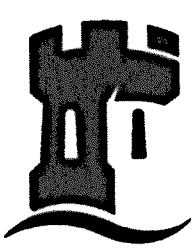

The University of Nottingham

SMOKING IN GHANA: A STUDY OF THE HISTORY OF TOBACCO INDUSTRY ACTIVITY, CURRENT PREVALENCE AND RISK FACTORS FOR SMOKING, AND IMPLEMENTATION OF TOBACCO CONTROL POLICY

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Summary

Background

There has been relatively little research on the prevalence and use of tobacco products in developing countries, where the majority of morbidity and mortality from tobacco use in this century is expected to occur. This is particularly true of countries in Africa. I conducted this study in the Ashanti region of Ghana, primarily to measure prevalence and risk factors for smoking, and secondarily to develop a template for national surveys in similar settings in developing countries. I also investigated the history of tobacco use in Ghana and looked into current implementation of tobacco control policy, in particular the Framework Convention on Tobacco Control (FCTC). The FCTC is the World Health Organization's first public health treaty, established to counter the tobacco pandemic internationally.

Methods

First, using electronic literature searches of the tobacco document archives and local library, I searched for all documents with information on the tobacco industry in Ghana and all studies of the prevalence of smoking in Ghana. Secondly, using a two-stage cluster randomized sampling design, I collected data from adults aged 14 and over in a representative household sample of approximately 720 households in the Ashanti Region of Ghana. Finally, I conducted interviews with 20 key policy makers involved with Ghana's implementation of the Framework Convention on Tobacco Control (FCTC) and other tobacco control policies to assess Ghana's progress of implementation.

Results

Results

Searches of the literature and tobacco document archives established that British American Tobacco (BAT), and latterly the International Tobacco Company Ghana (ITG) and its successor, the Meridian Tobacco Company (MTC), have been manufacturing cigarettes in Ghana since 1954. After an initial sales booming the two decades after independence in 1957, further increases in consumption typical of the tobacco epidemic in most countries did not occur. Possible key reasons include the taking of tobacco companies into state ownership, and a lack of foreign exchange to fund tobacco leaf importation in the 1970s,both of which may have inhibited growth at a key stage of development; and the introduction of an advertising ban in1982. BAT ceased manufacturing cigarettes in Ghana in2006.

My survey involved 7096 eligible individuals resident in the sampled households, of whom 6258 (88%; median age 31 (range 14-105) years; 64% female) participated. The prevalence of self-reported current smoking (weighted for gender differences in response) was 3.8% (males 8.9%, females 0.3%), and of ever smoking 9.7% (males 22.0%, females 1.2%). Smoking prevalence was strongly related to increasing age, being highest in the 60-69 age-group (Odds Ratio relative to 14-19 year olds 6.36 (95% Confidence Interval 3.26 to 12.38, $p_{trend}<0.001$), and varied significantly in relation to religion (overall $p<0.001$), being particularly high in those of Traditionalist belief relative to the Christian majority (adjusted OR 7.50, 95% CI 4.43-12.69);in relation to education level (overall $p=0.03$, adjusted OR for those with no or only primary education compared with those of tertiary education OR 1.49, 95% CI 0.81-2.73); and in relation to occupation (overall

p=0.003, adjusted OR for skilled workers relative to the unemployed 0.66, 95% CI 0.41-1.06). Smokers were more likely to drink alcohol (adjusted OR 7.70, 95% CI 4.63-12.93, p<0.001) and to have friends who smoke (adjusted OR 4.24, 95% CI 3.52-5.11 p<0.001), and significantly less likely to take exercise (adjusted OR 0.82, 95% CI 0.72-0.93, p<0.05). Among smokers, over three quarters (76%) had attempted to quit in the last six months, with the main sources of advice being friends and spouses. Use of smoking cessation medications, such as nicotine replacement therapy, was very rare. About 10% of cigarettes smoked were smuggled brands. About a third (38%)of smokers were highly or very highly dependent. Overall the proportion of ever-smokers who had quit smoking was high (61%) in all age groups. The median number and interquartile range of cigarettes smoked per day by male and female current smokers on weekdays were respectively 6(1-40) and 5 (4-10), and at weekends 19 (2-70) and 11 (8-20) respectively. The commonest brands smoked were London Brown (42%) and King Size (22%), both manufactured by BAT. Smokeless tobacco had been used ever by 3.2% of men and had been used more by older than younger people (adjusted OR for over 50's relative to 14-19 year olds 2.09 (95% 1.38-3.18, p<0.05, p_{trend} =0.006).

Knowledge of the health risks of smoking, including passive smoking and its impact on children and non-smokers, was high; radio (74%) and television (28%) were the main sources of such information and advice. Levels of health awareness were typically but not invariably higher in older people, in men, among the more highly educated and in those living in rural areas. There were few restrictions on smoking in public, and most people (38%) therefore worked and/or spent time in places where smoking was permitted. There was

very strong support (97%) for comprehensive smoke-free legislation, mainly among Christians and Muslims. Despite the advertising ban, around a third of respondents (35%), particularly in urban areas, had noticed advertising of tobacco or tobacco products. Again radio was the main source of exposure (72%) but some had also noticed advertising on television (28%).

The interviews with policy makers showed that they had good knowledge of the content of the FCTC, and reported that although Ghana had no explicit written policy strategy on tobacco control, the Ministry of Health had issued several tobacco control directives both before and after ratification of the FCTC. A national tobacco control bill had been drafted but had not yet been implemented, something which the policy makers needed to happen urgently. Challenges identified included the absence of a legal framework for implementing the FCTC, and a lack of adequate resources and prioritization of tobacco control efforts.

Conclusions

Despite rapid economic growth and a sustained tobacco industry presence, smoking prevalence in Ghana was low, particularly among younger people. This suggests that in contrast to many other developing countries, progression of an epidemic increase in smoking has been avoided. Awareness of health risks and support for smoke-free policies were high in Ghana. Exposure to tobacco advertising or promotion was limited, and most smokers reported having tried to quit. Whether these findings are cause or effect of the current low smoking prevalence is uncertain. The likely reasons that I have identified for the low smoking prevalence include an early advertising ban, substantial state intervention in the tobacco industry at a crucial point of

growth, socio-cultural factors (particularly religion), the harsh economic environment at a time when the industry was experiencing growth and other public health interventions such as health education by stakeholders involved in tobacco control. Although policy makers were aware of the FCTC, implementation of the World Health Organization (WHO) treaty has been slow, requiring an urgent need for the passage of the national tobacco control bill into law to enable the country to sustain its tobacco control efforts.

Publications arising from this thesis

The work in this thesis has been published in the following journals

1. Ellis Owusu-Dabo, Sarah Lewis, Ann McNeill, Anna Gilmore, John Britton. Smoking in Ghana: a review of tobacco industry activity *Tob. Control* 2009;18;206-211

2. Ellis Owusu-Dabo, Sarah Lewis, Ann McNeill, Anna Gilmore, John Britton. Smoking uptake and prevalence in Ghana doi:10.1136/tc.2009.030635 *Tob. Control* published online 5 Jul 2009

3. Ellis Owusu-Dabo, Ann McNeill, Sarah Lewis, Anna Gilmore, John Britton. Status of implementation of Framework Convention on Tobacco Control (FCTC) in Ghana: a qualitative study *BMC Public Health,* 2010,10:1

The following paper which was under review as at the time of submission had just been accepted for publication (BMC public health)

1. Ellis Owusu-Dabo, Sarah Lewis, Ann McNeill, Anna Gilmore, John Britton. Support for smoke-free policy, and awareness of tobacco health effects and use of smoking cessation therapy in a developing country

Copies of thesis papers are included in appendix 5

Acknowledgements

I have had the honour and pleasure of meeting many people in my life but meeting and studying in the University of Nottingham's Division of Epidemiology and Public Health has introduced me to some incredibly resourceful and 'willing to impact' people. To all of them whom I cannot mention by name, I say thank you for all your help.

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The Lord be praised forever more!!

Dedication

This thesis is dedicated to my wife Joyce, and children Derek Prince, Ellis and Godwill for all the sacrifices we had to make to get my PhD completed. I love you very much!

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CHAPTER ONE: EPIDEMIOLOGY OF SMOKING

1.1 Introduction

Smoking is the biggest avoidable cause of premature death and disability in developed countries, and is a major threat to current and future public health in the developing world. Ghana is a developing country which, for various reasons, has been and remains at high risk of involvement by the tobacco epidemic. This thesis therefore studies the history, current status, and future potential policy responses to this major threat to public health.

In this chapter, I attempt to summarize the key literature on the risk factors and health consequences of smoking, to provide a context for understanding the progress of the tobacco epidemic in Ghana in relation to other developing and developed countries, and to review the key evidence-based tobacco control policies that must be tackled to bring the epidemic under control.

1.2 History of tobacco use

Mankind has used the plant *Nicotina tobacum,* from which we get tobacco, in the Americas since about 6000 BC. Columbus is credited with bringing information on smoking tobacco to Europe in 1492, although the practice of smoking was thought to have been extensive in South America at the time. Tobacco is thought to have been introduced more widely into China, Europe, The Middle East and Africa in the mid 1500s then into Oceania in the 1700s [1]. Indian myth describes the history of tobacco use thus;

"In ancient times, when the land was barren and the people were starving, the Great spirit sent forth a woman to save humanity. As she traveled over the world

everywhere her left hand touched the soil, there grew potatoes. And everywhere her right hand touched the soil, there grew corn. And in the place where she had sat there grew tobacco" [2]

Tobacco use has gone through a lot of modifications over the years especially in the mode of its delivery. In most European countries, snuff was the most popular product in the 18th century. In the 19th century, tobacco smoking from cigars and pipes became more popular, whereas in the 20th and 21st centuries, processed manufactured cigarettes were the commonest forms of delivery. There are many forms of the manufactured product, but the filtered manufactured cigarette is probably the most widely used [3]. Other forms of the product popular today include bidis, cigars, kreteks, pipes (including shisha or hubbly bubbly), and moist and dry snuff. Currently, about a third of adults in the world use tobacco products, including increasing numbers of women [4].

Long before the health risks of smoking were properly recognized, King James VI remarked (1566-1625):

"Smoking is a custom loathsome to the eye, hateful to the nose, harmful to the brain, dangerous to the lungs, and in the black, stinking fume thereof nearest resembling the horrible Stygian smoke of the pit that is bottomless" [5].

In spite of the many health consequences now attributable to tobacco use and smoking in particular, cigarette smoking is probably the most prevalent, addictive, self-administered gratification known to man. And although there have been efforts aimed at control, there is no indication that smoking will be completely curbed in the immediate future.

1.3 Prevalence, trends and mortality of smoking and tobacco use in developed countries

From an initial few billion sticks of cigarettes consumed in 1900, the epidemic has now risen to approximately 5.5 trillion sticks being smoked across the globe annually [6]. Tobacco use killed approximately 5 million people in 2006, and on current projections this figure will rise to approximately 10 million in 2025 [7]. Although most deaths are currently from the developed countries, this will shift to developing countries over the coming years [8].

In the high income countries, 29% of all deaths are attributable to smoking compared to 18% in low income countries, because of the shorter history of smoking and in particular the low prevalence of smoking in women [9;10] in the developing world. In developed countries, approximately 25-30% of both men and women are current smokers, whilst in developing countries more men (50-60%) but fewer women (2-10%) smoke [11-13]. Whereas tobacco use has been declining in many developed countries over recent decades, the trend in tobacco use has been reported to be on the increase in developing countries [9;10]. This and the already high prevalence of current smoking among men indicate that major epidemics of tobacco-related deaths will emerge in developing countries in the future.

In many developed countries, the prevalence of smoking is now falling. In the United States for example, data from state and federal sources suggest that smoking prevalence in four states declined by 1% per annum between 1996-2001 [14]. Annual per capita cigarette consumption also declined over the five years preceding this study, and continued to decline between 1998 and 2001 by 34%. In Great Britain, it is currently estimated that around 10 million adults smoke cigarettes. This represents just over a fifth of the adult population, with 22% of

men and 20% women smoking respectively [8]. Smoking in Britain is highest among 20-24 year olds with 34% men smoking and 30% women. In Britain, there has been a consistent decline in smoking since 1974, when 51% of men and 41% of women smoked cigarettes, although the decline slowed down in the 1990s [9;15]. These declines have been attributed mainly to older smokers stopping smoking, rather than a reduction in smoking uptake.

These trends in the USA and UK are not typical of the entire developed world, however. In Europe for instance, data available at the beginning of 2002 indicated that approximately 30% of the adult population smoked, and that overall prevalence had been relatively stable but with a slight decline since the mid-1990's [8]. Overall, nearly 38% of men and 23% of women smoked in this region, with prevalence levels typically being higher and rising in many former Eastern European countries, and being lower but relatively stable in the West [16]. In the West Pacific region, which represents nearly a third of the world's population, tobacco-attributable mortality continues to rise, with 20% of total mortality attributable to tobacco [9]. This region represents the region with the highest prevalence for smoking worldwide with 60% of men and 6% of women smoking currently [16].

1.4 Prevalence, trends and mortality of smoking and tobacco use in developing countries

Currently, there are an estimated 1.3 billion smokers in the world [17], representing a third of the global population aged 15 and over, and 84% of whom live in the developing world [18]. In comparison with HIV/AIDS, which causes 3 million deaths per year, tobacco causes approximately 5 million deaths worldwide per year; more

than AIDS, legal and illegal drugs, road accidents, murder and suicide put together [19]. The current total of 1.3 billion smokers worldwide is predicted to rise to 1.9 billion, consuming more than 9 trillion cigarettes per year, by 2025 [20]. The number of smokers is set to rise still further in the long term [21] for several reasons, including: an increase in third world population, from 4.5 billion to 7.1 billion by 2025 [22] and hence in the number of potential smokers; an increase in wealth, making cigarettes more affordable [19]; lack of awareness of the health risks, particularly because of low levels of education but also among health professionals [20]; erosion of social taboos that prevent smoking among women; and intensive and ruthless marketing by multinational tobacco companies [23;21]. As a result, developing countries are projected to bear the brunt of the global epidemic of smoking in the 21st Century [24]. For example, of the projected 10 million deaths from tobacco related causes by 2030, 7 million will occur in developing countries [19;25]. The Asia-Pacific region is the fastest growing market for tobacco in the world, particularly in Malaysia, Indonesia, Pakistan and Vietnam [16]. The expansion of tobacco into these new markets has often been associated with an absence of regulation, especially with regards to promotion to youth, and lack of health warnings. Advertising in developing countries tends to focus on the aspirations of the poor to emulate western countries, as is the case for example in Africa, where such brand names as 'Diplomat' and 'Embassy' in Ghana, 'High society' in Nigeria and 'Sportsman' in Kenya are associated with westernization [26].

In Latin America, it is estimated that 20% of women and 37% of men smoke, with reports indicating that prevalence could have been as high as 50% among young people in some urban areas in 1992 [24]. Current figures for the prevalence of smoking in Latin America and the Caribbean, range from as high as 40% in Chile and Argentina to below 20% in Colombia, Costa Rica and Panama [24].

In contrast, data from central Asia suggest that the prevalence of smoking among men is typically between 50-70%, but that only around 3% of women smoke manufactured cigarettes (whilst 50-60% of women use chewing tobacco) [10]. In the Asia-Pacific region, the overall smoking rate is estimated to be 50-60% among men, and less than 10% in women. In the Eastern Mediterranean region, approximately 40-50% of men smoke, but cultural and religious factors consider smoking among women to be vulgar, improper and even immoral [27;28]. In central and Eastern Europe, 50-60% of men smoke and the prevalence rates among women range between 20-30% in Czechoslovakia, Hungary, Poland and the former Yugoslavia, similar to that in Western Europe. Smoking prevalence in women is lower in Russia and Romania (1-13%) [29;30].

In many developing countries however, basic epidemiological data on smoking and tobacco use are still lacking, and many countries have still not undertaken national surveys on smoking prevalence [13]. For those where national data are available, the data are bedeviled with inconsistencies making their reliability uncertain. In spite of this however, data from many developing countries suggest that more men (50-60%) and fewer women (2-10%) smoke compared with developed countries [11]. In Africa, data on smoking prevalence are only available from a minority of countries, and mostly from surveys undertaken in the 1970s in relatively select groups of people. Overall, about 50% of men and 10% of women smoke in Africa [9] although some studies [31] have suggested much lower prevalence for women. In 1995 the total cigarette consumption in Africa stood at 131,181 million sticks. This figure rose to 212,788 million in 2000, representing an alarming 38% increase in 5 years [19;32] requiring urgent action from policy makers on the continent to stem the problem of smoking and tobacco use.

Table 1.1 Tobacco use prevalence and number of smokers, 2000 by WHO regions and levels of development (% of the population aged 15 years and older and thousand smokers).

WHO Regions	Prevalence (%)			Number of tobacco users		
	Male	Female	Total	Male	Female	Total
Africa	29.4	7.4	18.4	51,967	13,420	65,387
Pop. Covered %	69.1	67.5	68.3			
Americas	32.0	20.9	26.3	94,035	64,072	158,107
Pop. Covered %	95.1	95.0	95.0			
E. Mediterranean	35.3	6.1	21.0	52,543	8,670	61,213
Pop. Covered %	93.0	93.0	93.0			
Europe	44.9	18.7	31.2	150,628	68,545	219,173
Pop. Covered %	97.5	97.6	97.6			
South-East Asia	48.1	5.3	27.3	251,699	26,484	278,183
Pop. Covered %	98.3	96.9	97.6			
Western Pacific	61.2	5.7	33.8	390,362	35,784	426,146
Pop. Covered %	99.9	100.0	99.9			
World	47.5	10.3	28.9	1,005,927	217,755	1,223,682
Pop. Covered %	95.3	94.8	95.0			
Levels of Development						
Developed	33.9	21.2	27.4	114,783	75,891	109,673
Pop. Covered %	100.0	100.0	100.0			
Developing	49.8	7.2	28.9	809,725	114,718	924,443
Pop. Covered %	94.5	93.7	94.1			
Transition	54.1	13.9	32.7	82,837	24,153	106,989
Pop. Covered %	94.6	95.0	94.8			

Source: Guindon et al [19]

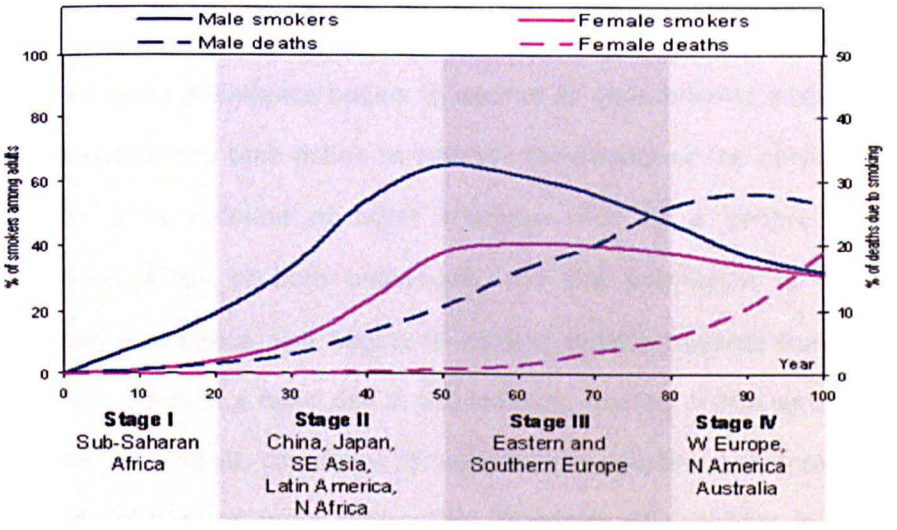
Table 1.1 illustrates the worldwide differences in smoking prevalence and tobacco use prevalence and number of adult smokers by WHO regions and levels of development for the year 2000. Globally, although men are almost five times likely to use tobacco as women, in the Americas and the European region, the smoking rates among women were higher than in other regions, for example, more than 18 and 21 % of females were smokers in Europe and America respectively compared with other regions such as South-East Asia and Western Pacific where the rates were much lower. There was however not much difference

in the rates of smoking across developed and developing countries in the populations covered in the year 2000, although more people tended to smoke in the developing country populations. These figures clearly show that the most tobacco users reside in developing countries.

1.5 The smoking epidemic model

The typical progression of the smoking epidemic has been described in a model by Lopez *et al* [33;34]in which countries tend to follow a clear pattern as the epidemic uptake of smoking emerges and evolves, and with a three to four decade lag between the peak in smoking prevalence and the subsequent peak in smoking related deaths. The epidemic is thought to move through four distinct stages over the course of around a century (see fig 1.1).

Figure 1.1 The four-stage evolution of the smoking epidemic. The time lag between smoking onset and the subsequent health impact is indicative of the emergence over several years of diseases such as lung cancer and vascular disease [33]



Adapted from Lopez AD, Collishaw NE, Piha T. A descriptive model of the cigarette epidemic in developed countries [33].

The stages of the epidemic are as follows:

Stage I:

Male and female smoking prevalence is relatively low and smoking-related deaths are not yet evident. This phase is relatively brief, usually lasting about one or two decades. Examples of countries in this stage are said to include those in sub-Saharan Africa such as Ghana, Nigeria and Malawi [35].

Stage II:

As smoking becomes socially acceptable and tobacco control strategies remain underdeveloped, the prevalence of smoking among men rises rapidly, reaching a peak of between 50-80% among men. Smoking prevalence among women typically lags behind men by one or two decades but increases rapidly during this stage. Examples of countries in this stage of the epidemic include Mexico, China and Brazil [35].

Stage III:

Male smoking prevalence begins to decline as governments and health authorities acknowledge and take action to address the impact of the epidemic. This is often against a background of other changes such as a general improvement in education levels of both individuals and the population as a whole. Female smoking prevalence also begins to decline slightly towards the end of stage III. However, there is a rapid rise in the smoking-related deaths among both men and women. As a result, conditions for successfully enacting and implementing tobacco control policies are more favourable. Examples of countries in this stage of the epidemic include Poland, Russia, Spain and Turkey [36].

Stage IV:

Smoking prevalence for men women continues to decline, but slowly. Male smoking-related deaths peak in stage IV, although female deaths continue to rise rapidly as the full health impact of female smoking patterns become evident. However, because women's cumulative exposure to tobacco is lower than men's, the peak number of deaths is also lower. Smoke-free personal environments then become the norm. Examples of such countries include UK, Canada and France.
Key policy initiatives depend on the stage of the epidemic of that country. For example, it is recommended that for countries within stage I, key priorities should include education of the general public on the dangers of smoking through wide scale campaigns, and the implementation by governments of the WHO's Framework Convention on Tobacco Control (FCTC) [10;37].

For those within stage II priorities should include an implementation of country-wide tobacco control policies including restrictions on smoking in public places, tougher legislation on the promotion of cigarettes and increase in tobacco tax. There should also be wider access and choice of smoking cessation therapies to help with quitting [36].

Policies within stage III typically include enforcing smoking restrictions and education on quitting and providing access to broad range of smoking cessation options so that smokers are offered tailored support for quitting.

Within stage IV, priority policies include sustained taxation of smoking products, creating novel public health campaigns and innovation in policies to constrain further consumption, focusing on addicts to help them quit [36].

It has to be said that whilst the model has been used for years to describe the epidemic in developed countries, the validity of the model to the evolution of the epidemic in the developing world has not been widely tested. Part of the reason

why this study is being conducted then will be to illustrate the extent to which this model is applicable to developing countries.

1.6 Risk factors and determinants of smoking and tobacco use

An understanding of the risks and determinants of smoking are important in determining whether these predictors are similar for both smoking onset and maintenance. A number of factors are known to influence the initiation and continued use of cigarette smoking and tobacco use, and can be grouped into distinct areas as follows [38]: Perception of smoking, social factors (peers, siblings and parents), life events (adverse childhood experiences) and personal resources including personality, social support and socio-economic status, self esteem mastery, extraversion, neuroticism, conscientiousness, agreeableness, openness and hostility [39]. Current knowledge however, of risk factors for the onset and maintenance of tobacco is still incomplete, and the aetiologic contribution of possible risk factors are yet to be accurately quantified [40]. Other factors include environmental and social factors, in particular the extent of tobacco advertising, anti-smoking media messages, economic factors (especially the price of tobacco), academic performance at school (early smokers being associated with lower levels of perceived and real academic achievement) [31].

1.6.1 Perception of smoking

Although the relationship between one's perception of smoking and initiation of smoking is a complex one, studies have shown that people who adapt psychologically to a lowered state of health, low self esteem, the belief that smoking confers future advantages in social life [41] and are also unaware of the

health risks of smoking, and who often engage in other risky health behaviours tend to initiate smoking at an earlier stage in life than those who are fully aware of the health consequences of smoking [42].

1.6.2 Social pressure and family influence

Factors affecting smoking in the social environment include the general acceptance smoking as a normal behavior in social groups, and in particular the influence of parents and peers[43]. Some of the reasons for smoking have been given as tension reduction (30.4%), pleasurable relaxation (15%), and psychological addiction (25%), stimulation (10.6%) handling of sensorimotor manipulation (10%) and habit (10%) [44-47]. Among the youth in Turkey, exposure to parent, teacher and peer smoking, anti-tobacco curricula, cigarette promotions and perceived ease of access were all thought to be significant factors related to smoking initiation [48].

1.6.3 Life events

Various stressful life events such as divorce, death of a loved one or relative, adverse childhood experiences [49], a demanding work environment and the amount of control one has in one's job [50] have all been associated with either the initiation or quitting of smoking [51]. Additionally, challenging mental health status in particular persons with depressive illness and other forms of psychoses determine both initiation and the amount of cigarettes consumed [52;53].

1.6.4 Personal resources

Cultural and religious factors (which are especially important in the type of tobacco used) [31], age, gender, locality type (whether urban or rural), socio-economic and marital status have all been linked with initiation and determining smoking status [54]. For example, unemployment status has been associated with smoking, with young unemployed men having the highest risk of smoking in South Africa [9;55]. Globally, unemployed males have the highest risk of continued smoking

although initiation typically starts among males of high economic status indicated in part by employment status [56].

1.6.4.1 Culture, ethnicity, religion and smoking

Research suggests that predictors of smoking are subject to cross-cultural variations. Landrine et al [57] reported that the amount of smoking among blacks, Asians, Hispanics and Whites living in the same communities was different. Risk factors such as ethnic discrimination and victimization (mainly reactionary) directed at certain ethnic groups, have been associated with smoking as well as poor health outcomes among adolescents [58]. In contrast, a secure sense of one's ethnic group identification and having cultural norms prohibiting smoking insulate the adolescent from smoking [59;60]. Therefore adolescents who report greater taboos against smoking are less likely to either initiate or progress to regular smoking. These taboos could either be based on one's personal, social or religious beliefs.

