his house was full of visiting guests. The advantage of interviewing at a participant's home is that they are easy to locate and more likely to be relaxed compared to a formal setting such as a GP clinic or hospital. Most of the interviews were of 30 to 45 minutes length. Sometimes it took longer as I was invited to have tea or a meal with the family. Also, there were occasions when respondents showed interest in discussing unrelated issues to the survey such as the Gulf War or the health of other family members.

3.7 Measures

The interview schedule (Appendix III) contains items relating to current cigarette and paan-tobacco use. Degree of nicotine dependence was measured for each of the tobacco items using items from FTQ. The interviewing process, including CO reading, took

around 30 to 45 minutes. The followings are eight domains, first five of which are generated from the layers of influence model.

3.7.1 Endowed characteristics

One of our inclusion criteria was Bangladeshi men aged 18 or over. Age was recorded as a continuous variable. For the purpose of further analysis the age was sub grouped into 18 to 29 years, 30 to 44 years, 45 to 64 years, and 65& above years. The UK national census groups age into 18 to 64 and 65+ years. This is done so to identify population below or over the pensionable age. The literature analysis suggested that people go through various life events such as completion of education, marriage, entry into the world of work at various stages of their lives. Analyses of Health and Lifestyle Survey data adopted an age grouping similar to this study (Primatesta *et al.*, 2001).

3.7.2 Individual and lifestyle factors

A question was asked ‘Have you been using any one the following tobacco products for at least once a day for the last 6 months?’ A respondent was considered a dual tobacco user if he reported using both paan tobacco and cigarettes at least once a day for the last six months, and had a CO score above six parts per million (ppm). Similarly, people who reported smoking cigarette at least once a day in the last six months and had a CO score above 6 ppm was considered as smokers and people who reported chewing paan tobacco at least once a day for the last six months were considered as paan tobacco chewers. Those who claimed to have used no form of tobacco in the last six months and had a CO score below six was considered nonuser; in this case I called ‘None’. A handful of people who reported other types of current tobacco use such as bidi or hukka were excluded if they were not using the first two items either individually or concurrently.

The US Centre for Disease Control (CDC), defines a person to be a smoker who smoked at least 100 cigarettes in a lifetime and is currently smoking every day or just on some days (Shopland *et al.*, 1996). However, there is no such institutional definition for paan tobacco chewer or dual tobacco user. I have adopted a common definition for all three

tobacco-using groups based on my experience of work with the female Bangladeshi paan tobacco chewers.

The respondent's age of initiation was recoded as a continuous variable and then grouped into 5 categories. These are '5/9' years, '10/15' years, '16/24 years', '25/40' years and '41/69' years. These groups usefully explored any relationship with age of initiation and dual tobacco use. Also, there was a question on the type of tobacco product used to initiate tobacco by asking 'Which tobacco product did you use first (initiation)?' This was recorded to explore any relationship between respondents' first tobacco use and current dual tobacco use. There was another question about ever use of any other form of tobacco by asking 'Were you ever in life a regular user of the following tobacco products?' to explore the relationship between past tobacco use and current dual tobacco use.

A question was asked 'How would you describe your current state of health in general?' As in the Health and Lifestyle Survey (Thompson *et al.*, 1999) self reported health was categorised as 'Excellent', 'Good', 'Average', 'Poor' and 'Very Poor'. Kirkland *et al.* (Kirkland *et al.*, 2004) have reported a significant relationship between self reported health and current smoking status. In this survey we have explored the relationship between self reported health and dual tobacco use in Bangladeshi men.

A question included a list of common chronic illnesses to choose from. Seventeen types of major chronic illness, ranging from Asthma to chronic depression, were listed in this question. Each respondent was asked to report as many chronic illnesses they had at the time of interview. Each positive entry was then added to achieve total individual chronic illness score. Majeed *et al.* have used this list to record chronic illness in a survey amongst London hospital patients (Majeed *et al.*, 2000). In this survey I recorded the number of GP visits in the previous two weeks by asking 'In the past two-week have you visited you GP?' in order to identify any relationship between frequency of GP visit and dual tobacco use.

An oral health related question ‘Do you have any oral problem such as pain/gum disease or any other?’ was included. Croucher et al. (2003b) have established a relationship between self reported oral problems, especially, oral pain and paan tobacco chewing. Dental registration status is a good marker of socio economic condition (Anderson and Thomas, 2000;Davies, 1999). In order to explore the relationship between dental registration and dual tobacco use, a dichotomised question ‘Are you registered with a dentist/dental practice?’ was asked.

3.7.3 Social and community network

Marital status was categorised as ‘Married’, ‘divorced/Separated’, ‘Widowed’ and ‘Unmarried’. These marital categories were adopted in the Health and Lifestyle Survey (Thompson *et al.*, 1999). Some tobacco related studies found that marital status has a strong influence on uptake and cessation of tobacco (Grundy and Sloggett, 2003;Chandola *et al.*, 2004). Respondents’ number of children was recorded to investigate any relationship between number of children and the pattern of dual tobacco

Family members and friends have been reported to be very influential in initiation and maintenance of tobacco. In this survey I have recorded respondents’ best friend, wife, father and mother’s tobacco use history. These were done to see whether there is any relationship between family and friend’s tobacco use and dual tobacco use of the respondents.

There are indications that people who enjoy a good social life are relatively healthy and smoke less (Grundy and Sloggett, 2003). In order to explore this hypothesis I have used a range of questions about social capital. These questions were adopted from the Social Capital section of the Whitehall Study (Stansfeld *et al.*, 1997). There were two additional questions e.g., ‘How often they attended the mosque?’ and ‘How often they attended community related meetings?’ Altogether, there were 10 questions in this sections, of these eight question had four response categories as ‘None’ ‘Up to two times’ ‘Up to six times’ and ‘six and over’. The individual scores were added from

responses to the eight questions to obtain a total social exchange score with the assumption that people with higher score would have better social relationships.

3.7.4 Living and working conditions

The respondent's final education level was classified into four general categories. These were 'None', 'Primary', 'Secondary', and 'Graduate & Above'. This categorisation was adopted from our experience of earlier work with this group. Vora et al. (Vora *et al.*, 2000) has also used a similar categorisation in their tobacco related research with South Asians living in Leicester. Tobacco related surveys from South Asia, especially India, often dichotomise respondents' education as 'no formal education' and 'formal education'. An analysis of the 1998-9 Indian national family health survey of 301,984 individuals reported that individuals with no education were 2.69 times more likely to smoke and chew tobacco than those with postgraduate education (Subramanian *et al.*, 2004). Gupta et al used a more abstract category of education such as Group 0: no formal education, Group I: 1-10 years, Group II: 11-15 years, and Group III: > 16 years (Gupta *et al.*, 2003).

Respondents' house ownership status is a good marker of their material condition (Shaw, 2004). I have used a five category house ownership status. These are 'Council (Local Authority)', 'Housing Association', 'Owned', 'Privately Rented', and 'Sharing with Others'. The English House Condition Survey has used a housing ownership category similar to us (Stewart, 1999).

Respondents' employment status was measured in seven categories. These were: Employed Full Time (30 Hours or over/week), Employed Part Time (Less than 30 Hours/week), Unemployed, Out of work due to sickness/disability, Retired, Full-time Student, and Keeping House. These categories have been used in the UK Health and Lifestyle Survey (HALS) and other analyses related to smoking using HALS data (Duncan *et al.*, 1999).

The measure of social class in the British Registrar General's six-fold occupational classification was used to record respondents self reported social class starting from social class I to social class V, including Social Class III Manual and III Non Manual. This social class classification have been used by other UK studies (Macintyre *et al.*, 2003).

3.7.5 Environmental and cultural conditions

Additional housing information such as the number of rooms in the house and number of people living in each of the household was obtained to derive information about over crowding. A property is considered to be overcrowded if the number of people sleeping there is such that any two persons aged 10 years or over of opposite sexes who are not man and wife must sleep in the same room. When calculating the number, no account is taken for a child under the age of one and a child between the ages of one and ten years is counted as half a unit (Office of the Deputy Prime Minister, 2004b). Since recording of age of other people living in the property was beyond the scope of this study, I adopted a more flexible definition of over crowding. In this study 2 to 2.5 people living per room was categorised as moderately over crowded and more than 2.5 people living per room in the household was categorised as severely over crowded.

Respondents' place of Birth was recorded as 'UK', 'Bangladesh' and 'Other'.

Bangladeshis in UK are often labelled as 'new community' because of their young age structure and recent migration. It was assumed that most of the over 30 years old respondents would be born in Bangladesh. In addition to this, information on the number of years in the UK for those who were born in Bangladesh was also recorded. This was then grouped into 1 to 4 years, 5 to 9 years, 10 to 19 years, 20 to 39 years, and 40 years & above. This was done so to compare tobacco habits of people who migrated relatively recently with those who migrated a long time ago (Wannamethee *et al.*, 2002)., I also wanted to explore the effect of recent migration on dual tobacco use.

3.7.6 Bivariate comparison between smokers and dual tobacco users

This section compares the degree of tobacco dependence between smokers and dual tobacco users using the original 14-item FTQ. An additional question on the age of initiation was included as a probe (Appendix III). Psychosocial researchers have acknowledged the importance of nicotine in maintaining tobacco dependence and in cessation difficulty. This has led to efforts to measure nicotine dependence using various social and behavioral markers (Benowitz, 1999).

One such well-known paper and pencil test of nicotine dependence is FTQ. This instrument has been found very effective in smoking related nicotine dependence. Several reviews have been published demonstrating its usefulness (Albrecht *et al.*, 1999;Becona and Vazquez, 1998;Benowitz, 1999). This is an easy to administer, cheap and less invasive method of identifying cigarette related nicotine dependence and it suits well in primary care settings. This has also been found equally effective in smokers of non- English and non-European origin (Becona and Vazquez, 1998;Kawakami *et al.*, 1998). However, when used to measure ST dependence it produced variable results with partial or no success. One report indicated that FTQ lacks cultural and structural items specific to the use of ST (Boyle *et al.*, 1995).

In order to test FTQ's effectiveness in Bangladeshi men who smoked (both cigarette only and dual tobacco users), all the original 14 items were retained and additional questions were incorporated that have emerged from the focus groups with Bangladeshi men. Why do you smoke cigarette nowadays was the first question. The responses were categorized as 'A Habit', 'Refreshing', etc. A question was asked about the number of cigarette they usually smoked in a day. There was also a question about type of cigarette, such as 'roll your own' and manufactured cigarettes. A key question in FTQ is how soon after waking up do you usually smoke? Generally, smokers who are highly addicted to nicotine light up a cigarette soon after waking up. The responses were categorized as less than 5 minutes, 5 to 15 minutes and so on. The sixth item was how difficult they find it to go without a cigarette for a whole day. The responses were categorized as fairly easy, fairly difficult and very difficult. The next item how difficult

it is to refrain from smoking in places where it is forbidden. The responses were categorized as 'yes', 'no' and 'n/a'. The eighth item was which cigarette they would most hate to give up. The responses were categorized as 'first cigarette of the day', 'the cigarette after meal' and 'any other'. The ninth item was whether they smoke when they are very ill. The responses were 'yes' and 'no'. The tenth item was whether they smoke more frequently during the first few hours after waking up. The responses were 'yes' and 'no'. The eleventh item was whether they inhale smoke and the responses were dichotomized as 'yes' and 'no'. The twelfth item was whether there is any other smoker at home. The responses were categorized as 'yes' and 'no'. The next question was about whether the respondent wants to give up smoking with a dichotomized response 'yes' and 'no'. The fourteenth question was how much the respondent wants to give up and responses were categorized as 'not at all', 'slightly', 'moderate', 'quite strongly' and 'very strongly'. The final question in this section was about the number of attempts they have made to give up and the responses were recorded in number of times.

3.7.7 Bivariate comparison between paan tobacco chewers and dual tobacco users

This section compares degree of tobacco dependence between paan tobacco and dual tobacco users using the original 14 item FTQ questions discussed in the previous section. One additional item 'Do you carry a paan box?' was included as it emerged from the focus group that people who were dependent on paan tobacco chewing carry a box with them if they travel far from home. All the fourteen FTQ items in this section were modified to describe paan tobacco chewing dependence, piloted and used in an earlier study (Croucher *et al.*, 2002). The female study identified that those who used 'sada' or leaf tobacco (Appendix I) and chew a paan within 30 minutes of waking up are more dependent on paan tobacco chewing. Boyle *et al.* also reported using this for US spit tobacco users (Boyle *et al.*, 1995).

3.7.8 Multivariate analysis of risk factors for dual tobacco use

This section aims to identify risk factors for dual tobacco use firstly, by employing bivariate logistic regression (smoking vs. dual tobacco and paan-tobacco vs. dual

tobacco). In each case the dependent variable, smokers and dual tobacco users and paan-tobacco users and dual tobacco users, was made a dummy variable (coded 0,1). Results are presented as OR. Secondly, multinomial logistic regression has been used where the dependent variable, tobacco use status, was used (base category, smokers=0). Results are presented as OR.

3.8 Data analysis

3.8.1 Descriptive statistic

Counts of frequencies were carried out to identify how many times events of the research interest occurred or how many responses fit into a particular category. A commonly used statistic, percentages have been used to express information as proportion of a whole to show relationships and comparisons either between categories of respondents or between categories of responses. When reporting percentages, the number of cases (n=) from which the percentage is calculated is shown at the top of each table. Percentages were rounded off to the next higher number until a whole number without a decimal point was achieved.

The mean or averages have been shown, where appropriate, in reporting data. It was obtained by summing the similar answers and dividing by the total number of responses in that question. Ranges have been shown in conjunction with the mean to show spread of responses or values. Significance tests have been carried out to determine if an observed value of a statistic differed enough from a hypothesized value of a parameter with 0.5 levels.

3.8.2 Binary logistic regression

Logistic regression models have been used to compare the degree of nicotine dependence between smokers, paan tobacco chewers and dual tobacco users (Bender and Grouven, 1998). The dependent variable in logistic regression is usually dichotomous, that is, the dependent variable can take the value 1 with a probability of success θ , or the value 0 with probability of failure $1 - \theta$. The relationship between the predictor and response

variables is not a linear function in logistic regression; instead, the logistic regression function is used, which is the logit transformation of θ (Bewick *et al.*, 2005):

$$\theta = \frac{e^{(\alpha + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_k x_k)}}{1 + e^{(\alpha + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_k x_k)}}$$

Where α = the constant of the equation and, β = the coefficient of the predictor variables. In each case the dependent variable, smokers and dual tobacco users and paan-tobacco users and dual tobacco users, was made a dummy variable (coded 0,1). Results are presented as OR. Backward stepwise regression has been used at the exploratory stage of model building. The likelihood-ratio test has been used, where the likelihood function for the full model (L_1) over the maximized value of the likelihood function for the simpler model (L_0) using the following formula (Bewick *et al.*, 2005):

$$-2 \log\left(\frac{L_0}{L_1}\right) = -2[\log(L_0) - \log(L_1)] = -2(L_0 - L_1)$$

3.8.3 Multinomial logistic regression

Multinomial logistic regression is an extension of binary logistic regression that allows the simultaneous comparison of more than one contrast (Chen *et al.*, 2002). That is, the log odds of three or more contrasts are estimated simultaneously. The dependent variable, tobacco use status, was used (base category, smokers=0). Results are presented as OR.

3.8.3 Multivariate statistic

The OR have been calculated as the number of events divided by the number of non-events. Where appropriate, confidence intervals of OR have been presented. The standard error of a statistic is the standard deviation of the sampling distribution of that statistic. Standard errors have been presented to demonstrate how much sampling fluctuation had occurred. It has been used in the construction of confidence intervals and significance testing. Ninety five percent confidence intervals have been shown to represent a range of valued within which the estimated parameter lies within the 95% surety.

3.9 Cut off points

The following cut off points have been adopted for the data analysis

- For CO, a breathalyser reading of cut off point of 6ppm was adopted to confirm smoking status. This level of cut off point was adopted from other studies (Middleton and Morice, 2000).
- For all the statistical tests a significance level of 0.05 and below have been accepted.