1.6.4.2 Age, gender, parental influence and smoking

Most smokers start smoking during adolescence [61], and the probability of cessation among adults is inversely related to age at initiation [62;63]. Initiation and prevalence of smoking among adolescents typically rise with increasing age and grade [64;65]. Historically, the prevalence of smoking in both developed and developing countries has been higher among men than women [9] but over the last two decades, the rates of current smoking and initiation to smoking have been approximately equal in developed countries [66;67]. However, reports of equal or higher levels of smoking by females have originated primarily from studies in countries with Western cultural orientation, such as England, New Zealand and the United States, rather than Eastern cultures, such as China, Japan and Sri Lanka where higher smoking

levels among males prevail [68]. Parents who smoke are more likely to influence their children to smoke and this has been shown in several studies [69-72] that looked not only at tobacco use but other substances of abuse. In a study by Forrester 2007 [73], parental smoking significantly increased the risk of their children experimenting with and becoming addicted to smoking.

1.6.4.3 Socio-economic status and smoking

Socioeconomic status is strongly related to smoking behaviour [74;75], though the direction of this association appears to change as the stages of the smoking epidemic proceed [76]. For example uptake of smoking (stage I) is initially highest among people in higher socioeconomic positions, who are thought to adopt innovations and new behaviours more quickly than less advantaged groups (those of lower socioeconomic status), and are also better able to afford to purchase cigarettes [77]. However, as the epidemic progresses, those in the low socioeconomic ladder tend to have high prevalence compared with the higher socioeconomic groups. This reversal in socioeconomic gradient may be explained in part by increasingly early uptake of smoking among people with lower educational levels, and by an earlier decline in smokers with higher educational levels [61]. Parental socioeconomic status, personal income and level of education have all been associated with smoking status among adolescents [61]. For example Wagenknecht *et al,* showed that educational status was strongly linked with both the numbers who smoked as well as the quantity of cigarettes consumed. Study participants with high education smoked less and were less likely to smoke [78]. Economic factors, especially the price of tobacco, are thought to be associated with tobacco use. In high income countries an increase in tobacco price by 10% reduces demand by 4%, and by 8% in low to middle income countries [79]. Young

people with more spending money show higher levels of smoking presumably because money is needed to purchase cigarettes [80-82].

1.6.4.4 Smoking and residence or locality type

Relatively few studies measure rural/urban status and the results of these studies are inconsistent [61]. Whereas some studies report no significant rural/urban difference after adjusting for other socio-demographic variables [83;84], several other studies report high prevalence of smoking associated with rural tobacco producing areas in the United States [85;86] and urban residence in Sri Lanka [87]. Isohanni and colleagues [88] noted increased smoking by young people living in urban areas, but decreased smoking by those living in an industrialized province.

1.6.4.5 Alcoholism, peer influence, exercise and smoking

Having peers who are delinquent or who drink alcohol, use drugs and smoke cigarettes, is strongly related to smoking behavior in both initiation and regular smoking [89;90]. In a study by O'Loughlin et al., independent predictors of smoking initiation retained in a multivariate model included having friends who smoke. In this study, 14.7% of girls and 20.8% of boys reported initiating smoking [91]. There is ample evidence from both developing and developed countries to suggest that smokers are more likely to have friends who smoke and are less likely to exercise [92;93]. Physical activity in any form is inversely related to smoking status [94]. Physical activity is therefore less prevalent among smokers than among never smokers and smokers who quit are likely to initiate physical activity [93].

1.6.4.6 Genetics and smoking

Finally, there are limited, but potentially important, data on the role of genetic make-up on initiation and use of tobacco and smoking in particular [95;96]. In most,

but not all, twin studies on the aetiology of smoking behaviour, genes have been found to be associated with the risk of cigarette use, particularly among women [97-100]. Unlike initiation of smoking in these studies, there has been little evidence to support the hypothesis that environmental experiences shared by twins as adults play an important role in the maintenance of cigarette use [101;102].

1.7 Levels of smoking addiction

The concept of addiction is complex and involves powerful motivation to engage in an activity repeatedly to an extent that is harmful often accompanied by impaired capacity for self-control. To effectively combat addiction to smoking cigarettes requires an understanding that there are several mechanisms underlying it. The PRIME Theory of motivation aims to provide a model that can encapsulate these mechanisms. It recognizes that evolution has led to multiple levels of motivation from basic impulses and inhibitions, through 'motives' (feelings of want and need), to 'evaluations' (beliefs about what is good or bad), and plans (intentions regarding future actions) [103]. For example, whereas levels of addiction are high among males, males are significantly less likely to perceive smoking as addictive than are their female counterparts [104]. Several studies [105;106] have shown the importance of levels of addiction in relation to the relative success of smoking cessation therapies, and how certain socio-demographic factors influence addiction. For example, household factors such as income, marital status children or the number of children, occupation, employment status are all strong predictors of levels of addiction and tendency to quit with those in low socioeconomic class having high levels of addiction and being the least likely to quit [107;108]. There is an indication that in Western countries where the epidemic remains stable or is in decline, there are more people addicted to smoking compared with developing

countries where the epidemic is set to increase [10]. This may simply be the result of a higher chance of successful cessation among less addicted smokers in countries in stage IV of the smoking epidemic, leaving a residual population of smokers that has a particularly high level of dependence [109;110]. One way of measuring levels of nicotine dependence in a population is by using the Fagestrom scale [111].

1.8 Composition of cigarettes and tobacco smoke

Manufactured cigarettes usually consist of shredded or reconstituted tobacco processed with hundreds of chemicals often with a filter [9]. Cigarette smoke is a mixture of gases and small particles made up of water tar and nicotine. Machine measured yields (which are not the same as what smokers get) vary dramatically across countries often as a result of countries specifying limits for machine-measured yields. For example, the average machine measured yield of United States cigarettes is about 12 mg tar, 0.88 mg nicotine and 14 mg carbon monoxide [112]. Levels are higher in countries with limited capacity for verification of these constituents and low where there is a strong anti-tobacco movement [113]. For example, the machine measured yields of tar in Australian made cigarettes has fallen substantially since the late 1960s from a high of 40 mg tar in 1967 to values of between 4-12 mg in the 1990s, as a direct consequence of action taken by the Anti-Cancer Council of Victoria. Meanwhile there is evidence that imported brands of similar products had high levels of 'tar' and nicotine from data analyzed [114]. There is body of scientific literature about the harmful effects of carbon monoxide, nicotine, 'tar', irritants and these other noxious gases as well as heavy metals [1]. Mainstream smoke drawn through the cigarette, and of side stream smoke released by the smoldering cigarette contains some over 4000 tobacco compounds

[115], including nicotine, but the chemicals that cause cancer are mainly in the 'tar'. In 2000, the number of known carcinogens in tobacco smoke was thought to be 69 [116]. The content of tar is relatively similar for most brands of cigarette, rendering brand descriptors such as 'light' and 'mild' to describe the contents of tar relatively meaningless [117].

1.9 Smokeless tobacco use

Smokeless tobacco use is a significant part of the overall world tobacco problem. Smokeless tobacco products are tobacco products without combustion or pyrolysis at the time of use [118]. The prevalence of use is relatively high in many countries especially in South Asia. There is a great diversity of smokeless tobacco products and smokeless tobacco use patterns across the globe [119]. Oral use is by far the most common behaviour. Nasal use is very rare. There are different forms of the product and they come under different names depending on where they are found. For example, there are few available studies on certain other smokeless tobacco products, such as toombak in Sudan and other African countries [120], shammah in Saudi Arabia [121], nass and nasswar in Central Asia republics. There is evidence from South Asia that the use of smokeless tobacco products increases oral cancer risk [122]. Whereas some studies [123] indicate a significant risk for oral cancers, others [124;125] do not, the problem with all of this being that smokeless tobacco is a very heterogeneous range of products. Evidence for associations between smokeless tobacco use and other cancers is however inconclusive [126]. In many cultures, particularly in South East Asia, in many other developing countries, and increasingly in Sweden, smokeless tobacco use has been more socially acceptable than smoking [79], and it is also easy to practice without detection. Current figures by the WHO indicate that smokeless tobacco use is typically higher among women

in the African region than in men, but generally that the reverse is the case in Europe where crude prevalence rates are higher among men than women [79]. In Sweden for example the prevalence of smokeless tobacco use among men is 19%, compared with 4.9% in women. In Africa, studies from Mauritania and South Africa indicate high prevalence among women of 26.1%, 10.9 and 4.9%, 2.4% among women and men respectively [79].

1.10 Health effects of tobacco use

The harmful health effects of tobacco are daunting and many and have been very well documented particularly in developed countries. Mortality is not the only problem; for every death caused by smoking, approximately 20 smokers are suffering from a smoking related disease [127;128].

Tobacco use has been a recognized as a cause of premature death globally and as many as 50% of all long-term smokers will die during middle age, losing 20-25 years of productive life [129]. Worldwide, the number of Daily Adjusted Life Years (DALYs) lost to tobacco use is projected to increase from under 40 million years in 1990 to over 120 million years in 2020 [34;130].

Globally, tobacco is the main known cause of death from cancer, with lung cancer having the highest incidence and mortality among men, while in women it is the fourth most common cause of cancer but the second most common cause of death [56;131]. Following the first reported case of carcinoma of the lip associated with tobacco use over 200 years ago [132], many other case control [133-135] and cohort studies [136-138] have been carried out, in most instances confirming an association with disease. Tobacco diseases fall primarily into three main categories; cancers, vascular disorders and chronic lung diseases (Table 1.2), and for all these, the relation between the disease and tobacco use has been confirmed from different

study populations, the biological mechanisms are understood and a strong dose-response relationship has been identified.

Examples of cancers caused by smoking include; bladder cancer, cervical cancer, oesophageal cancer, kidney cancer (contributory factor), laryngeal cancer, leukaemia, lung cancer, oral cancer, pancreatic cancer, and stomach cancer [139].

Among the cardiovascular diseases, sufficient evidence to infer a causal relationship with smoking has been found for: abdominal aortic aneurysm, atherosclerosis, cerebrovascular accidents and coronary heart disease [1;139].

Concerning the respiratory system, cigarette smoking has been found to be the most important of the causes of chronic bronchitis in the United States, and increases the risk of dying from chronic bronchitis [1]. In utero exposure to maternal smoking is associated with reduced lung function among infants. Passive smoking in childhood and adolescence causes other respiratory effects such as cough, respiratory infections, wheezing and pneumonia [1].

Cigarette smoking has effects on the reproductive system, causing both primary and secondary infertility and fetal death. In addition, cigarette smoking is a known cause of low birth weight and pregnancy related complications.

Other smoking related diseases include cataract, hip fractures, low bone density and peptic ulcer disease [1]. Table 1.1 summarizes the health effects of cigarette smoking as well as their causal relationships.

Table 1.2 Risk of current versus never male smokers (except for cervical cancer in female smokers) based on UK Doctors study and Cancer Prevention Studies (CPS II). Adapted from data in Doll [137], Wald [140] and Boyle [141].

Increased risk largely or entirely due to smoking	Increased risk partly due to smoking	Increased risk largely or partly due to confounding
Cancers: Mouth*, pharynx*, Larynx*, Lung*, Oesophagus, Bladder, Pancreas	Myeloid leukaemia[ø] (sig relation with amount smoked in UK Doctors study), Nose and nasopharynx[ø], Kidney[ø], Stomach[ø]	Liver (causal and confounding), Cervix (largely confounding), (CPS data only) Large bowel (largely confounding)
Cardiovascular: Ischaemic heart disease, Hypertension, Myocardial degeneration, Pulmonary heart disease-Aortic aneurysm, Peripheral vascular disease, Cerebrovascular disease		
Respiratory: Chronic obstructive airway disease, Asthma	Pneumonia	
Other diseases:	Gastric ulcer, Duodenal ulcer, Crohns disease, Osteoporosis, Periodontitis, Tobacco ambyobia, Age-related macular degeneration, cataracts, Hip fracture	Cirrhosis, Suicide and Poisoning

*Defined as causal by International Agency for Research on Cancer (IARC) [142], considered causal later-see Doll [143]

1.11 Health effects of smoking in developing countries

It is difficult to obtain statistics on the health consequences of smoking in many developing countries especially Africa [144;145]. Some studies [146;147] describe effects in specific populations but data on the wider burden of deaths attributable to smoking in developing countries are scarce [148]. One reason may be that since most African countries are in stage I of the smoking epidemic model illustrated above, health effects have not yet become markedly apparent [149;150]. In Ghana in particular, very few quality data are available on morbidity and mortality arising from smoking and the impact it is having on the country. However, the indications are that they are on the increase [13]. Smoking is also however a potentially low priority in countries in which other more immediate health impacts from communicable diseases which may be seen as a greater priority by those involved in health policy and planning [151].

1.12 Tobacco industry

Transnational tobacco companies (TTCs) have played a major role in the unfolding epidemic and in many instances have provided the public with information that resulted in the use of tobacco and smoking in particular [152]. TTCs develop strategies that thwart the tobacco control efforts at national and regional levels and to maintain tobacco friendly environments, particularly in developing countries. During the last half of the twentieth century, knowledge of the health effects of tobacco use and smoking of cigarettes increased in developed countries leading to increased regulation and declining consumption [9]. In response to this the tobacco industry introduced robust, aggressive and sophisticated marketing techniques to countries with fewer restrictions and limited knowledge of health consequences of smoking. Previous research has highlighted some of the activities

of the industry but it still remains poorly understood [153-155]. For example, studies have demonstrated how the industry deceived the public and policy makers about the harms of tobacco [156;157], manipulated science by conducting research that sought to counteract evidence [158-160], used third parties to promote agenda [161;162], targeted vulnerable populations [163;164], interfered with regulatory and public policy process [165;166], promoted smuggling and contraband products [167;168] in a bid to avoid in-country taxation and prevent competition. Successful legal actions against the industry have resulted in paper depository and online electronic archives of tobacco industry documents which have been of immense value to understanding industry operations and inner workings [152]. Curbing the tobacco industry's efforts to encourage people to start smoking and not to stop could involve (i) prohibiting marketing activities, (ii) preventing the industry from making unfounded claims about reduced health risks from products such as 'low tar' cigarettes and in principle (iii) preventing them from engineering their products to make them more attractive or harder to give up [169].

1.13 Tobacco control strategies

As has been demonstrated above, most of the damage to health caused by tobacco does not become evident until decades after starting smoking. Therefore while tobacco use is on the increase, the health consequences have just begun in many countries. Effective tobacco control policies should therefore be priorities of concerned governments and civil society. Tobacco control policy must focus on three key areas as follows; i) influence behaviour of current or potential tobacco

users, ii) limit how far the tobacco industry can seek to influence behaviour and iii) reduce the harm from use of tobacco products [169;170]. These principles have been captured in the World Health Organization's (WHO) Framework Convention for Tobacco Control (FCTC) [37]. The FCTC is the WHO's first international treaty that enjoins governments and civil society to implement certain regulatory activities that will help bring the epidemic under control. As a follow-up to the FCTC and based on evidence, six priority tobacco control measures that are thought to be workable and effective in countering the epidemic have been identified [10]. These measures (also known as the MPOWER package) are: **r**aising taxes and prices of tobacco products, **e**nforcing advertising ban, promotion and sponsorship, **p**rotecting people from second-hand smoke, **w**arning everyone about the dangers of tobacco use, **o**ffering help to people who want to quit and finally carefully **m**onitoring the epidemic and prevention policies [10].

1.13.1 Tax and price measures

Increasing the price of tobacco through higher taxation is the single most effective way to decrease consumption and encourage tobacco users to quit [171]. A 70% increase in the price of tobacco could prevent up to a quarter of all smoking related deaths worldwide [172]. A reduction in consumption does not equate to a similar size of reduction in smoking prevalence however, since some of the decrease in consumption results from continuing smokers reducing the number of cigarettes they smoke per day. This would still represent a benefit, though not necessarily a proportional one as a result of compensatory smoking. The effect of price rises on smoking prevalence appears to be over half the effect on total consumption. In China, for example, consumption elasticity has been estimated at 65%, with a 'participation' (prevalence) elasticity of 44% [173]. France in 2006 increased the price of cigarettes by 40% in the space of just over 1 year [174], and

achieved a 31% decrease in consumption, and a temporary doubling in calls to their smoking cessation help lines and purchasing of medications to aid cessation. A major issue that arises in relation to tax increases is that of smuggling and tax fraud. In the United Kingdom, it is estimated that ~40% of cigarettes (including hand-rolled) have not had UK duty paid on them (and in most cases no duty of any kind) [175]. The average cost of such cigarettes is about half of that of legitimate cigarettes. Any taxation policy needs to be accompanied by vigorous and adequately funded law enforcement to combat this problem.

1.13.2 Banning advertising, promotion and sponsorship

The effectiveness of tobacco advertising, promotion and sponsorship on tobacco use and smoking in particular has been clearly identified, although the tobacco companies argue that tobacco promotions aim simply to reallocate market share among existing users [10]. Marketing strategies specifically targeting youth and specific demographic subgroups are particularly very effective [176;177]. Marketing and promotion increase tobacco sales and therefore contribute towards killing more people by encouraging current smokers to smoke more and decreasing their motivation to quit. Marketing also urges potential users and young people specifically, to try tobacco, many of whom then become long-term users. To be effective, bans must be complete and apply to all marketing and promotional categories. If only television and radio advertising is blocked, the tobacco industry will move its budgets to other marketing avenues such as newspapers, magazines, billboards and the Internet. If all traditional advertising is blocked, the industry will convert advertising expenditure to sponsorship of events popular among youth such as racing, sports and music festivals [178]. Prohibition therefore needs to be comprehensive.

1.13.3 Protecting people from second-hand smoke

Research clearly shows that there is no safe level of exposure to second-hand smoke. Second-hand smoke contributes to a range of diseases including heart disease and many cancers, increases risk of coronary heart disease by 25-30% and risk of lung cancer by 20-30% [179]. Comprehensive bans on smoking in workplaces and indoor public areas also appear to have an effect on smoking [10]. The main reason for introducing such bans is to protect employees and the public from second-hand smoke exposure, but bans can clearly motivate smokers to try to stop and may make it easier for them to succeed. The ban in Ireland appears to have reduced smoking prevalence by 2% in the months immediately following implementation, though this effect may not have been sustained [180]. A similar ban has been put into force in parts of the United States and Australia and in Norway, Scotland, New Zealand and Italy, with England followed in the summer of 2007. Partial bans have been introduced in countries as diverse as Spain, India and Iran, although the degree of compliance and enforcement appears to be variable [10]. Such partial bans appear to have minimal effect on smoking prevalence.

1.13.4 Warning about the dangers of tobacco use

In spite of the conclusive evidence about the dangers of smoking, there are data to suggest that many smokers are unaware of the health consequences of smoking, particularly in developing countries [181]. Where awareness is higher, in many cases addiction has already been established so cessation is difficult to achieve. Health warnings on tobacco packages increase smokers' awareness of their risk however, and there is overwhelming scientific evidence that large direct health warnings on cigarette packs, covering at least 30% of the cigarette pack, is an effective tobacco control measure [182;183]. Experience in Australia [184],Belgium [185], Brazil [186], Canada [187], Thailand[188] and other countries show that strong health

warnings on tobacco packages, particularly pictorial warnings, are an important information source for younger smokers and also for people in countries with low literacy rates. Effective tobacco control policy should incorporate strong direct health warnings to deter potential would-be smokers.

1.13.5 Offering help to smokers

Three-quarters of all smokers who are aware of the health consequences and dangers of tobacco use, want to quit [10;189]. Countries' health-care systems hold the primary responsibility for treating tobacco dependence. Treatment includes various methods, from simple medical advice to pharmacotherapy, along with telephone help lines known as quit lines, and counseling. These treatment methods have differing cost efficiencies, and do not have a uniform impact on individual tobacco users. Treatment should be adapted to local conditions and cultures, and tailored to individual preferences and needs [10]. Smoking cessation services should be incorporated into primary health care services where applicable with opportunities to remind users about the need to protect themselves and family from the harmful effects of tobacco use.

1.13.6 Monitoring epidemic and preventive measures

Through accurate monitoring and measurement of tobacco use, effective measures can be put in place to ensure that there is a continuous decline in tobacco use and to ensure that tobacco control policies are working. An effective monitoring strategy should track several indicators such as i) prevalence of tobacco use ii) impact of policy interventions and iii) tobacco industry marketing promotion and lobbying [10].

1.14 Conclusion

Mankind has used tobacco for throughout history. Currently, the cigarette is the most common form of tobacco in use. There are differences in regional smoking prevalence as well as the level of development across the world. Whereas data abound in developed countries on the prevalence and health consequences of smoking, the same cannot be said of developing countries where data on national smoking prevalence are scant. In spite of the many health consequences, smoking of manufactured cigarettes is on the rise in developing countries but appears to have stabilized in many developed countries. The epidemic rise in smoking is a global problem that requires urgent action particularly in developing countries where resources are scarce and communicable diseases are many. Effective measures by governments to incorporate the six most workable policies outlined in the MPOWER package will help to contain the epidemic.

CHAPTER TWO: SMOKING IN GHANA AND PROFILE OF STUDY AREA

2.1 Introduction

This chapter presents an introduction to Ghana, in particular its history, geography and culture, together with a profile of the study region within Ghana that I have studied. Additionally, the contemporary status of tobacco control policy and politics in Ghana including key policy initiatives, what is known about tobacco studies, key actors and bodies involved in tobacco control and promotion. An introduction has further been made of the FCTC and Ghana's participation to date of Conference of Parties (COPs) and other such initiatives. Finally, I present why smoking in Ghana is a problem and seek to address what is known and the research gaps that need to be researched. The chapter therefore ends with study aims and objectives.

2.2 Short profile and history of Ghana

Ghana is situated on the West Africa's Gulf of Guinea, a few degrees north of the Equator with a total area of 238,540 km^2. From a population of just about 10 million in the early 1970's, Ghana's current population stands at about 22 million. The Gross National Income in Ghana (in 2005) was $450 per capita, and economic growth was just under 6% [148]. Ghana is projected to reach middle-income status by 2015. In 2001, the literacy rate in Ghana was 75% and life expectancy at birth was 56.2 years for men and 59.3 for women [190]. The population is made up of several ethnic groups. The Akans constitute the largest ethnic group (49%) followed by the Mole-Dagbon (17%), Ewe (13%), and Ga/Dangbe (8%). There are

however various other smaller ethnic groups found in many parts of the country [148].

The republic of Ghana was established in March 1957 from the then "Gold Coast". The name Gold Coast was adopted by the Europeans who colonized and named the region, principally because high quality gold can be found there in abundance [191]. Ghana derives its name from the medieval Ghana Empire of West Africa, Wagadugu, which covered an area that now includes part of present day Burkina Faso, located up to 500 miles north of the present day Ghana. Some anecdotal evidence connects the Akans (the biggest tribe in Ghana) with the Mandikas of Senegal and Gambia. The similarity in the design and use of pipes by the Akans and the Mandikas connects the two peoples in their history of tobacco use [192]. Since 1957, when the first Government was elected under the presidency of Osagyefo, Dr Kwame Nkrumah, Ghana has had a tortuous political history, including periods of military rule. In 1992 however, Ghana returned to constitutional rule with the election of President Jerry Rawlings. Currently, Ghana enjoys a stable democracy with a constitutionally elected Government under President John Evans Atta Mills who succeeded President John Agyekum Kufour in 2008.

Figure 2.1 Regional map of Ghana showing the Ashanti Region

2.3 The progress of the smoking epidemic in Ghana

British American Tobacco (BAT) has had a manufacturing presence in Ghana for most of the past 50 years and has consistently had the bigger market share ranging from 80-95% [193] until closure and relocation in December 2006 [194;195]. BAT cited that this closure was "part of its drive to optimize its business processes

including its supply chain, which will enable the organization take advantage of the emerging economic integration in Africa to benefit from a reduced cost base, in line with the strategy of the British American Tobacco Group" [196;197]. However it is thought that Government policies on the excise tax structure and illicit tobacco trade in Ghana were probably among the reasons for the fold up of the BAT's Takoradi factory [197].

Having had a manufacturing presence for this long as a poor but rapidly growing country, Ghana is a prime tobacco industry target and is therefore likely to be at a relatively high risk of involvement in the tobacco epidemic. However, detailed information on smoking in the general adult population in Ghana is scarce, being limited to one national survey which included only three questions on smoking [151]. Currently, cigarettes are widely available in public places including pubs, lorry stations and market places, and although there has been no formal study of levels of population awareness of the health effects of cigarette smoking, indications are that they are low. The low reported smoking prevalences from some studies across African countries have given the erroneous impression that smoking is not of public health significance in sub-Saharan Africa. Consequently, tobacco control programmes have received little attention in many of these countries including Ghana [198]. Ghana appears to be in stage 1 of the smoking epidemic model mentioned in chapter one, in which smoking prevalence among both men and women are relatively low and smoking related deaths are not yet evident [199].

Some earlier research work done with minor population groupings such as civil servants in 1973 suggested a smoking prevalence of 19.4% with the highest consumption per day being evident among the 40-49 year olds [198]. Data from tobacco archives of the WHO and British American Tobacco reports indicate in 1974 that, the average number of cigarettes smoked per day by age and sex was

7.7 for males and 4.7 for females [200]. In 1975, another study that looked at smoking in Mamprobi (a suburb of Accra) suggested a prevalence of 24.6% among males and 0.75% among females [201]. A presentation made by Amonoo-Lartson in 1982 from a study among 1600 pupils in the Greater Accra region indicated that 33% of students smoked at that time and a significant number of those who had ever smoked (32.6%) came from high socioeconomic homes as exemplified by the level of education of the father [202]. Advertising appeared to be a factor as to why students started smoking in this study population.

Another source of data conducted by BAT from their own research team on smoking prevalence in 1995 reported prevalence in Accra, the national capital to be 8% and 0.4% respectively for adult males and females respectively. The prevalence for urban and rural populations were 9% and 8% respectively, and the age group with the highest prevalence was found to be those aged 45-54 years (14%) [203]. The prevalence of smoking was reported to be higher in males than females, and highest in the Northern Regions compared with the Southern part of the country for both males and females [204].

National data on smoking prevalence in adults in Ghana were not available until 2003, when three smoking questions were included in the Demographic and Health Survey (DHS), a household survey of 10,706 individuals aged 15-59. This study found that smoking in adult women was rare (<1%) but that 9% of men smoked, and 2% used other forms of tobacco. The prevalence of smoking was highest in men aged over 35 years, living in rural areas, with no education, and in the lowest wealth quintile. However, heavy smoking, of 10 or more cigarettes/day, was more common in those in the higher wealth quintiles, and in those living in urban areas. The DHS estimated smoking prevalence in men aged 15 to 19 to be only 0.7%, with no reported use of other tobacco products [151].

The only other source of recent data on smoking in young people paints a very different picture however. The Global Youth Tobacco Survey (GYTS), a school-based survey of students aged 11-16 years and in grade Junior Secondary School 1 (JSS1) to JSS 2 which measured smoking behaviour in a sample of 1,917 Ghanaian school children aged 11-16 years in 2000, reported a smoking prevalence of 4.8% (3.8% of girls and 5.3% of boys), and use of other tobacco products by a further 5% [205]. The GYTS which involved a two-stage randomized sample design to produce a representative data for Ghana also reported that 14.3% of participants had tried cigarettes, and that 19.3% currently used any tobacco product [55;205]. A repeat survey of the GYTS was conducted in 2006, in which a total of 9,990 students participated with a school response rate of 96.7% and a student response rate of 88.5%; the overall response rate of 85.6%. The 2006 GYTS reported a prevalence of 14.4% (male = 14.6%; female = 13.0%) currently using tobacco products, 11.5% ever having smoked cigarettes (male = 12.2%; female = 9.7%), and 12.5% (male = 12.4%; female = 11.5%) currently using tobacco products other than cigarettes [206].

Finally, Amoah's [207] work, from which 10.8% of Ghanaian men and 4% of women are quoted to be smokers by the World Health Organization (WHO) [208], actually reports a survey of diabetes prevalence in adults aged over 25 living in Accra, and does not include figures for smoking, are, if correct, again inconsistent with the DHS result.

Another WHO smoking prevalence estimate gives smoking prevalences for Ghana in 2002 of 7.4% and 0.7% among males and females respectively [9]. Official tobacco trade data also present a surprising picture of the likely trend in prevalence of smoking in Ghana, since they suggest that consumption has decreased by 50% between 1970 and 1996, from 331 to 171 cigarettes per capita

[209]. Whereas a true fall is possible, the emergence of significant trade in smuggling is a plausible explanation. It suggested that at that time over 99% of these cigarettes were supplied by British America Tobacco (BAT) Ghana, although this figure would very likely change following the closure of the BAT Ghana factory. In the light of all these obvious inconsistencies in the available data, it is important to study smoking in Ghana firstly, to better understand the true situation and secondly to augment existing literature and finally, to make suggestions for control of the smoking epidemic.

2.4 Tobacco control policy and resources in Ghana

Like many policies in Ghana, it is very hard to come by documentary evidence of Ghana's tobacco control policy. Several policies in Ghana have been made publicly and usually on political platforms, after which drafting of official documentation and enforcement proves to be problematic [210]. The first tobacco control policy to be introduced was the introduction of a comprehensive advertising ban implemented in 1982 [211]. Other recent policies have included: the celebration of 'World No Tobacco Days'; 'quit and win contests; limited smoke-free places that include Ministry of Health buildings, government buses, ports and some hotels; and, the formation of a national steering committee on tobacco control, responsible for policy advocacy and initiation as well as education and information on the adverse effects of smoking from mainly television and radio [212]. Although initially difficult to implement and still sometimes difficult to enforce, the advertising ban has largely been adhered to [196;213]. Although there are indications of an imminent comprehensive smoke-free policy [214], this is currently limited as indicated above to governmental buildings and selected areas based on a pronouncement (directive) by the Minister for Health, but without any legal basis

for enforcement. In Ghana, for 'legislation' or 'law' to have legal status and in order to be enforced, it needs to be passed through a legislative assembly (parliament). All offences under these are punishable as prescribed in the relevant legislation and the offender can be tried in a court of law. Under a 'Directive' or an 'Executive order' however, a policy for a particular aspect is pronounced but the offender cannot be tried under a court of law. As a result people still smoke everywhere with blatant disregard for smoke-free policy. Hotels are included in the directive but few adhere to it [214]. Ghana has celebrated 'World No Tobacco Day' every year since the year 2002 [215], but although commendable, little action follows the celebration of the day. At the last celebration though, Ghana's parliament pledged to pass the national tobacco control bill which will among other things seeks to ban smoking in public places [212;214].

The first Ghana Committee on Tobacco Control (GCTC) was established in 1993 [216]. This committee has recently evolved to become the national steering committee on tobacco control mandated by the Ministry of Health to oversee tobacco control activities, including media campaigns, health promotion and lobbying for smoke-free legislation [217;218]. However the resources provided for tobacco control activity are low, now amounting to funding for one person working in the non-communicable disease control unit of the Ghana Health Service (GHS). There is no specific budget for tobacco control activities within the GHS.

The regulator of tobacco products is the Food and Drugs Board (FDB) [219]. A draft national tobacco control bill [220] prepared by the national steering committee on tobacco control and other stakeholders and under the auspices of the FDB, has been submitted to cabinet but little has been done to pass the bill. Stakeholders who have been involved in the consultation process for the drafting of the bill include the Ghana Health Service, the Ministry of Health, the Health select

committee of parliament, the World Health Organization (WHO), the United Nations Children's Fund (UNICEF), the Food and Drugs board (FDB), the Attorney-General's Office, the Ministry of Women's affairs, the Ministry of information, the Ministry of finance, the Customs Excise and Preventive Service (CEPS), the Ministry of Education, the Ghana Education Service, the Ministry of Agriculture and the coalition of non-governmental organizations, the Consumers Association of Ghana and the Movement against tobacco and substance use. The others are the Ghana Standards board, the National Media Commission, the Ministry of Trade and Industry and the Ghana Tourist board [220]. Being the regulator of tobacco products, the Food and Drugs Board (FDB) has managed to get tobacco importing companies in the country to abide by certain codes of conduct that in essence adheres to the tenets of the Bill without having to wait for the passage of the bill. Since they lack legal backing, the tobacco importing companies are under no obligation to abide by these regulations [221]. For example, specific directives that the tobacco companies are supposed to abide by include those on advertising, sponsorship, promotion and required information, prohibition of organized activity for example the document that requires application for registration of tobacco product states thus "a manufacturer, importer distributor or retailer of a tobacco product shall not organize or promote an organized activity that is to take place or in part in the country" [221]. Again, in this document, which essentially implements the major FCTC policies, tobacco importing companies are not supposed to sell or offer tobacco products in "a health institution including hospitals, pharmacies, or health clinics, educational institutions, a facility with significant portion of youth clientele including an amusement park, a movie theatre and sports stadium and any other place prescribed by the FDB" [221]. Sale shall also not be made through a vending machine, post or through the internet. Meanwhile posters containing

health messages are supposed to be placed at all distribution points and retail outlets and messages on these should be vetted in line with the guidelines of the FDB [221]. However, while representing an initial step in controlling tobacco use on paper little has been done by way of implementation of these rules in practice.

In 2004, Ghana became the 39th country to ratify the FCTC, after unanimous approval by parliament [222]. The World Health Organization's Framework Convention on Tobacco Control (FCTC), which came into effect after ratification by 40 countries on February 27, 2005, presents a unique opportunity to prevent the global burden of tobacco related death and disability [37]. This is especially so in developing countries where tobacco smoking is increasing [145;223]. The treaty creates a set of principles and general duties for nations to address in tobacco use, with the objective (in Article 3) "To protect present and future generations from the devastating health, social, environmental and economic consequences of tobacco use.....by providing a framework for tobacco control measures" [37]. For example, according to the provisions of the treaty, by February 27, 2010, the 40 original ratifying countries should have banned advertising and promotion of tobacco products [224]. However, for the FCTC to succeed, ratification must be followed by implementation, and there are indications that in many countries including Ghana, policies and programs as well as local legislation are weak or nonexistent [225]. For the FCTC to succeed, there has to be active participation in the policies by ratifying countries with the necessary leadership, resources and commitment to do so. The FCTC itself is not however empowered to achieve this. Again, being a treaty itself and a legal instrument that provides the basic tools, the FCTC depends on 'goodwill' from member countries to implement the treaty and not legally binding on them to do so. As a result of these limitations, the FCTC is not necessarily being put into practice and enforcement is poor [225]. Apart from

setting the various principles in the treaty, article 21 of the FCTC requires each party to submit periodic reports on implementation to the Conference of the Parties (COPs) secretariat. However, to date, investigation of the process and potential obstacles to this progress in the developing world has been limited [226;227]. Monitoring the role of governments' compliance with their obligations however falls with Intergovernmental Negotiating Bodies (INBs). The first (COP I) was held in Geneva in February 2006. This was followed by the Bangkok COP II in June 2007 and finally the COP III held in Durban, South Africa in November 2008. Since ratification, Ghana has participated in all of the Conferences of the Parties (COPs) aimed at negotiating specific protocols for FCTC implementation. However, progress in implementing FCTC policies in Ghana has been slow. For example, at the time of the COP II many of the target indicators that Ghana was supposed to have achieved were not achieved at the time [228]. The report submitted from Ghana at the COP II indicated that there was no protection from exposure to tobacco smoke in indoor workplaces such as government buildings, health care facilities, educational facilities, private workplaces and others. There were no laws prohibiting sales to and by minors, regulation of the contents of tobacco products, packaging and labeling of tobacco products and as well ban smoking in public places [228]. Many targets under the COP III were still not achieved at the last conference in South Africa [229]. Although policy makers are supposed to be aware of the FCTC and its principles for implementation, the extent to which tobacco control is perceived by them as a priority is unknown [229]. The achievements and challenges to implementing the FCTC in Ghana after ratification have not been assessed.

The Ghana Health Service and the WHO country representative, together with all stakeholders involved in tobacco control (see above), have developed a five year

action plan for tobacco control but yet again, little has been seen by way of action or financial support [230]. For example, currently, health warnings on BAT Ghana Ltd products consist of texts occupying only about 8% of cigarette brand packs. The text health warning reads "Ministry of Health Warning; cigarette smoking can be harmful to your health" in Arial narrow font style of size 12. Other smuggled brands (smuggled brands constitute about 10% on the market [231]) from neighbouring countries in particular Republic of Togo, carry much smaller warnings, typically stating "Le tabac nuit gravement à la santé". There are no pictorial warnings, despite evidence that these are even more effective in developing countries [232]. Meanwhile, enshrined in Article 6a (I & ii) of the draft tobacco bill is the statement that "health warning[s] shall be printed large, clear and legible and permanently attached to the most visible outermost surface of the package and shall not be less than thirty per cent of the principal areas". The above analysis therefore indicates that while Ghana has ratified the FCTC and managed to put certain key tobacco control initiatives in place, implementation has been lacking.

2.5 Profile and reasons for choice of study region (Ashanti)

The Ashanti Region is one of 10 regions of Ghana and it has a land size of 24,390sq km, which is about 10.2% of the land area of Ghana. It has one municipality (Kumasi) and 22 other districts (see figure 2.2). The region shares common boundaries, to the north with Brong-Ahafo, to the south with the Central Region, to the east with the Eastern Region and to the west with the Western Region (see figure 2.1). It lies approximately between longitude 0.15' to 2.25' west and latitude 5.50' to 7.40' north.

2.5.1 Demography

Ashanti is the most heavily populated region in Ghana, with a population of 4,415,554 in 2006 [148]. Kumasi, the regional capital city, has the highest population of 1,430,241 (32.4%) of the regional total. About 47% of the population lives in the rural areas. The region has a population density of 163.8 per sq. km and also has a large proportion of hard to reach areas especially in the Afram Plains sections of Sekyere East, Ejura Sekyedumase, Sekyere West and Asante Akim North districts. Three new districts Adansi North, Atwima Mponua and Amansie Central were created in 2005. This has raised the number of districts to twenty-one, with 114 sub-districts.

2.5.2 Geography

Like most of Ghana, the Ashanti Region is heavily forested with many streams and rivers. The vegetation is broadly classified into two types: semi deciduous forest and Guinea Savanna woodland. The climate is tropical but temperatures and rainfall vary with the average temperature being about 27°C, and annual rainfall ranging from 1,015 mm (40 inches) to 2,030 mm (80 inches). The humidity is relatively high, averaging about 85% in the forest area and 65% for the Savannah belt. There are two major seasons: the rainy season, which occurs normally between May and July (a minor rainy season is from August to October); and the dry *harmattan* season occurs from November to February.

2.5.3 Culture

The Ashanti Region has 33 traditional councils and each iheaded by a Paramount Chief. All these Paramount Chiefs in turn owe allegiance to the overall Chief of the Ashantis, the Asantehene, Otumfuo Osei Tutu II. The region is often referred to as the seat of the country's culture since many of the items that portray the

Ghanaian culture, such as pottery, kente weaving, wood carving, traditional sandals, beads, smithing and a lot of others can be traced to the Region.

The main economic activity in the region is agriculture. Major crops grown include cocoa, oil palm, plantain, maize, yam, cassava, vegetables and citrus.

2.5.4 Road Network

The road network to major towns and villages in Ashanti is mostly good. Kumasi, the regional capital, is centrally placed and easily accessible by road from almost all parts of the country. Parts of Sekyere East, Sekyere West, Asante Akim North and Ejura Sekyedumase districts are however inaccessible most of the time, especially during the rainy season.

2.5.5 Ethnicity, religion and languages

The majority of the inhabitants of the Kumasi and Ashanti Region belong to the Ashanti tribe, one of several ethnic groupings making the Akan ethnic group. The language spoken by the Ashantis is Asante Twi. There are other minor tribes within the Akan ethnic grouping, including Fantes, Akwapims, etc., making Kumasi particularly cosmopolitan. Other ethnic groupings in the Ashanti Region apart from the Akans include, Dagomba, Ewe and Ga/Dangbe. The principal religion in the Ashanti Kingdom (about 70%) is Christianity, with 15% being Muslims, and most of the rest Traditionalist (a belief in the existence of lesser gods, with adherence to traditional Ghanaian customs). Among Christians, the principal religious affiliations are Catholic, Protestant, Orthodox, Charismatic and Pentecostal.

2.5.6 Health

There are five hundred and thirty (530) health facilities in the region. The Ghana Health Service operates about 32% of all these; the others are operated by the private sector, home based care, naturopathic and traditional health sectors (see table 2.1). Kumasi has the highest number of these facilities (about 38% of all the

facilities in the region) [233]. The main health problems found in the region are chronic endemic diseases such as Malaria, Tuberculosis, Buruli ulcer, Onchocerciasis and HIV/AIDS. Some diseases earmarked for eradication are acute flaccid paralysis, Neonatal tetanus, Guinea worm, yaws and leprosy.

2.5.7 Education

The Ashanti Region is one of the education hubs of the country and has several secondary schools, one public and several private universities. The overall literacy rate is about 65%. School attendance for basic schools is mandatory under a new Government programme of free compulsory basic education since 2002. Kumasi boasts of several private and public schools for education from basic level to tertiary level.

Table 2.1: Health Facilities by Ownership in Ashanti

Facility	Total Number
Government	170
Mission	71
Private	281
Quasi Government	08
Total	530

Source: Regional Health Administration, Ashanti

2.5.8 Occupation

The main economic activity in the region is agriculture and trading. Major crops grown include cocoa, oil palm, plantain, maize, yam, cassava, vegetables and citrus. Other occupational activities include pottery, kente weaving, wood-carving, traditional sandals, beads, smithing as a result of which the region is often referred to as the seat of the country's culture due to the fact that several items that portray the Ghanaian culture can be found in the Region.

2.5.9 Housing characteristics

The Ashanti Region has an urban/rural population distribution of 51:49%. Currently the region is the second most urbanized in the country after the Greater Accra Region, where the national capital is situated. The population per house typically ranges between seven and thirteen, with compound (a type of house in which there are many households sharing same basic amenities such as toilets etc) houses being the predominant form, the other form of housing is separate houses that are present in all districts. In rural areas, the commonest form of house is mud-thatched, with cement block built houses being the most prevalent form in urban areas such as Kumasi. Most houses are owned by individuals in the rural areas compared with the relatively high proportion of people living in rented houses in urban areas.

In Ashanti, approximately 30% of the population does not have access to potable water, nearly 80% will dispose of solid waste by dumping and about 70% of the population would use wood or charcoal as fuel for cooking [233].

Figure 2.2 Regional map of Ashanti showing Municipal and Districts

Ashanti Regional Map showing Metro Municipal and Districts

2.5.10 Reasons for choice of Ashanti, Ghana

At the outset of this study, and as outlined above, there was little published research on smoking prevalence in Ghana, no data on the uptake of smoking, and no account of past tobacco industry activity and current tobacco control policy in Ghana. Published studies on health effects of tobacco use in particular smoking are minimal and studies quantifying health effects in Ghana are unavailable, although conflicting there are indications that health effects arising from tobacco use are on the increase [234]. Clearly, although it is evident that Ghana has been involved in tobacco control since the ban of tobacco advertising as far back as 1982, and more recently by the ratification of the FCTC, there are still gaps in the knowledge of tobacco control efforts. Other areas in which data are scarce include: cigarette consumption; types of product smoked; brands consumed; price paid

and usual place of purchase; age at onset of smoking; duration of regular (at least daily) smoking; levels of dependence (time to first cigarette of the day and consumption); current use of tobacco products other than cigarettes (including cigars, pipes, chewing tobacco, snuff, and other products); number of close friends who smoke; smoking policy at respondent's place of work; support for smoking regulations in indoor public areas; knowledge of health effects and diseases caused by smoking; beliefs about the dangers of different tobacco products; awareness of media campaigns; desire to quit and number of quit attempts; and perceived difficulty in quitting smoking.

The Ashanti region was chosen to study some of these characteristics, first because it is the home region of the student and work base, and also because it includes inhabitants across the range from developed urban to subsistence rural lifestyles. Secondly, the region's demographic characteristics (being the most populous) are comparable with national data suggesting that it is broadly representative of the country. This study was also developed as a prototype for developing countries to determine the prevalence and determinants of smoking, to determine how these relate to tobacco control policies such as those within the FCTC and how developing countries could better utilize the FCTC to control tobacco use. Until developing countries better understand their own unique circumstances and what determines tobacco use in their countries, it will be difficult to implement effective tobacco control policies.

2. 6 Rationale for study

To summarize, cigarette smoking has been the main preventable cause of disease, death and disability in many developed countries for the past 50 years or so. It is forecasted that without strong and resolute action from developing countries, "smoking diseases will appear in developing countries before communicable diseases and malnutrition have been controlled" [79] resulting in developing countries bearing the greater impact of the global tobacco epidemic.

Ghana is a case of a fast growing economy and economic stability with a tobacco industry manufacturing presence (BAT) for the most part of the country's history (since 1952), but where very little is known about tobacco use and consumption [235]. Very little is known about the activities of the tobacco industries, their activities in relation to smuggling and to what extent they have contributed to the epidemic. For example with the exception of the mention of International Tobacco Ghana (ITG) and how it used to champion smuggling from Ghana's Eastern neighbour, very little is known of this company and how it contributed to the economy's tobacco issues [236]. Existing data on prevalence, including WHO estimates, are inconsistent. Tobacco consumption appears to be low, although there has been only one nationally representative study, the Ghana Demographic and Health Survey (GDHS), which contained only three questions on smoking. Thus, given the historical presence of the tobacco industry in Ghana there is concern that Ghana could be a prime target for the tobacco industry. This study was therefore designed to augment existing literature and to present the exact situation of tobacco use and control in Ghana. The focus on data from Ghana; was therefore the main concern as literature for the whole of Africa or other developing countries was beyond the scope of the study. It also aims to give a detailed

assessment of tobacco use, of tobacco control policies and to what extent they have been implemented and are recognized by the population, and the extent to which progress has been made with implementation of the FCTC. This detailed picture will help regulators in Ghana to take any necessary action to prevent the public health consequences of smoking and tobacco use, and to avoid Ghana becoming a part of the growing global tobacco epidemic.

2.7 Aims and objectives of study

The following are the aims and objectives of the study:

2.7.1 Principal objective

The principal objective of the study is to chronicle the history of tobacco industry activity, describe the epidemiology of the tobacco epidemic in Ghana and assess progress with implementation of the FCTC for the very first time.

2.7.2 Specific objectives

Specifically, the study seeks;

1. To carry out a literature and documents search to review the nature of the tobacco industry presence in Ghana to date.

2. To survey current smoking behaviour and risk factors for smoking in a random population sample in urban and rural areas of the Ashanti Region.

3. To describe public attitudes to smoking and tobacco.

4. To assess the extent of implementation of current tobacco control policies, identify likely problems and suggest potential solutions.

5. Finally, to make recommendations for the effective control of tobacco use in Ghana.

2.8 Conclusion

Ghana is a fast growing economy with industry presence for over half a century and at stage 1 of the smoking epidemic model. Ghana is thus at risk of the smoking epidemic but whereas Ghana has tried to implement tobacco control measures (policies), including an advertising ban in 1982, limited smoke-free places, health warnings, celebration of World No Tobacco Days, formation of a national steering committee on tobacco control, large stakeholder participation and involvement in the drafting of the national tobacco control bill which has not been passed into law, little has been done to enforce tobacco control measures and to prioritize tobacco control activities. The FDB and GHS have tried to implement measures to control tobacco but without any legal backing and with little success. Prevalence studies conducted in Ghana are scant, inconsistent and largely confined to minor populations. Industry activity and other variables indicated above have not been studied requiring data to depict the true picture and to augment literature on the smoking epidemic in Ghana.

CHAPTER THREE: EVOLUTION OF THE TOBACCO INDUSTRY IN GHANA

3.1 Introduction

As the first stage of the research in this thesis, this study was carried out to document the growth and development of the tobacco industry, and of tobacco consumption, in Ghana. The possible reasons for Ghana's apparent low tobacco use and cigarette smoking prevalence are explored in this chapter. In addition, a chronicle of the main industries, their activities in Ghana and a forecast of the likely behaviour of Ghana's tobacco industry in the future are presented. The term 'tobacco industry' used here refers to all the manufacturers and companies that have dealt and continue to deal in tobacco products in Ghana dating the entire period that the research covers. My literature review is a narrative review of the key literature identified primarily through searches of Medline, existing reviews, and citations in existing reports.

3.2 Methods

3.2.1 Background to industry documents

This first part of the study involved a desk review of tobacco archive documents, analysis of all published works on smoking and tobacco use in Ghana as well as contact with all tobacco control experts in Ghana and elsewhere to describe as much as possible the epidemiology and evolution of smoking and tobacco use in that country. International tobacco industry documents released as a result of litigation in the US were searched. The internal tobacco industry documents give the public health community invaluable and unprecedented insight into the industry's motives, strategies, tactics and data. The documents provide information that is only available to the industry and describe the history of the

tobacco industry for over fifty years. This immense data source became public knowledge when the *New York Times* published a series of articles from Brown and Williamson (B&W) and its parent organization, British American Tobacco from a whistleblower in 1994 [237]. Additional documents became available and increased with the major settlement in Minnesota and Blue Cross/Blue Shield against the major tobacco companies leading to the stored depositories in Minnesota and Guildford, England [238]. There have been recent initiatives to promote the use of these documents from the National Cancer Institute, Legacy Foundation, and California Tobacco-Related Disease Research Program.

3.2.2 Making a start

At the start of this work contacts were made with experts in the area of tobacco industry research in London School (Anna Gilmore) and with Eric LeGresley at the International Union Against Tuberculosis and Lung Disease (IUATLD) who had carried out some research on tobacco industry documents from Africa, to help me to develop a plan for searching the document databases. Before the search was carried out, a library was created using Reference Manager Software version 11 (Adept Scientific, United Kingdom) with a specific output style to be employed in the search of the internal documents and to which details of the documents searched were added.

3.2.3 Document search strategy

I employed an iterative approach to search through the documents, using internet sites and library sources. The Legacy Tobacco Documents library (http://legacy.library.ucsf.edu) and the British American Tobacco Documents Archive (http://bat.library.ucsf.edu) were searched at first for obvious terms such as Ghana, Ghanaian, West Africa and Africa, and then with additional terms identified through these initial searches, further searches were made. A snowball

approach to such additional terms included BAT cigarette brands, the local tobacco company (Pioneer Tobacco Company) and the names of adjacent countries. Other regional terms such as Francophone, Anglophone were also used for the search. The additional terms included BAT's cigarette brand names used in Ghana and neighbouring countries, BAT UK & Export (BATUKE), Britanique Ivoirienne Tabac Conseil (BRITCo), and AMESCA (BAT's subsidiary for Africa, Middle East and sub Continent). Attention was paid to terms such as 'Unit II' and 'Unit 2'; these were BAT marketing groups operating in West African region. Sometimes terms were intentionally misspelled to crosscheck for consistency with contemporary names and bearing in mind that names could potentially have been misspelled. As a result, in searching for 'Accra', I would deliberately search using 'Acra' and for many other variables that I was interested in. Names of BAT workers in Ghana and the West African Region and specific project names were also used. Such names of BAT employees provided valuable memos as to what their job specifications were and why certain memos were written and for what purpose and within what context. Sometimes some of the search terms were used in combination, to understand the contexts within which they have been used. When the search was completed, relevant documents were then indexed in a project database library, printed or copies made for future reference, analysis, study and subsequent inclusion in the write-up. The searches were carried out between March and October 2007.

3.2.4 Analysis of documents

The majority of documents identified were BAT documents. A total of over 1000 documents were extracted into a database and sorted according to relevance and

date using the Reference Manager software. The documents were then read, summarized and analyzed according to questions raised in the literature review process. Analytic themes were developed and synthesized into framework for contextualization [239]. These data were then interpreted using the iterative approach to coherently construct an account of what is being said. This required substantive reviews sometimes supported by contemporary documents on the internet and evidence to deeply contextualize documents from industry sites. This triangulation process was also sometimes supplemented by journal articles. Contemporary websites such as electronic newspaper websites became the secondary source from which materials were occasionally validated, as it is very difficult to validate internal documents. Again, as much as possible, documents searched were put into my country's historical and situational contexts to better understand what they meant. Documents were sorted out by date, relevance and content relating to key research objectives and themes arising from search, including tobacco industry activity and the role it has played in Ghana, tobacco and cigarette production and consumption, brands, price and taxation, smuggling, advertising and projects. Once retrieved, individual documents were then indexed into the database library resulting in a total of approximately 300 documents used for the detailed analysis for the purpose of this work based on the criteria above. I also obtained official cigarette production, import and export data (from the United Nations (UN) Food and Agriculture Organization, United States Department of Agriculture Foreign Agricultural Service and other relevant sources (http://www.usda.gov), (http://www.fao.org) to gain further insight into the likely scale of the tobacco market in Ghana and to estimate the extent of any unofficial trade.

3.2.5 Reporting

As the analysis of such documents is mainly qualitative, they include quotes to substantiate claims and reporting is based on the thematic areas for which research has been carried out. A synthesis of the main content of the documents and how they address the industry's activity in Ghana were summarized in a story to detail the internal workings of the industry in Ghana to date.