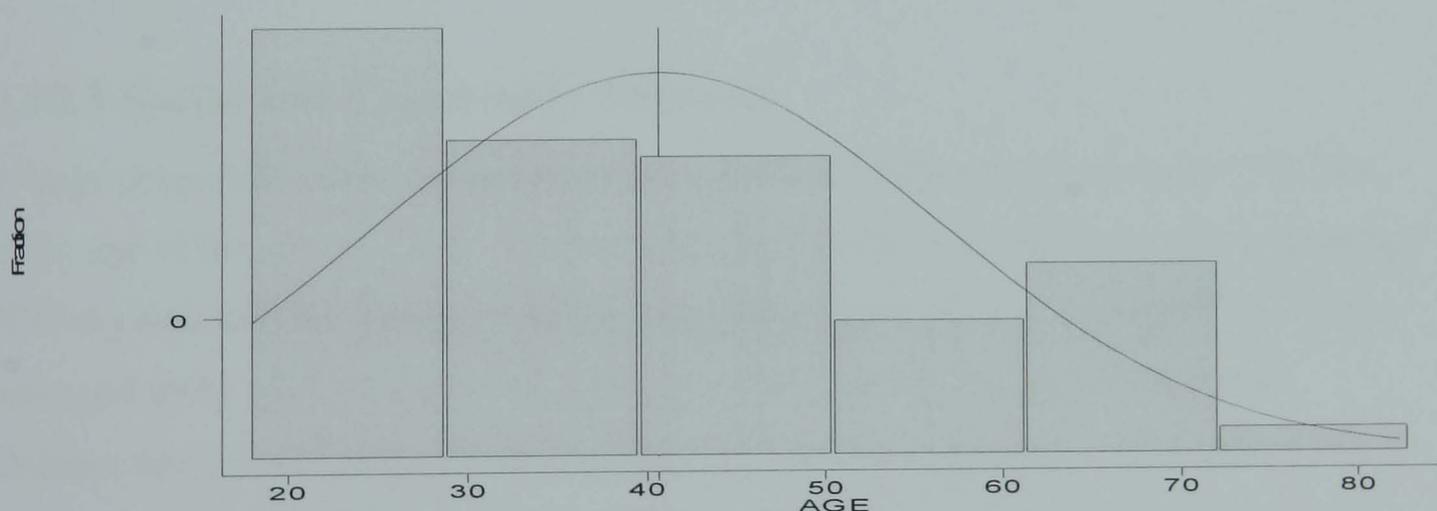
3.10 Characteristics of the study sample

This section presents the general characteristics of the study sample.

3.10.1 Endowed Characteristics: Age

The mean age of the study sample was 40.7 years (95% CI 40.2-41.2) with a range from 18 to 83 years (Appendix IV, Table A.1). Since the minimum age of selection was 18, the age distribution was left truncated with a right hand side skewed extension (Figure 3.3) with the largest number of men in the 20 to 30-age band.

Figure 3.3: Age distribution of a random sample of UK resident adult Bangladeshi men (n=322)



3.10.2 Individual and Lifestyle Factors

Five categories of self reported health status, ranging from excellent to very poor were recorded. Nine percent claimed to have 'excellent' and 8% of the respondents claimed to have 'very poor' health. However, the majority reported 'good' to 'average' health.

Respondents who claimed to have poor health were older and vice versa (Appendix IV, Table A.3).

The respondents were asked about 18 most common chronic illnesses and an open ended question about any other chronic illness. The mean number of chronic illness was obtained by adding the number of individual chronic illnesses, divided by the total number of illnesses (Appendix IV, Table A.4). The mean number of chronic illnesses was 1.4 (95% CI 1.2-1.5) ranging from zero to a maximum of nine. It was high amongst the older age groups and those who reported poor health (Appendix IV, Tables A.5 & A.6). One good indicator for examining current health status is to ask about the number and reasons for GP visit in the last week. In this sample 16% had visited their GP in the previous week before the date of interview (Appendix IV, Table A.7).

When asked about any current oral health problem, 24% responded positively (Appendix IV, Table A.8). Information was collected about registration with a dentist. It was found that only 43% of the study sample was registered (Appendix IV, Table A.9).

3.10.3 Social and Community Network

A large proportion of the sample was married (71%) (Appendix IV, Table A.10). The mean age of this group was 45.9 years. The oldest group was widowers with a mean age of 63.4 years and the youngest was the unmarried group with a mean age of 24.7 years. Amongst those who were married at the time of the survey, the mean number of children was 3.5 with a maximum number of 12 children (Appendix IV, Table A.11). One unmarried respondent claimed to have a child. This case was followed up and reconfirmed.

Twenty two percent of the sample had not visited the home of family members two weeks before the interview date. Most of the respondent (53%) visited family members at least once or twice. Eight percent had visited a family member nine times or more in the previous two weeks (Appendix IV, Table A.11). Over 22% of respondents have not had a

visit from a family member in the previous two weeks before the interview, while 45% had at least one or two visits. Eight percent had been visited by family members nine times or more in the previous two weeks before the date of interview (Appendix IV, Table A.12).

Twenty one percent of respondents had not visited a friend in the previous two weeks before the interview. Thirty eight percent had visited once or twice, while 16% had visited a friend nine times or more in the previous two weeks before the date of interview (Appendix IV, Table A.14). When asked about a visit by a friend in the previous two weeks, 24% of respondents said they did not have any. Thirty eight percent said they had friends visited once or twice, while 13% claimed to have had friends visited nine times or over (Appendix IV, Table A.15).

A large percentage of the sample (48%) had not visited a neighbour in the previous two weeks before the date of interview, 34% had visited neighbours at least once or twice and only 6% had claimed to have visited neighbours nine times or more in the previous two week (Appendix IV, Table A.16). Twenty four percent said that a neighbour had not visited in the previous two weeks before the interview. Thirty eight percent had one or two neighbours visited and 13% had nine or more visit from the neighbours (Appendix IV, Table A.17).

Twenty one percent had not visited a local mosque in the previous two weeks before the date of interview, while 41% had visited at least once or twice and 22% had made visits to mosques nine times or more (Appendix IV, Table A.18). Sixty three percent of the respondents had not attended a community meeting in the previous two weeks before the date of interview, 23% had attended meeting once or twice and only 5% claimed to have attended meetings nine times or more (Appendix IV, Table A.19).

When asked about the relationship with the neighbours in general, 93% said neighbours were friendly (Appendix IV, Table A.20) and 10% said neighbours were hostile (Appendix IV, Table A.21). The individual social exchange score was obtained by adding

nine items of social capital and social participation questions presented above (Appendix III). The mean score of the sample was 21.1 with a maximum score of 72 and minimum of zero (Appendix IV, Table A.22).

3.10.4 Living and Working Conditions

A large proportion of Bangladeshi men have either no or minimum education (33%). Over 50% of the sample studied upto secondary level. Only 17% were university degree holders (Appendix IV, Table A.23). Eighty five percent of the sample claimed to belong to the manual groups. Only 2% claimed to be in the social classes I & II (Appendix IV, Table A.24). A large majority of the respondents lived in social housing with 70% in Local Authority housing and 18% in Housing Association housing. Only 9% of the respondents owned a house or flat (Appendix IV, Table A.25).

A high proportion of adult male Bangladeshis were economically inactive during the time of the survey. Only 44% of the respondents was fully employed, while 20% were unemployed. The others were economically inactive due to retirement (16%), incapacity (5%), and full time study (5%) (Appendix IV, Table A.26).

3.10.5 General Environmental and Cultural Conditions

Two percent lived in a single person household, while the rest (98%) lived with other people (Appendix IV, Table A.27). Some households had upto 14 people living under the same roof, with 34% having six to eight people and 12% with over nine people (Appendix IV, Table A.28). In terms of the crowding index, calculated by dividing number of people with number of rooms available in the house, a large majority (69%) suffered from some degree of overcrowding (Appendix IV, Table A.29). Most of the people interviewed for the survey were born in Bangladesh (86%), while only 13% were born in UK (Appendix IV, Table A.30). Those who were born in Bangladesh, the mean number of years in UK were 24.77 years. One person claimed to have lived in the United Kingdom for over 60 years (Appendix IV, Table A.31).

3.11 Summary

Dual tobacco use in UK Bangladeshi men has been explored by using a random survey methodology. The instrument used for the survey had to pass through four exploratory stages before it was finalised. The survey was conducted on 325 adult Bangladeshi men living in Tower Hamlets. The interviews were conducted in Bengali at respondent's homes. Data thus obtained was analysed using STATA and the risk factors for dual tobacco use in Bangladeshi men have been investigated by using both bivariate and multivariate methods.

Chapter 4: Results

4.1 Introduction

The aim of this study is to establish dual tobacco use prevalence in UK Bangladeshi men. This study plans to build an evidence base for understanding dual tobacco use by UK resident Bangladeshi men against the backdrop of high social disadvantage. Measures generated from Dahlgren and Whitehead's description of layers of influence model are described in Chapter 1. These are:

- **Endowed Characteristics:** age
- **Individual Lifestyle:** tobacco use pattern and history, self-reported general and oral health, episodes of chronic illness, use of primary health care services, tobacco types and dependence
- **Social and Community Networks:** social capital and social participation, mosque and community occasion attendance, family size, tobacco use pattern and history of family and friends
- **Living and Working Conditions:** house ownership, education, employment status, social class
- **General Environmental and Cultural Conditions:** overcrowding, migration status, place of birth

The first section is organised according to the order of layers described by Dahlgren and Whitehead (Dahlgren and Whitehead, 1991). The following two sections compare nicotine dependence in the light of FTQ (Appendix III) and the additional questions generated from focus groups. The final section identifies risk factors for dual tobacco use through multivariate analysis.

Three hundred and twenty five men of Bangladeshi origin had been randomly selected using the method presented in Chapter 3 and approached for interview by myself or a trained bi-lingual interviewer. One hundred and ninety three interviews were completed from an initial list. A replacement list was then used until 325 interviews were completed. The response rate from the initial list was 59%. The reasons for non availability of rest of the 31% include moving address, refusal, too ill to be interviewed,

work till late in the evenings and travelling abroad. Three hundred and twenty two interviews were considered complete after checking for consistency and outliers such as not claiming to smoke cigarettes whilst having a high CO score.

4.2 Tobacco use patterns

This section describes the tobacco use pattern of the study sample by the various social economic and health factors located in the five strata of layers of influence model.

More than one form of tobacco was used by 22%, while 36% of the sample smoked cigarettes only, 8% chewed paan tobacco only and 35% did not use any form of tobacco (Table 4.2.1). When cigarette only smokers and dual tobacco users are combined, 58% of the respondents smoked cigarettes daily and when dual tobacco and paan tobacco chewers are combined, 30% of the sample chewed paan tobacco on a daily basis.

Table 4.2.1: Type of tobacco use of a random sample of UK resident adult Bangladeshi men

<i>Type</i>	<i>Freq.</i>	<i>Percent</i>	<i>Cum%</i>
Dual tobacco	66	22	22
Cigarette	107	36	58
Paan tobacco	23	8	65
None	105	35	100
Total	301	100	

Dual tobacco users had a mean CO reading of 11.2 ppm. The smoker's mean CO reading was 10.3 ppm. There were three cases of suspected misreporting in the 'None' group as their CO readings were much higher than the cut off point of 6ppm. These cases were treated as outliers and dropped from the analysis. Table 4.2.2 presents the mean CO scores by tobacco use category.

Table 4.2.2: Mean carbon monoxide reading by type of tobacco use of a random sample of UK resident adult Bangladeshi men (n=299)

<i>Type</i>	<i>Mean CO Score (ppm)</i>	<i>Std. Err.</i>	<i>95% CI (ppm)</i>
Dual tobacco	11.2	0.6	10.1-12.4
Cigarette	10.3	0.5	9.3-11.2
Paan tobacco	3.2	0.4	2.5-3.9
None	2.2	0.2	1.7-2.7

4.2.1 Endowed Characteristics: age

Table 4.2.3 presents the mean age and 95% confidence intervals by tobacco use category. Paan tobacco chewers had the highest mean age (50.2 years). The dual tobacco users were relatively older than the cigarette only smokers (46.4 vs. 35.6 years).

Table 4.2.3: Mean age by type of tobacco use of a random sample of UK resident adult Bangladeshi men (n=301)

Type	Mean Age	Std. Err.	95% CI
Dual tobacco	46.4	1.7	43.2-49.7
Cigarette	35.6	1.1	33.4-37.8
Paan tobacco	50.2	2.8	44.6-55.7
None	41.8	1.3	39.2-44.4

The relationship between respondent's age and type of tobacco preference was significant with older men using more of both dual tobacco and paan tobacco, while the younger respondents preferred cigarette smoking (Table 4.2.4). Amongst the smokers 46% belonged to the age group 18-29, while amongst the dual tobacco users 44% belonged to the age group 45-64. This age group was also dominant in the paan tobacco chewer group with 44%.

Table 4.2.4: Percentage of tobacco use category by age group of a random sample of UK resident adult Bangladeshi men (n=301)

<i>Tobacco Use</i>	<i>Dual tobacco</i>	<i>Cigarette</i>	<i>Paan tobacco</i>	<i>None</i>	<i>Total</i>
<i>Age Group</i>					
18-29	20	46	9	37	34
30-44	2	31	26	23	26
45-64	44	18	44	22	27
65+	14	6	22	18	13
Total	100	100	100	100	100

P=0.000

4.2 .2 Individual Lifestyle

The mean age of initiation for dual tobacco users was 14.6 years. Paan tobacco chewers mean age of initiation was 20.3 years (Table 4.2.5).

Table 4.2.5: Mean age of any form of tobacco initiation by type of tobacco use of a random sample of UK resident adult Bangladeshi men (n=301)

Type	Mean Age	Std. Err.	95% CI
Dual tobacco	14.6	0.8	13.0-16.2
Cigarette	14.9	0.3	14.3-15.5
Paan tobacco	20.3	2.8	14.9-25.8

Age of initiation grouped into five categories by tobacco use is shown in Table 4.2.6. Most of the dual tobacco users first started using tobacco by the age of 15 years (42%). Eighteen percent began tobacco use before the age of 10 years. For cigarette smokers 58% started by the age of 15 and for paan tobacco chewers it was 39%. The relationship between age of initiation and type of tobacco use is statistically significant.

Table 4.2.6: Percentage of tobacco use category by age of initiation of a random sample of UK resident adult Bangladeshi men (n=301)

Tobacco Use	Dual tobacco	Cigarette	Paan tobacco	None	Total
Age Start Group					
5/9	18	3	9	6	8
10/15	42	58	39	34	48
16/24	33	39	30	31	35
25/40	5	1	9	26	7
41/69	2	0	13	3	2
Total	100	100	100	100	100

P = 0.000

Table 4.2.7 presents the type of tobacco products respondents had used to initiate their tobacco addiction. Fifty seven percent had begun with cigarette and 29% had begun with paan tobacco chewing.

Table 4.2.7: Tobacco initiation and ever use of a random sample of UK resident adult Bangladeshi men

	Frequency	Percent	Cum %
Start with Cigarette (n=301)			
No	129	43	43
Yes	172	57	100
Start with Paan tobacco (n=301)			
No	214	71	71
Yes	87	29	100
Ever Used Cigarette (n=246)			
No	39	16	16
Yes	207	84	100
Ever Used Paan (n=246)			
No	139	57	57
Yes	107	44	100

Eighty four percent respondents reported that they had used cigarettes at some point of time, whilst 44% of the respondents reported chewing paan tobacco in their lifetime (Table 4.2.7). Only 7% of dual tobacco users, 7% of cigarette smokers and 13% of non users claimed to have excellent self reported health, while none of the paan tobacco chewers claimed to have excellent self reported health. Most of the dual tobacco users (40%) reported their health as average at the time of interview. A large percentage of cigarette smokers (49%) reported their health as good and a nearly equal percentage of paan tobacco chewers also claimed to have good or average health (Table 4.2.8).