3.2.6 Strengths and limitations of search method and strategy

Details of strengths and weaknesses of the internal documents have been adequately and comprehensively discussed [240-242]. Searching the millions of tobacco industry documents can be daunting as they are poorly indexed, difficult to index and sometimes of poor visual quality. Identifying documents that are useful for research purposes can therefore pose serious challenges. In the case of Ghana for example, much information is hard to find, incomplete, and sometimes difficult to interpret. In many instances, since these memos and other forms of documents were written by non-Ghanaian BAT workers, spellings of contemporary Ghanaian town names were either misspelled or wrongly referred to. For example Sekondi and Keta, towns in the Western and Volta Regions of Ghana were spelt as 'Secondee' and 'Quittah' respectively [243]. Some documents consisted of only one sheet (page) of incomplete information and it was therefore necessary for me to search for supplementary documents to augment what was present in the documents. At the time of conducting the study, there was no single published work on the internal documents from across the continent of Africa and currently only one [244] has been published. It was difficult therefore to compare notes with similar work done elsewhere on the continent and methods for analysis are still evolving and not standardized as yet. Documents are sometimes present in duplicate and in some instances triplicate, but with inconsistent dates. They may

also contain different handwritten marginalia that provide interesting insight on how some documents may have been interpreted or used by industry staff but without dates [240]. Perhaps the most important shortfall of the internal documents is the difficulty of validating the industry's claims and accounts of events in the documents. To validate these, researchers have to rely on secondary sources which may include contemporary news reporting, although sometimes with risk to the persons involved in direct interviews with individuals mentioned in the documents [245].

Most of the work reported was carried out using BAT's internal documents, since BAT have always controlled more than 70% of the Ghanaian market. It is therefore possible that information from other companies may have been missed, but time constraints have limited the search to that described here.

3.3 Results

3.3.1 History of tobacco use

Tobacco is thought to have been introduced in Ghana in the 15th century by the Portuguese, who were the first to come to the then Gold Coast, and subsequently by other European traders [246;247]. However, records indicate that cultivation of tobacco began in the 1930's and 1940's with encouragement from the Department of Agriculture [246;248]. A German entrepreneur, Mr Kurie, attempted to establish a cigarette factory in Koforidua in the early 1940's [243] but for some reason his company did not survive. Acceleration of cigarette use did not occur until the return of Ghana's servicemen from the Second World War service in Burma, after which the demand for cigarettes increased progressively, leading to increasing importation of cigarettes. The natural consequence of this demand was the

establishment of distribution depots in the then Gold Coast by British America Company (BAT) in 1948 [246;249].

3.3.2 Industry activity before independence

BAT operated these depots through an arrangement with the United African Company in several locations including Accra, Ada, Axim, Cape-Coast castle, Half Assini, Salt Pond, Secondee (now Sekondi), Winneba and Quittah (now Keta), all in the southern part of the country. The depots operated under BAT's own representatives with F & A Swanzy Ltd and Millers Ltd as "Depot Managers" [249;250]. F & A Swanzy and Millers Ltd were part of a network of BAT's agents that were tasked with the responsibility of managing many of BAT's depots in several countries in Africa including Ghana. In March 1951, BAT established the Gold Coast Tobacco Co. Ltd to take over its depot assets, and in November 1952, the Pioneer Tobacco Company Limited (PTC) was also established as a wholly-owned subsidiary of BAT to develop tobacco cultivation and cigarette manufacture. Work on the first buildings, which constituted the pilot factory, was completed in early 1954, with production starting in the same year [243;251;252].

3.3.3 Changes at independence

Moves towards independence changed the whole scenario of tobacco industry in Ghana. In 1957 when Ghana attained independence from the British Government, The Gold Coast Tobacco Company (GCTC) changed its name to Ghana Tobacco Company Limited (GTCL) [253] in April, 1957. In March 1959, when tax concessions offered to "new" industries expired, the Ghana Tobacco Company sold its assets (with the exception of amounts owing on its current account and from tax claims) to the PTC, which had been incorporated to take over as BAT's main subsidiary in Ghana with its headquarters in Takoradi, the regional capital of the Western

Region of Ghana. PTC enjoyed a great deal of support from the government, and the then president of Ghana (Dr Kwame Nkrumah) stated in 1957:

"I want to emphasize once more that we welcome foreign investment in Ghana and that we intend to continue to respect the role of private capital. I should like to draw attention to an excellent example of the kind of investment we appreciate in this country. I refer to Pioneer Tobacco Company. Here is a young company working most efficiently among Africans, encouraging the growth of its raw materials -Tobacco, and taking the fight often with Government in setting its main priority and targets and of acquaintance, pleases the Government and is an excellent case scenario for private enterprise" [243].

From this point onwards there was 'serious' distribution of tobacco products through PTC's network of branch shops owed by large expatriate trading firms, including the United Africa Company, G. B. Ollivant and the Union Trading Company [254].

3.3.4 Post independence

After PTC had taken over the operations of GTC, increasing need for closer Government relations led the PTC to move its Head Office from Takoradi to Accra in 1959, occupying its then ultra modern tobacco house on the Liberty Avenue in 1966. In 1962, there was a deliberate attempt to phase out the role of the expatriate trading firms, to complete the appointment of Ghanaian distributors, and to abolish the sales depots to establish a dispatch centre to handle all distributors' orders and shipments by the PTC [250;254]. Therefore in 1962, the Government passed a law putting the "marketing" of tobacco under state control as part of its ideology of the state owning property. The government bought the

leaf department from PTC, resulting in the formation of the Ghana Tobacco Leaf Company Ltd to take over the state leaf-producing organization. However, although PTC retained shares in and became a managing agent of the company, it had no defined terms of agreement at the time of subscription [243;251;255]. In 1967 however, Nkrumah had been deposed in a coup d'état and private enterprises were encouraged by the new government.

In 1976, following a decree by the Ghana Government Investment Policy which required Ghanaian participation in the operations of major foreign companies and organizations, PTC ceased to be a wholly owned subsidiary of BAT. The Ghana Government bought 40% of the total share of the company, 15% was sold to the public (3,700 shareholders) and 45% was retained by BAT (PTC) [251;256]. During this time though, BAT made an agreement with PTC to provide management and employees to offer services to the company to supplement an earlier technical and advisory agreement in 1975 [257;258].

PTC remained the sole cigarette manufacturing and distributing company in Ghana until 1976, when International Tobacco Ghana (ITG) was established to manufacture and supply Rothmans King Size cigarettes under an agreement with Rothmans UK, which by then had achieved an approximate 25% market share (equivalent to about 4 million sticks per day) from cigarettes brought into the country from Togo, on Ghana's eastern border [236;259-262]. However in 1991, ITG was forced out of business as a result of levy from Ghana Customs Excise and Preventive Service (CEPS) for USD $3.3 million in unpaid duty and sales tax. It is not known whether this was because the then Managing Director of ITG, Mr. B. A Mensah was not a supporter of the government (the Provisional National Defence Council (PNDC)) but of the main opposition party. The assets of ITG were therefore taken over by government and sold to the Meridian Tobacco Company

Ltd (MTC), a joint venture between the state-owned Social Security and National Insurance Trust (SSNIT) and Rothmans UK [263].

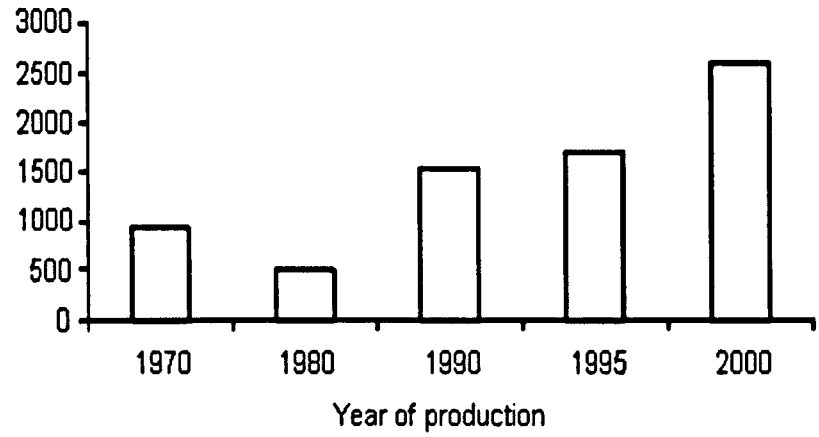
After the takeover of Rothmans by BAT in 1999, PTC merged with MTC to become British American Tobacco Ghana Ltd, again creating a manufacturing monopoly for BAT in Ghana. In 2006 the company recorded a turnover of GHC 260,565 million in Ghanaian cedis (1GHC≈1US Dollar), representing an increase of 9.57% over the preceding year, but recorded a loss of GHC 11,312 million compared with a net profit of GHC 30,350 million in 2005 [194]. In December 2006 the company closed down and manufacturing was relocated to Nigeria [193;194]. Thus the industry in Ghana has moved from an initial monopoly by BAT (PTC), then to state intervention (control), then to an oligopoly (BAT and ITG) then finally back to monopoly by BAT until it finally closed down manufacturing. The key milestones of industry developments are listed in Table 3.1.

3.4 Tobacco and cigarette production and consumption

By the end of 1966, according to BAT, cigarette sales in Ghana amounted to 200 million per month, and between 1968 and 1976 production increased by an estimated 76% [248;264]. However, growth in production was limited during this period by a lack of tobacco leaf; domestic production was insufficient, and importation was substantially limited by foreign exchange shortages [264-266]. From 1980 however, domestic leaf production increased (Figure 3.1) [267], to the point that Ghana was able to start to export tobacco leaf in 1986 [201;250;268].

FIGURE 3.1 TOBACCO LEAF PRODUCTION

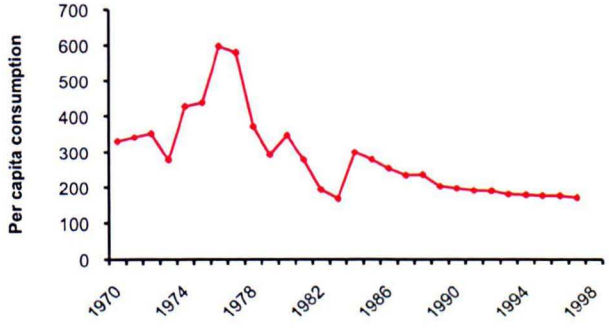
Figure 1: Tobacco leaf production in metric tons, Ghana



Source: European Research Council [269]

According to a United Nations African Regional Report, per capita consumption of cigarettes in Ghana also increased in the early 1970s, to a peak of 600 per person 1977 [267], but subsequently declined to a low of 171 per person in 1997 [267] (Figure 3.2). Consumption estimates based on official production figures since the late 1990's are incomplete and are thought not to include consumption of smuggled cigarettes (see below), but demonstrate a slow but progressive decline in consumption since 1984 [270], although consumption appears to have increased immediately following the advertisement ban in 1982 (see below).

FIGURE 3.2: ANNUAL PER CAPITA CONSUMPTION OF CIGARETTES, GHANA (1970-1997)

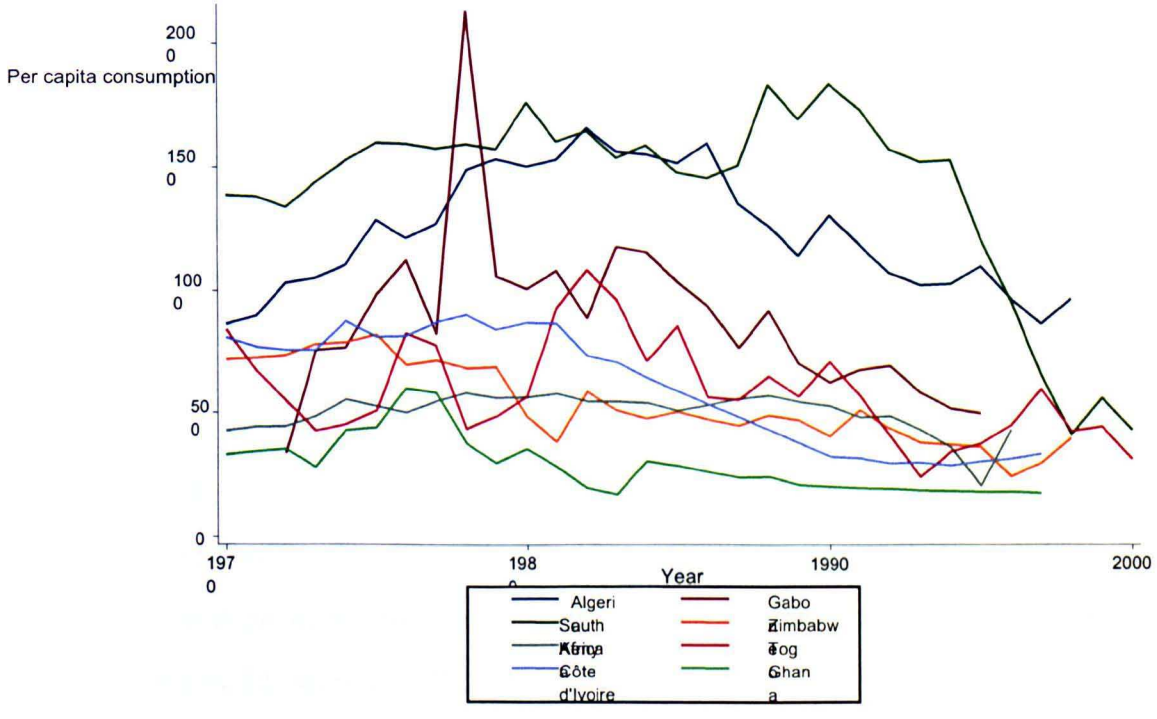


Source: United Nations Commodity Trade (GOMTRADE [267])

3.4.1 Tobacco consumption in other African countries

Tobacco consumption data available for African countries with a higher Gross Domestic Product (GDP) than Ghana [269] are shown in figure 3.3. The data suggest that consumption has also fallen in these other countries over the past two decades. Of these countries, only the Republic of South Africa implemented an advertising ban (in 1999) in the period for which data are available [271].

FIGURE 3.3: ANNUAL PER CAPITA CONSUMPTION OF CIGARETTES IN SELECTED AFRICAN COUNTRIES WITH HIGHER GDP IN COMPARISON WITH GHANA [269].



3.5 Cigarette brands in Ghana

The first made-in-Ghana cigarette, Tusker, was produced from imported tobacco in 1954; the second brand, Town Hall, was introduced in 1955 [254;272;273]. In 1976, there were six cigarette brands as well as pipe tobacco to suit all tastes and consumers and these were State Express 555, Embassy, Sweet Menthol, Tusker, and Durbar. The pipe tobacco included Player's Sundowner, Sweet Nut (Full strength) and Sweet Nut (Medium strength) [243]. No mention was made in the documents about the production and sale of smokeless tobacco. By 1979, there were 10 cigarette brands on the Ghanaian market, of which State Express 555

(SE555) and Embassy (BAT) accounted for 70%, and Rothman's king size and Pall Mall (ITG) 25% [248;272;274]. In 1991 top brands included SE555 and Rothmans King Size. Medium brands included Embassy, Royals, Diplomat, Duke A1, and Bond/London. Low brands included Tusker R, Nationale and Durbar. By the time of closure of the BAT factory in 2006 there were over 25 cigarette brands on the Ghanaian market, most of them manufactured in Ghana by BAT but including Bond Street, Gold Seal and others brought from Togo and Nigeria. With the closure of the manufacturing plant most of these brands are now going to be imported by marketing companies including BAT.

3.6 Price and taxation

In 1978 the ten major cigarette brands in Ghana were produced with official or nominal retail prices in local currency equivalent to between US$0.67 and US$1.12 for a pack of 20 cigarettes [248;272]. However the real price at which packs retailed was considerably higher, at between US$1.49 of the cheapest brand to US$3.72 of the most expensive brand [248]. It was unclear who profited from the price increase – producers or 'middle men'. At the time of the survey, GDP per capita in Ghana for 1976 was $580 and was thought to be decreasing (-2.4) between 1973-1976 [248]. The cost per capita therefore of actual consumption for the lowest priced brands was 4% of GDP in Ghana in 1978 and 10% for the premium brands [248]. Higher priced brands therefore put a strain on low-income earners' economy. Given that between the same periods cigarette consumption increased by 160% it is unlikely that price served as a deterrent in reducing consumption. Indeed with a decreasing GDP per capita consumption was rising until the late 1970s. Household income at this time and average wages was difficult to come by, but if anything at all either remained the same or decreased in value in real terms as a result of high

inflationary trends ranging between 30% and 40% in Ghana [268]. By 1987 however, BAT market survey data indicate that popular brands were selling for the equivalent of $0.83 to $1.67 per pack of twenty (figures again quoted in USD by BAT) [275;276], and by 1995 the prices paid per pack of 20 of BAT's top four brands (State Express 555, Embassy, Tusker and Diplomat) were $3.50, $2.90 $1.80 and $2.60 respectively [277;278]. Prices for International Tobacco Ghana (ITG) brands (Rothmans and Pall Mall) were competitive at between US$0.97-3.35 and US$1.12-3.72 nominal and real price respectively. During this time, real GDP per capita was decreasing as inflationary trends continued to soar and therefore eroded purchasing power. For example, real GDP in 1984 was 5.9 and decreased to 0.6 in 1990, while inflation for the same period was between 39.7% and 37% respectively [268]. The real price therefore of a pack of 20 may not have increased even though nominal price value may have increased as seen over time. Current (2008) retail prices of manufactured cigarettes on sale in Ghana range from the equivalent in local currency of approximately US$0.85 to $3.50. Tax on tobacco products in Ghana is high in comparison with other consumer products and different for different brands of cigarettes, but low in relation to tobacco products in many developed countries. Currently, for example, they account for approximately 25% of the retail price of premium brand cigarettes such as State Express or Rothmans King size [279] and approximately 17% of lowest priced brands [279]. However, according to the World Health Organization (WHO), cigarette prices in Ghana are still low in relation to many other African countries [190]. Prices of cigarettes therefore although relatively high in comparison with other non-tobacco products may not be able to account for the decreasing consumption pattern seen in figure 3.2.

3.7 Smuggling

Cigarettes have been smuggled into Ghana from its eastern neighbour, the Republic of Togo, since the middle of the 1970s [244;260;280]. References to smuggling are common in the documents we researched, as are quoted figures estimating the market share of smuggled brands, but these estimates are highly variable and their provenance unknown. However the market share of smuggled brands was probably highest in 1977, with estimates consistent at around 20-25% [248;281], Rothmans accounting almost entirely for this trend in smuggling mainly from The Republic of Togo by the International Tobacco Ghana [236]. But smuggling is reported to have fallen after the establishment of ITG in Ghana, as they began to manufacture and sell Rothmans and Pall Mall in Ghana, and to have remained relatively low until the present decade [282]. Smuggled cigarettes are sold under cover in drinking bars, hotels and by hawkers. The situation of smuggling drew government's attention as companies lose competitiveness and Government lose revenue. The Minister of Finance highlighted this in the Budget statement in 2002 thus;

"*In view of the harmful effects of smuggling, the Government has decided to combat it at the point of sale. The following products will be targeted initially among others-wax prints, alcoholic beverages cigarettes...*"[283].

In closing down manufacturing in Ghana, BAT cited unfair trade competition and Government's failure to deal ruthlessly with the growing incidence of smuggling activities along the country's borders. Although figures are difficult to come by and

often inconsistent, by 2006 however, the estimated market share of smuggled cigarettes was as high as 17.5% [282], having risen from a figure of 2% in 2002 [194]. Although smuggling figures were inconsistent, whether indeed a reflection of the true situation of smuggling in Ghana is is unknown and difficult to say. However, smuggling is thought to have cost the Government a total loss of US$3.5 million in revenue every year between 2002 and 2006 [196]. Bond Street and Gold Seal, both of which are marketed in Togo but not Ghana, are now the two most popular smuggled brands [235;279].

3.8 Technical specifications of cigarette brands

In the early stages of the manufacturing of cigarettes by PTC, BAT's parent organization provided support, particularly in terms of capacity [252;265;273;284;285]. During the early part of 1967, it was decided that analytical work on cigarette manufacturing, being carried out by the Takoradi laboratory by expatriates as well as locally trained technicians, should be discontinued and moved to BAT's laboratory in Ibadan, Lagos [265]. There were however several other means of technical support given by the parent organization (BAT) in Southampton, UK, regarding specific brand analysis in conformity with international standards, whilst meeting local consumption needs [252;260;264;284;286]. Published figures on the content of cigarettes on the Ghanaian market were not made available as the technology for measuring and detecting these was not available to Ghana, however, the content of nicotine and other components in cigarettes were said to be higher for exported varieties of same brands in Ghana than in the West from a survey done in 1979 [248]. There is evidence to indicate that in 1995 total nicotine was highest in

State express 555 (2.55mg), followed by Rothmans King Size (2.22mg) [287;288], probably accounting at least in part for their positions as Ghanaian brand leaders.

3.9 Projects

Technical input made to cigarette production during the early days of industry activities were based on the blend of tobacco grown in Ghana and imported tobacco. Early standard preparations were based on the Indian specification for cigarettes, the publications of International Organization for standardization (ISO) 126 and the Association of Official Analytical Chemists, AOAC [289]. Under various project names and codenames, several projects and their corresponding marketing strategies were undertaken to pursue rigorous blend analysis and specifications. Among the many projects undertaken in this regard were project 'Scarlet' [290;291], 'Integrity' [292;293], 'Quaint' [294], 'Batalion' [246], 'Koforidua' [295], 'Grandslam' [254] and 'Oracle' [296]. Under the guise of these projects, many of which had international dimensions (as they were undertaken about the same time in different countries, each having a similar focus), the industry was able to introduce many brands which had connections with major national programmes to augment tobacco sales and use.

3.10 Advertising and industry tactics

Data on industry spending on advertising and promotion are few, but in 1978 PTC was spending less than 1% of its total income on advertising [248], reportedly because PTC had no commercial competitors in Ghana and the available supply of cigarettes was insufficient to meet any increased demand that advertising would generate [243;272]. In 1982 the Government imposed a directive banning all cigarette

advertisements on state television, radio and in printed media [211], and all tobacco billboards were taken down. The industry response included attempts to counteract health concerns by publicising the economic benefits of the industry [285;297-299], reduce the frequency of anti-smoking and anti-tobacco articles by placing pro-industry articles in the media [217;288], and networking to involve senior management in committees and associations providing contact with government officials and business leaders[275;300]. BAT also used donations, and sponsorship of programmes such as beauty pageants, sports and cultural events to generate good publicity in the press, TV and Radio [297;301]. Their efforts yielded dividend as there were attempts to reintroduce advertising in all forms again in the early to mid 1990s thus making the adherence to the advertising ban problematic [301]. For example, in 1990 BAT reported that:

"The company ...sponsored the national dance championship competition under the Great Embassy Triple-Do.....in all these the company received very good publicity in the press, TV and Radio" [300]

Other key activities undertaken to respond to Government's interventions included the promotion of the company's agro-based activities in the rural areas to offer improvement in the living standards of the rural folk. For example a specific strategy engaged by the industry was to:

"Employ farmers in the rural areas to start cultivating other cash crops in addition to tobacco such as mangoes and cowpeas and to increase the number of farmers by 30%. This will give the company's activities good publicity" [268].

However, adherence to the advertising ban has been good, and the main forms of advertising that persist in Ghana are those on the vehicles of cigarette

distributors, in street side vendors' and other retail outlets, and on company paraphernalia and promotional items [212].

3.11 Discussion

The objective of this study was to document the evolution of the tobacco industry in Ghana, and to look for potential explanations for the low reported prevalence of current smoking. In the context of Africa, Ghana is a country at high risk of involvement in the tobacco epidemic, being populous, having enjoyed sustained strong economic growth, and having had a strong international tobacco industry presence in the country for more than 50 years. Despite this, after an initial surge originating soon after World War II and continuing until the mid 1970s, tobacco consumption has since fallen substantially. This and the reported low current prevalence of smoking [13;151] indicate that Ghana is an example of a country in which the typical tobacco epidemic appears, at least to date, to have aborted.

The information on industry activity in Ghana available for our study was limited predominantly to that available from the BAT archives. As indicated in the early part of this chapter, validation of internal documents was problematic since we have no external or independent sources with which to validate most of the information obtained, so the reliability of the data is unknown [240;302]. However, at times internal company document information was supported by contemporary news reports also held in the archive, or by consistency of findings in more than one source. We are also limited in the reliability of our assessment of smoking prevalence in Ghana, since only one nationally representative study has been published [151]. We have therefore had to rely on per capita consumption as a

marker of likely trends in prevalence and since official per capita consumption does not include smuggled cigarettes the interpretation of data in figure 3.3 should be with caution as actual consumption could have been much higher. Although bedeviled with these numerous weaknesses, the internal tobacco documents provide information that is not available anywhere else and represents exclusive data on the industry's own internal dealings. The documents have made several revelations in the past about the internal dealings of the industry that otherwise would not have been known. They show that the tobacco industry has been engaged in deceiving policy makers and the public for decades, illustrating how the industry operated and provide the truth about tobacco and secondhand smoke, advertising, promotion and other related industry activities [237;303].

However this research points towards three key factors that appear to have contributed to preventing a sustained increase in tobacco consumption after the mid to late 1970s. The first was that foreign exchange and domestic tobacco leaf shortages in the 1970s prevented the industry from responding fully to the rising demand for cigarettes by increasing domestic production. That cigarettes were in short supply is evident from the fact that at this time, cigarettes were selling for up to four times their official retail price. The second was that at around this time the industry was subject to increasing government intervention, culminating in the government taking a 40% stake in the Pioneer Tobacco Company, and requiring a further 15% of the company to be sold to the public, in 1976. Whilst I have no direct evidence that this change impacted on the efficiency and profitability of the PTC, the relegation of BAT to minority ownership at such a key point in market development is likely, at least temporarily, to have inhibited investment and growth. The third was the implementation of an advertising ban in 1982.

Before 1976, PTC appears to have spent relatively little on advertising in Ghana, perhaps because of their monopoly position (BAT adopted a similar strategy in Kenya, where they enjoyed similar market status [304]) but also because production was limited and could not meet the increased demand that advertising might stimulate. Advertising might have been expected to increase after the entry of Rothmans into the legal market through ITG in 1976, as a means for both companies to protect or expand market share; and again in the 1980s, when the tobacco leaf supply shortages that had restrained production during the 1970s and early 1980s ended and production could again increase. That leaf supply shortages had ended by 1986 is evident from the fact that Ghana then began to export tobacco leaf; at this point, presumably, leaf supply was no longer restricting cigarette production and in the presence of advertising to stimulate demand, domestic production could have increased to meet higher consumption. However at this stage, where growth was again possible, the advertising ban was in place and although not fully comprehensive, removed all billboard and media advertising. From this period, whilst advertising in Ghana continued at point-of-sale outlets, on distribution vehicles, and through sponsorship and other industry manoeuvres to obtain media coverage, the ban removed the major modes of product promotion at a time of particular commercial need.

It is therefore possible that production shortages account for the fall in consumption through the late 1970s and early 1980s, and that by the time the leaf shortages had eased in the 1980s, the advertising ban was in place and prevented the industry from stimulating fresh demand for the product it again had capacity to produce. Although the increase in consumption that appears immediately following the advertisement ban in Ghana may just be an artefact in the general trend of a decline, it is also possible that the industry manoeuvres to

counteract the effect of the advertisement ban could account for it. However, whilst this hypothesis accounts for the consumption pattern over time in Ghana, and the low overall level of consumption in Ghana relative to other relatively affluent African countries, it does not explain why consumption has also failed to grow substantially in recent years in several other countries without advertising bans, indicating that other factors are also important. Only one other African country for which data were available implemented an advertising ban during the period of comparison, and that was the Republic of South Africa (RSA), in 1999. Although consumption in the RSA fell markedly in the late 1990s this occurred in the years immediately before the advertising ban was implemented, suggesting that pre-ban publicity arising from sustained anti tobacco campaigns [32] had an important effect. There had been no such campaigns in Ghana.

Official price and tax changes appear unlikely to have played a major part in the trend in tobacco use in Ghana but contributed generally to the low consumption, not least because cigarettes have at times traded at prices substantially higher than the official price. Thus, although tax has been levied on cigarettes in Ghana for many years at a high rate in relation to that on other consumer products, the current price in US dollars paid (that is, the real rather than nominal price) for cigarettes has changed little since the 1970s, and in real terms therefore has fallen substantially. Perhaps consistent with this, and in absence of reliable data, it appears that consumption of smuggled cigarettes has also not increased in Ghana since the mid 1970s. Although there have been consistent reports of smuggled (transit) brands of cigarettes since the 1970s of about 25% reducing to about 17.5% in 2006 and accounting in part for the relocation of manufacture as stated by BAT, it is unlikely that this could have played a major role as in many instances, BAT perpetrated the situation to avoid tax and to create a good

corporate image to government [244]. It is difficult therefore to say whether smuggling is decreasing or remains unchanged in Ghana, but the claim by government indicated that it is losing revenue through this activity could potentially indicate an increase, at least until at the time of closure of BATs manufacturing [194;305]. Therefore, whilst the closure and relocation of BAT's activity in Ghana may also be driven by other broader commercial reasons, a failure to grow substantially in this country might also be an important factor in that decision.

Other tobacco control activities in Ghana are also unlikely to have played a major role, at least until relatively recently, in preventing the emergence of the smoking epidemic. Tobacco control activity during the 1970s and 1980s, when consumption was falling, was minimal. The first formal tobacco control committee was not established until 1993, and investment in tobacco control resources remains low. The ratification of the FCTC and promotion of the case for smoke-free legislation, as well as the celebration of the 'World No Tobacco Day' and other FCTC policy implementation represent considerable recent achievements but are unlikely to explain the trend in consumption due to their recency.

Overall our findings indicate that in Ghana, as in many countries [306-308], the tobacco industry typically survives hostile economic and political climates, and works hard to create a good corporate image and avoid measures that might impact adversely on demand for their product. However these efforts have not succeeded in achieving high levels of consumption in Ghana, either in absolute terms or in relation to other affluent African countries, where strong growth in consumption also occurred in the 1960s and 1970s [271;309], and continued after the peak in Ghana, before falling in more recent years [271]. In Ghana in particular, a

combination of factors including economic conditions that restricted industry growth and an early ban on advertising appear to date to have averted the major smoking epidemic and consequent toll of death and disability that would otherwise have been expected to unfold. Whilst the relative contributions of these two influences are hard to establish, the overall low consumption levels at all times in Ghana relative to other richer African countries, both before and after the advertising ban was introduced, suggests that early restrictions on growth of supply may have been particularly important in determining subsequent consumption levels.

Public health practitioners and health policy makers should be aware of the ever increasing strategy of the industry to perpetuate their activities, and continue to engage with government to advocate for strong legislation to deal effectively with the industry. Ghana's experience suggests that epidemic spread of smoking is not inevitable, and that controls on promotion, availability and advertising are likely to be effective in prevention in other countries. If effective legislation backs the current position, Ghana would be well placed to prevent an escalation of the current situation, becoming a model in that process.

3.12 Conclusion and interpretation

The tobacco industry (BAT and its counterpart ITG) has been active for the entire history of the Ghanaian economy. It started from its early days of depots formation, the initial Gold Coast Tobacco Company, through the Ghana Tobacco Company, to become the Pioneer Tobacco Company, then International Tobacco Company which later became known as the Meridian Tobacco Company to finally become known as the British/American Tobacco Ghana Ltd formed by the merger of PTC and MTC in 1998/99 (see table 3.1).

Ghana's smoking prevalence from the reviewed literature is low, in part from the unfavourable economic environment and leaf shortages at a time when the industry should have responded to increased marketing and later by an advertisement ban in 1982. Subsequently, pricing and taxation, smuggling as well as anti-tobacco activities such as the celebration of 'World No Tobacco Day', media campaigns and activities of the national steering committee in sensitizing parliament and the media although minimal, have all contributed to the low smoking prevalence.

Table 3.1 Evolution of tobacco industries in Ghana

15th Century: First indications
1930's-1940's Cultivation of tobacco began
Tobacco use accelerated by servicemen from World War II
Late 1940's tobacco distribution depots formation
1951 Gold Coast Tobacco Company Ltd incorporated
1952 Pioneer Tobacco Company (PTC) established
1954 first buildings of PTC completed
1957 Gold Coast Tobacco Company changed its name to Ghana Tobacco Company
1959 Ghana Tobacco Company sold its assets to PTC
Late 1950's to early 1960's Grand Tobacco Company formed
1969 Grand Tobacco Company bought by PTC
1969 Ghana Tobacco Leaf Company formed
1976 PTC ceased to be wholly owned by BAT
1976 International Tobacco Ghana formed
1991 International Tobacco Ghana sold to Meridian Tobacco Company, MTC (Joint venture between SSNIT, Ghana and Rothmans UK)
1998/1999 PTC and MTC joined to form the British American Tobacco Ghana Ltd
2006 British American Tobacco Ghana Ltd closed manufacturing and delisted from Ghana Stock Exchange
2007-onwards increased imports by competing marketing companies (BAT, Target link and Super kings)

CHAPTER FOUR: PREVALENCE AND DETERMINANTS OF SMOKING IN GHANA

4.1 Introduction

This chapter describes an investigation of the extent of tobacco use in Ghana. In it, I have aimed to measure smoking in a representative sample in the Ashanti region of Ghana to ascertain the prevalence and major risk factors for smoking in Ghana. Prevalence is measured as current and ever smoking status, using questions derived from standard questions used in UK national surveys. The risk factors I have investigated include socio-demographic characteristics, in particular age, gender, educational level and ethnicity; locality of residence, ownership of goods, having friends who smoke, alcohol use and occupation. In addition to smoking prevalence I have measured cigarette consumption, the type of product smoked, the brand smoked, price paid and usual place of purchase of cigarettes, age at onset of smoking, duration of regular (at least daily) smoking, measures of dependency (time to first cigarette of the day and consumption), current use of tobacco products other than cigarettes (including cigars, pipes, smokeless tobacco and other products) and their sources of acquisition.

4.2 Study Methods

4.2.1 Study design

This research involved a two-stage cluster randomized sampling design to recruit a representative sample of Ashanti region residents aged 14 years and above in a cross-sectional study of households carried out between September 2007 and May 2008.

4.2.2 Preparation and ethics

Approval for the conduct of the study was sought from the Committee of Human Research and Ethics at the School of Medical Sciences in the Kwame Nkrumah University of Science and Technology, Kumasi, Ghana as well as the Ethics Review Board of the Ghana Health Service in Accra and the local ethics committee of the University of Nottingham. Letters seeking consent and cooperation were sent to the respective Metropolitan and District Assemblies for information and collaborative assistance.

Informed consent for the survey was obtained by either signature or thumbprint after careful explanation of the purpose and requirements of the study. Photocopies of the ethical approvals granted, and collaborative letters are attached in appendices 3, 4 and 6.

After seeking ethics approval from the University of Nottingham, formal communication was made with the head of my department (Community Health) of the School of Medical Sciences, as well as the head of the Kwame Nkrumah University of Science and Technology (KNUST) to seek support. Letters of collaboration were sought from the Health Research Unit of the Ghana Health Service (GHS), which is responsible for tobacco control in order to get them involved in any policy implications arising from the findings of the study.

Letters seeking assistance for map generation and the conduct of mini censuses (household listings) in the Ashanti Region were sent to the Ghana Statistical Service (GSS) who offered the services of their staff for the household listing. The services of the GSS staff proved invaluable in the conduct of this research. Again, letters of cooperation were sent to the Regional Health Directorate of the GHS who in turn informed all Community Health Volunteers (CHVs) about the intended

research. As a result of this, some health volunteers were then trained, together with fieldworkers, in the administration of the questionnaire during the survey.

4.2.3 Selection of study participants

Our initial sampling frame was the list of Ashanti Enumeration Areas (EA) from the 2000 Ghana population and Housing Census (updated version), altogether numbering 360 (176 rural and 184 urban EAs respectively). EAs are population counting units, each typically comprising about 100-120 households, and have important properties such as well-defined boundaries that are represented by maps and relatively small sizes of clusters. We stratified the list of EAs into rural and urban, and since the Ashanti region has an urban to rural population of 51:49% took a random sample of 30 (15 urban and 15 rural) EAs for study. The EAs constituted the primary sampling units since they are the smallest well defined geographical units for which the population and household data were collected. Households within the EAs constituted the secondary sampling units, the final sampling unit being all eligible persons in the household aged 14 and above. Fieldworkers from the Ghana Statistical Service of the Ashanti region were engaged to visit each sampled EA, and to identify a 20% systematic sample of houses in each EA by walking a serpentine route through the EA and making a chalk mark of Tobacco Project Survey (TPS) with the appropriate number on the wall of every fifth house. The fieldworkers also produced a hand drawn map to help identify the houses (see appendix 7). These houses were then visited by trained fieldworkers who explained the study, obtained informed consent (with approval given by way of signature or thumbprint as appropriate) before administering questionnaires. We excluded individuals living in institutions (such as hospitals, prisons and hotels) and foreign nationals. Also excluded from the

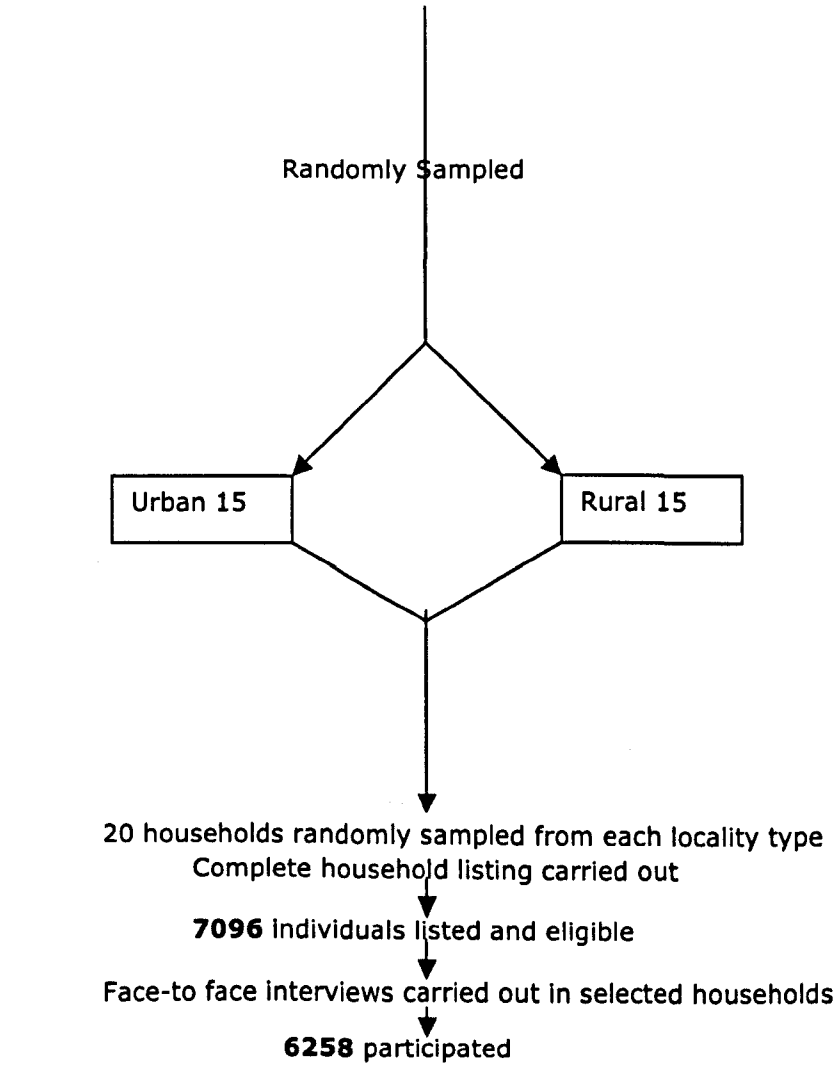
study were individuals below 14 years and those who failed to give consent for participation.

4.2.4 Sample size and power

Sampling urban and rural EAs in a 1:1 ratio, and anticipating (from estimates based on local knowledge) that smoking prevalence would be of the order of 5 to 10%, and a design effect (i.e. a multiplication factor for sample size to allow for clustering within household) of up to 2, a total sample of 6000 participants was estimated to allow us to estimate the prevalence of smoking in the urban areas to within 1% and in the rural areas (where prevalence was expected to be slightly lower) to within 2%. By selecting a total of 30 EAs (15 each of urban and rural) provides a total number of 3600 estimated households from which a systematic random sample of 20% results in of approximately 720 households. With an estimated number of approximately 8-9 members per household, this would yield our estimated sample size of 6000. The sample size also provides over 95% power to detect a twofold or greater difference in prevalence between urban and rural areas, or between exposed and unexposed individuals, for any risk factor occurring in at least 20% of the population, taking an alpha of 5%.

Figure 4.1 is a flow chart of how sampling was performed and the final sample size obtained for the study.

Figure 4.1 Flow chart of sampling procedure



4.2.5 Household listing

To determine the number of eligible individuals for the study and hence response rates a complete household listing of all selected households in the selected EAs. This was done before the survey work began, by engaging staff of the Ghana Statistical Service (GSS) in Ashanti Region. Members of the GSS then conducted a

census of all occupants in all selected households in both the rural and urban selected households of these Enumeration Areas (EAs) in the Region. All eligible individuals of these households were then later contacted for face-to-face interviews.

4.2.6 Training of field workers

The field workers were recruited predominantly from people with health background including nurses, health assistants and Community Health Volunteers (CHVs). The criteria for the recruitment of field worker were: one's ability to be able to speak Twi and English; to be able to explain appropriately the purpose of the study; and to obtain informed consent in accordance with the study protocol. The fieldworkers were selected through interviews and by recommendation from directors of health in the region. After letters of engagement were given to them, they were then asked to gather at the premises of the Department of Community Health of the School of Medical Sciences of KNUST in Kumasi for a training session which lasted three days. The purpose of the training session was to give an overview of the aims and objectives of the study, to ensure that there was internal validity by going through the study questionnaire and how it should be completed and training the fieldworkers to be skilled interviewers and to go through the protocol for seeking informed consent in both rural and urban districts.

4.2.7 Data collection tools and survey

After their training, pairs of fieldworkers were sent to each household to conduct a face-to-face interview with all consenting adults aged 14 and above. Questions were asked in both Twi and English and respondents had the option of having a translator if they could not speak Twi or English. Up to 3 repeat visits were made to capture data for individuals who were not present at the first visit. The smoking questions were based on those used in the UK General Household Survey [310] and

the International Tobacco Control survey[311], supplemented by questions on local issues relevant to smoking (see appendix 1). The questionnaires were translated and back-translated from English into local Asante Twi language before administering.

4.2.7.1 Demographic questions

Questions covered demographic variables such as age, gender, ethnic group, religious affiliation, educational qualification, main employment, type of health insurance and how much paid. In estimating socioeconomic status (SES), I used questions on ownership of consumer goods, measured and grouped according to ownership of the following items; radio, television, video recorder (VHS), telephone or refrigerator, and having electricity supply. We used this information to create five categories of ownership: none, radio, telephone, TV and car. I did not include having electricity in the analysis as everyone in the selected EAs had access to electricity. In doing the analysis, I categorized the various items from a scale of 1-5 with the most expensive item (car) in category 5 and the least expensive as category 1. If a household did not have any item, they categorized as 'none', category one, those households with radio, as category 2, those with Telephone as category 3, those with television as category 4 and those with car as category 5. The assumption made was that if one had car (category 5), they would have all other items of lesser value. Similarly, those with a telephone were assumed to have radio, TV and VHS and were grouped in category 4, and so on. The categories generated are shown in table 4.4.

4.2.7.2 Smoking status

Apart from asking about current smoking status, questions on cigarette smoking included questions on type of product smoked, the brand, price paid, how many cigarettes purchased at a time, how many cigarettes were smoked per day during

the weekday and weekend, usual place of purchase and places often smoked, age at onset of smoking, duration of regular (at least daily) smoking, the number of close friends who smoked, quit attempts and reasons for going back to smoking and other variables (see appendix 1).

4.2.7.3 Housing questions

General questions on the various households were ascertained. These included questions on how many persons were in each household, the locality name, and name of household, relationship of individual members of the household with each household member and whether each household member was a long term resident (defined as having lived daily in that address for the past one year). Individuals who were not long-term residents were not included in the study. Questions were asked also about the type of drinking water used in the home and the type of toilet facility used.

4.2.7.4 Addiction questions

Dependence on smoking and tobacco use was measured using the modified Fagerstrom score (Fagerstrom test for Nicotine Dependence, FTND) [111], from a set of six questions assessing smoking addiction on a 10 point scale. The FTND assesses nicotine dependence by asking the following questions: how soon after wake up that one smokes the first cigarette; how difficult or easy one would find it to go without smoking cigarette for a day; do you find it difficult to refrain from smoking in places designated 'no smoking'; do you smoke more frequently during the first hours after waking than the rest of the day; and, whether one smokes if they are so ill and bedridden most of the day. Each of these questions provides answers that are scored from 0-3 and classified from a maximum score of 10 into very low (0-2), low (3-4), medium (5), high (6-7) and very high (8-10) levels of addiction.

4.2.7.5 Other questions ascertained

I also asked a range of questions covering smokeless tobacco use, other hard drug usage such as cocaine, LSD, marijuana and amphetamine use. Other variables determined included smoking policy at the respondent's place of work, home, places often visited such as restaurants, shops and other public places, diseases caused by smoking, beliefs about the dangers of different tobacco products, and other factors. The results for these are reported in the next chapter.

4.2.8 Pretesting

In accordance with study protocols and to ensure the validity of the study instrument, pretesting was done in one selected urban and rural EA comprising of 20 households each outside the study area. Pretesting revealed that some of the study questions were not asked consistently and did not seem to measure what we purported to measure and as a result those questions were reworded. All other potential problems in the process of administration of the questionnaire such as times of visits for interviews, tracing randomly selected houses and questionnaire administration times, were attended to during this stage. A further day's training session was carried out to address problems that arose from pretesting the questionnaire.

4.2.9 Data management

Two full-time data entry clerks were engaged. At the end of each day all data sheets were cross-checked by independent fieldworkers before they were certified for entry into the computer. Cross-checking here involved manual checking to ensure that each question had been answered correctly allowing me to check for consistency, completeness and adherence to general guidelines set out in the study protocol before inputting into database. All data were coded and entered into a Microsoft access database (Microsoft Corporation, 2003). Entered data were

double and cross-checked during the entry process using simple data editing tools. Data cleaning was carried out at the end of every month. At the end of the study, final cleaning of the data was carried out and data exported into Stata for analysis.

4.2.10 Data analysis

The data were analysed using Stata SE version 11 (Statacorp, College Station, Texas, USA), and using the survey commands to allow for the sampling design, including stratification by locality, and clustering by EA and household, and to weight for gender differences in participation in relation to the ascertained study sample, and also in relation to the gender distribution reported in national survey data. Proportions and 95% confidence intervals were obtained as estimates of prevalence of smoking.

4.2.11 Outcome and exposure variables

In ascertaining the various determinants of smoking in this study, the main exposure variables used were locality type (whether urban or rural), age in years (categorised into 5 as 14-19, 20-29, 30-39, 40-49, 50-59, 60-69 and 70 and above), religion (Christianity, Muslim, Traditionalist and other), ownership of goods (none, radio, TV, telephone and car), occupation (unemployed, self employed, student, administrative staff, urban skilled worker and rural worker), ethnicity (Akan, Ewe, Dagbani and other), alcohol use (current user or not), number of friends who smoke (none, 1-3 and more than 3) and exercise per week (never, once, more than once and everyday). These were assessed against the main outcome variable, smoking status. A current smoker was defined as someone who reported that they had smoked at least 100 cigarettes over his or her lifetime and smoked nowadays; an ex-smoker one who had smoked at least 100 cigarettes but reported never smoking a cigarette, cigar or pipe now. In computing educational qualification, the original categories were recategorised to

include junior and senior secondary schools into one category and all those of polytechnics, colleges and university into one category referred to as tertiary. Employment status (occupation) was also recategorised from the original 14 categories into six by combining civil administrative and managerial staff, managerial staff, and office worker, into one as 'administrative staff'. The migrant worker in the city, urban manufacturing worker and employee in service industry categories were also combined into an 'urban skilled worker' category. Finally, migrant worker in rural area was combined with rural worker into a single 'rural worker' category. The other categories were self-employed, unemployed and student.

4.2.12 Analysis strategy

Initial univariate analysis was performed using the main outcome variables as stated above. Then the risk factors identified were presented by treating age, gender and locality type as a priori confounders and statistical reports detailing which risk factors were significantly associated with smoking status reported.

4.2.13 Statistics computed

Statistics were computed in Stata using the survey set (svyset) command allowing for 2 stage clustering effects in the study design as follows; svyset su1 pweight=pw], strata (strata) fpc(fpc1) || su2, fpc(fpc2). Su1 is the first sampling unit in this case the area code, pweight is the weighting and is the probability weight of being included in the sample due to design effect, strata is any strata used-locality type. Fpc1 is the final population correction which gives the total number of areas available to sample from for each stratum i.e. urban and rural EAs from which sample made. Su2 is the second sampling unit, in this case the household code HH, fpc2 is the finite population correction, which gives the total

number of households in each area (from which I have sampled). This was input into Stata after which all statistical analyses were performed.

I first computed the prevalence of the primary outcome variables, current smoking and ever smoking. Crude odds ratios with 95% confidence intervals were then computed using logistic regression to determine the univariate associations between potential risk factors and the outcome variables using the 'svyset' command in Stata. The independent risk factors for smoking status were then determined using multiple logistic regression analysis. Multivariate analyses of predictors of smoking status were conducted using logistic regression, adjusting for age, gender and urban/rural locality type as *a priori* confounders. In computing the prevalence of smoking in the study sample, proportions and 95% confidence were obtained as estimates. Prevalence estimates were also adjusted for male under-response in my study sample in relation to regional population data, and to national data. The weighting adjusted for the fact that 78% of men but 95% of women from the eligible population participated, on the assumption that those who didnot respond are similar to those who did. I did not adjust for the difference in the gender ration of my eligible population (ie.in sampled households) of 41:59% relative to that of 47:53% in previous Ashanti region survey data. The reasons for this discrepancy are unknown.

4.3 Results

4.3.1 Characteristics of study participants

Of the 7096 (3661 and 3435, urban and rural residents respectively) adults (2900 males, 4196 females), ascertained to be members of the sampled households and thus eligible for the study, 6258 (88%; 78% of men and 95% of women; 86.3% urban and 90.2% rural) participated. Of these, 2274 (36.3%) were male and 3984

(63.7%) were female. The median age of participants was 31 (range 14-105). In both urban and rural areas, the median number of household members among study participants was 3 (range 1-18). Table 4.1 summarises the socio-demographic characteristics of the study participants and illustrates the relatively high proportions of participants who were female, from younger adult age groups, from the Akan ethnic group, who were self employed, had attained secondary level of education, and who described themselves as of the Christian faith. The number of respondents from the rural and urban localities was similar (3161 urban and 3097 rural). However, in both urban and rural areas there were more females compared with males in all age categories. The distribution of female population in urban areas was slightly higher compared with their rural counterparts (Table 4.2).

Table 4.1: Socio-demographic characteristics of household members

Locality Type	**Number**	**Percentage (%)**
Urban	3161	50.5
Rural	3097	49.5
Age in years		
14-19	1144	18.3
20-29	1686	26.9
30-39	1277	20.4
40-49	810	12.9
50-59	554	8.9
60-69	328	5.2
≥ 70	459	7.3
Gender		
Male	2274	36.3
Female	3984	63.7
Religious Affiliation		
Christian	5699	91.1
Muslim	424	6.8
Traditionalist	82	1.3
Other	53	0.8
Marital Status		
Unmarried	2486	39.7
Married	2831	45.2
Divorced	400	6.4
Widowed	541	8.6

Education		
Illiterate	1004	16
Primary	765	12.2
Secondary	4206	67.2
Tertiary	283	4.5
Ethnicity		
Akan	5423	86.7
Ewe	59	0.9
Dagbani	43	0.7
Others	733	11.7
Occupation		
Unemployed	1231	19.7
Self employed	2403	38.4
Student	852	13.6
Administrative staff	99	1.6
Urban skilled worker	652	10.4
Rural worker (farmer)	1021	16.3

Table 4.2 Age distribution and proportions by gender in urban and rural Ashanti, Ghana

Urban			Rural	
Agegroup	Number (%)	Females (%)	Number (%)	Females (%)
14-19	591 (18.7)	354 (59.9)	553 (17.9)	312 (56.4)
20-29	919 (29.1)	603 (65.6)	767 (24.8)	488 (63.6)
30-39	661 (20.9)	420 (63.5)	616 (20.0)	407 (66.1)
40-49	395 (12.5)	253 (64.0)	415 (13.4)	280 (67.5)
50-59	286 (9.0)	193 (67.5)	268 (8.7)	168 (62.7)
60-69	151 (4.8)	93 (61.6)	177 (5.7)	114 (64.4)
≥ 70	158 (5.0)	111 (70.3)	301 (9.7)	188 (62.5)
Total	3161 (100)	2027 (64)	3097 (100)	1957 (63)

4.3.2 Prevalence and amount of smoking

4.3.2.1 Unadjusted prevalence

Current smoking was reported by 202 (8.9%; 95% Confidence Interval (CI) 7.3 to 10.5%) males and 11 (0.3%; 95% CI 0.1 to 0.4%) females. The unadjusted overall prevalence of current smoking was 3.4% (95% CI 3.0 to 3.9%). The unadjusted prevalence of ever smoking was 8.7% (95% CI 8.1 to 9.5%, comprising 22.0% (95% CI 19.3 to 24.8%) of males and 1.2% (95% CI 0.7 to 1.6%) of females).