Table 4.2.8: Tobacco use category by self reported health, GP visit, oral problem and dental registration of a random sample of UK resident adult Bangladeshi men (%)

Tobacco Use	Dual tobacco	Cigarette	Paan tobacco	None	Total
Self reported Health (n=300)					
Excellent	7	7	0	13	9
Good	26	49	35	30	36
Average	40	30	35	36	34
Poor	19	9	22	10	12
Very poor	7	5	9	12	8
Visit GP Last Week (n=296)				P = 0.027	
Yes	19	14	26	15	16
No	81	86	74	85	84
				P=0.463	
Any Oral Problem (n=287)					
Yes	32	15	36	26	24
No	68	85	64	74	76
				P=0.035	
Dental Registration (n=283)					
Yes	53	43	43	36	43
No	47	57	57	64	57
				P=0.219	

Nineteen percent of dual tobacco users had visited their GP the week before being interviewed, while 26% of paan tobacco chewers had visited their GP at that time (Table 4.2.8). There was no significant relationship between GP visit and tobacco use status.

A large percentage of smokers (85%) did not report any oral health problem. Self reported oral health problem was highest among paan tobacco chewers (36%) and the second highest group was the dual tobacco users (32%). There was a significant difference between the tobacco use groups in terms of their self reported oral health problems (Table 4.2.8). Percentage of tobacco use category by dental registration is also shown in Table 4.2.8. Fifty three percent of dual tobacco users reported being registered with a dentist, while only 36% of respondents who did not use any form of

tobacco were registered with a dentist. Reported non registration was also high amongst paan tobacco chewers (57%). However, there was no significant association between tobacco use status and dental registration.

4.2.3 Social and Community Network

Most of the dual tobacco and paan tobacco chewers were married (83% and 96%) and marital status was significantly associated with the ST use. None of the divorced men in this sample were dual tobacco user (Table 4.2.9). This is possibly due to the small number (four) of divorced men identified in the survey (Appendix IV: Table A.10).

Table 4.2.9: Percentage of tobacco use category by marital status of a random sample of UK resident adult Bangladeshi men (n=301)

Tobacco Use	Dual tobacco	Cigarette	Paan tobacco	None	Total
Married	83	65	96	68	72
Divorced	0	1	0	3	1
Widower	3	2	0	4	3
Unmarried	14	32	4	25	24
Total	100	100	100	100	100

P = 0.033

Family and friends tobacco use is shown in Table 4.2.10. All the tobacco use categories had a large percentage of best friends, ranging from 94% to 100%, who smoked cigarettes.

Table 4.2.10: Percentage of tobacco use category by family and friends tobacco use of a random sample of UK resident adult Bangladeshi men

Tobacco Use	Dual tobacco	Cigarette	Paan tobacco	None	Total
Best Friend's Smoking (n=271)					
Yes	97	100	95	94	97
No	3	0	5	6	3
				P = 0.095	
Best Friend's Paan Tobacco Use (n=271)					
Yes	74	27	90	50	50
No	26	73	10	50	50
				P = 0.000	
Wife's Smoking (n=143)					
Yes	9	7	0	0	5
No	91	93	100	100	95
				P = 0.232	
Wife's Paan tobacco Chewing (n=143)					
Yes	67	23	83	43	50
No	33	77	7	57	50
				P = 0.000	
Mother's Smoking (n=182)					
Yes	2	3	0	0	2
No	98	97	100	100	98
				P = 0.634	
Father's Smoking (n=211)					
Yes	44	65	32	64	57
No	56	35	68	36	43
				P = 0.013	
Father's paan tobacco chewing (n=211)					
Yes	37	23	44	33	30
No	63	77	56	67	70
				P = 0.185	

A large majority of dual tobacco users had a best friend who chewed paan tobacco (74%). This is also true for the case of paan tobacco chewers (90%), whereas very few cigarette smokers had paan tobacco chewing friends (27%). The relationship between tobacco use status and best friends current paan tobacco chewing was statistically significant.

Irrespective of respondents tobacco use status very few of their wives were reported to smoke cigarettes. Nine percent of dual tobacco users reported having wives who smoked at the time of the survey. Sixty seven percent of dual tobacco users had a wife who chewed paan tobacco and 83% of paan tobacco chewers had a wife who was reported to be also a paan tobacco chewer. Only 23% of smokers reported that their wife chewed paan tobacco. The relationship between tobacco use status and wife's paan tobacco chewing was highly significant.

Mother's and father's ever smoking and ever paan tobacco chewing status is presented in Table 4.2.10. Very few respondents' mothers smoked cigarettes. However, a large percentage of respondents' mothers were reported to have chewed paan tobacco (over 60% across the categories). A large majority of smokers had a cigarette smoking father (65%). Forty four percent of paan tobacco chewer's fathers had chewed paan tobacco and 37% of dual tobacco users had a paan tobacco chewing father.

Thirty five percent of the respondents had not visited their family two weeks before the date of interview, whilst 16%, 22% and 22% of dual tobacco, cigarette smokers and non users had done so at the same time. Sixty four percent of dual tobacco users, 55% of cigarette smokers, 43% of paan tobacco chewers and 47% of non users had visited once or twice in the two weeks before the interview (Appendix V: Table B1).

Nineteen percent of dual users, 28% of smokers, 39% of paan tobacco chewers and 17% of non users had not been visited by family members two weeks before the date of interview. A nearly equal percentage of the entire tobacco use category had one or two visits in that time. Seventeen percent of dual tobacco users had nine or more visits from the family member, compared with 3% and 10% for cigarette smokers and non tobacco users. None of the paan tobacco chewers had family member's visit nine times or more (Appendix V: Table B2).

Twenty eight percent of the dual tobacco users had not visited homes of friends in the previous two weeks before the interview. It was 16% for the cigarette smokers, 26% for

the paan tobacco chewers and 19% for non users. Only 39% of dual tobacco users had visited friends once or twice. This was 61% for the paan tobacco chewers and 35% for cigarette smokers (Appendix V: Table B3). Thirty one percent of dual tobacco users, 19% of cigarette smokers, 48% of paan tobacco chewers and 16% of non users were not visited by friends two weeks before the date of interview. Thirty four percent, 41%, 39% & 39% for dual tobacco, cigarette, paan tobacco and non tobacco users respectively, were visited at least once or twice by friends (Appendix V: Table B4).

A large percentage of respondents across the categories had not visited a neighbour two weeks before the date of interview. Only 6% of dual tobacco users and 6% of smokers visited nine times or more. None of the paan tobacco chewers did so during that time (Appendix V: Table B5). Twenty seven percent of dual tobacco users, 43% of cigarette smokers, 45% of paan tobacco chewers and 35% of non tobacco users were not visited by neighbours two weeks before the date of interview. Large percentages across the categories had one or two visits from neighbours. Only 9% of dual tobacco users, 7% of cigarette smokers, 4% of paan tobacco chewers and 3% of non users had neighbours visiting nine times or over (Appendix V: Table B6).

Twenty three percent of dual tobacco users had not visited the mosque for prayer two weeks before the date of interview. Twenty five percent, 17% and 15% of cigarette smokers, paan tobacco chewers and non users respectively had not visited the mosque during that time. A nearly equal percentage of dual and non users (28% & 29%) had visited nine times or more. This was only 11% and 22% for cigarette smokers and paan tobacco chewers (Appendix V: Table B7). Most respondents had not attended community meetings two weeks before the date of interview. Only 1% of cigarette smokers had taken part in meeting nine times or more. This was 4%, 4% and 8% for dual tobacco, paan tobacco and non users respectively (Appendix V: Table B8).

Most of the respondents across the categories claimed their neighbours were friendly (Appendix V: Table B9) and when asked separately whether neighbours were hostile to them the response rate was similar (Appendix V: Table B10).

Mean social capital score by tobacco use is shown in Table 4.2.11. People who did not use tobacco had the highest mean social capital score (23.7) and paan tobacco chewers had the lowest mean social capital score (16). The mean social capital score for dual tobacco users was 21.

Table 4.2.11: Mean social capital score by tobacco use of a random sample of UK resident adult Bangladeshi men (n=299)

Tobacco Use	Estimate	Std. Err.	95% CI
Dual tobacco	21	1.9	17.3--24.7
Cigarette	19.5	1.1	17.3--21.8
Paan tobacco	16	2.6	10.8--21.3
None	23.7	1.5	20.8--26.6

4.2.4 Living and working conditions

Table 4.2.12 presents living and working conditions in relation to current tobacco use status. Respondents with no or minimum formal education participated more in dual tobacco and paan tobacco. However, the largest percentage of dual tobacco users (41%) had secondary level of education.

Table 4.2.12: Tobacco use by living and working conditions of a random sample of UK resident adult Bangladeshi men (%)

Tobacco Use	Dual tobacco	Cigarette	Paan tobacco	None	Total
Education (n=301)					
None	20	6	13	6	9
Primary	31	16	35	23	23
Secondary	41	64	48	43	50
Graduate	8	14	4	27	17
				P=0.000	
House Ownership (n=300)					
Local Authority	73	69	78	73	72
Housing Association	20	20	13	15	18
Owner-occupier	8	8	0	9	8
Privately Rented	0	1	9	1	1
Sharing	0	2	0	2	1
				P=0.218	
Self reported social class (n=293)					
I&II	0	2	0	4	2
IIINM	12	12	5	16	13
IIIM	16	23	25	24	22
IV	47	51	50	39	46
V	26	12	20	17	17
				P=0.362	
Employment status (n=300)					
Full time	35	54	35	36	42
Part time	8	9	4	15	11
Unemployed	27	19	26	18	21
Incapacity	5	1	4	8	4
Retired	23	8	30	18	17
Student	3	7	0	5	5
				P = 0.030	

Data on tobacco use by house ownership shows that a large majority of dual and paan tobacco chewers lived in social housing (over 90% for both the groups). None of the paan tobacco chewers lived in a privately owned home. The relationship

between house ownership and tobacco use pattern was not statistically significant. Amongst the dual tobacco users, over 47% reported belonging to the self reported social class IV and 26% reported belonging to the social class V. None of the self reported social class I&II respondents used either dual tobacco or paan tobacco (Table 4.2.12). However, the social class relationship of tobacco use forms was not statistically significant.

Table 4.2.12 also presents information about tobacco by employment status. Thirty five percent of the dual tobacco using men was employed. The second largest group was unemployed with 27% and a close third was the retired group with 23%. Few students used dual tobacco (5%). Employed people were most active cigarette smokers (54%) and paan tobacco chewers (35%).

4.2.5 General environmental and cultural conditions

Most of the dual tobacco users were born in Bangladesh (94%) and all the paan tobacco chewers were born in Bangladesh Table 4.2.13. It also shows that most of the dual tobacco users had lived in UK for over 20 years; it was also the case for smokers and paan tobacco chewers. All the people who had immigrated recently had used at least one form of tobacco. A large majority of dual tobacco users suffered from some degree of over crowding (74%). Smokers were also disadvantaged in terms of over crowding (69%). The relationship between crowding index and tobacco use was not statistically significant.

Table 4.2.13: Tobacco use by general environmental and cultural conditions of a random sample of UK resident adult Bangladeshi men (%)

Tobacco Use	Dual tobacco	Cigarette	Paan tobacco	None	Total
Place of Birth (n=301)					
UK	6	18	0	18	14
Bangladesh	94	82	100	82	86
				P=0.063	
Years in UK (n=271)					
1/4	2	2	4	0	2
5/9	5	6	17	4	6
10/19	23	41	13	31	31
20/39	49	44	35	36	42
40+	21	7	30	29	20
				P = 0.005	
Crowding Index (n=299)					
No	14	19	22	21	18
Normal	12	12	17	12	13
Moderate	56	61	39	47	53
Severe	18	8	22	20	16
				P=0.323	

4.3 Comparison between cigarette smokers and Dual tobacco users in terms of their nicotine dependence

This section compares the degree of nicotine dependence by cigarette smoking and Dual tobacco use. The questions were adopted from the original 14 item FTQ.

Table 4.3.1A and Table 4.3.1B present percentage of smoking status by FTQ questions. A large majority of both cigarette smokers and Dual tobacco users claimed that cigarette smoking was a habit (90% & 91.8%). There was no difference between the groups in terms of their reason for smoking cigarette (p=.699).

Table 4.3.1A: Smoking status by FTQ questions of a random sample of UK resident adult Bangladeshi men (%)

Tobacco Use	Cigarette	Dual tobacco	Total
Reason for Smoking (n=161)			
Habit	90	92	91
Helpful	10	8	9
			P = 0.699
Number of Cigarette/Day (n=161)			
1-9	26	18	23
10-19	51	46	50
20-39	18	34	24
40+	5	2	4
			P = 0.076
Type of Cigarette (n=159)			
Manufactured	91	76	85
RYO	8	24	14
Both	1	0	1
			P = 0.014
How Soon after waking up (n=161)			
Within 30 mins.	51	63	56
30-60 mins.	27	23	26
1-2hrs	13	9	11
Over 2hr	8	5	7
			P = 0.612
How Difficult to go without a cigarette (n=160)			
Easy	11	7	9
Difficult	38	26	33
Very difficult	43	61	50
N/A	9	7	8
			P = 0.201
Difficult in Public Places (n=160)			
Yes	51	59	54
No	49	41	46
			P = 0.321
Hate to Give Up Most (n=157)			
1st	51	47	49
After meal	41	52	45
Other	7	0	4
N/A	1	1	1
			P=0.164

Table 4.3.1B: Smoking status by FTQ questions of a random sample of UK resident adult Bangladeshi men (%)

Smoke when Ill (n=159)			
Yes	28	37	31
No	72	63	69
			P = 0.237
Smoke More first few hours of the day (n=161)			
Yes	41	59	48
No	59	41	52
			P = 0.054
Do you inhale smoke (n=161)			
Yes	98	1	99
No	2	0	1
			P = 0.287
Other Smoker at Home (n=160)			
Yes	47	26	39
No	53	74	61
			P = 0.011
Want to give up (n=162)			
Yes	75	85	79
No	25	15	21
			P = 0.117
How Much Wants to Give Up (n=161)			
No	7	6	7
Moderately	20	16	19
Very Strongly	38	34	37
N/A	34	44	38
			P = 0.702
Tried Giving Up (n=160)			
Yes	46	57	50
No	54	43	50
			P = 0.175

The number of cigarettes smoked per day is shown in percentages in the Table 4.3.1A. The majority of both the dual tobacco users and smokers smoked 10 to 19 cigarettes a day (45.9% & 50.98%). Although, more dual tobacco users smoked 20 to 39 cigarettes a day than the smokers (34% vs.18%), there was no overall difference between the dual tobacco user and smokers in terms of the number of cigarettes smoked per day (p=.076).

More smokers smoked manufactured cigarettes than the dual tobacco users (91% & 76%). Twenty three percent of dual tobacco users smoked roll your own (RYO) cigarette and 8% of smokers smoked RYO on a daily basis. The difference between the type of cigarette use by cigarette smoking status was significant. Fifty one percent of smokers smoked a cigarette within 30 minutes of waking up and 63% of dual tobacco users smoked within that time. There was no difference between the two groups in terms of their time to first cigarette of the day. People who are nicotine dependent find it very difficult to go without a cigarette for a whole day. Sixty one percent of dual tobacco users and 43% of cigarette smokers said that they find it very difficult. However, there was no overall difference between reported difficulties between the two groups ($p=.201$).

Table 4.3.1A shows that 59% of dual tobacco user and 51% of smokers found it difficult to refrain from smoking in public places. There was no difference between the two groups in terms of perceived smoking difficulties in public places ($P = 0.321$). When asked questions about which cigarette of the day they most hate to give up, 47% of dual tobacco users and 51% of cigarette smokers said it was the first cigarette of the day. Also, 52% of dual tobacco users and 41% of cigarette smokers also reported hating to give up a cigarette after a meal. There was no significant difference in terms of both the groups' response to this question ($p=.164$).

The percentage of smoking status by smoking when ill in Table 4.3.1B shows that 7% of dual tobacco users and 28% of smokers smoked even when they were ill. Both the groups did not differ significantly in terms of this question ($p=.236$). When asked whether they smoked more in the first few hours of the day, 59% of dual tobacco users and 41% of smokers claimed that they smoke more in the first few hours of the day. This relationship was significant ($p=.054$). When asked a question about whether they inhale cigarette smoke or not, all most all the respondents responded positively. There was no difference between the two groups in terms of the question ($p=.287$).

Twenty six percent of dual tobacco user reported at least one other smoker at home, while 47% of smokers reported at least one other smoker at home (Table 4.3.1B). Smokers had significantly higher percentage of reported other smokers at home ($p=.011$). Eighty five percent of dual tobacco users and 75% of smokers reported wanting to give up smoking. The groups did not differ in terms of their intention to give up ($p=.119$). When asked how much they wanted to give up cigarette smoking, 43% of dual tobacco users and 38% of smokers wanted very strongly to give up. Overall, their response did not differ across the categories ($p=.702$). Fifty seven percent of dual tobacco users and 46% of cigarette smokers had tried at least once in their effort to give up smoking. Both the groups were similar in their attempt to give up smoking ($p=.175$).

4.4 Comparison between paan tobacco chewers and dual tobacco users in terms of their nicotine dependence

This section compares the degree of nicotine dependence by paan tobacco chewing and dual tobacco use. Table 4.4.1A and Table 4.4.1B present percentage of paan tobacco chewing status by reasons for chewing. A large majority of both paan tobacco chewers and dual tobacco users claimed that paan chewing was a habit (65% & 66%). There was no difference between the groups in terms of their reason for paan chewing ($p=.938$).

Table 4.4.1A: Paan tobacco chewing status by FTQ questions of a random sample of UK resident adult Bangladeshi men (%)

Tobacco Use	Paan tobacco	Dual tobacco	Total
Reason for Paan tobacco Chewing (n=86)			
Habit	65	66	66
Helpful	35	34	34
			P = 0.938
Number of Paan/Day (n=84)			
1-4	23	53	44
5-9	45	39	41
10+	32	8	15
			P = 0.011
Tobacco Type (n=80)			
Zarda	34.78	50	45.57
Sada	43.48	14.29	22.78
Both	21.74	35.71	31.65
			P=0.021
How Soon after waking up (n=83)			
Within 30 mins	44	16	24
30-60mins	43	31	34
1-2hrs	9	37	29
2+hrs	4	16	13
			P=0.006
Difficult to go without a day (n=83)			
Very Easy	13	12	12
Fairly Easy	22	23	23
Fairly Difficult	39	45	43
Very Difficult	26	20	22
			P=0.929
Hate to Give Up Most (n=76)			
Morning	67	17	31
After Meal	33	83	69
			P=0.000
Chew Paan When Ill (n=74)			
Yes	48	36	39
No	52	64	61
			P=0.337

Table 4.4.1B: Paan tobacco chewing status by FTQ questions of a random sample of UK resident adult Bangladeshi men (%)

More Paan 1 st few hours of the day (n=55)	(cont.)		
Yes	64	23	33
No	36	77	67
			P=0.007
Swallow paan juice (n=80)			
Yes	65	73	71
No	35	27	29
			P=0.446
Other User At Home (n=85)			
Yes	87	78	81
No	13	22	19
			P=0.372
Carry a Paan Box (n=83)			
Yes	38	13	20
No	62	87	80
			P=0.018
Want to Give up (n=77)			
Yes	57	54	55
No	43	46	45
			P=0.784
How Much Want to Give Up (n=79)			
No	13	7	9
Moderate	39	46	44
Strongly	48	47	48
			P=0.608
Ever Tried Giving Up (n=78)			
Yes	67	86	82
No	33	14	18
			P=0.840

Thirty two percent of paan tobacco chewers reported using 10+ paan quid per day, while only 8% of dual tobacco users reported using 10+ paan quid per day. There was significant difference between paan tobacco chewers and dual tobacco users in terms of the number of paan quid they chewed per day (p=.011). More paan tobacco chewers used sada (tobacco leaf) than the dual tobacco users (43% & 14%). Fifty percent of dual

tobacco users reported using zarda and 35% of paan tobacco chewers reported using zarda on a daily basis. The difference between the type of tobacco use by paan tobacco chewing status was significant ($p=.021$).

Forty four percent of paan tobacco chewers reported needing a paan within 30 minutes of waking up, while only 16% of dual tobacco users reported needing a paan within 30 minutes. There was difference between two groups in terms of their time to first paan of the day ($p=.006$). Twenty percent of dual tobacco users and 26% of paan tobacco chewers said that they would find it very difficult to go without a paan for a whole day. However, there was no overall difference between perceived difficulties between the two groups ($p=.929$).

When asked about which paan of the day they most hate to give up, 17% of dual tobacco users and 67% of paan tobacco chewers reported the first paan of the day. Also, 83% of dual tobacco users and 33% of paan users hated to give up the paan after a meal. There was significant difference in terms of both the groups' response to this question ($p=.000$). Thirty six percent of dual tobacco users and 48% of paan tobacco chewers chewed even when they were ill. Both the groups did not differ significantly in terms of this question ($p=.337$).

Twenty three percent of dual tobacco users and 64% of paan tobacco chewers claimed they chewed more in the first few hours of the day. The difference was significant ($p=.007$). When asked about whether they swallow paan juice or not, the majority response from both the groups was yes. There was no difference between the two groups in terms of the question of swallowing juice ($p=.466$). Seventy eight percent of dual tobacco user reported at least one other chewer at home, while 87% of paan tobacco chewers had at least one other chewer at home. There was no difference between the two groups in terms of the question of other chewers at home ($p=.372$).

Thirty eight percent of paan tobacco chewers carried a paan box with them, while only 13% of dual tobacco user carried a paan box. The difference between the two groups in terms of their carrying paan box was significant ($p=.018$). Fifty three percent of dual

tobacco users and 57% of paan tobacco chewers wanted to give up chewing. The groups did not differ in terms of their intention to give up ($p=.784$).

When asked how much they wanted to give up paan tobacco chewing, 47% of dual tobacco users and 48% of paan tobacco chewers wanted very strongly to give up. Overall, their response did not differ across the categories ($p=.608$) Eighty six percent of dual tobacco users and 67% of paan tobacco chewers had tried at least once in their effort to give up paan tobacco chewing. The groups did not differ in their attempt to give up chewing ($p=.084$).

4.5 Multivariate analysis for the socio-economic and health risk factors for tobacco use categories

A logistic regression model was developed using backward stepwise elimination and log likelihood ratio test, with smoking status as the independent variable (coded 0=Cigarette smoker, 1= Dual tobacco users) and all the items from smoking related FTQ plus age of the respondents, CO score. Only age, CO, ‘other cigarette smoker at home’, ‘smoke more during the first few hours of the day’ remained in the modal after the log likelihood ratio test. Wife’s paan tobacco chewing was added to the model based on a-priori assumption identified from exploratory analysis. Table 4.5.1 demonstrates that the dual tobacco users were older (OR=1.06, 95% CI 1.02-1.09), had a wife who chewed paan tobacco (OR 8.41, 95% CI, 1.94-43.92) and smoked more cigarettes during the first few hours of the day (OR=2.67, 95% CI 1.09-6.54).

Table 4.5.1: OR for dual tobacco users compared to cigarette smokers of a random sample of UK resident adult Bangladeshi men (n=95)

Variable	OR	Std. Err	P	95% CI
Age	1.06	.018	0.000	1.02-1.09
CO	.98	.044	0.795	.90-1.07
Wife chewing of paan tobacco	8.41	7.09	.006	1.94-43.92
Smoke more on 1 st Few Hours of the Day	2.67	1.221	0.031	1.09-6.54

The Appendix VI: Figure C1 presents the area under the ROC based on the above logistic model. It shows that wife's paan tobacco chewing 80% successfully predicts dual tobacco (controlling for age, CO scores, other smokers at home and preferred timing of cigarette smoking in a day) by a Bangladeshi man when he smokes.

A logistic regression model was also developed using the methods discussed above with paan tobacco status as the independent variable (coded 0=Paan tobacco chewers, 1= Dual tobacco users) and all the items from paan tobacco related FTQ (Section 4 of this Chapter) (Table 4.5.2). Dual tobacco users were less likely to chew a paan within the first hour of waking up (OR=12.52, 95% CI 1.36-115.37), less likely to chew more in the first few hours of a day (OR=16.54, 95% CI 1.34-206.05) and less likely to carry a paan box with them when they were out of home (OR=21.23, 95% CI 1.63-275.38).

Table 4.5.2: OR for dual tobacco users compared to paan tobacco chewers of a random sample of UK resident adult Bangladeshi men (n=46)

Variable	OR	Std. Err.	P	95% CI
Over 1 Hrs	12.52	14.19	0.026	1.36-115.37
After Meal	2.70	2.95	0.362	.31-23.04
Less Paan in the 1 st Few Hours	16.64	21.36	0.028	1.34-206.05
Do Not Carry a Paan Box	21.23	27.75	0.019	1.63-275.38

Finally, a multinomial logit model was developed for socio-economic and health factors using smoking as the comparison group (Table 4.5.3). The model was developed using backward stepwise elimination and log likelihood ratio test (see Chapter 3), with tobacco use status as the independent variable (Base category= Cigarette smokers). It shows that compared to the smokers dual tobacco users had a wife who chewed paan tobacco (RR=6.03, 95% CI 1.99-18.26) who used more paan tobacco (Table 4.5.3). Wife's use also distinguishes paan tobacco chewing (RR=64.80, 95% CI 2.53-1658.6) compared to the smokers. RCO analysis was not conducted for this item due to a large gap in confidence interval.

Table 4.5.3: Multinomial logit for socio-economic and health risk factors for tobacco use categories of a random sample of UK resident adult Bangladeshi men (comparison group cigarette smokers, n=152)

Variables	RR	SE	P	95%CI
Dual tobacco				
Age	1.01	.026	0.619	.96-1.06
Wife's chewing of Paan Tobacco	6.03	3.38	0.002	1.99-18.26
Social Class	1.41	.78	0.52	.47-4.21
Social capital Score	.98	.01	0.40	.94-1.02
Number of Chronic Illness	1.14	.25	0.56	.72-1.78
Years in UK	1.01	.03	0.70	.94-1.08
Paan Tobacco				
Age	1.03	.03	0.33	.96-1.10
Wife's Use	64.80	106.25	0.01	2.53-1658.6
Social Class	1.64	1.42	0.56	.29-9.16
Social capital Score	.94	.03	0.10	.87-1.01
Number of Chronic Illness	1.03	.30	0.90	.57-1.85
Years in UK	1.01	.05	0.93	.89-1.12
None				
Age	1.05	.02	0.01	1.01-1.09
Wife's Use	1.36	.78	0.58	.44-4.23
Social Class	1.22	.66	0.71	.41-3.59
Social capital Score	.99	.01	0.63	.95-1.02
Number of Chronic Illness	1.05	.21	0.79	.71-1.56
Years in UK	.98	.03	0.64	.92-1.05

4.6 Summary

The results of the analyses of data presented in this Chapter can be summarised as:

A. Characteristics of the study sample

- Mean age 40.7 years (95% CI 40.2-41.2)
- Older respondents reported more poor health and more chronic illness
- There was a high percentage of dental non registration
- There was a large family size compared to the national average
- There was a high rate of social housing occupancy
- Lower levels of educational attainment were reported compared to the national average
- A high unemployment rate compared to the national average
- A High degree of overcrowding as measured against UK national standard
- A large majority reported being born in Bangladesh

B. With respect to tobacco use

- Twenty two percent of the respondents used dual tobacco
- Dual tobacco users were initiated with tobacco at an early age
- Paan tobacco and dual tobacco users were older, had poor self reported health ratings, had a wife who chewed paan tobacco and had high self reported oral problems compared to cigarette smokers

C. Dual tobacco users compared to cigarette smokers were

- Older
- Smoked more cigarettes in the first few hours of the day
- Lower percentage of other smokers at home
- Had a wife who chewed paan tobacco

D. Dual tobacco users compared to paan tobacco chewers were

- Less likely to chew a paan with tobacco within an hour of waking up
- Less likely to chew paan in the first few hours of the day
- Less likely to carry a paan box.

Chapter 5: Discussion

5.1 Introduction

It has been argued that dual use of tobacco use in UK Bangladeshi men is a challenging public health issue (HMEG '99, 1999). In addition, the tobacco use pattern of Bangladeshi men may be complex due to a number of previously unexplained and unique factors such as the presence of a diverse variety of culturally endorsed tobacco products.

This primary research has investigated the prevalence and patterns of dual tobacco use in a random sample of UK resident Bangladeshi men. The main aim of this study has been to identify dual tobacco use prevalence in the men of this community. Its additional objectives are to establish baseline measures for differences in the degree of influence exerted by different determinants proposed by the 'layers of influence' model and to identify risk factors for dual tobacco use. This is, so far, the only known UK tobacco related study that has deliberately targeted dual tobacco use in a demographic group.

This chapter provides an overall discussion of how the findings collectively address the aims and objectives of the study. The significance of the research will be discussed firstly, in relation to dual tobacco use. Secondly, this chapter will provide a discussion of the limitations of the study and finally, conclusions of the research project and recommendations for public health policy in addressing dual tobacco use in the UK resident Bangladeshi men will be proposed.

5.2 Prevalence of tobacco use

Among the general population of UK, 27% of men are current cigarette smokers (HMEG '99, 1999). In this random sample of adult Bangladeshi men prevalence of cigarette only smoking was 36%, dual tobacco use was 22% and paan tobacco only use was 8% (Table 4.2.1). When cigarette only smokers and dual tobacco use are combined, 58% of the respondents smoked cigarettes on a daily basis. When daily dual tobacco and paan tobacco chewing only are combined, 30% of the respondents chewed paan tobacco on a daily basis. Any form of tobacco use in this group was 68%. These figures are slightly

higher than reported for Bangladeshi adult male in the HMEG '99 the survey (HMEG '99, 1999). In the HMEG '99 survey 44% of Bangladeshi men reported smoking cigarettes and 19% reported chewing paan tobacco daily, irrespective of their daily use of other tobacco forms. However, the true prevalence of dual tobacco use was not established in the HMEG '99 (reported prevalence 12%) due to a definitional confusion regarding paan with and without tobacco as daily reported use of paan quid was taken as a proxy indicator for paan with tobacco use.

The excess tobacco use in this random sample of Tower Hamlets resident adult Bangladeshi men could be attributed to several factors. This survey research systematically targeted tobacco use in general and dual tobacco use in particular through a series of probing questions combined with CO validation to minimize tobacco related under reporting found in other tobacco related studies with BMEG (Simon *et al.*, 1996).

Area deprivation is a known risk factor for smoking (Shohaimi *et al.*, 2003). According to a report by Office of the Deputy Prime Minister (Office of the Deputy Prime Minister, 2004a), Tower Hamlets was the second most deprived local authority in England in 2004. Higher tobacco use rates found in this study compared to HMEG '99, which recruited its Bangladeshi respondents nationally (HMEG '99, 1999), could be due to the area effect measured by a composite index of general deprivation such as unemployment, low educational attainment and inadequate social housing provision.

Both dual tobacco users and smokers had high mean CO scores (11.2 and 10.3). These scores indicate that dual tobacco users may have been equally dependent on smoking compared to cigarette only smokers (Table 4.2.2). Both paan tobacco chewers and non-users had lower CO scores than the cut-off point of 6 ppm adopted for this study (3.2ppm and 2.2ppm respectively). This confirms the usefulness of the CO Monitor in identifying smokers in a community setting.

5.3 Age and tobacco use

The relationship between respondent's age and type of tobacco preference was significant, with older men using more of both dual tobacco and paan tobacco, while the younger respondents reported preferring cigarettes alone (Table 4.2.4). Amongst the smokers 46% belonged to the age group 18-29 years, while amongst the dual tobacco users 44% belonged to the age group 45-64 years. This older age group was also dominant in the paan tobacco chewing group with 44%. Other studies related to UK Bangladeshis have reported a similar pattern in relation to age (HMEG '99, 1999:Rudat, 1994).

These findings indicate that older Bangladeshi men preferred traditional forms of tobacco which may have been initiated at an early age from their country of origin. The younger group might have preferred cigarettes over ST due to the perceived aesthetic disadvantage of ST use reported from South Asian studies (Rani *et al.*, 2003) and widespread availability of manufactured cigarettes. This is a paradoxical situation when we consider ST use in US youths, many of whom use ST at an early age and gradually progress to become a regular cigarette smoker when they reach adulthood (Newman and Shell, 2005).