4.3.2.2 Adjusted prevalence

Adjustment for male under-representation in the study sample, by population-based weighting using national survey data [148], increased the estimate of current smoking prevalence for Ghana by about 0.9 percentage points, to 4.3% (95% CI 3.6% to 5.0%). The prevalence adjusted for male under-response using the regional Ashanti data was 3.8% (95% CI 3.1 to 4.4%). The prevalence of ever smokers adjusted for male under-response was 9.7% (95% CI 8.4 to 10.9%).

4.3.2.3 Prevalence of ex-smokers

There were 334 (5.3%) ex-smokers, the numbers of which were distributed evenly across all ages over 20 years, with age-specific proportions that increased from 1.8% in the 14-19 agegroup to 12.6 in the over 70 agegroup (Table 4.3). When ex-smokers were computed as a percentage of total smokers, there were a fairly stable proportion of ex-smokers with the exception of the 60-69 and 70 and older agegroups where there were increases, 66% and 79.5% respectively.

4.3.2.4 Amount and type of cigarette smoked

The median number of cigarettes smoked per day by male and female current smokers was 6 (inter-quartile range 1 to 40) and 5 (4 to 10) respectively on weekdays, and 19 (2 to 70) and 11 (8 to 20) at the weekend. The commonest types of cigarettes smoked were London Brown (42%), King Size (21.6%) and State Express 555 (13%) manufactured by BAT. The least common cigarettes used were Pall Mall (3%) and Craven (0.5%) respectively (Table 4.5).

4.3.3 Other forms of tobacco used among smokers

Of the 213 current smokers, about a quarter of them used smokeless tobacco in the form of moist snuff, nasal snuff and chewing tobacco. Other forms of tobacco used included pipes (~3%) and cigar almost 8%. No other forms of tobacco were reported among smokers.

Table 4.3: Numbers of current, ex- and ever smokers, and proportion of ever smokers who are ex-smokers, by age

Age (years)	N	Current smokers n (%)	Ex smokers N (%)	Ever smokers n (%)	Ex as % of total smokers
14-19	1144	12 (1.0)	21 (1.8)	33 (2.9)	63.6%
20-29	1686	41 (2.4)	56 (3.3)	97 (5.8)	57.7%
30-39	1277	54 (4.2)	54 (4.2)	108 (8.5)	50.0%
40-49	810	36 (4.4)	53 (6.5)	89 (11.0)	59.6%
50-59	554	35 (6.3)	53 (9.6)	88 (15.9)	60.2%

60-69	328	20 (6.1)	39 (11.9)	59 (18.0)	66.1%
≥ 70	459	15 (3.3)	58 (12.6)	73 (15.9)	79.5%
TOTAL	6258	213 (3.4)	334 (5.3)	547 (8.7)	61.1%

4.3.4 Determinants of smoking

Table 4.4 details the associations between current smoking and various socio-demographic and other characteristics. Smoking prevalence was similar in urban and rural areas and across ethnic groups, and was markedly lower in women than in men (Adjusted odds ratio (AOR) 0.03, 95% CI 0.01-0.065, $p<0.001$). Smoking prevalence was strongly related to increasing age, being highest in the 60-69 age group (odds ratio relative to 14-19 year olds 6.36 (95% CI 3.26 to 12.38, $p_{trend}<0.001$) and varied significantly in relation to religion ($p<0.001$), being particularly high in those of traditionalist belief relative to those of the Christian majority (AOR 7.50, 95% CI 0.81-2.73). Smoking was also significantly associated with occupation (overall $p=0.003$), for example being less common in skilled workers relative to the unemployed (AOR 0.66, 95% CI 0.41-1.06), and also with education level (overall $p=0.03$); those with no or only primary education being about 50% more likely to be smokers (AOR 1.49, 95% CI 0.81-2.73). Smoking was slightly but not significantly more common in those who owned a radio and television relative to those who had none (AOR 1.18, 95% CI 0.75-1.85, and AOR 1.09, 95% CI 0.59-2.03 respectively), and less common in those who owned telephone and car relative to those who had none (AOR 0.53, 95% CI 0.29-0.97, and AOR 0.61, 95% CI 0.27-1.39 respectively). Non-smokers were significantly and markedly less likely to drink alcohol (AOR for those who do not drink relative

to those who do drink 0.13, 95% CI, 0.08-0.22 p<0.001). Smokers were substantially more likely to have friends who smoke (AOR for those with 1-3 friends who smoke relative to those without friends who smoke = 11.23, 95% CI 6.57-19.21, p<0.001); and less likely to be taking regular exercise (AOR for smoking among those who exercised once per week relative to those who never exercised being 0.49, 95% CI 0.26-0.94, p value for trend p<0.05).

4.3.5 Uptake, levels of addiction and sources of tobacco

Age at uptake of smoking, sources of tobacco products, level of addiction and other characteristics of current smokers are shown in Table 4.5. Just under half of all current smokers started smoking before the age of 20, and 87% by the age of 30. Cigarettes tended to be purchased from drinking spots or pubs (67%) rather than shops, and the majority of brands (86%) purchased were those marketed in Ghana by BAT Ghana Ltd. Brands that are not marketed in Ghana but are available in neighbouring countries (*Bond* and *Gold Seal* from Togo, *Craven* from La Côte d'Ivoire) accounted for about 10% of purchases. Over 40% of smokers spent more than 1 Ghanaian Cedi (GHC; 1 GHC being approximately equivalent to 1 US Dollar) on cigarettes per day. Over a third of smokers had high to very high dependence on cigarettes based on the Fagerstrom Nicotine and Addiction Test score.

Table 4.4: Demographic distribution of study population and prevalence and determinants of current smoking

Characteristic Total	Number (%) 6258 (100)	Males (%) Smokers (%) 2274(36.33) 202(3.3%)	Female (%) Smokers (%) 3984(63.66) 11(0.18%)	Adjusted odds ratio (95% CI)	P value
Locality type					
Urban	3161 (50.5)	1134 (35.87) 106 (3.4)	2027 (64.13) 7(0.22)	1	
Rural	3097 (49.5)	1140 (36.81) 96 (3.1)	1957 (63.19) 4(0.13)	0.90 (0.64, 1.27)	0.54[β]
Age (years)					
14-19	1144 (18.3)	478 (41.78) 10 (0.87)	666 (58.22) 2(0.17)	1	
20-29	1686 (26.9)	595 (35.29) 39 (2.31)	1091(64.71) 2 (0.12)	2.44 (1.19, 4.98)	
30-39	1277 (20.4)	450 (35.24) 51(4.00)	827 (64.76) 3 (0.23)	4.32 (2.10, 8.90)	
40-49	810 (12.9)	277 (34.20) 35 (4.32)	533 (65.80) 1(0.12)	4.59 (2.67, 7.87)	<0.001*
50-59	554 (8.9)	193 (34.84) 35 (6.32)	361 (65.16) 0 (0.00)	6.69 (3.41, 12.38)	
60-69	328 (5.2)	121 (36.89 19 (5.79)	207 (63.11) 1(0.30)	6.36 (3.26, 12.38)	
≥ 70	459 (7.3)	160 (34.86) 13 (2.83)	299 (65.14) 2 (0.44)	3.26 (1.43, 7.42)	
Religion					
Christian	5699 (91.5)	2003 (35.15) 152 (2.67)	3696 (64.85) 9 (0.16)	1	
Muslim	424 (6.8)	165 (38.91) 15 (3.54)	259 (61.08) 2 (0.47)	1.37 (0.84, 2.22)	<0.001[β]
Traditionalist	82 (1.3)	66 (80.49) 29 (35.33)	16 (19.51) 0 (0.00)	7.50 (4.43, 12.69)	
Other	53 (0.8)	40 (75.47) 6 (11.3)	13 (24.53) 0 (0.00)	1.80 (0.67, 4.84)	
Education					
Illiterate	1004 (16)	210 (20.19) 25 (2.49)	794 (79.08) 3 (0.30)	1	
Primary	765 (12.2)	208 (27.19) 35 (4.58)	557 (72.81) 1 (0.13)	1.49 (0.81, 2.73)	0.03[β]
Secondary	4206 (67.2)	1667 (39.64) 129 (3.07)	2539 (60.37) 7 (0.17)	0.74 (0.38, 1.43)	
Tertiary	283 (4.5)	189 (66.78) 13 (4.59)	94 (33.22) 0 (0.00)	0.53 (0.20, 1.40)	
Ownership of Goods					
None	1462 (23.3)	363 (24.83) 29 (1.98)	1099 (75.17) 6(0.41)	1	
Radio	1262 (20.2)	513 (40.65) 58 (4.59)	749 (59.02) 1 (0.07)	1.18 (0.75, 1.85)	
Telephone	1513 (24.2)	598 (39.52) 34 (2.25)	1096 (72.44) 0 (0.00)	0.53 (0.29, 0.97)	0.07[β]
TV	1694 (27.1)	654 (38.61) 71 (4.19)	859 (50.71) 4 (0.24)	1.09 (0.59, 2.03)	
Car	327 (5.2)	146 (44.65) 10 (3.06)	181(55.35) 0 (0.24)	0.61 (0.27, 1.39)	
Occupation					
Unemployed	1231 (19.7)	330 (26.81) 39 (3.13)	901 (73.19) 5 (0.41)	1	
Self employed	2403 (38.4)	679 (28.26) 59 (2.46)	1724 (71.74) 4 (0.17)	0.53 (0.36, 0.79)	
Student	852 (13.6)	418 (49.06) 6 (0.70)	434 (50.93) 1 (0.12)	0.19 (0.08, 0.41)	
Administrative staff	99 (1.6)	59 (59.60) 7 (7.07)	40 (40.40) 0 (0.00)	0.71 (0.27, 1.83)	0.003[β]
Urban skilled worker	652 (10.4)	426 (65.34) 41 (6.23)	226 (34.67) 0 (0.00)	0.66 (0.41, 1.06)	
Rural worker (farmer)	1021 (16.3)	362 (35.46) 50 (4.89)	659 (64.54) 1 (0.09)	0.90 (0.52, 1.55)	
Ethnicity					
Akan	5423 (86.7)	1969 (36.31) 171(3.15)	3454(63.69) 8 (0.14)	1	
Ewe	59 (0.9)	20 (33.40) 3(5.08)	39(66.10) 1 (1.69)	2.54 (0.73, 8.90)	0.33[β]
Dagbani	43 (0.7)	17 (39.53) 3(6.98)	26(60.47) 0 (0.00)	1.52 (0.56, 4.12)	
Others	733 (11.7)	268 (36.56) 25(3.41)	465(63.44) 2 (0.27)	1.17 (0.78, 1.77)	
Alcohol use					
Yes	2165 (34.60)	1132(52.29) 177(8.18)	1033(47.71) 9(0.42)	1	<0.001[β]
No	4093 (65.40)	1142(27.90) 25(0.61)	2951(72.10) 2 (0.05)	0.13 (0.08, 0.22)	
Friends who smoke					
None	5100 (81.50)	1516 (29.73) 29(0.57)	3584 (70.27) 3 (0.01)	1	
1-3	708 (11.31)	415 (58.62) 7 (0.99)	293 (41.38) 2 (0.28)	11.23 (6.57, 19.21)	<0.001[β]
> 3	450 (7.19)	343 (76.22) 96 (21.33)	107 (23.78) 6 (1.33)	21.72 (13.36,35.31)	
Exercise/week					
Never	3109 (49.68)	794(25.54) 104(3.35)	2315 (74.46) 10(0.32)	1	
Once	711 (11.36)	283 (39.80) 19(2.67)	428 (60.20) 0(0.00)	0.49 (0.26, 0.94)	
More than once	1115 (17.82)	510 (45.93) 21(1.88)	605 (54.26) 0(0.00)	0.30 (0.19, 0.47)	<0.001[β]
Everyday	1323 (21.14)	687(51.93) 58(4.38)	636 (48.07) 1(0.08)	0.65 (0.45, 0.96)	

*P value for trend

[β] Wald P value adjusted for age, gender and urban or rural locality type

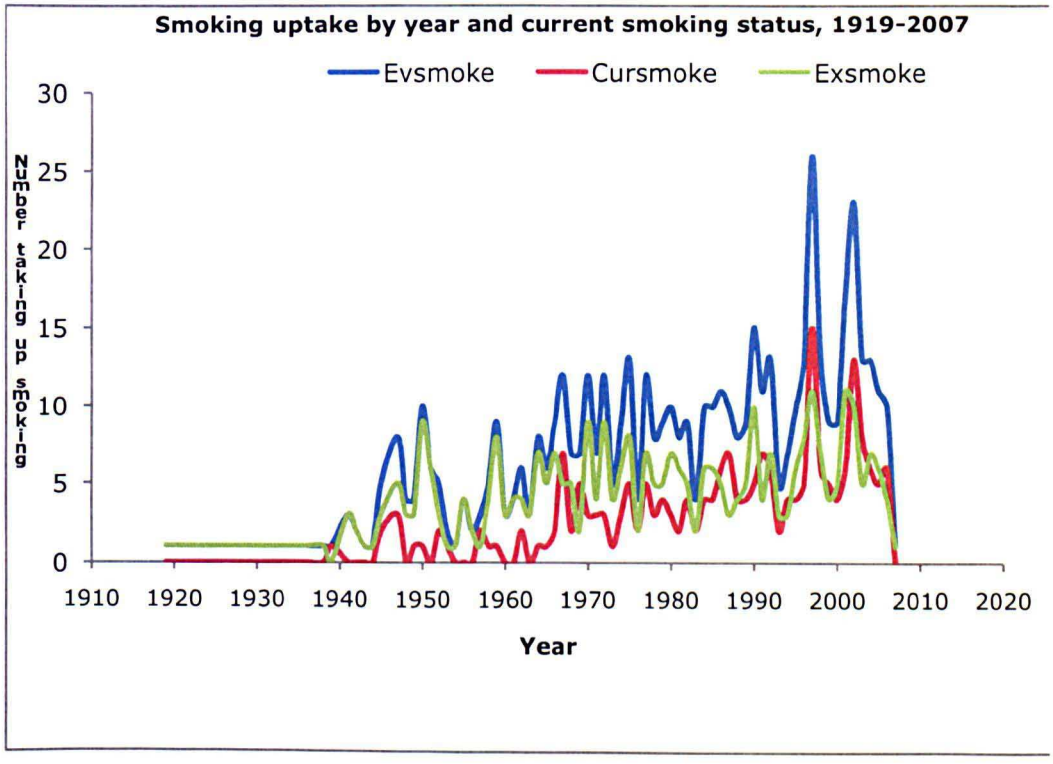
Table 4.5: Smoking characteristics of current smokers in study

Characteristic	n (%)
Age of uptake of smoking	
14-19	104 (48.82)
20-29	82 (38.50)
30-39	20 (9.39)
40-49	7 (3.29)
Sources of cigarettes	
Shops	58 (27.23)
Pubs & Drinking spots	144 (67.61)
Roadside	11 (5.16)
Others	0
Primary Brand (manufacturer) of cigarettes used	
State Express 555 (BAT)	27 (12.68)
Bond (smuggled, originating in Togo)	12 (5.63)
Diplomat (BAT)	8 (3.76)
Gold seal (smuggled, originating in Togo)	10 (4.69)
King size (BAT)	46 (21.60)
London Brown (BAT)	91 (42.72)
London White (BAT)	12 (5.63)
Pall Mall (BAT)	6 (2.82)
Craven (smuggled from La côte d'Ivoire)	1 (0.50)
Form of tobacco used*	
Manufactured cigarettes	213 (100%)
Pipes	6 (2.82)
Cigar	17 (7.98)
Smokeless (Moist snuff, nasal snuff, Chew)	54 (25.35)
Amount spent on cigarette/day (in Ghanaian Cedis)	
Less than 0.5	76 (35.98)
0.5-1	50 (23.36)
1.1-5	62 (28.97)
> 5	25 (11.68)
Levels of addiction	
Very low dependence (0-2)	25 (11.27)
Low dependence (3-4)	80 (37.74)
Medium dependence (5)	27 (12.74)
High dependence (6-7)	56 (26.42)
Very high dependence (8-10)	24 (11.32)

* Multiple responses (in addition to cigarettes could respond to any)

The year in which smokers in the study sample took up smoking, estimated from their age and self-reported age at which participants took up smoking, grouped by smoking status into ever, current and ex-smokers, is shown in Figure 4.2. The plot demonstrates that within this predominantly young study population, with the exception of two peak years since 2000, the numbers taking up smoking rose slowly over time. The proportion of ever smokers who were ex-smokers was broadly similar across most of the age range of respondents (Table 4.3).

FIGURE 4.2: YEAR OF UPTAKE OF SMOKING IN EVER, CURRENT AND EX-SMOKERS



Evsmoke-Ever smoker; Cursmoke-current smoker; Exmoke-ex-smoker

Table 4.6 Ever use of smokeless tobacco (ST) in Ashanti, Ghana n=6258

Characteristic	Number (%) N	Number used ST (%)	Adjusted odds ratio	P value
Total	**6258**	**285(4.6)**		
Age group				
14-19	907 (14.5)	27 (3.0)	1	
20-29	1923 (30.7)	72 (3.7)	1.28(0.82-1.97)	P=0.012
30-39	1277 (20.4)	56 (4.4)	1.33(0.82-2.15)	Pt=0.006
40-49	811 (13.0)	34 (4.2)	1.25(0.80-1.97)	
50+	1341 (21.4)	96 (7.2)	2.09(1.38-3.18)	
Gender				
Male	2274 (36.3)	177 (7.8)	1	
Female	3984 (63.7)	108 (2.7)	0.42 (0.31-0.57)	P<0.001
Locality type				
Urban	3161 (50.5)	133 (4.2)	1	
Rural	3097 (49.5)	152 (4.9)	1.14 (0.78-1.65)	P=0.48
Smoking Status				
Non smoker	6045 (96.2)	231(3.8)	1	P<0.001
Smoker	213 (3.8)	54(25.4)	5.02 (3.50-7.20)	
Education				
Illiterate	1004 (15.6)	69 (6.9)	1	
Primary	765 (12.0)	32 (4.2)	0.59 (0.35-0.99)	P=0.11
Secondary	4206 (67.6)	172 (4.1)	0.59 (0.39-0.90)	Pt<0.05
Tertiary	283 (4.8)	12 (4.2)	0.43 (0.18-1.03)	
Religion				
Christian	5699 (91.1)	249 (4.4)	1	
Muslim	424 (6.8)	18 (4.2)	0.86(0.53-1.40)	P=0.78
Traditionalist	82 (1.3)	13 (15.9)	1.25(0.52-2.99)	
Other	53 (0.9)	5 (9.4)	1.35(0.58-3.18)	
Ethnicity				
Akan	5423 (86.7)	252 (4.6)	1	
Dagomba	43 (0.7)	2 (4.7)	0.72(0.13-4.08)	P=0.61
Others	782 (12.6)	31 (4.0)	0.82(0.54-1.24)	

P Wald p value adjusted for age gender and locality type; Pt p value for trend

4.3.6 Smokeless tobacco use

Questions were asked about awareness and use of smokeless tobacco products. Over 80% of all participants had heard of smokeless tobacco products and of that number 4.6% (95% CI; 3.9-5.6); male 7.8% (95% CI 5.6-8.9) and female 2.7% (95% CI 2.1-3.5) had used smokeless tobacco products in the last six months. In

a multivariate analysis (Figure 4.6), those who used ST were significantly more likely to belong to the older agegroup ($p<0.05$) with a clear increasing trend towards those over 50 year old (p value for trend Ptrend=0.006). Females were significantly less likely to use ST (adjusted OR 0.42, 95% CI 0.31-0.57 $p<0.001$), with those with high educational background also less likely to use ST (p value for trend $p<0.05$). Smokers were five times more like to use smokeless tobacco compared with non-smokers ($p<0.001$, adjusted odds ratio 5.02, 95% CI 3.50-7.20). There was no difference in the use of ST among urban and rural dwellers and no association with ST use and religion. Although Akans were more likely to use ST, the association was not significant. The commonest form of ST used in the population was nasal snuff (56%) followed by chewing tobacco (35.4%).

4.4 Discussion

This is the first study to provide detailed estimates of the prevalence and determinants of smoking in Ghana. The finding of higher smoking prevalence among men than women is consistent with previous, more limited studies in Ghana [13;151;202;207;312], and studies elsewhere in Africa [13;313-316]. Adjusting for non-response in the survey sample through weighting allowed for the fact that 78% of men but 95% of women from the eligible population participated, and on the assumption that that those who did not respond are similar to those who did, overall adjusted estimates of current smoking prevalence for the Ghanaian population of 3.8%, and of ever smoking at 9.7% were produced. These figures show that the prevalence of smoking in Ghana is one of the lowest in Africa [317], indicating that Ghana has to date avoided the marked increase in smoking prevalence that often accompanies economic development. The study also identified the main risk factors contributing to smoking status in Ashanti Ghana

include age, religion, education, occupation, alcohol use and having friends who smoke. The other key finding is that awareness of smokeless tobacco (ST) was high (80%) and that use of ST in the last six months although at a low of 4.6% was higher than for cigarette smoking. Previous findings that smokers tended to start smoking in their teenage years were confirmed in this study and that the predominant source of cigarettes was in pubs and drinking spots.

The study was limited to the Ashanti region of the country for logistic reasons, and because it is the most heavily populated of the ten regions of Ghana, and is generally representative of the national population as can be seen in the population attributes of the national census data for the year 2000 (see census data [148]). Participation was high, at 88%, though higher in females than males, and we weighted our prevalence estimates to allow for this non-response. Nevertheless, the female to male ratio of our sampled population at 59:41 differed from the national ratio of 53:47 [151]. The reasons for the male under-representation (non response) is not clear as we attempted to ascertain the names of all long-term residents (defined as any person who had lived at the address for at least one year) in each household, and one possibility is that a substantial proportion of men had left or were otherwise long-term absentees from the family home. We have no further data to assess whether the smoking behaviour of the men in our sample population is representative of men in Ashanti, or in the wider Ghanaian population. However, allowing for male underrepresentation relative to the national population increased our prevalence estimate by only 0.9 percentage points.

Non-response, misclassification and recall biases are all potential sources of systematic error in surveys, and this work will not be an exception to this rule. For instance, teenagers may not admit to smoking in the presence of their

parents, whilst female 'closet smokers' may not admit to smoking, because they feel smoking is socially disapproved. We attempted to minimize these influences by interviewing all respondents, including teenagers, on an individual basis and in as much privacy as was achievable, but it is possible that such pressures have resulted in a degree of underestimation of true prevalence in those groups. However our findings are consistent with previous studies of smoking in Ghana, although these are few and have involved either very small and unrepresentative samples [55;201;254], have been limited to young people [107], or in the case of the one national survey to date, based on responses to only three questions [151]. Current WHO estimates are that Ghana's current overall smoking prevalence is 4.4% [10] (8.2% males (95% CI 6.9-9.6) and 0.7% females (95% CI 0.3-1.0). These estimates are all broadly consistent with ours, indicating that the prevalence of smoking in Ghana is indeed low in absolute terms, and in relation to other countries in Sub-Saharan Africa [318]. A systematic review by Pampel et al., on all published data on smoking prevalence in Ghana, including findings from the GYTS and other works, indicate a range of smoking prevalence between 3% and 10% all consistent with low smoking prevalence for Ghana [319]. The smoking prevalence of 0.87% among the 14-19 year olds in this study is comparable with that of the Demographic and Health Survey data in 2003, which estimated the smoking prevalence of 15-19 year olds to be 0.7% [151]. The low prevalence of smoking among women is a typical finding in African countries [13;316;320], for example the smoking rates among women in Nigeria, South Africa and Kenya are 0.9%, 8.9% and 1.6% [10] respectively and has been attributed to limitation of opportunities to smoke among women with low levels of economic independence[320;321], and socio-cultural contexts within which smoking among women is often considered to be immoral [322;323].

Our observation that current smokers are likely to have friends who smoke is consistent with previous findings that having friends who smoke is a risk factor for both smoking initiation and continued use [90;324]. That smokers tend to use alcohol has been demonstrated in several studies. A study by Bobo (1992) indicated that most alcohol users tend to have smoking rates of at least 90% and that smokers are more likely to use alcohol than non-smokers and vice versa. In some instances, smokers are at increased risk of by as much as six fold increase [325]. Another study by Schorling (1992) showed that smoking rates were high among alcohol users and that smokers tended to be at increased risk of alcohol and other substance abuse such as cocaine, marijuana and LSD compared with non-smokers in a large survey to ascertain the risk factors for smoking in United States among university students [326]. That smokers tend to be less physically active, is also consistent with other reports [92;93] and may arise in part from the social and psychological gratification that is derived from smoking, which may inhibit uptake of other physical activity among smokers [93;94;327]. The finding that smokers tended to be adult men underscores the importance of age as a risk factor for cigarette initiation and continued use [64;65]. For example, whereas studies indicate that many smokers are at high risk of cigarette use in the teenage years, continued use however is seen mainly among the elderly among whom the habit may persist. Several factors may account for the continued use of smoking among adult population for example purchasing power tends to be important in continued use of cigarettes [328]. Another explanation may be a reflection of the stage of development of the epidemic in a given country. Countries within stages I-III of the epidemic (mainly developing countries) have high levels of adult male smokers and this may account for the predominantly high levels of smoking among men

compared with women. Indeed levels of equal smoking prevalence have been reported in many developed countries in the West [68]. Our finding that smoking is more prevalent among the less well educated, less economically active and relatively less affluent members of the population contrasts with the typical pattern of the early stages (stage I) of uptake of smoking in most countries, including many developing countries [329], where smoking of manufactured cigarettes often occurs first among those in paid employment [312]. During the stages of the development of smoking epidemic, socioeconomic gradients (indicated by occupation, education, income etc.) appear to change as well, albeit inversely. The epidemic is initially highest among people in higher socioeconomic status; however as the epidemic progresses, those of lower socioeconomic status tend to have higher prevalence resulting in a reversal of the socioeconomic gradient [77]. That cigarette consumption almost doubled over the weekend among smokers perhaps also reflects the influence of social pressures or incentives to smoke. Social events such as parties tend to occur during the weekends, as do funerals. Ghanaians and in particular those in Ashanti region tend to worship the dead and spend a lot of days (even weeks to months), traditionally mourning the dead and this must be done in a traditionally and socially prescribed way which is often time consuming and held over the weekends [330;331]. At these gatherings, substantial use of alcohol and other substances of abuse may also tend to occur reflecting the social incentives for people to smoke at such events.

Our findings demonstrate that smoking imposes a substantial economic cost on those who smoke, since most smokers spend more than one Ghanaian Cedi on smoking per day; this represents about a third of the likely wage of the typical smoker in our study [332]. The high proportion of cigarettes smoked being those of BAT brands underscore the longstanding manufacturing presence of BAT in Ghana.