Most of the non-users were younger (37% belonged to age group 18-29 years). A similar pattern has been observed in Western Europe over the last three decades that there was a trend towards higher initiation rates between 1958 and 1982 followed by a decline (Schiaffino *et al.*, 2003). This is an encouraging finding for public health strategists who are concerned with high tobacco use in UK Bangladeshis. Tobacco use rates in this group would most likely to be reduced as more Bangladeshi adults would be born in the UK and, would have greater exposure to mainstream public health messages.

5.4 Individual Lifestyle Factors and tobacco use

Both smoking and ST use are mostly initiated and established at a young age (1994). For ST initiation by Indian male adolescents (Sinha *et al.*, 2003), the average age of initiation was at 10 years. On the other hand, the average age of paan-tobacco initiation was 24 years in a sample of Bangladeshi women living in London (Croucher *et al.*, 2003a).

Men in this random sample broadly followed a similar pattern (Tables 4.2.5 and 4.2.6). Most of the dual tobacco users first started using tobacco by the age of 15 years (42%). Eighteen percent began tobacco use before the age of 10 years. For cigarette smokers 58% started by the age of 15 and for paan tobacco chewers it was 39%. The mean age of paan tobacco initiation was 20.3 years. This later onset of paan tobacco initiation, also reported by another study (Croucher *et al.*, 2002), has remained unexplained and beyond the scope of this random survey. However the spouse's influence and switching from cigarette to ST due to perceived health benefit as reported by Rodu *et al.* (Rodu *et al.*, 2003) cannot be ruled out.

Fifty seven percent of the respondents had begun tobacco use with cigarettes and 29% had begun with paan tobacco (Tables 4.2.7). Eighty four percent of respondents reported that they had ever smoked cigarettes, whilst 44% of the respondents reported ever chewing paan tobacco (Tables 4.2.7). The ratio between ever smoker and current smoker is a good indicator of tobacco prevention measures. In the UK general population this ratio was over half (0.54) (HMEG '99, 1999). In this random sample of Bangladeshi men the corresponding ratio was around one third (1-current prevalence of 58% divided by ever prevalence of 84%). This indicates that a large number of ever smokers were also current smokers at the time of the interview and smoking cessation measures directed to this group have achieved less than the national level.

For paan tobacco chewing this ratio was also slightly below one third (1-current prevalence of 30% divided by ever prevalence of 44%). In absence of any national level benchmark it is difficult to comment about the success of paan tobacco cessation. However, there are encouraging reports from Tower Hamlets based cessation initiatives targeting paan tobacco dependence with a reported success rate of around 62% (Bexson, 2003; Croucher *et al.*, 2003a).

The prevalence of bad or very bad self reported health for adult men nationally was 6% in 1999 (HMEG '99, 1999). For the respondents of this survey it was 26%, 14%, 31% and 22% for dual tobacco users, cigarette smokers, paan tobacco chewers and non users

respectively (Table 4.2.8). These figures demonstrated that both dual and paan tobacco chewers reported higher percentages of perceived bad or very bad health. When adjusted for age these differences largely disappear implicating the influence of age (Endowed characteristics) on perceived health status as described in 'Layers of influence' model. There was no significant difference in this sample between the tobacco use categories and reported GP visits in the previous two weeks before the date of interview (Table 4.2.8). Nevertheless, it was higher than the national average of 12% (HMEG '99, 1999).

Respondents were asked whether they had any oral problems at the time of the interview. Self reported oral health problems was highest among paan tobacco chewers (36%) and the second highest group was the dual tobacco users (32%) (Table 4.2.8). There was a significant difference between the tobacco use groups in terms of their self reported oral health problems. When adjusted for age only paan tobacco chewers appeared to have a higher percentage of current oral health problems (Appendix IV, Table A32). In terms of dental registration, 47% of dual tobacco users, an equal percentage of cigarette only smokers and paan tobacco chewers (57%) and 64% of non users were not registered with a dentist. Although there was no significant difference between the tobacco use categories in terms of dental registration (Table 4.2.8). The non registration rate in general was high in this sample.

5.5 Social and community network

Prevalence of both dual and paan tobacco was found to be high in married respondents (Table 4.2.9). The mean age of the married group was 45.9 years and for the unmarried group it was only 24.7 years. The influence of age on traditional tobacco preference such as paan tobacco or dual tobacco has been discussed before. Further analysis of data revealed that older age only partially explains this when wife's paan tobacco chewing is taken into consideration (Table 4.2.10). The implications for this finding will be discussed in a subsequent section.

The current literature suggests that individual social capital, measured by social participation, only marginally effects the variance in daily tobacco smoking in general

population (Lindstrom *et al.*, 2003b). In terms of the mean social capital measures presented in the Table 4.2.11 this trend has been reflected in this sample. However caution should be applied in interpreting these findings as social capital measures developed predominantly for an indigenous cultural group may not be appropriate for a relatively recently immigrated community from a different continent. Complexities in measuring social capital through conventional indicators in UK Bangladeshi community have been reported in the literature (HMEG '99, 1999). It must be noted here that this was the first known attempt to measure social capital in relation to tobacco use in South Asians.

5.6 Living and working condition

Lack of formal education has been reported as a strong predictor for tobacco use across culture and gender (Wetter *et al.*, 2005a). Findings from this study also confirm this (Table 4.2.12). Only 8% and 4% of dual tobacco and paan tobacco chewers respectively had graduate or above education, while 14% of cigarette smokers and 27% non users respectively had graduate or above education. There was a strong educational gradient in tobacco use status. Implications of this finding for tobacco cessation service delivery targeting adult Bangladeshis might consider a community based cessation programme and consider adding more trained bilingual cessation workers at the primary care level.

Occupancy of social housing was high amongst the respondents and there was no significant difference across the tobacco use categories (Table 4.2.12). The Scottish MONICA Project in North Glasgow (Shewry *et al.*, 1990) and studies from USA (Breeze *et al.*, 2004) showed that smokers living in public housing were heavier smokers and had a weaker motivation to quit, health beliefs and social environment were less conducive to cessation, and less knowledge of where to get help to quit was also reported. The high rate of tobacco use in UK Bangladeshi men could be linked to their living in a highly stressful environment and a commonality of tobacco use in their surroundings as indicated in the layer of influence model. Although house ownership is a wider socio-economic and structural issue, any health improvement initiative including tobacco prevention should be coupled with the program that seek to improve local socioeconomic

regeneration as laid out in The National Strategy for Neighbourhood Renewal (Parry and Judge, 2005).

There was no marked difference in self reported social class, with predominance in the lower social class status (Table 4.2.12). This is indicative of homogeneity of the sample in terms of their socio-economic position. The literature strongly suggests that tobacco use is more frequent among those who have a low than a high socio-economic status (de Vries, 1995). However, a significantly high rate of economically inactive people in both dual and paan tobacco categories compared to the others might indicate that the respondents who preferred traditional forms of tobacco could be more disadvantaged than cigarette smokers and the non users (Table 4.2.12). Findings from this study justified that high tobacco use in Bangladeshi men can be explained through the theoretical framework proposed in the first chapter that locates all types of health compromising behaviour in the wider context of inequality (Dahlgren and Whitehead, 1991).

5.7 General environmental and cultural conditions

Results from this investigation showed that a higher proportion of both dual and paan tobacco chewers were born in Bangladesh and had been living longer in the UK compared to cigarette smokers and non users (Table 4.2.13). This could be due to the age factor that has been discussed before. In general people who experienced the stressful process of migration may experience a range of health disadvantage and often tend to adopt health compromising coping behavior such as smoking (Carballo *et al.*, 1998). This may be a case for the UK Bangladeshi men when we consider their high tobacco use compared to the UK general population. The literature advances several possible explanations for high tobacco use in migrants such as stress associated with the migration process (McCarthy *et al.*, 2003), acculturation (Shelley *et al.*, 2004; Juon *et al.*, 2003), trauma in the country of origin prior to migrating (Hulanicka *et al.*, 1999) and a general sense of displacement (McCarthy *et al.*, 2003; Gaiser, 1984; Bjerregaard *et al.*, 2004). The psychosocial aspects of migration and its relationship with tobacco use was not specifically investigated in this research. A further investigation that grounds these issues in relation to dual tobacco use may address this proposition.

A non significant difference in residential overcrowding across the tobacco use categories in this sample is indicative of the homogeneity of the sample (Table 4.2.13). Moreover, a sample extracted from a well known deprived area is unlikely to yield any significant difference in terms of general environment conditions such as overcrowding. In general high overcrowding rates found in all the categories again emphasizes the issue of area economic regeneration.

Complexities in measuring cultural parameters has been discussed in the literature (Trostle, 2003). However, the evidence is strong that many South Asians use ST in conjunction with paan. Despite reported gender ambivalence towards ST by UK Bangladeshi men (Croucher and Rahman, 2005) many respondents who were older and had a childhood experience of rural Bangladesh might continue to use ST and smoke cigarettes concurrently. The availability of a wide range of ST and cultural endorsement of ST should be considered as two important driving forces for maintaining dual tobacco.

Islamic doctrine's ambivalence towards tobacco use has been discussed. A high rate of tobacco use has been consistently found among Muslims, compared to Hindus, all across India (Gajalakshmi *et al.*, 1996; Gupta *et al.*, 2002). This relationship holds for male Muslim South Asians living in UK (Best *et al.*, 2001; Primatesta *et al.*, 2000). All the respondents in this study were Muslim. In absence of a comparison group it is difficult to measure religion's influence on tobacco use. There are ways to measure degree of religiosity (Koenig, 2001) and tobacco use. Any future study that investigates tobacco use in UK Bangladeshis may consider this.

5.8 Comparison between cigarette smokers and dual tobacco users in terms of their nicotine dependence

FTQ is a well known paper and pencil test of nicotine dependence. This is an easy to administer, cheap and less invasive method of identifying cigarette related nicotine dependence and is adoptable to primary care settings. This has also been found equally effective in smokers of non- English and non-European origin (Becona and Vazquez, 1998; Kawakami *et al.*, 1998). The degree of nicotine dependence by cigarette smokers and dual tobacco users were compared using questions adopted from the original 14 item FTQ.

Amongst all the 14 items only two items were significantly different (Table 4.3.1). These are- ‘types of cigarette used’ and ‘any other smoker at home’. Dual tobacco users used more RYO cigarette. Generally poor smokers use RYO and these products have been reported to yield higher proportions of CO, tar and nicotine (Darrall and Figgins, 1998) than manufactured cigarettes. The use of RYO in UK Bangladeshi men has been identified in a recent qualitative study (Croucher and Rahman, 2005) and the main reason cited was cost cutting. The excess use of RYO by the dual tobacco users compared to cigarette only smokers should be considered from the general context of inequality. Also there is a need for further investigation that explores the sources and preference of alternatives forms of tobacco by this community.

Smokers had a significantly higher percentage of reported other smokers at home. It is difficult to comment precisely why it was so, but since the cigarette only smokers were younger they were more likely to be aware that one of their siblings or parents was also a smoker. The older dual tobacco users might not have that information as smoking in front of elders is considered an offence in traditional Asian culture (Partridge, 2002).

The comparison between cigarette smokers and dual tobacco users in terms of their nicotine dependence through FTQ revealed that there was very little difference between dual tobacco users and cigarette smokers in terms of their cigarette dependence. However, UK Bangladeshi male dual tobacco users might have higher estimated daily nicotine

exposure levels than the cigarette only smokers. This was found to be a case for Native American dual tobacco users (Spangler *et al.*, 2001).

The potential implications of these findings include treating dual tobacco users as a highly nicotine dependent group, incorporating ST specific advice alongside standard smoking cessation procedures, recognizing the psychosocial acceptance of ST in Bangladeshi culture and treating dual tobacco dependence holistically.

5.9 Comparison between paan tobacco chewers and dual tobacco users in terms of their nicotine dependence

The degree of nicotine dependence by paan tobacco chewers and dual tobacco users were compared. The questions were again adopted from FTQ. One additional item ‘do you carry a paan box?’ was included as it emerged from qualitative work that people who were dependent on paan tobacco chewing carried a box with them if they leave home for a long time. All the fourteen FTQ items in this section were modified to describe paan tobacco chewing dependence following a previous study (Croucher *et al.*, 2002).

There were significant difference in several items between paan tobacco and dual tobacco users. More paan tobacco chewers used sada (tobacco leaf) than dual tobacco users (Table 4.4.1). Forty four percent of paan tobacco chewers reported needing a paan within 30 minutes of waking up, while only 16% of dual tobacco users reported needing a paan within 30 minutes. When asked about which paan of the day they most hated to give up, 17% of dual tobacco users and 67% of paan tobacco chewers reported the first paan of the day (Table 4.4.1). Twenty three percent of dual tobacco users and 64% paan tobacco chewers claimed they chewed more in the first few hours of the day (Table 4.4.1). Thirty eight percent of paan chewers also carried a paan box with them, while only 13% of dual tobacco user carried a paan box (Table 4.4.1).

A study of nicotine dependency in Bangladeshi women (Croucher *et al.*, 2002) identified that those who used ‘sada’ or leaf tobacco (Appendix I) and chewed a paan within 30 minutes of waking up were more dependent on paan tobacco chewing. Results from this

study also confirmed that those who were solely dependent on paan tobacco chewing needed a paan quid soon after waking up and also more of them consumed leaf tobacco with paan. The implications of these findings include a need for understanding ST use in the context of Bangladeshi culture as well as their existence along the contour of social inequality. Measures might include

- community or home visit for tobacco cessation
- separating paan tobacco chewing addiction from the conventional notion of nicotine dependence associated with the cigarette smoking
- treating dual tobacco users for both cigarette smoking and paan tobacco chewing dependence
- putting greater emphasis on cigarette dependence in dual tobacco users

5.10 Multivariate association for the psychosocial and health risk factors for tobacco use categories

Results of binary logistic regression between cigarette smokers and dual tobacco users in terms of psychosocial and health risk factors showed that compared to cigarette only smokers dual tobacco users were older, smoked more cigarettes in the first few hours of the day, had a wife who chewed paan tobacco and had few other smokers at home (Table 4.5.1). The implications for most of these findings have been discussed in the earlier sections. In general these findings strongly suggest that dual tobacco users are at least equally dependent on cigarettes compared to the cigarette smokers despite their concurrent chewing of paan tobacco. The prominence of wife's paan tobacco chewing in dual tobacco category throws a new light on current dual tobacco use which is in essence psychosocial in nature and will be discussed later.

Binary logistic regression between paan tobacco chewers and dual tobacco users in terms of psychosocial and health risk factors showed that compared to paan tobacco chewers dual tobacco users were less likely to chew a paan with tobacco within an hour of waking up, less likely to chew paan in the first few hours of the day and less likely to carry a paan box (Table 4.5.2). These findings again demonstrate the prominence of ST dependence in paan tobacco chewers while for dual tobacco users cigarettes were the main source of

nicotine addiction. Smokers can readily access cigarettes when they leave the home but for paan tobacco chewers it not. This could be a possible reason for them to carry a paan box when they travel far from home.

Multinomial logistic regression showed that, compared to the smokers, dual tobacco users had a wife who chewed paan tobacco (RR=6.03, 95% CI 1.99-18.26) who chewed more paan tobacco. Wife's use also distinguished paan tobacco chewing (RR=64.80, 95% CI 2.53-1658.6) compared to the smokers (Table 4.5.3). However such a wide gap in confidence should be interpreted with caution.

The evidence for influence of family and friends on tobacco uptake and maintenance is now established. Studies reported spouse similarity for several variables, including current smoking (Price *et al.*, 1981;Graham and Braun, 1999). The odds that a woman's spouse would be a current smoker was 5.5 times greater if she was a current smoker than if she did not smoke (Ogden *et al.*, 1997). Couples with the least amount of education were most concordant and showed the greatest smoking rate. Convergence of phenotype was the most likely explanation (Price *et al.*, 1981).