The domination of the 'London brown' brand, is ample testimony of the popularity of brands that are associated with the west in many developing countries including Ghana [13]. That approximately 10% of all cigarettes purchased by our study population were brands that are not marketed in Ghana affirms the long standing problem of smuggling in Ghana, particularly from the Republic of Togo [231;333] and other neighbouring countries. The problem of smuggling therefore should be incorporated into data that assesses per capita consumption patterns, as is the case of Figure 3.3. True per capita consumption of cigarettes may have been underestimated as data on smuggling are not incorporated into such estimates and therefore interpretation of these data should be done cautiously.

Data on levels of addiction are rare in Africa and have not been measured previously in Ghana, and cannot therefore be compared with previous findings. However, our finding that over a third of smokers were very highly dependent on cigarettes is quite high and perhaps surprising as in many instances cigarette addiction is a common finding of countries in stage IV where the epidemic has peaked and among more deprived male smokers which is consistent with the data in our study. All of this perhaps underscores the possibility that the evolution of smoking in Ghana may not have followed the traditional epidemic model, and that smoking has been established for many years but has not shown the epidemic increase in prevalence expected in Stage II of the model. Further studies providing comparative data from other countries in Africa and elsewhere will be helpful in determining whether this is a finding that is relatively specific to Ghana, or more widespread in the African continent [33]. The age at uptake of smoking in our study sample is limited to the sample of smokers so is not a representative finding for all smokers. This notwithstanding, for people smoking at the time of the study (and hence biased by the age distribution of the participants) is also consistent with the

above, in that there is no evidence of markedly higher uptake in younger than in older smokers.

The use of smokeless tobacco has a long history in many developing countries and the prevalence of almost 5% perhaps reflects the longstanding history of its use particularly in African populations. This relatively high use of smokeless tobacco may be a reflection of the social acceptance of smokeless tobacco and the ease with which it can be practiced without detection [79]. Although current figures from WHO in the African region suggests that use of smokeless tobacco is higher among women, our finding of high smokeless tobacco use among men contrasts with this finding but compares with that of Europe where smokeless tobacco use is higher among men [12]. Smokeless tobacco use of 2.7% among women and 7.8% men is lower than that found in other African countries such as Mauritania (26.1% of women and 10.9% of men). Again, for example, figures from South Africa show that 4.9% of women and 2.4% of men use smokeless tobacco [79] comparable with the numbers in Ghana. The finding that smokeless tobacco use tended to occur among older men of low educational status and that the common forms of smokeless tobacco were snuff, followed by chewing tobacco, contrasts with the typical presentation of the prevalence and use of smokeless tobacco particularly in Africa where it tends to occur more in women but compares with findings from the West [79].

Ghana has enjoyed consistent economic growth over recent years, and from the time that Ghana first became independent in 1957 until as recently as 2006, British American Tobacco has had an active manufacturing facility in the country. Given this relative affluence and a local source of manufactured cigarettes from an early stage, Ghana might therefore be expected to be at a relatively advanced

stage of the tobacco epidemic in relation to other developing countries, and to have a relatively high prevalence of smoking. The picture emerging from our data is however more complex, perhaps reflecting the inability of the traditional model of the tobacco epidemic, based on trends observed in the west [33] to adequately explain patterns elsewhere. Thus, although the low rates of smoking and gender disparity suggest Ghana may be at an early stage of the epidemic, most aspects of our data (the significant proportion of ex-smokers, lower rates of smoking in younger than older age groups and lower rates amongst the more educated), are all consistent with Ghana being at a relatively late stage, and therefore perhaps avoiding the expected high prevalence of smoking. Results consistent with this interpretation, reporting a fall in smoking prevalence among civil servants in Accra, have been reported elsewhere [198].

Cultural and religious factors may have had a strong influence on the pattern of smoking in Ghana. Ghana is a religious country with substantial Christian (70%) and Muslim (17%) populations [151], among whom smoking was relatively uncommon in our study, in contrast with those of Traditionalist faith. Members of the Traditionalist faith do not have restrictions on the use of alcohol and smoking in Ghana and this may account for their higher levels of smoking [334]. Whether these associations are causal, and if so how, is not clear from our data. I reported in the previous chapter (and associated paper [195]) that Ghana's low smoking prevalence and tobacco use may also have been attributable to the imposition of partial government ownership of the main tobacco company in Ghana at the early stage of epidemic growth in smoking prevalence in the 1970s and 80s, and to a lack of foreign exchange to fund tobacco leaf importations in addition to implementation of a ban on tobacco advertising in 1982 [211;258;335]. In reality, Ghana's experience of low tobacco use and smoking prevalence to date probably

reflects a broad mix of cultural and political influences, and do not necessarily imply that a more marked increase in smoking prevalence will not occur in the future. It remains to be seen whether Ghana's experience will be replicated in other developing countries in Africa and elsewhere in the world.

4.5 Conclusion and interpretation

Despite rapid economic growth and a sustained tobacco industry presence, smoking prevalence in Ghana is low, particularly among younger people. Several risk factors were identified in this study as determining smoking status in the sampled population. These factors include education, occupation, socio-cultural factors including religion, having friends who smoke and alcohol use. The low smoking prevalence among the studied population suggests that progression of an epidemic increase in smoking has to date been avoided. Whether this reflects the effect of local tobacco control effects or other cultural or economic factors remains uncertain. Among factors suggested for this low prevalence is the initial substantial taking of tobacco industry into state ownership, difficult foreign exchange for the importation of leaves and the ban placed on tobacco advertising in 1982. Other factors include socio-cultural behaviours that put pressure on persons smoking cigarettes to either quit or smoke in secret.

CHAPTER FIVE: AWARENESS OF AND ATTITUDE TOWARDS TOBACCO CONTROL INITIATIVES/POLICY IN GHANA

5.1 Introduction

In the previous chapters I have established that Ghana's smoking prevalence is low and that local tobacco control measures, particularly in the form of early imposition of an advertising ban, coupled with political, economic and logistic restraints on manufacturing growth are likely to have been important in restraining the growth of tobacco use. Ghana was in fact the first African country to introduce an advertising ban, doing so in 1982, and not followed by any other country until South Africa did so in 1998. Ghana also has smoke-free policies based on directives from the Minister of Health and covering Ministry of Health buildings and selected premises such as ports, government vehicles and hotels. Other policy initiatives that are of relatively recent origin include education and information about the health risks of tobacco use and the celebration of *World No Tobacco Day*.

In this chapter, I explore the extent to which the public are aware of the health risks of tobacco use, support smoke-free legislation, prevent passive smoke exposure in the home, and other behaviours and attitudes that might reflect the impact of tobacco control policy initiatives in Ghana. I also explore the extent to which smokers have attempted to quit smoking, whether they have used nicotine replacement therapy, and explore other socio-demographic characteristics of smokers and the general population that may be important in explaining current tobacco use in Ghana.

5.2 Methods

Questionnaire data are taken from the survey outlined in the previous chapter. Further questions included in the study covered broad areas such as; awareness of health promotion campaigns and health risks, knowledge of health effects and composition of cigarette smoke, Knowledge and support for smoke-free legislation, awareness of tobacco advertising in Ghana and smoking cessation.

5.2.1 Awareness of health promotion campaigns and health risks

In assessing the awareness of health promotion campaigns and health risks, respondents were asked the following questions: have you come across any advertisements warning about smoking risks, and if answered yes, how many of these advertisements they had seen in the previous year. The sources of these adverts were also noted by asking where the advertisements were seen. Respondents were then further asked about knowledge of diseases known or believed to be caused by smoking cigarettes by asking the question; based on what you know or believe, does smoking cause the following: heart disease, stroke, erectile dysfunction, lung cancer and mouth and throat cancer. An assessment was also made about the influence of passive smoking on one's health, by asking the question; other peoples smoking is dangerous to non-smokers please indicate strongly agree, agree, neither agree nor disagree or disagree or strongly disagree with this statement. In considering the dangers posed to the population by others' smoking, I generated two categories of the responses into either 'agree' or 'disagree', by combining 'strongly agree' and 'agree' into one category and 'neither agree nor disagree', 'disagree' and 'strongly disagree' into a second category for the analysis. Questions were asked about parental influence on childhood smoking thus: how likely, if all, do people think that their smoking would influence whether or not children in their household to

become smokers' to which they had four response options: 'very likely', 'fairly likely', 'fairly unlikely' and 'very unlikely'. In performing the analysis however, I generated two categories of variables 'likely' and 'unlikely' and for those who said it was likely to influence children taking up smoking, a further multivariate analysis was performed by using the socio-demographic variables stated above as exposure variables to determine whether they had any associations with likeliness of parental influence on children smoking.

5.2.2 Knowledge of health effects and composition of cigarette smoke

The study assessed the knowledge of the constituents of tobacco smoke by asking the question: "As far as you know, are each of the following chemicals included in cigarettes smoke?" The main constituents assessed were cyanide, mercury, arsenic and carbon monoxide. If respondents did not know they had an option to say so. They were further asked about having noticed about warning labels on cigarette packs by asking the question; in the last month, how often if at all have you noticed the warning labels on cigarette packs? Respondents were provided with the answers 'never', 'rarely', 'sometimes' 'often' and 'very often'.

5.2.3 Awareness and support for smoke-free legislation

Various questions were asked about awareness and support for smoke-free policy in Ghana. The questions included; in your workplace or school, places often visited such as pubs, lorry station, shops, restaurants and your home, are there any regulations on smoking? To which they had options 'no regulation', 'smoking forbidden in certain areas' and 'smoking forbidden in all areas'. To further ask about smoking in places often visited, another question was asked thus; which of the following best describes the rules about smoking in drinking establishments, bars and pubs and answers included smoking not allowed in any indoor areas, smoking is allowed only in some indoor areas and no rules or restriction.

In performing the analysis to ascertain regulations at workplace/school, places often visited and homes, I combined the responses that 'smoking was forbidden in certain areas' and 'smoking forbidden in all areas' into one category, and 'no regulations' into another. In determining whether there was support from the population for preventing smoking in public places, questions were asked about whether people would support law enforcement preventing smoking in public places. In addition to responding about 'public places', respondents were also asked about support for a complete ban or some sort of enforcement. In determining support for smoke free legislation, I combined the responses 'no' and 'don't know' into a single category and 'yes' into another.

5.2.4 Awareness of tobacco advertising

Questions about tobacco advertising were included. The first part of the question asked respondents about whether they had noticed advertising of cigarettes and/or tobacco products in the last six months, and the source(s) of these advertisements. The second part of the question specifically asked whether the advertisement promoted a tobacco company itself and not just specific brands or products.

5.2.5 Smoking cessation

Quit attempts by smokers were ascertained by asking whether they had tried to quit smoking in the last 12 months and if so how many times they had done so. Reasons for going back to smoking by smokers were also ascertained. In addition, smokers were asked whether they had been given advice about smoking, and if so, the sources of this advice. Smokers were further asked whether they had heard about medication to help quit smoking, and if so which of the various nicotine replacement therapy formulations (gums, inhalers, patches) or other cessation drugs they had used. Smokers were also asked who had helped them to

quit in the previous year, that is, whether they had been helped by one of the following: spouse, parent, children, friend, work mate, priest and other potential sources of support.

5.2.6 Data analysis

After recategorising some of the responses as stated above, data were then analyzed using Stata SE version 10 (Statacorp, College Station, Texas, USA) using the survey commands to allow for the sampling design, and p values less than or equal to 0.05 accepted to be statistically significant. For each of the outcome variables stated above, the main exposure variables examined included sociodemographic characteristics such as age, gender, ethnicity, occupation, religion, smoking status and locality type. Similar trends in the analysis of these factors followed the detailed description in the analysis section in chapter four which first involved univariate analysis followed by multivariate analysis. In determining the relationship of these factors in the multivariate analysis, age, gender and locality type were treated as a priori confounders following a similar process to that outlined in chapter four. In performing the statistics to ascertain quit attempts among smokers, and whether they had received advice to quit and heard about medications that help to quit smoking, I performed Fischer's exact test using the command *([var][var] if cursmoke==1, chi2 exact)*, where cursmoke 1 is defined as current smoker, was performed as the numbers reported were very small and I report here the Fisher's probability values in table 5.5.

5.3 Results

5.3.1 Awareness of health promotion campaigns and health risks

The majority of respondents (84%), and particularly (though not significantly so) non-smokers, and significantly more men ($p<0.001$), traditionalists ($p<0.05$)

and the relatively educated (overall p value p=0.03, p value for trend pt< 0.05) reported awareness of public health advertisement warnings about the health effects of smoking, typically from the radio or television (Table 5.1). A higher awareness of such health promotion advertisements was also reported by residents of rural than urban areas (AOR; 1.46, 95% CI 1.14-1.87, p=0.004). Over half (55%) of all those who recalled health promotion advertisements had noticed them more than ten times. Of those who had noticed health warnings many of them recalled hearing them from the radio (74%), seeing these on television (28%), at the roadside (12%), in the marketplace (4.3%), in newspapers (3.2%), lorry station (2.3%) and other sources (14.4%). There was no association between smoking status and ethnicity in relation to awareness of health promotion advertisements. Nine in ten respondents believed that passive smoking is dangerous to one's health and 94% would object if someone smoked near them, significantly more female than male participants held the latter belief (97%, p value<0.001) and significantly more older, of those aged 20 years and above, than younger participants (93.6%, p value =0.02). Of the number who believed that passive smoking was dangerous to one's health, 82.6% strongly agreed with the belief that passive smoking was dangerous to one's health, agree (7.1%), neither agree nor disagree (7.8%) and those who disagree or strongly disagree with the belief that passive smoking was dangerous to one's health (2.4%). They were more young (p=0.06; pt<0.05), urban than rural (non-significant), non-smokers than smokers (p<0.05) and the relatively educated particularly those in tertiary education (not significant) holding this belief. The belief that passive smoking was dangerous to one's health was strongly associated with ethnic origin of respondents (p=0.002). Although respondents had limited knowledge of the harmful constituents of cigarettes as 93% of them did not know

anything about the constituents of cigarette smoke (see table 5.2), there was generally good knowledge about health risks posed by smoking: 97% were aware that smoking causes heart disease, 82% lung cancer, 71% stroke, and 72% mouth and throat cancer. Similarly, awareness of health risks was higher among those aged more than 20 and were predominantly female. Almost 96% of respondents took the view that adult smoking encourages children to smoke. Of these, age ($p<0.05$), gender (more women than men, Adjusted Odds Ratio (AOR) 1.97 95% CI 1.49-2.62, $p<0.001$) smoking status (non smokers than smokers) and education (a clear trend, the higher the level of education, the more likely they would agree that parental smoking influences children smoking, $p=0.18$, $pt<0.05$) were associated with the belief that parental smoking influences children in the household to smoke.

Table 5.1: Advertisements warning about tobacco risks, health risks posed by passive smoking and parental influence on children smoking

Characteristic	Number (%)	Number (%) noticed warning	Adjusted odds ratio	Number (%) agree passive smoking dangerous	Adjusted odds ratio	Number (%) agree smoking influences children	Adjusted odds ratio
Total	**6258**	5256 (84.0) (7 missing)		5612 (90.0)		5986 (95.7)	
Age group							
14-19	1144 (18.3)	740(64.7)	1	1041 (91.0)	1	1094 (95.6)	1
20-29	1686 (26.9)	1605(95.2)	1.21 (0.99-1.48)	1521 (90.2)	1.08(0.79-1.47)	1593 (94.5)	1.49(1.0-2.24)
30-39	1277 (20.4)	1079(84.5)	1.30 (1.07-1.56)	1157 (90.6)	1.07(0.80-1.42)	1233 (96.6)	1.85(1.25-2.75)
40-49	810 (12.9)	710(87.7)	1.68 (1.27-2.22)	721 (88.9)	0.89(0.67-1.17)	787 (97.0)	2.22(1.43-3.45)
50+	1341 (21.4)	1122(83.7) *P=0.017* *Pt=0.15*	1.18 (0.89-1.56)	1172 (87.4) P = 0.056 Pt=0.022	0.78(0.55-1.11)	1279 (95.4) P= 0.02 Pt=0.18	1.35(1.02-1.79)
Gender							
Male	2274 (36.3)	2001(88.0)	1	2034 (89.5)	1	2132 (93.8)	1
Female	3984 (63.7)	3255(81.8) *P<0.001*	0.60 (0.52-0.70)	3578 (89.8) P = 0.74	1.04(0.81-1.33)	3854 (96.7) P < 0.001	0.51 (0.39-0.69)
Locality type							
Urban	3161 (50.5)	2575(81.6)	1	2845 (90.0)	1	3011 (95.3)	1
Rural	3097 (49.5)	2681(86.7) *P=0.004*	1.46 (1.14-1.87)	2767 (89.3) P = 0.68	0.94(0.68-1.29)	2975 (96.1) P = 0.30	1.9 (1.46-2.58)
Smoking Status							
Non smoker	6045 (96.6)	5070(84.0)	1	5437 (90.0)	1	5801 (96.0)	1
Smoker	213 (3.4)	186(87.3) *P=0.76*	1.08 (0.66-1.76)	175 (82.2) P = 0.017	0.52(0.31-0.88)	185 (86.9) P = 0.0002	0.34(0.20-0.57)
Education							
Illiterate	1004 (16.0)	810 (80.8)	1	889 (88.6)	1	953 (94.9)	1
Primary	765 (12.2)	644 (84.3)	1.32 (1.05-1.64)	678 (88.6)	0.92(0.65-1.29)	736 (96.2)	1.50 (0.88-2.57)
Secondary	4206 (67.2)	3554 (84.6)	1.42 (1.11-1.81)	3789 (90.1)	1.03(0.77-1.37)	4027 (95.7)	1.50 (0.99-2.28)
Tertiary	283 (4.5)	248 (87.6) *P=0.025* *Pt<0.05*	1.70 (1.12-2.58)	256 (90.5) P = 0.90 Pt=0.66	1.10(0.64-1.92)	270 (95.4) P = 0.18 Pt=0.04	1.60(0.85-2.99)
Ethnicity							
Akan	5423 (86.7)	4568 (84.3)	1	4886 (90.1)	1	5193 (95.8)	1
Ewe	59 (0.9)	48 (81.4)	0.84 (0.38-1.87)	54 (91.5)	1.13(0.42-1.29)	57 (96.6)	1.33 (0.35-5.07)
Dagomba	43 (0.7)	39 (90.1)	1.95 (0.54-7.00)	43 (100)	1.23(0.67-1.34)	42 (97.7)	1.74(0.22-3.41)
Other	733 (11.7)	601 (82.2) P=0.575	0.86 (0.65-1.13)	629 (85.8) P=0.002	0.65(0.51-0.83)	694 (94.7) P=0.66	0.79 (0.53-1.18)
Religion							
Christian	5699(91.1)	4947 (86.8)	1	5107 (89.6)	1	5452 (95.7)	1
Muslim	424 (6.8)	342 (81.0)	0.79 (0.66-0.95)	377 (88.9)	0.94(0.64-1.39)	401 (94.6)	0.85 (0.48-1.51)
Traditionalist	82 (1.3)	77 (93.9)	2.16 (0.79-5.94)	80 (97.6)	5.00 (1.2-20.8)	80 (97.6)	2.24 (0.53-9.42)
Other	53 (0.9)	40 (75.5) P<0.05	0.47 (0.22-0.98)	48 (90.6) P=0.190	1.17(0.37-3.73)	53 (100) P=0.49	2.12 (0.62-3.12)

P=Adjusted Wald test; Pt=P value for trend; odds ratio adjusted for age, gender and locality type.

Table 5.2 Knowledge of health effects and composition of cigarette s

Characteristic	Frequency 6258 (%)	Male (%) 2274	Female (%) 3984	Age<20(%) 906	Age>20(%) 5352
Knowledge of diseases caused by smoking					
Causes heart disease	6055 (96.76)	2187 (97.17)	3868 (97.09)	882 (97.35)	5173 (96.66)
Causes stroke	4470 (71.43)	1608 (70.71)	2862 (71.84)	613 (67.66)	3857 (72.07)
Causes erectile dysfunction	2796 (44.68)	1017 (44.72)	1779 (44.65)	365 (40.29)	2431 (45.42)
Causes lung cancer	5154 (82.36)	1887 (82.98)	3267 (82.00)	719 (79.36)	4435 (82.87)
Causes Mouth and throat cancer	4525 (72.31)	1646 (72.38)	2879 (72.26)	638 (70.42)	3887 (72.63)
Knowledge of chemical composition of cigarette smoke					
Cyanide	56 (0.89)	30 (1.31)	26 (0.65)	7 (0.77)	49 (0.92)
Mercury	61 (0.97)	37(1.63)	24 (0.60)	15 (1.66)	46(0.86)
Arsenic	78 (1.25)	41 (1.80)	37 (0.93)	7 (0.77)	71 (1.33)
Carbon monoxide	248 (3.96)	154(6.77)	94 (2.36)	42 (4.64)	206(3.85)
Don't know	5815 (92.92)	2032 (89.36)	3783 (94.95)	835 (92.16)	4980 (93.05)
Tolerance to smoke by friend					
Not tolerate	792 (92.55)	1976 (86.90)	3816 (95.78)	855 (94.37)	4937 (92.25)
Would tolerate	374 (5.98)	253 (11.13)	121 (3.04)	36 (3.97)	338 (6.32)

Multiple responses in table

5.3.2 Awareness of and support for smoke-free legislation

Most individuals reported that smoking was permitted in their workplace and/or school and in various public places they often visited (Table 5.3). Age, gender, locality type, smoking status, education and religion were all associated with awareness of regulation in workplaces or schools. Those working in smoke-free areas tended to be younger people ($p<0.001$; $p_{trend}<0.001$), more educated (the more one's education, the more likely that they were aware of such regulations, adjusted odds ratio of primary education relative to those without any education 1.29, 95% CI 1.05-1.59 Ptrend<0.001), non-smokers (smokers were less likely to be aware (AOR; 0.55 95% CI 0.42-0.74), and more likely to live in the urban area (rural dwellers were less likely to have such regulations in places they worked or in school AOR; 95% CI 0.84 0.71-1.00, $p<0.05$). Females were less likely to be aware of such regulations in workplaces/schools (AOR; 0.57 95% CI 0.51-0.65, $p<0.001$).

Similarly, about a third of respondents reported having noticed regulations in places often visited and was significantly associated with age ($p<0.001$, $pt<0.001$), locality type ($p<0.001$), education ($p<0.001$, $pt<0.001$), ethnicity ($p=0.001$) and religion ($p=0.002$) but did not differ among male and female ($p=0.20$). Only 27% of respondents, and more men than women, reported that smoking was prohibited in part or all of their homes. Significantly, of those who were aware of regulations at home more men than women ($p<0.001$), educated than none educated ($p=0.03$), more in those with tertiary level of education than those with little or no education and religion, in particular those of the Traditionalist faith ($p=0.002$). Restrictions on home smoking were not related to education ($P=0.06$), urban or rural residence, or smoking status of respondents. Almost all (97%) respondents were in favour of smoke-free legislation, particularly

women (AOR; 4.04 95% CI 2.84-5.74 p<0.001), rural than urban dwellers (AOR; 2.15 95% CI 1.46-3.18, P<0.001), the young (p=0.004, pt=0.05) and non-smokers as smokers were significantly less likely to support smoke-free policy (AOR; 0.08 95% CI 0.05-0.14, p<0.001). Support for smoke-free legislation was lower among those of Traditionalist faith (AOR; 0.15 95% CI 0.07-0.32, p=0.0004) than among Muslims or Christians, but did not differ by education (P=0.53) and ethnicity (p=0.68). Most respondents (92%) wanted a complete ban on smoking in a range of public places, including (each of these locations having more than 80% support) churches, mosques, buses, trains, bus stations, waiting areas, airports, shops and bars. Participants cited health consequences, personal dislike of smoking, and economic reasons in support of their opinion.

Table 5.3: Awareness of and support for smoke-free regulation in Ashanti, Ghana

Characteristic	Regulation at workplace/school Number (%) aware of any regulation	Adjusted odds ratio	Regulation in places often visited Number (%) aware of any regulation	Adjusted odds ratio	Regulation at home Number (%) aware of any regulation	Adjusted odds ratio	Support for smoke free legislation	Adjusted odds ratio
Total	2349 (37.8) (35 missing)		1924 (30.9) (24 missing)		1715 (27.4)		6904 (97.4)	
Age group								
14-19	570 (63.2)	1	340 (37.6)	1	269 (29.7)	1	885 (97.7)	1
20-29	722 (37.7)	0.36(0.30-0.44)	612 (31.9)	0.79(0.640.96)	501 (26.1)	0.89(0.74-1.07)	1873 (97.4)	0.81 (0.46-1.43)
30-39	416 (32.8)	0.29 (0.24-0.36)	390 (30.7)	0.75(0.600.94)	357 (28.0)	0.98(0.77-1.24)	1255 (98.2)	1.19 (0.67-2.11)
40-49	256 (31.7)	0.28 (0.22-0.35)	256 (31.7)	0.79(0.601.04)	216 (26.6)	0.90(0.69-1.17)	792 (97.7)	0.87 (0.48-1.60)
50+	385 (28.9)	0.24 (0.19-0.31)	326 (24.5)	0.57(0.450.71)	372 (27.7)	0.94(0.75-1.18)	1289 (96.1)	0.48 (0.29-0.80)
	P < 0.001		P < 0.001		P = 0.14		P=0.004	
			Pt<0.001		Pt=0.85		Pt=0.02	
Gender								
Male	1052 (46.5)	1	729 (32.2)	1	721 (31.7)	1	2162 (95.1)	1
Female	1297 (32.8)	0.57 (0.51-0.65)	1195 (30.1)	0.92(0.80-1.05)	994 (25.0)	0.72(0.65-0.80)	3932 (98.7)	4.04 (2.84-5.74)
	P < 0.001		P = 0.20		P < 0.001		P<0.001	
Locality type								
Urban	1251 (39.8)	1	1099 (34.9)	1	815 (25.8)	1	3052 (96.6)	1
Rural	1098 (35.7)	0.84 (0.71-1.00)	825 (26.8)	0.69(0.58-0.83)	900 (29.1)	1.17(0.65-0.80)	3042 (98.2)	2.15 (1.46-3.18)
	P = 0.04		P < 0.001		P = 0.15		P=0.008	
Smoking Status								
Non smoker	2286 (38.0)	1	1871 (31.1)	1	1657 (27.4)	1	5934 (98.2)	1
Smoker	63 (29.6)	0.55 (0.42-0.74)	53 (24.9)	0.73(0.49-1.09)	58 (27.2)	0.81(0.57-1.14)	160 (75.1)	0.08 (0.05-0.14)
	P < 0.001		P = 0.12		P = 0.21		P<0.001	
Education								
Illiterate	286 (28.7)	1	98 (19.9)	1	301 (30.0)	1	980 (97.6)	1
Primary	203 (26.6)	0.69 (0.53-0.90)	199 (26.1)	1.29(1.05-1.59)	209 (27.3)	0.83(0.64-1.07)	744 (97.3)	0.83(0.45-1.53)
Secondary	1689 (40.4)	1.14 (0.53-1.44)	1409 (33.6)	1.76(1.50-2.07)	1110 (26.4)	0.77(0.62-0.96)	4100 (97.5)	1.15 (0.64-2.04)
Tertiary	171 (60.6)	2.63 (1.90-3.65)	118 (41.7)	2.43(1.75-3.37)	95 (33.6)	1.06(0.79-1.43)	270 (95.4)	1.08 (0.49-2.78)
	P < 0.001		P < 0.001		P= 0.031		P=0.75	
	Pt<0.001		Pt<0.001				Pt=0.53	
Ethnicity								
Akan	2075 (38.5)	1	1716 (31.8)	1	1503 (27.7)	1	5277 (97.3)	1
Ewe	25 (42.4)	1.23 (0.58-2.58)	13 (22.0)	0.59(0.27-1.28)	21 (35.6)	1.54(0.79-3.03)	58 (98.3)	1.34 (0.16-11.06)
Dagomba	13 (30.2)	0.79 (0.42-1.47)	6 (14.0)	0.34(0.13-0.87)	16 (37.2)	1.57(0.93-2.65)	41 (95.4)	0.68 (0.18-2.60)
Other	236 (32.5)	0.76 (0.62-0.94)	189 (25.9)	0.74(0.58-0.94)	175 (23.9)	0.81(0.65-1.02)	718 (98.0)	1.35 (0.73-2.49)
	P=0.06		P=0.001		P=0.24		P=0.68	
Religion								
Christian	2156 (38.0)	1	1788 (31.5)	1	1544 (27.1)	1	5562 (97.6)	1
Muslim	137 (32.7)	0.78 (0.61-0.99)	114 (27.0)	0.81(0.61-1.08)	115 (27.1)	0.99(0.79-1.24)	414 (97.6)	1.12 (0.67-1.85)
Trad.	42 (51.2)	1.66 (0.90-3.06)	8 (9.8)	0.25(0.12-0.51)	48 (58.5)	3.20(1.66-6.16)	66 (80.5)	0.15 (0.07-0.32)
Other	14 (26.4)	0.49 (0.23-1.02)	14 (26.4)	0.76(0.45-1.30)	8 (15.1)	0.45(0.20-1.03)	52 (98.1)	2.23 (0.41-12.19)
	P=0.02		P=0.002		P=0.002		P=0.0004	

P=Adjusted Wald test; Pt=P value for trend; odds ratio adjusted for age, gender and locality type.