Against a backdrop of high material deprivation, large family size and a tradition bound gender role, Bangladeshi married couples are likely to have very little time for shared social life or leisure activities. Sharing a paan with tobacco after a family meal or before the bedtime may provide a gateway for relaxation and exchange. Perceived aesthetic and conjugal benefits associated with paan chewing might also contribute to the higher prevalence of paan tobacco amongst Bangladeshi married couples. The implications for this finding indicate a social nature of tobacco use in Bangladeshi culture. A culturally sensitive tobacco cessation programme that incorporates both husband and wife at the same time could effectively address dual tobacco use in Bangladeshi men.

5.11 Limitations of the study

This study has some limitations that need to be taken into account when considering the results of the study and its contributions. Firstly, the absence of a robust method of

biochemical validation that successfully separates ST and smoking in dual tobacco users. CO reading successfully identifies a smoker. Cotinine, a metabolite of nicotine, reliably quantifies amount of nicotine absorbed into the body system within the last 12 hours of specimen collection without distinguishing the source of nicotine. Some saliva specimens were collected at the early stage of the study on a pilot basis and then it was abandoned due to the limitation stated above. Smoking status was confirmed using CO reading, but paan tobacco chewing status was confirmed by self report.

The main aim of this study was to measure the prevalence of dual tobacco use in UK Bangladeshi adult men. Therefore the sample size was appropriately selected to identify true prevalence of dual tobacco use in a random sample based on previously reported rates of tobacco use in this community. A second limitation of this study was identified during data analysis is that if the sample size had been supplemented; it would have been possible to measure separate layer specific influences as proposed in the adopted model through recently available analytic methods such as multi-level modelling. However, we have to keep in mind that random survey research is an expensive and time consuming but robust empirical method and the amount of resources required is almost linearly proportional to the number of interviews to be administered.

A third limitation stems from absence of a comparison group from other geographical areas of the UK. The layer of influence model has placed general environmental condition at the topmost layer and proposed that neighbourhood condition is an important determinant of health inequality such as greater tobacco use. In general, Bangladeshis in the UK experience poorer health compared to the other BMEG. This has been attributed to the disparities in occupational social class, material living conditions and local area deprivation (Chandola, 2001). Assuming a relative homogeneity of UK Bangladeshis in terms of their psychosocial position, if equal number of respondents could have been recruited from other areas known to have large Bangladeshi population such as Small Heath (Birmingham) or Bradford, the area affect on tobacco use in general and dual tobacco use in particular could have been explored through this research.

Tobacco use in Bangladeshi men is not static. The transitional nature of tobacco use was identified in the first chapter. Some people move from a traditional form of tobacco to the manufactured cigarettes and others move in the opposite direction due to perceived health disadvantages associated with cigarette smoking. This movement in tobacco preference in UK Bangladeshi men has been grounded in a recent qualitative research (Croucher and Rahman, 2005). It is impossible to capture this dynamic phenomenon from a point prevalence survey. It demands a prospective design that follows a group of respondents over a period of time to identify this tobacco related movement. This was the fourth limitation of this study.

The fifth limitation was related to measuring social capital. There are indications that people who enjoy a good social life are relatively healthy and smoke less (Grundy and Sloggett, 2003). In order to explore this hypothesis I adopted a range of questions about social capital. These questions were adopted from the Social Capital section of the Whitehall Study (Stansfeld *et al.*, 1997). Two additional questions –one on frequency of mosque visits and the other on frequency of attending community related meetings were generated from the focus group discussion. During the course of interview and exploratory data analysis it was felt that these questions might not be appropriate to explore social resourcefulness in Bangladeshis and might require further review and exploration in order to identify culturally appropriate questions that accurately measures social capital in this cultural group.

These limitations could be addressed as a means for improvement or potential strategies for further study. The next section presents these.

5.12 Implications for further research

Based on an evaluation of the research process and the limitations that have been discussed above the following areas of further research have been proposed.

- Adoption of a robust validation process that distinguishes smoking and ST use in dual tobacco users

- A sample size sufficient to measure layer specific influence on current dual tobacco use
- A multi centre study of adult Bangladeshi men in order to facilitate comparison in relation to area affect and other psychosocial parameters
- A study with longitudinal design that captures transitional nature of tobacco use in Bangladeshi men
- A review to explore and identify appropriate questions in relation to measurement of social capital in UK Bangladeshis

5.13 Implications for tobacco cessation service delivery

- A community based and family cantered culturally sensitive tobacco cessation service for UK Bangladeshis
- Smoking cessation interventions in Bangladeshi men should be combined with ST cessation advice
- A tobacco cessation training programme for bi-lingual primarycare workers and community leaders
- Raising awareness about the health compromising nature of ST alongside cigarette smoking through bilingual leaflets and other promotional means including UK South Asian media

5.14 Conclusion

The aim of this thesis has been to establish dual tobacco use prevalence in UK Bangladeshi men. Three specific objectives to complement this aim have been to:

- establish baseline information for dual tobacco use against the key determinants of social inequality in health as proposed in the layers of influence model
- compare dual tobacco users with cigarette smokers and paan tobacco chewers against psychosocial, health and nicotine dependence parameters, and
- identify key risk factors for current dual tobacco use compared to cigarette smoking and paan tobacco chewing through multivariate analysis

From this cross-sectional random survey of Bangladeshi men it can be reported that dual tobacco was used by 22% of the sample, while 36% smoked cigarette only, 7% chewed paan tobacco only, and 35% did not use any form of tobacco. These high rates of tobacco use in adult Bangladeshis can be attributed to a number of factors including social inequality, pro-tobacco norms in the community and cultural endorsement of traditional forms of tobacco.

Whilst absence of ST related studies makes it difficult to assess the impact of social inequality on dual tobacco use in this random sample of Bangladeshi men, it becomes apparent from the findings that social and community networks play a vital role in the initiation and maintenance of dual tobacco use in Bangladeshi adults. In general this random sample of Bangladeshi men had a large family size, high occupancy in social housing, lower level of education attainment and a high unemployment rate than the general UK adult population. A need for understanding dual tobacco use holistically in the context of Bangladeshi users' personal, familial, social and cultural situation has been demonstrated through this thesis.

Comparison between cigarette smokers and dual tobacco users in terms of their nicotine dependence revealed that there was very little difference between these two groups in terms of their cigarette dependence implicating both the groups as at least equally nicotine dependent. However, dual tobacco users were older, likely to smoke more cigarettes in the first few hours of the day and have a wife who chewed paan tobacco. Whilst paan tobacco users were more likely to have the first paan of the day within an hour of waking up, preferred 'sada' (leaf tobacco) chewing and more likely to carry a pan box compared to the dual tobacco users implicating paan tobacco users' greater dependence on chewing tobacco.

Influence of wife's paan tobacco use on dual tobacco maintenance, found in this study, adds a new dimension to the already complex tobacco use situation of UK Bangladeshi adult men. Bangladeshi men's concordance with wives paan tobacco use also reinforces the notion that nicotine addiction in form of tobacco use has a strong social influence.

Public health policies need to take account of these factors when planning a health improvement policy for the adult Bangladeshi men. Additional targeted primary research is also needed to address these issues.

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Appendices

Appendix I: Description of major types of South Asian tobacco products available in the UK market

- **Gutkha** - a sweet chewing tobacco that contains a variety of spices and sweeteners- mainly aimed at younger users
- **Zarda** - a chewing tobacco mixed with a variety of colourings, spice essences and perfumes. It can either be moist or dry
- **Paan masala**- containing tobacco was introduced in the Indian market during the 1970. It is a mixture of areca nut, tobacco, lime, catechu and spices
- **Gudakhu**- is a paste-like tobacco preparation during use it is rubbed over teeth and gum with a fingertip. Besides tobacco, it contains molasses, lime, red soil and water
- **Dried whole and chopped tobacco leaves** – these can often be purchased in shops to be used in oral preparations and often added in paan quid
- **Tooth cleaning powders** – these originate from Southeast Asia and comprise abrasive powdered tobacco with a number of aromatic ingredients added to make the breath sweet
- **Bidi**- is small, brown, hand-rolled cigarette primarily made in India and southeast Asian countries consisting of tobacco wrapped in a tendu or temburni leaf (*Diospyros melanoxylon*)
- **Hukka or hubble-bubble**- is used for smoking tobacco. The basic structure is a water tank (made of coconut shell or metal) which is connected to a long pipe and a burning tobacco source described as ‘fire bowl’.

Appendix II: A map of Tower Hamlets



Source: <http://www.towerhamlets.gov.uk/data/yourcouncil/data/newwards/oldwards.s.cfm>

Appendix III: The Questionnaire

SL NO:

CO Score:

Saliva Sample Collected: Yes

No

Section 1: Information about tobacco use

Have you been using any one the following tobacco products for at least once a day for the last 6 months? If none please complete Sections 2 (socio-demography) & Section 3(health)

(tick all that apply)

- | | |
|--|--|
| 1.1. Smoke cigarette (including roll-up) | No <input type="checkbox"/> Yes <input type="checkbox"/> (Section B) |
| 1.2. Chew paan with tobacco (zarda, sada, kimum, etc.) | No <input type="checkbox"/> Yes <input type="checkbox"/> (Section C) |
| 1.3. Smoke bidi | No <input type="checkbox"/> Yes <input type="checkbox"/> |
| 1.4. Smoke Hukka | No <input type="checkbox"/> Yes <input type="checkbox"/> |
| 1.5. Smoke pipe/cigar | No <input type="checkbox"/> Yes <input type="checkbox"/> |
| 1.6. Use a tobacco-based tooth cleaning powder
(e.g. gul, mishi, etc) | No <input type="checkbox"/> Yes <input type="checkbox"/> |
| 1.7. Any other tobacco product
(e.g. gutka, khaini, etc) | No <input type="checkbox"/> Yes <input type="checkbox"/> |
| 1.8 Any other addictive non-tobacco smoking substances
(e.g, cannabis, cocaine, heroine, etc) | No <input type="checkbox"/> Yes <input type="checkbox"/> |
| 1.9 Alcoholic drinks | No <input type="checkbox"/> Yes <input type="checkbox"/> |

Now, I would like to ask a few questions about your use of tobacco

1.10 Which of the tobacco product you started to use first (initiation)?

(Tick only one)

Cigarette (including roll ups) Paan tobacco (sada, zarda) Bidi
Hukka pipe/cigar Tobacco based tooth-cleaning power
Other tobacco products N/A

1.11 How old were you when you first started to use that product?

Age-----

1.12 Were you ever in life a regular user of the following tobacco products? (Tick all that apply)

Cigarette (including roll ups) Paan tobacco (sada, zarda) Bidi Hukka
pipe/cigar Tobacco based tooth-cleaning power
Other tobacco products N/A

1.13 Do you have a very close friend who uses tobacco regularly?

Yes (go to Q 1.14)

No (go to Q 1.15)

N/A

1.14 Which of the following tobacco products he/she uses regularly? (Tick all that apply)

None Cigarette (including roll ups) Paan tobacco (sada, zarda) Bidi
Hukka Pipe/cigar Tobacco based tooth-cleaning power
Other tobacco products Don't know N/A

1.15 Does you wife/partner uses tobacco regularly?

Yes (go to Q 1.16)

No (go to Q 1.17)

N/A

1.16 Which of the following tobacco products your wife/partner currently uses? (Tick all that apply)

None Cigarette (including roll ups) Paan tobacco (sada, zarda) Bidi Hukka
 Pipe/cigar Tobacco based tooth-cleaning power Other tobacco products
Don't know N/A

1.17 Was your father a tobacco user?

Yes (go to Q 1.17)

No (go to Q 1.18)

N/A

1.18 What was/were the product he used to use? (Tick all that apply)

None Cigarette (including roll ups)

Paan tobacco (sada, zarda) Bidi

Hukka Pipe/cigar

Tobacco based tooth-cleaning power

Other tobacco products

Don't know N/A

1.19 Was your mother a tobacco user?

Yes (go to Q 1.20)

No (go to section 2)

N/A

1.20 What was/were the product she used to use?

Paan tobacco (sada, zarda) Bidi

Hukka Pipe/cigar

Tobacco based tooth-cleaning power

Other tobacco products

Don't know N/A

Section 2: Socio-demographic Information

2.1 Please record respondent's gender
Male
Female

2.2 Please record respondent's age in years -----

2.3 Please record respondent's current marital status

Married	<input type="checkbox"/>	No of children-----
Divorced/separated	<input type="checkbox"/>	No of children-----
Widowed	<input type="checkbox"/>	No of children-----
Unmarried/single	<input type="checkbox"/>	

2.4 Please record respondent's final education level

None	<input type="checkbox"/>
Primary	<input type="checkbox"/>
Secondary	<input type="checkbox"/>
Graduate and above	<input type="checkbox"/>
N/A	<input type="checkbox"/>

2.5 Please record respondent's current employment status

Employed full-time (30+hrs)	<input type="checkbox"/>	Type of work---
Employed part-time (less than 30hrs)	<input type="checkbox"/>	Type of work-----
Unemployed and looking for work	<input type="checkbox"/>	
Out of work due to sickness/disability	<input type="checkbox"/>	
Retired from work	<input type="checkbox"/>	
Full-time student	<input type="checkbox"/>	
Keeping house	<input type="checkbox"/>	
N/A	<input type="checkbox"/>	

: record the social class position of the respondent (based on self-report or income of the head of the household or type & condition of housing)

- I & II
- III NM
- III M
- IV
- V
- N/A

2.7 Please record respondent's place of birth

- UK
- Outside UK Years in UK-----
(number of years in this country)

2.8 In addition to the respondent how many other people live in the household

- No other people
- Number of people -----
- N/A

2.9 Respondent's housing type

- Council No of bedrooms-----
- Housing Association No of bedrooms-----
- Owned No of bedrooms-----
- Privately rented No of bedrooms-----
- Rented & Shared with other people No of bedrooms-----
- N/A

Now I would to ask you a few questions about your contact with family and friends which is important for your health and general well being

Over the past 2 weeks how many times have you done the followings?

	Not at all	1 or 2 times	3 to 6 times	6+times
a) Gone to visit family members	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Had family visited you	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Gone out to visit friends	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Had friends visited you	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Gone to visit neighbours	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Had neighbours visited you	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Had gone to mosque for prayer?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Attended a meetings related to the community/school/political party/ associations etc ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Attended a meetings related to the community/school/ political party/ associations etc ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

i) Are most of the people in your neighbourhood friendly to you?

Yes No

j) Do you have a neighbour who is hostile/threatening to you or your family members?

Yes No

Now I would like to ask you a few questions about your health

Section 3: Health

3.1 How would you describe your current state of health in general?

- Excellent
- Good
- Average
- Poor
- Very poor
- N/A

3.2 Please record if the respondent has any of the following conditions (tick all that apply)

(Please read the following items one by one)

- Arthritis/Rheumatism
- Asthma
- Back trouble
- Bronchitis or other breathing or chest trouble
- Cancer (any form)
- Diabetes
- Epilepsy/fits
- Eyesight or hearing problems
- Heart trouble
- High BP
- Kidney trouble
- Incontinence
- Liver trouble
- Migraine
- Physical disability
- Stomach problems
- Stress, anxiety, nerves or depression
- Any other (Please record)-----
- N/A

At the moment do you have anything on prescription?

Yes For what condition(s) (please record)-----

No

N/A

3.4 Do you do anything at the moment to keep yourself healthy or improve your health ?

Yes What do you do (please record) -----

No

N/A

3.5 Are there any things you would like to do to keep yourself healthy but you don't/can't do?

Yes What is it (please record) -----

No

N/A

3.6 In the past week have you felt depressed (unable to take an interest in things) for any reason?

Yes

No

N/A

3.7 What do you think causes people to be healthy? (record verbatim) -----

3.8 What do you think causes people to be ill? (Record verbatim) -----

3.9 In the past two-week have you visited you GP?

Yes How many times: ----- and reasons for visiting-----

No

N/A

3.10 Do you have any oral problem such as pain/gum disease or any other?

Yes please describe-----

No

N/A

3.11 Are you registered with a dentist/dental practice?

Yes

No

N/A

Section B: Cigarette Smoking

B1 Why do you smoke cigarette nowadays?

A habit

Refreshing

Good for teeth & gums

Aids digestion

Helps concentration

Helps pass the time/

Relieve boredom

N/A

B2 How many times do you usually smoke cigarette in a day? -----

B3 What types of cigarette do you smoke?

Manufactured Cigarette

Hand Rolled Cigarette

B4 How soon after waking do you usually smoke?

Less than 5 mins.

5 – 15 mins.

15 – 30 mins.

30 mins. – 1 hour

1 – 2 hours

More than 2 hours

N/A

B5 How old were you when you first started smoking?

----- years

B6 How easy or difficult would you find it to go without smoking for a whole day?

Very easy

Fairly easy

Fairly difficult

Very difficult

N/A

B7 Do you find it difficult to refrain from smoking in places where it is forbidden?

- Yes
- No
- N/A

B8 Which cigarette would you most hate to give up?

- 1st
- After meal
- Other
- N/A

B9 Do you smoke if you are so ill that you are in bed much of the day?

- Yes
- No
- N/A

B10 Do you smoke more frequently during the first few hours after awakening than during rest of the day?

- Yes
- No
- N/A

B11 Do you inhale smoke?

- Yes
- No
- N/A

B12 Is there any other smoker at home?

- Yes Please state how is she/he related to you-----
- No
- N/A

B13 Do you want to give up cigarette smoking?

Yes

No

N/A

B14 How much do you want to give up cigarette smoking altogether?

Not at all

Slightly

Moderately

Quite strongly

Very strongly

N/A

B15 Have you ever tried to give up Cigarette smoking?

Yes (no of times): -----

No

N/A

Paan with tobacco chewing: Section C

C1 Why do you chew paan with tobacco nowadays?

A habit

Refreshing

Good for teeth & gums

Aids digestion

Helps concentration

Helps pass the time

N/A

C2 How many times do you usually paan with tobacco in a day? ----- (number)

C3 What types of tobacco do you chew with paan?

Sada

Zarda

Both

Others. Specify-----

N/A

C4 How soon after waking do you usually chew paan with tobacco?

Less than 5 mins.

5 – 15 mins.

15 – 30 mins.

30 mins. – 1 hour

1 – 2 hours

More than 2 hours

N/A

C5 How old were you when you first started chewing paan with tobacco?

----- years

C6 How easy or difficult would you find it to go without chewing paan with tobacco for a whole day?

Very easy

Fairly easy

Fairly difficult

Very difficult

N/A

C 7 Which paan with tobacco would you most hate to give up?

1st

After meal

Other

N/A

C8 Do you chew paan with tobacco if you are so ill that you are in bed much of the day?

Yes

No

N/A

C9 Do you paan with tobacco more frequently during the first few hours after awakening than during rest of the day?

Yes

No

N/A

C10 Do you swallow juice when you chew paan with tobacco?

Yes

No

N/A

C11 Is there any other who chew paan with tobacco at home?

Yes Please state how she/he related to you-----

No

N/A

C 12 Do you carry a paan box with you if you travel far?

Yes

No

N/A

C13 Do you want to give up tobacco in your paan?

Yes

No

N/A

C14 How much do you want to give up paan chewing with tobacco altogether?

- Not at all
- Slightly
- Moderately
- Quite strongly
- Very strongly
- N/A

C15 Have you ever tried to give up tobacco in your paan?

- No
- Yes (number of times):-----
- N/A

Thank you

Appendix IV

Table A.1: Age distribution of a random sample of UK resident adult Bangladeshi men

<i>Number of Observation</i>	<i>Mean Age</i>	<i>Std. Err</i>	<i>95% CI</i>	<i>Minimum</i>	<i>Maximum</i>
322	40.7	.3	40.2-41.2	18	83

Table A.2: Self reported health of a random sample of UK resident adult Bangladeshi men

<i>Health</i>	<i>Frequency</i>	<i>Percent</i>	<i>Cum%</i>
Excellent	28	9	9
Good	117	36	45
Average	110	34	79
Poor	40	13	92
Very poor	26	8	100
Total	321	100.00	

Table A.3: Mean age by self reported health of a random sample of UK resident adult Bangladeshi men (n=300)

<i>Self Reported Health</i>	<i>Mean Age</i>	<i>Std. Err.</i>	<i>95% CI</i>
Excellent	28.3	1.1	26.1-30.5
Good	33.2	0.9	31.4-35.1
Average	42.7	1.2	40.4-45.1
Poor	54.1	2.1	49.9-58.3
Very poor	58.5	2.4	53.8-63.2

Table A.4: Mean number of chronic illness of a random sample of UK resident adult Bangladeshi men (n=216)

<i>Estimate</i>	<i>Std. Err.</i>	<i>95% CI</i>	<i>Min</i>	<i>Max</i>
1.4	0.1	1.2-1.5	0	9

Table A.5: Mean number of chronic illness by age group of a random sample of UK resident adult Bangladeshi men (n=216)

<i>Age Group</i>	<i>Mean no Chronic Illness</i>	<i>Std. Err.</i>	<i>95% CI</i>
18-29	0.4	0.1	0.2-0.5
30-44	0.7	0.1	0.4-0.9
45-64	1.9	0.2	1.5-2.2
65+	3	0.3	2.3-3.6

Table A.6: Mean number of chronic illness by self reported health of a random sample of UK resident adult Bangladeshi men (n=215)

<i>Health</i>	<i>Mean no Chronic Illness</i>	<i>Std. Err.</i>	<i>95% CI</i>
Excellent	0.1	0.1	0.04-0.33
Good	0.6	0.1	0.3-0.8
Average	1.5	0.2	1.1-1.9
Poor	2.3	0.2	1.9-2.7
Very poor	3.1	0.3	2.4-3.6

Table A.7: Visit to a GP in the last week of a random sample of UK resident adult Bangladeshi men

<i>Visit to GP in the Last Week</i>	<i>Frequency</i>	<i>Percent</i>	<i>Cum%</i>
Yes	47	16	16
No	239	84	100
Total	286	100	

Table A.8: Self reported oral problem of a random sample of UK resident adult Bangladeshi men

<i>Any Oral Problem</i>	<i>Frequency</i>	<i>Percent</i>	<i>Cum %</i>
Yes	69	24	24
No	217	76	100
Total	286	100	

Table A.9: Registration with a dentist by a random sample of UK resident adult Bangladeshi men

<i>Registered with a Dentist</i>	<i>Freq.</i>	<i>Percent</i>	<i>Cum %</i>
Yes	122	43	43
No	162	57	100
Total	284	100	

Table A.10: Marital status of a random sample of UK resident adult Bangladeshi men

<i>Marital Status</i>	<i>Observation</i>	<i>Percent</i>	<i>Cum %</i>
Married	228	71	71
Divorced	4	1	72
Widower	9	3	75
Unmarried	81	25	100
Total	322	100	

Table A.11: Mean number of children by marital status of a random sample of UK resident adult Bangladeshi men

<i>Marital Status</i>	<i>Observation</i>	<i>Mean Number of Children</i>	<i>St. Dev</i>	<i>Min</i>	<i>Max</i>
Married	221	3.5	2.4	0	12
Divorced	4	1	0.8	0	2
Widower	8	4.1	1.6	1	6
Unmarried	1	1		1	1
Total	234				

Table A.12: Number of visit to family in the previous two weeks of a random sample of UK resident adult Bangladeshi men

<i>Number of visit to family in the last two weeks</i>	<i>Frequency</i>	<i>Percent</i>	<i>Cum %</i>
None	67	22	22
1/2 Times	158	53	75
5-8 Times	49	16	92
9 Times & Over	25	8	100
Total	299	100	

Table A.13: Number of visit by family in the previous two weeks of a random sample of UK resident adult Bangladeshi men

<i>Number of visit by family members in the last two weeks</i>	<i>Frequency</i>	<i>Percent</i>	<i>Cum %</i>
None	68	22	22
1/2 Times	134	45	68
5-8 Times	74	25	92
9 Times & Over	23	8	100
Total	299	100	

Table A.14: Number of visit to friends in the previous two weeks of a random sample of UK resident adult Bangladeshi men

<i>Number of visit to friends in the last two weeks</i>	<i>Frequency</i>	<i>Percent</i>	<i>Cum %</i>
None	63	21	21
1/2 Times	113	38	59
5-8 Times	75	25	84
9 Times & Over	47	16	100
Total	298	100	Total

Table A.15: Number of visit by friends in the previous two weeks of a random sample of UK resident adult Bangladeshi men

<i>Number of visit by friends in the last two weeks</i>	<i>Frequency</i>	<i>Percent</i>	<i>Cum.%</i>
None	72	24	24
1/2 Times	114	38	63
5-8 Times	71	24	87
9 Times & Over	40	13	100
Total	297	100	

Table A.16: Number of visit to neighbours in the previous two weeks of a random sample of UK resident adult Bangladeshi men

<i>Number of visit to neighbors in the last two weeks</i>	<i>Frequency</i>	<i>Percent</i>	<i>Cum %</i>
None	140	48	48
1/2 Times	98	34	8
5-8 Times	36	12	94
9 Times & Over	16	6	100
Total	290	100	

Table A.17: Number of visit by neighbours in the previous two weeks of a random sample of UK resident adult Bangladeshi men

<i>Number of visit by neighbors in the last two weeks</i>	<i>Frequency</i>	<i>Percent</i>	<i>Cum.%</i>
None	72	24	24
1/2 Times	114	38	63
5-8 Times	71	24	87
9 Times & Over	40	13	100
Total	297	100	

Table A.18: Number of visit to mosque in the previous two weeks of a random sample of UK resident adult Bangladeshi men

<i>Number of visit to mosque in the last two weeks</i>	<i>Frequency</i>	<i>Percent</i>	<i>Cum%.</i>
None	61	21	21
1/2 Times	123	42	62
5-8 Times	46	16	78
9 Times & Over	66	22	100
Total	296	100	

Table A.19: Number of visit to community gatherings in the previous two weeks of a random sample of UK resident adult Bangladeshi men

<i>Number of meeting and community gatherings attended in the last two weeks</i>	<i>Frequency</i>	<i>Percent</i>	<i>Cum %</i>
None	189	63	63
1/2 Times	69	23	87
5-8 Times	27	9	94
9 Times & Over	13	5	100
Total	298	100	

TableA.20: Reported 'Neighbours are friendly' of a random sample of UK resident adult Bangladeshi men

<i>Neighbours are friendly</i>	<i>Frequency</i>	<i>Percent</i>	<i>Cum %</i>
Yes	272	93	93
No	21	7	100
Total	293	100	

TableA.21: Reported 'Neighbours are hostile' of a random sample of UK resident adult Bangladeshi men

<i>Neighbours are hostile</i>	<i>Freq.</i>	<i>Percent</i>	<i>Cum %</i>
Yes	30	10	10
No	263	90	100
Total	293	100	

Table A.22: Mean social exchange score of a random sample of UK resident adult Bangladeshi men

<i>Number of Observation</i>	<i>Mean Age</i>	<i>Std. Err</i>	<i>95% CI</i>	<i>Minimum</i>	<i>Maximum</i>
304	21.1	0.8	19.6-22.6	0	72

Table A.23 Final education of a random sample of UK resident adult Bangladeshi men

<i>Education</i>	<i>Observation</i>	<i>Percent</i>	<i>Cum %</i>
None	29	9	9
Primary	75	24	33
Secondary	160	50	83
Graduate+	53	17	100
Total	317	100	

Table A.24: Self reported social class of a random sample of UK resident adult Bangladeshi men

<i>Class</i>	<i>Observation</i>	<i>Percent</i>	<i>Cum %</i>
I&II	7	2	2
IIINM	37	13	15
IIIM	63	21	36
IV	138	47	83
V	48	17	100
Total	294	100	

Table A.25 Housing type of a random sample of UK resident adult Bangladeshi men

<i>Housing type</i>	<i>Observation</i>	<i>Percent</i>	<i>Cum %</i>
Local Authority	226	70	70
Housing Association	57	18	88
Owner	28	9	96
Privately Rented	7	2	98
Sharing	4	1	100
Total	322	100	

Table A.26: Employment status of a random sample of UK resident adult Bangladeshi men

<i>Work Type</i>	<i>Observation</i>	<i>Percent</i>	<i>Cum %</i>
Full time	139	44	44
Part time	34	11	55
Unemployed	63	20	75
Incapacity	15	5	80
Retired	51	16	95
Student	16	5	99
Keeping house	1	0.3	100
Total	319	100	

Table A.27: Number of occupant per household of a random sample of UK resident adult Bangladeshi men

<i>Number of people per household</i>	<i>Freq.</i>	<i>Percent</i>	<i>Cum.</i>	<i>Average number of people/household (min-max)</i>
Single occupant	6	2	2	1
Multiple occupants	307	98	100	5.4 (2-14)
Total	313	100		

Table A.28: Number of people per household who are not single occupant of a random sample of UK resident adult Bangladeshi men

<i>Number of people/household</i>	<i>Freq.</i>	<i>Percent</i>	<i>Cum %</i>
Two persons	45	14	14
3/5 persons	123	40	54
6/8persons	106	34	88
Over 9 persons	39	12	100
Total	313	100	

Table A.29: Percentage of household by crowding index of a random sample of UK resident adult Bangladeshi men

<i>Crowding Index</i>	<i>Frequency</i>	<i>Percent</i>	<i>Cum %</i>
No	56	19	19
Normal	38	13	31
Moderate	160	53	84
Severe	47	16	100
Total	301	100	

Table A.30: Place of birth of a random sample of UK resident adult Bangladeshi men

<i>Place of birth</i>	<i>Freq.</i>	<i>Percent</i>	<i>Cum %</i>
UK	43	13	13
Bangladesh	277	86	99
Other	1	1	100
Total	321	100.00	

Table A.31: Average length of stay in UK for those who were born in Bangladeshi of a random sample of UK resident adult Bangladeshi men

<i>Number of Observation</i>	<i>Mean number of year in UK</i>	<i>Std. Err</i>	<i>95% CI</i>	<i>Minimum</i>	<i>Maximum</i>
271	24.77	.51	23.78-25.76	1	60

Table A.32: Percentage of tobacco use category by self reported oral problem of a random sample of UK resident adult Bangladeshi men if age is 45 years and over (n=118).

<i>Any oral Problem</i>	<i>cig</i>	<i>both</i>	<i>paan</i>	<i>none</i>	<i>Total</i>
Yes	7	15	8	17	47
Percent	29.17	40.54	53.33	40.48	39.83
No	17	22	7	25	71
Percent	70.83	59.46	46.67	59.52	60.17

Appendix V: Social capital

Table B1: Percentage of tobacco use category by visit to the family in the previous two weeks of a random sample of UK resident adult Bangladeshi men (n=291)

<i>Tobacco Use</i>	<i>Dual tobacco</i>	<i>Cigarette</i>	<i>Paan tobacco</i>	<i>None</i>	<i>Total</i>
<i>Visit to family in the last two weeks</i>					
None	16	2	35	22	22
1/2 Times	64	56	43	47	53
5-8 Times	7	16	17	21	16
9 Times & Over	13	6	5	10	9
Total	100	100	100	100	100

P = 0.145

Table B2: Percentage of tobacco use category by visit by the family in the previous two weeks of a random sample of UK resident adult Bangladeshi men (n=292)

<i>Tobacco Use</i>	<i>Dual tobacco</i>	<i>Cigarette</i>	<i>Paan tobacco</i>	<i>None</i>	<i>Total</i>
<i>Visit by family in the last two weeks</i>					
None	19	28	39	17	23
1/2 Times	46	43	44	43	44
5-8 Times	16	27	17	30	25
9 Times & Over	18	3	0	10	8
Total	100	100	100	100	100

P = 0.003

Table B3: Percentage of tobacco use category by visit to friends in the previous two weeks of a random sample of UK resident adult Bangladeshi men (n=295)

<i>Tobacco Use</i>	<i>Dual tobacco</i>	<i>Cigarette</i>	<i>Paan tobacco</i>	<i>None</i>	<i>Total</i>
<i>Visit to friends in the last two weeks</i>					
None	28	16	26	19	20
1/2 Times	39	35	61	35	38
5-8 Times	21	31	9	27	26
9 Times & Over	12	18	4	19	16
Total	100	100	100	100	100

P = 0.072

Table B4: Percentage of tobacco use category by visit by friends in the previous two weeks of a random sample of UK resident adult Bangladeshi men (n=295)

<i>Tobacco Use</i>	<i>Dual tobacco</i>	<i>Cigarette</i>	<i>Paan tobacco</i>	<i>None</i>	<i>Total</i>
<i>Visit by friends in the last two weeks</i>					
None	31	19	48	16	23
1/2 Times	34	41	39	39	39
5-8 Times	16	28	4	31	25
9 Times & Over	18	12	9	14	14
Total	100	100	100	100	100

P = 0.010

Table B5: Percentage of tobacco use category by visit to neighbours in the previous two weeks of a random sample of UK resident adult Bangladeshi men (n=288)

<i>Tobacco Use</i>	<i>Dual tobacco</i>	<i>Cigarette</i>	<i>Paan tobacco</i>	<i>None</i>	<i>Total</i>
<i>Visit to neighbours in the last two weeks</i>					
None	47	57	36	46	50
1/2 Times	42	29	55	29	33
5-8 Times	5	9	9	20	12
9 Times & Over	6	6	0	5	5
Total	100	100	100	100	100

P=0.021

Table B6: Percentage of tobacco use category by visit by neighbours in the previous two weeks of a random sample of UK resident adult Bangladeshi men (n=293)

<i>Tobacco Use</i>	<i>Dual tobacco</i>	<i>Cigarette</i>	<i>Paan tobacco</i>	<i>None</i>	<i>Total</i>
<i>Visit by neighbours in the last two weeks</i>					
None	27	43	45	35	37
1/2 Times	48	37	41	38	40
5-8 Times	15	13	9	23	17
9 Times & Over	9	7	4	3	6
Total	100	100	100	100	100

P = 0.261

Table B7: Percentage of tobacco use category by visit to mosque in the previous two weeks of a random sample of UK resident adult Bangladeshi men (n=295)

<i>Tobacco Use</i>	<i>Dual tobacco</i>	<i>Cigarette</i>	<i>Paan tobacco</i>	<i>None</i>	<i>Total</i>
<i>Visit to mosque in the last two weeks</i>					
None	24	25	17	15	21
1/2 Times	30	53	35	40	42
5-8 Times	18	10	26	16	15
9 Times & Over	28	11	22	29	22
Total	100	100	100	100	100

P = 0.007

Table B8: Percentage of tobacco use category by attended meeting in the previous two weeks of a random sample of UK resident adult Bangladeshi men (n=296)

<i>Tobacco Use</i>	<i>Dual tobacco</i>	<i>Cigarette</i>	<i>Paan tobacco</i>	<i>None</i>	<i>Total</i>
<i>Attended meeting in the last two weeks</i>					
None	64	70	61	59	64
1/2 Times	22	21	26	24	24
5-8 Times	10	8	9	9	8
9 Times & Over	4	1	4	8	4
Total	100	100	100	100	100

P = 0.506

Table B9: Percentage of tobacco use category by reported 'neighbours are friendly' of a random sample of UK resident adult Bangladeshi men (n=291)

<i>Tobacco Use</i>	<i>Dual tobacco</i>	<i>Cigarette</i>	<i>Paan tobacco</i>	<i>None</i>	<i>Total</i>
<i>Neighbours are friendly</i>					
Yes	97	91	100	91	93
No	3	9	0	9	7
Total	100	100	100	100	100

P = 0.205

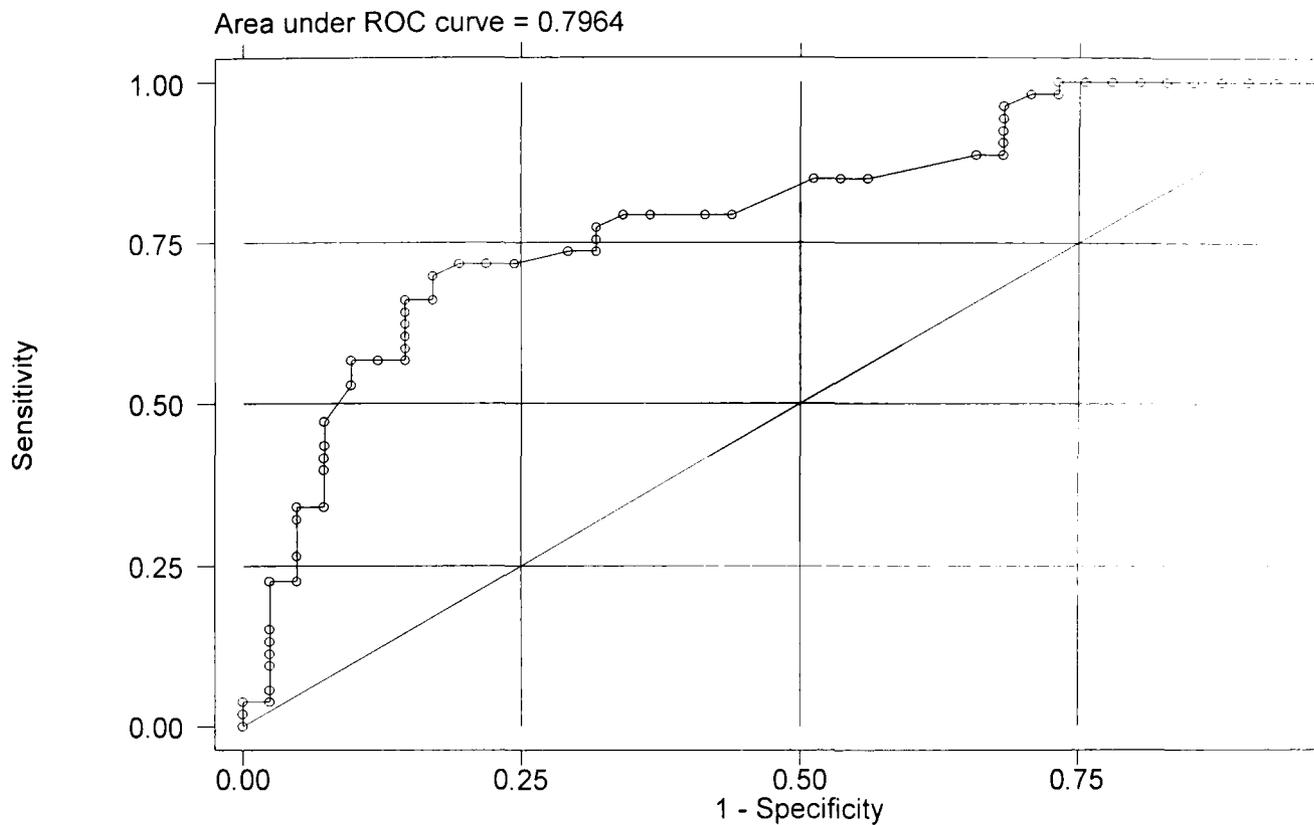
Table B10: Percentage of tobacco use category by reported 'neighbours are hostile' of a random sample of UK resident adult Bangladeshi men (n=291)

<i>Tobacco Use</i>	<i>Dual tobacco</i>	<i>Cigarette</i>	<i>Paan tobacco</i>	<i>None</i>	<i>Total</i>
<i>Neighbours are hostile</i>					
Yes	6	13	9	9	10
No	94	87	91	91	90
Total	100	100	100	100	100

P = 0.471

Appendix VI: Area under ROC curve

Appendix VI: Figure 1: Area under ROC curve to predict dual tobacco use in comparison to cigarette smokers of a random sample of UK resident adult Bangladeshi men when wife chewed paan tobacco.



Pearson goodness-of-fit tests for the model estimated by the above logistic model is present below ($p=.05$).

Number of observations =94

Number of covariate patterns =63

Pearson $\chi^2(80) =100.63$

Prob > $\chi^2 =0.05$

Appendix VII: Curriculum Vitae

Personal Details

Full Name: Syed Shariful Islam
Address: 8 Basil House
Henriques St
London E1 1NG
Tel: 0207 481 9513
D.O.B: 28/12/1961
Nationality: Bangladeshi
Immigration Status: A permanent resident of UK

Education

1998 - 1999

MSc Epidemiology
London School of Hygiene and Tropical Medicine
University of London

1979 - 1984

BSc (Hons) Agricultural Economics and Rural Sociology
Agricultural University, Bangladesh

Current Appointment

Position: Analyst

Employer: Healthcare Commission
Finsbury Tower
103-105 Bunhill Row
London EC1Y 8TG

Recent Academic Appointment

Position: Lecturer - 2 days/week

Employer: Department of Transcultural Oral Health
Eastman Institute for Oral Health Sciences,
University College London (UCL)
Dates: September 2001 - March 2004

Position: Programme Leader - (3 days/week; seconded from UCL)

Employer: Black and Minority Ethnic Tobacco Education Campaign
CVD and Cancer Prevention Business Area, Department of Health
Dates: September 2001 - March 2004

Past Academic Appointments

Position: Research Associate/Research Fellow
Employer: Department of Dental Public Health
Royal London School of Medicine and Dentistry
Dates: July 1995 - May 2001

Position: Research Officer
Employer: Dental Team, Tower Hamlets Healthcare NHS Trust
Dates: January - June 1995

Position: Research Associate
Employer: Institute of Community Studies (ICS)
Dates: September 1993 – December 1994

Position: Research Assistant
Employer: Department of Sociology, London Guildhall University
Dates: January 1991 - December 1990

Other past Appointment

Position: Assistant Press and Public Relations Officer
Employer: London Borough of Tower Hamlets
Dates: September 1989 – December 1990

Research Skills

a) Qualitative/Social

- Grounding in classical social theories related to health and illness
- 2 weeks intensive training on qualitative data analysis from the University of Warwick (modules such as network and pathways analysis)
- Competent user of Nudist-Nvivo (a platform for grouping and sub-grouping qualitative information)
- Good working knowledge of reference management packages such as Reference Manager and End Note
- Experience of designing, conducting and analyzing focus group. e.g. Multi-tobacco use in Bangladeshi men, at Department of Dental Public Health, QMUL Dental School
- Experience of conducting and analyzing field observation, field notes taking and open ended interviewing, e.g. Bangladeshi People with Diabetes Study at London Guildhall University and Family and Kinship Study at Institute of Community Studies

b) Quantitative/Epidemiological

- Can operate application packages such as Epi-info, Mini-tab, DBMS. SPSS, Model Maker and Reference Manager
- Excellent command on STATA
- Experience of handling, cleansing and analyzing large secondary data e.g. Health and Lifestyle Survey (HALS 91)
- Experience of analyzing hierarchical data e.g., housing estate/area effect on cotinine score: East London paan-tobacco dependence study
- Experience of conducting systematic review e.g., paan without tobacco and oral cancer, 1995 and toxic chemicals in South Asian tobacco, 2002
- Familiarity with the useful review tools such as Nudist-Nvivo and Reference Manager
- Familiarity with design and analysis of surveys, demographic estimations, epidemiological studies and clinical trials
- Experience in designing, conducting and analyzing externally commissioned health services research e.g. The East London Tobacco Cessation Trial and Tower Hamlets Multi-tobacco Dependence Survey
- Experience of managing a pool of researchers for a community wide survey e.g. Tower Hamlets Paan Ingredients Survey

Research Support

Sampling, qualitative analysis of labeling and laboratory analysis of South Asian tobacco products available in the UK Market, £30,000. Department of Health

Training Attended

- Media activism for tobacco control, ASH
- Project management, Department of Health
- Nudist-NVivo, QSR-Sage
- Programming for STATA, Stata Corp
- Design and analysis of qualitative studies, University of Warwick
- Attended about 75% of the MSc Social Research Methods classes at London Guildhall University as a part of in-house training

Teaching (Contact Hours in brackets)

- Lecturer and Course Leader, Tobacco and Oral Health, MSc Dental Public Health, Eastman, UCL 2002 (4x3 lectures)
- Lecturer, Introduction to data analysis using SPSS, MSc Dental Public Health, Eastman, UCL 2002 (4x3)
- Personal Tutor for 2 MSc Dental Public Health students, Eastman, UCL 2002-2003
- Support Tutor for two Diploma in Dental Public Health Students, UCL/QMUL 1997
- Community Module, Undergraduate Medical & Dental Students, St Bartholomew's and The Royal London School of Medicine and Dentistry, QMUL, 1997 (2x8)

- Community Module, Undergraduate Medical & Dental Students, St Bartholomew's and The Royal London School of Medicine and Dentistry, QMUL, 1996 (2x8)
- Independently lectured and also assisted Prof Croucher, Prof Marcenes and Dr Bachelor in several teaching sessions for human sciences and public health modules for undergraduate Dentistry during 1995 to 2001 at QMUL
- Course Leader, the Royal Society of Health Certificate in Oral Health Promotion, QMUL (4x6x8=192 hrs), 1995-1997
- Seminar Leader, Undergraduate Medical Sociology and Sociology of Imagination, London Guildhall University (at least 12x2), 1990-1992.

Invited lectures and seminars

- Chewing tobacco and health, East London and City Health Authority (ELCHA), 1995
- Bangladeshi people and health, East London and City Health Authority (ELCHA), 1996
- Prevention of oral cancer, East London and City Health Authority (ELCHA), 1996
- Smokeless Tobacco Cessation, Quit, 1997
- Legal issues relating to South Asian Tobacco, Department of Trade and Industry (DTI)/ Department of Health (4 lectures for senior DTI/Trading Standard officials), 2003
- Presented several papers at national and international conferences

Administrative Duties last position

a) Eastman, UCL

Jointly with Dr Alkhatib, Leader, MSc Dental Public Health field trip, UCL

b) Department of Health

- Project Coordinator, Black and Minority Ethnic (BME) Tobacco Control Community Development Fund, Department of Health (DH).
- Project Leader, BME Tobacco Control Training and Capacity Building Programme, DH
- Project Leader, BME Tobacco Control Resource Mapping Study, DH
- Project Leader, London BME Tobacco Control Alliance
- Project Adviser, BME Tobacco Education and Media Campaign, DH

Conference Organization

- Jointly with John Tilly of DH - Tobacco Control for DTI/Trading Standard Officials (4 different UK cities), 2002-2003.
- Jointly with John Eversley of QMUL - Ethnicity and Health, QMUL, 1997
- Jointly with Prof Croucher of QMUL - Paan Ingredient Trade in Tower Hamlets, Toynbee Halls, Commercial Road, E1. 1995

Committee Membership

- EC Member Social Action for Health
- Committee Member, Tower Hamlets Community Research Network
- Steering Committee Member, East London Asthma Research, Psychiatry, QMUL.
- Committee Member, London South Asian Tobacco Prevention Network

Community Involvement

- Trustee, Social Action for Health
- Director, Betar Bangla Ltd: A community Radio Station, on 1503 AM, every evening 7-9 pm
- General Secretary, the Porag Theatre

Languages

English, Bengali/Sylheti, Urdu (spoken) and Hindi (spoken)

Publications

1. Croucher, R. and Islam, S. (2001): Socio-economic aspects of areca nut use. *Addiction Biology*. 7: 1: 139-146
2. Croucher, R. Islam, S. M. Rahman, R. Shajahan, S. Howells, G. and Jarvis, M. (2001): Nicotine dependency in Bangladeshi Women Chewing Tobacco with Paan. *Tobacco Control*. 2:4: 171-176
3. Croucher, R. Islam, S. Jarvis, M. J. Garrett, M. Rahman, R. Shajahan, S. and Howells, G. (2003): Oral tobacco cessation with UK resident Bangladeshi women: a community pilot investigation. *Health Education Research*. 18: 2: 216-223
4. Kelleher, D. and Islam, S. (1996): 'How Should I live?': Bangladeshi People and Non-insulin Dependent Diabetes. In: Kelleher, D and Hillier, S (eds): *Researching Cultural Differences in Health*. London: Routledge. 220-237
5. Islam, S. Croucher, R. and O'Farrell, M.(1995): *Paan Ingredients Trade in London Boroughs of Tower Hamlets and Newham*. London: Department of Dental Public Health, St Bartholomew's and The Royal London School of Medicine and Dentistry and Tower Hamlets Healthcare NHS Trust
6. Kelleher, D. and Islam, S. (1994): The Problem of Integration: Asian People and Diabetes. *Journal of the Royal Society of Medicine*. 87: 414-417