5.3.3 Awareness of tobacco advertising

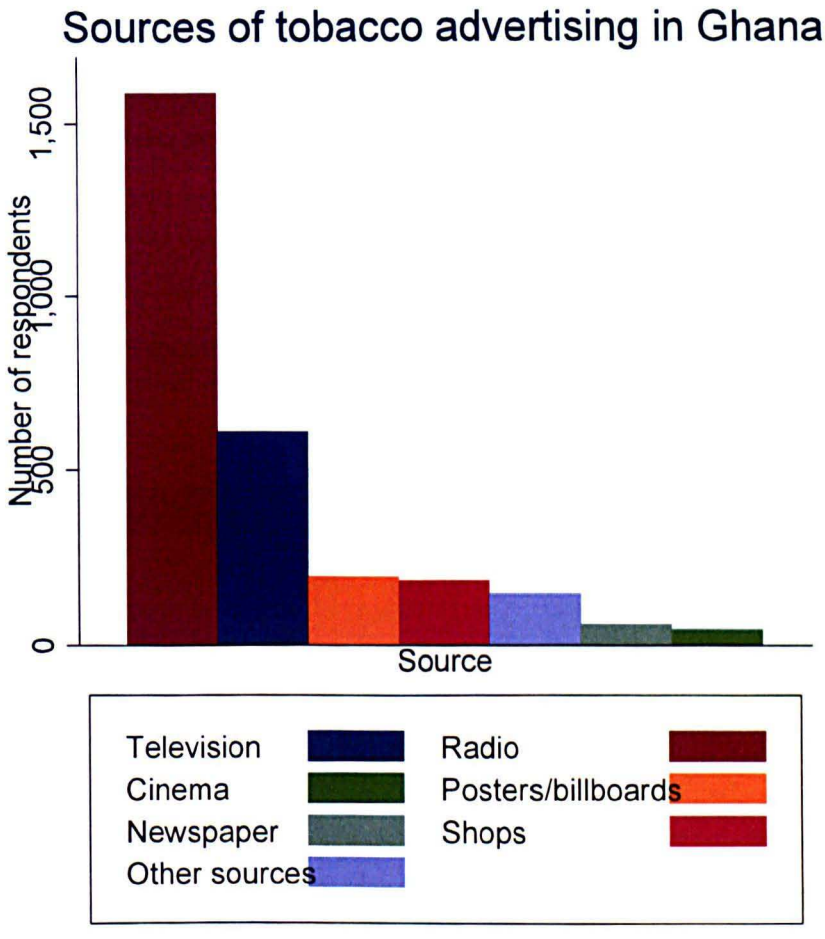
Although a complete ban on advertising was introduced in Ghana in 1982, 35% of participants reported that they had noticed advertising for tobacco products within the past six months (Table 5.4), and 12% promotion of a tobacco company. Such advertising of tobacco products tended to be seen by smokers, who were 50% more likely to notice them, p=0.02, by men (p<0.001), by the more educated (p=0.07), and substantially more in the urban than the rural areas (p<0.001). Significantly, age was associated with being aware of such advertisements of tobacco products, the elderly tending to be more aware than those in the younger age groups (overall p=0.003 and p value for trend pt=0.002). Awareness differed by ethnic group and was high among Traditionalists (AOR; 4.18 95% CI 1.81-9.67, p=0.02). Dagombas (the largest tribal grouping in the northern region of Ghana) tended to be more aware of such advertisements about tobacco products (AOR; 3.95 95% CI 1.97-7.95). Awareness of promotion of tobacco companies was significantly associated with gender, locality type, education and religion. There were significantly less females than males (AOR; 0.79 95% CI 0.66-0.95, p=0.03) noticing such promotional advertisements by tobacco companies. Significantly less rural, than urban, dwellers noticed such advertisements (AOR; 0.55 95% CI 0.37-0.83, p<0.001). Although there was a clear trend in the association between promotional advertisements of tobacco companies and education, the overall association was not statistically significant (p=0.30, pt=0.007). From Figure 5.1, the advertising or promotion was most often reported to have been heard on the radio (72%) or seen on the television (28%).

Table 5.4: Awareness of tobacco advertising and promotion

Characteristic	Noticed tobacco advertising N (%)	Adjusted odds ratio	Noticed promotion for tobacco company N (%)	Adjusted odds ratio
Total	**2216 (35.4)**		**767 (12.3)**	
Age group				
14-19	279(24.39)	1	108(9.44)	1
20-29	665(39.44)	1.21(1.03-1.42)	238(14.11)	1.04 (0.78-1.37)
30-39	471(36.88)	1.38 (1.15-1.64)	167(13.07)	1.15 (0.86-1.56)
40-49	330(40.74)	1.65 (1.32-2.07)	114(14.07)	1.25 (0.91-1.72)
50+	471(35.12)	1.33 (1.08-1.63)	140(10.44)	0.94 (0.65-0.95)
	P=0.003		*P=0.09*	
	Pt=0.002		*Pt=0.52*	
Gender				
Male	915 (40.2)	1	314(13.8)	1
Female	1301(32.7)	0.70 (0.60-0.81)	453(11.4)	0.79 (0.66-0.95)
	P<0.001		*P=0.03*	
Locality type				
Urban	1333(42.2)	1	489(15.5)	1
Rural	883(28.5)	0.53 (0.43-0.66)	278(9.0)	0.55 (0.37-0.83)
	P<0.001		*P<0.001*	
Smoking Status				
Non smoker				
Smoker	2108(34.9)	1	734(12.1)	1
	108 (50.7)	1.50 (1.09-2.07)	33(15.5)	1.13 (0.70-1.84)
	P=0.02		*P=0.60*	
Education				
Illiterate	352 (35.1)	1	89(8.9)	1
Primary	286 (37.4)	1.04 (0.78-1.38)	84(11.0)	1.19 (0.84-1.67)
Secondary	1450 (34.5)	0.80 (0.63-1.02)	548(13.0)	1.34 (0.92-1.95)
Tertiary	128 (45.2)	0.98 (0.67-1.43)	46(16.3)	1.43 (0.99-2.07)
	P=0.03		*P=0.007*	
	Pt=0.07		*Pt=0.30*	
Ethnicity				
Akan	1904 (35.1)	1	644 (11.9)	1
Ewe	24 (40.7)	1.31 (0.69-2.50)	13 (22.0)	1.95 (0.86-4.40)
Dagomba	30 (69.8)	3.95 (1.97-7.95)	8 (18.6)	1.44 (0.43-4.89)
Other	258 (35.2)	1.00 (0.83-1.21)	102 (13.9)	1.19 (0.91-1.56)
	P=0.002		P=0.22	
Religion				
Christian	1988 (34.9)	1	685 (12.0)	1
Muslim	150 (35.4)	1.04 (0.85-1.28)	67 (15.8)	1.38 (1.04-1.84)
Traditionalist	57 (69.5)	4.18 (1.81-9.67)	3 (3.7)	0.28 (0.08-0.93)
Other	21 (39.6)	1.04 (0.61-1.77)	12 (22.6)	1.87 (0.87-4.04)
	P=0.02		P=0.005	
			Pt=0.02	

P=Adjusted Wald test; Pt=P value for trend; odds ratio adjusted for age, gender and locality type.

FIGURE 5.1: SOURCES OF TOBACCO ADVERTISEMENT IN GHANA



5.3.4 Smoking cessation

Three quarters (75.9%) of all smokers had tried to quit smoking in the last six months, and the majority of these (69%) had made more than one attempt. The main reasons given for an inability to quit were lack of control of cravings for smoking (57%) and peer influence (30%). Most smokers (76%) had received advice to quit smoking (Table 5.5), mainly from friends and spouses (65%) and to

a much lesser extent from health workers (19%). Just over a third (37%) of all smokers had heard about nicotine replacement therapy (NRT), but only 3 (1.41%) had ever used it (gum). Awareness of NRT was higher in the urban area (X^2=6.05, p value =0.02) and in more educated smokers (X^2=12.66, p value=0.006). Otherwise there was little difference in smoking cessation behaviour between urban and rural areas or with other sociodemographic factors measured in the study.

Table 5.5: Quit attempts, receiving advice and knowledge of NRT among smokers in Ghana

Characteristic	Current smokers	Quit attempt in last 6 months (%)	Received advice to quit (%)	Heard of NRT (% of current smokers)
Total	213 (3.4)	161 (75.9) (1 missing)	160 (75.5) (3 missing)	77 (36.7) (3 missing)
Age group				
14-19	7 (3.3)	3 (42.9)	4 (57.1)	2 (28.6)
20-29	45 (21.1)	36 (81.8)	32 (72.7)	17 (38.6)
30-39	53 (24.9)	43 (81.1)	42 (80.8)	17 (32.7)
40-49	37 (17.4)	29 (78.4)	27 (73.0)	13 (35.1)
50+	71 (33.3)	50 (70.4)	53 (75.7)	28 (40.0)
		P=0.15	*P=0.64*	*P=0.91*
Gender				
Male	202 (94.8)	154 (76.6)	149 (74.9)	73 (36.7)
Female	11 (5.2)	7 (63.4)	9 (81.8)	4 (36.4)
		P=0.30	*P=0.60*	*P=0.98*
Locality type				
Urban	113 (53.1)	88 (77.9)	86 (76.8)	50 (44.3)
Rural	100 (47.0)	73 (73.7)	72 (73.5)	27 (27.8)
		P=0.52	*P=0.63*	*P=0.02*
Education				
Illiterate	29 (13.6)	23 (79.3)	18 (62.1)	9 (31.0)
Primary	36 (16.9)	27 (75)	29 (80.6	19 (52.8)
Secondary	135 (63.4)	100 (84.6)	101 (76.5)	40 (30.3)
Tertiary	13 (6.1)	11 (84.6)	10 (76.9)	9 (69.2)
		P=0.91	*P=0.34*	*P=0.006*
Religion				
Christian	160 (2.81)	116 (72.96)	120 (75.95)	60 (38.22)
Muslim	18 (4.25)	14 (77.78)	14 (82.35)	4 (22.22)
Traditionalist	29 (35.37)	26 (89.66)	20 (68.97)	9 (31.03)
Other	6 (11.32)	5 (83.33)	4 (66.67)	4 (66.67)
		P=0.26	*P=0.71*	*P=0.23*
Ethnicity				
Akan	178 (3.28)	137 (76.97)	132 (74.15)	68 (38.42)
Ewe	4 (6.78)	3 (75.00)	3 (75.00)	1(25.00)
Dagomba	4 (9.30)	2 (50.00)	3 (75.00)	1(25.00)
Other	27 (3.68)	20 (74.07)	22 (84.62)	8 (28.57)
		P=0.57	*P=0.70*	*P=0.78*

Chi square test with p values

5.4 Discussion

This study demonstrates that support for smoke-free policy in work and public places, and awareness of the health hazards of active and passive smoking, are high in the population of a developing country that has to date avoided an epidemic increase in smoking prevalence. It also demonstrates that motivation to quit smoking is also high, though use of cessation support, such as nicotine replacement therapy, is rare. Awareness of and support for smoke-free legislation and awareness of health risks were strongly linked with socio-cultural factors in particular religious faith. The degree of current smoke-free policy in Ghana is low as most people reported that smoking was permitted in their workplace/school, places often visited and homes. It has also been demonstrated that although motivation to quit among smokers was high, knowledge and use of medications that help quitting was quite low. The study also shows that the ban on advertising in Ghana, imposed in 1982, has succeeded in preventing the majority of participants from exposure to tobacco advertising, though this is far from absolute.

Given that all tobacco advertising is banned in Ghana it is perhaps surprising that 35% of respondents reported seeing or hearing advertisements. These were reported to be predominantly seen or heard on television and radio, and both these are available from broadcasters based from within and outside Ghana. Those originating from neighbouring countries are not subject to an advertising ban. Anecdotally we are aware that breaches of the advertising ban are also common among small local (FM) radio stations. Awareness of advertising in spite of advertising bans is consistent with findings elsewhere in both developed and developing countries [178;336] and although the reason is uncertain, might be a reflection of poor recall bias among respondents or that adherence to tobacco

control measures, in particular advertising bans, is problematic. For example in the International Tobacco Control survey (ITC), [178] although there had been a ban on tobacco advertising in the four countries surveyed, 9, 10%, 15% and 22% (Australia, United Kingdom, Canada and United States respectively) of respondents sampled reported having noticed tobacco advertising in the last six months. Levels of awareness were less than 20% for television, and (1-7%) for radio. Adherence to tobacco control measures is particularly problematic in developing countries. For example a study by Li *et al* [336], revealed that 40%of the population studied in Chinahad noticed tobacco advertising in the past six months and that 20% had also noticed tobacco advertising in Thailand in spite of advertising bans. Recall of tobacco advertising was even higher among the Chinese population when prompted, increasing to 75%. These figures are perhaps a reflection of poor tobacco control efforts or inadequacy of the control measures as tobacco control efforts work in a dose response manner, the higher and more comprehensive the ban, the lower the exposure to tobacco marketing [178;337;338]. In South Africa, although tobacco advertising has been banned since 1998, in a study by Reddy et al (2002), 75% of students could recall pro-tobacco advertisements [55]. This therefore perhaps calls for a much concerted effort at enforcement in these countries.

The finding that awareness about smoking regulations in workplaces and schools was high among young people, urban males, non-smokers and the more educated may be a reflection of the likely age of working and schooling class in the sampled population. That smoking regulation was less likely to be noticed by women in the home is surprising as women are traditionally more likely to stay at home and should therefore have the tendency to notice these regulations more than men. The reported levels of support for smoke-free policy in Ghana were extremely high

in comparison with (for example) European countries, where a large majority of the population support bans on smoking in workplaces but far fewer, particularly smokers, support such policies in restaurants and bars [339;340]. Across Europe 84% of the population would support such bans for workplace in comparison with 79% for restaurants. That support for smoke-free places was high among non-smokers than smokers is similar to findings from the Eurobarometer survey [339]. That support was high among the rural population contrasts with findings from Richmond *et al,* which showed that support for smoke-free legislation was high among urban populations [341]. Support was also particularly high among Christian and Muslim respondents, suggesting that cultural influences and beliefs may be playing a major role in determining specific attitudes to smoking, and hence to the sustained low prevalence of smoking in Ghana to date [342]. However it is not clear why these factors might have a stronger influence in Ghana than in the many other countries and populations that share these religious beliefs but have become involved in the smoking epidemic. The observation that there is higher support for smoke free legislation, in particular among women than men, in rural than urban areas and in non-smokers than smokers, is consistent with other reports from developing countries [343-345] and shows that support for smoke free legislation is perhaps higher and stronger in developing countries compared with developed, and that legislation may not necessarily precede support and enforcement for smoke free places in developing countries [346]. Whereas support for smoke-free policy was high among surveys of Chinese, Thai and South African populations, each having support of over 85%, the same cannot be said of countries in the west where smoking rates are high [118;339]. The transnational tobacco companies typically try to prevent the enforcement of smoke-free regulations, particularly in developing countries; as for instance in a legal challenge to a strong smoke-free

laws passed by the Kenyan parliament [347]. It is also possible that countries in stage I of the smoking epidemic model have a higher tendency to support smoke-free legislation but not enforcement compared with those of stage IV, where passage of laws are very much likely to be adhered to. For example of the population sampled in the Euro barometer survey, two-thirds (73%) were in support of total ban of smoking in offices and other indoor places compared with the over 90% support seen in Ghana. Similarly in the Euro barometer survey, the figure even decreased to 63% for support for smoke-free in restaurants. There was much less support for total restrictions in bars, pubs and clubs (47%) [339]. Implementation of smoke-free legislation remains a challenge in many developing countries including Ghana, Uganda and The Democratic Republic of Congo where partial bans (restrictions) have been implemented without much success [347]. Support in many of these developing countries may not necessarily translate into enforcement and therefore whilst support is a necessary prerequisite for success in the implementation of smoke-free policy it cannot replace enforcement.

The high levels of awareness of health risks associated with smoking in this developing country compares with that pertaining in developed countries [43;348;349] and perhaps reflects the educational campaigns that the Ministry of Health (MoH) has embarked on in the recent past, in particular during 'World No Tobacco Day' celebrations. This high awareness is unlikely to have arisen from health warnings on cigarette packs as in Ghana, these do not warn about specific disease entities caused by cigarette smoking and currently, health warnings mainly from BAT Ghana Ltd consist of miniscule texts (occupying about 8% max) of cigarette brand packs. The text health warning reads "Ministry of Health Warning; cigarette smoking can be harmful to your health" and consist of Arial narrow font style of size 12 and is therefore unlikely to have contributed to the high level of health

awareness among respondents. It is however unclear whether this high level of support and awareness reflect a pre-existing cultural aversion to cigarette smoking, or has arisen from the advertising ban and health promotion policies followed by the Ghanaian government. That awareness of NRT was higher among educated urban dwellers is not surprising as in many developing countries although there is no extensive provision of tobacco cessation therapies, the few available are likely to be concentrated in urban areas where educational levels are also high and the products are more easily accessible [350;351]. The low levels of awareness of nicotine replacement therapy, and the especially low levels of use of the therapy, does not only illustrate the stage of development of the epidemic [352] but also the need for further health promotion to educate smokers of the effectiveness of cessation support, and for affordable, easily accessible and available formulations.

In many developing countries, there is no legal framework for enforcement of tobacco policies and in cases where there are legal mechanisms, they are lax [225]. Our findings suggest that for whatever reason(s), Ghana has succeeded to date in maintaining high levels of support for tobacco control policy, high levels of awareness of health promotion campaigns, and a high willingness on the part of smokers to quit while the 1982 tobacco advertising ban is largely holding. The challenge now is to deliver those policies to prevent future escalation of the smoking epidemic.

5.5 Conclusion and interpretation

Awareness of health promotion campaigns and health risks is high among the studied population in Ghana. Support for smoke-free policies, are high and so is the willingness to quit smoking in Ghana. The support for smoke-free policy was particularly high among Christians and Muslims, and two thirds of the population is not aware of exposure to tobacco advertising or promotion. Knowledge of constituents of tobacco smoke is low and many smokers are unaware about the use of medications that help with quitting. Whether these high levels of support and of awareness are cause or effect of the current low smoking prevalence in Ghana is still uncertain. The challenge for Ghana is to implement and sustain tobacco control efforts to prevent the current situation from escalating particularly targeting populations with specific needs as seen in this study.

CHAPTER SIX: STATUS OF IMPLEMENTATION OF FRAMEWORK CONVENTION ON TOBACCO CONTROL (FCTC) IN GHANA: A QUALITATIVE STUDY

6.1 Introduction

In the previous two chapters, I have shown that in spite of the presence of an active tobacco industry in Ghana for over fifty years the prevalence of smoking in Ghana is low; and that the likely reasons for this include an advertising ban implemented in 1982, a harsh economic environment at a crucial time of potential industry growth, socio-cultural factors and a period of substantial state control of tobacco industry. Further on, the key determinants of smoking status among a representative sample of the Ashanti population have been identified to include; age, occupation, religion, education, having friends who smoke and alcohol use. Other attributes such as smoking addiction, use of smokeless tobacco, brands and price of cigarettes have all been described in the previous chapter. Currently, as a result of the recent closure of the BAT manufacturing factory and its relocation to Nigeria, imports of tobacco products have increased, at least from the 2007/2008 fiscal year [279]. Therefore, there is likely to be robust marketing (of which the recently increased presence of marketing vans, as described in chapter 3, is an example) from the three main importers of tobacco products into the country. This means that policy makers cannot afford to rest on their laurels, but instead, need to further implement and sustain tobacco control efforts in Ghana. In particular, it is important that they implement the policy measures outlined in the Framework Convention on Tobacco Control (FCTC).

The World Health Organization's Framework Convention on Tobacco Control (FCTC) [37], which came into effect after ratification by 40 countries on February 27,

2005, represents the first international public health treaty and presents a unique opportunity to prevent the global burden of tobacco related death and disability. This is especially so in developing countries where tobacco smoking is increasing [12;145]. The treaty creates a set of principles and general duties for nations to address in tobacco use, with the objective (in Article 3) "To protect present and future generations from the devastating health, social, environmental and economic consequences of tobacco use.....by providing a framework for tobacco control measures" [37]. For example, according to the provisions of the treaty, by February 27, 2010, the 40 original ratifying countries should have banned advertising and promotion of tobacco products [353]. However, for the FCTC to succeed, ratification must be followed by implementation, and there are indications that in many countries, policies and programs as well as local legislation are weak or nonexistent [225]. As a result the FCTC is not necessarily being put into practice. To date investigation of the process and potential obstacles to this progress in the developing world has been limited [226].

In 2004, Ghana became the 39th country to ratify the FCTC, after unanimous approval by parliament [222]. A national steering committee responsible for formulating tobacco control policies and making recommendations to ensure that tobacco use is regulated was established under the auspices of the Ghana Health Service in 2003. Since ratification, Ghana has participated in all of the Conferences of the Parties (CoPs) aimed at negotiating specific protocols for FCTC implementation. However, progress in implementing FCTC policies in Ghana has been slow.

Although policy makers are supposed to be aware of the FCTC and its obligations, actual awareness of these policy measures, and the extent to which implementing effective tobacco control policy among policymakers and politicians in Ghana is unknown. There are also no data on the progress of FCTC implementation within Ghana. This chapter therefore describes a qualitative study of policy makers' awareness of the FCTC, as well as the progress in and barriers to its implementation in Ghana as a means of exploring the experience of implementing the FCTC in one country to date, capturing the prospects for progress in the coming years, and characterizing the likely obstacles to effective implementation elsewhere.

6.2 Methods

Members of the national steering committee for tobacco control, which is a multidisciplinary stakeholder representation team established under the auspices of the Ghana Health Service in 2003 and is responsible for formulating tobacco control policies and making recommendations for tobacco control, were interviewed on various aspects of the FCTC. This committee evolved from the Ghana Committee on Tobacco Control (GCTC) originally established in 1993 [216]. All 28 members of the committee were contacted, initially by telephone, to book an appointment for interview. Face to face interviews were then carried out with all consenting individuals using a semi-structured interview guide. Interviews were carried out between January and May 2008, and normally lasted between 45-60 minutes. Interviews were conducted in English, and covered current and potential policies for tobacco control in Ghana, awareness of the FCTC, specific achievements resulting from the FCTC process, and challenges, if any, of implementing the key elements of the FCTC. The latter included: price and tax

measures; protection from tobacco exposure; regulation of tobacco product disclosure; packaging and labeling of tobacco products; education, communication, training and public awareness (media campaigns); demand reduction measures concerning tobacco dependence and cessation services; illicit trade; sales to and by minors; provision of support for viable alternative livelihoods, activities and research; surveillance; and exchange of information. All interviews were audio-recorded using a digital voice audio-recorder and transcribed verbatim by the researcher. A semi-structured guide was developed for the interviews (see Appendix 2).

6.3 Analysis

Data analysis was facilitated using NVivo software version 8 (QSR International, Australia) and the Framework method of analysis [354]. The framework approach is adequately supported by Grounded Theory techniques and procedures. The first stage of the analysis involved reading through each interview transcript line-by-line and identifying open codes (called free nodes in NVivo) to identify themes and subthemes as well as concepts. Emergent themes, categories and subthemes as well as concepts were defined, cross-checked with the data and subsequently refined in an iterative process [355]. Themes and subthemes were given unique codes and a manageable index was constructed. Some free nodes were grouped together if they were determined to belong to each other under one parent node (tree nodes in NVivo). The next stage involved constructing charts with rows and columns for each of the main themes and sub-themes that emerged. The process of "charting" allows allocation of the main themes to each column on the chart and each interview transcript is assigned to a particular row. This ensures that enough data and context are included in the charts such that the analyst is not required to

go back to the transcribed data to understand the point being made [354]. Each interview stays on the same location on every chart. After charting all the interviews, interview texts were collated from the themes and sub-themes relating to the research aims and objectives to identify important issues. All interviews were transcribed and coded by me but for quality control purposes seven transcripts were selected randomly and checked by another member of the team to confirm the consistency of coded transcripts and that they contained data that could be substantiated by key findings of the study. The terms 'some' 'the majority' and 'most' represent approximately 30%, 70-80% and more than 80% respectively of proportions of respondents in the script.

6.4 Results

Of the 28 members of the national steering committee for tobacco control, 25 indicated a willingness to participate but five were unavailable for interview during the study period. The remaining 20 individuals were interviewed. They had different professional backgrounds, comprising 3 lawyers, 4 doctors, 1 parliamentarian, 2 people from the media, 3 from non-governmental organisations, 2 pharmacists, 2 communications specialists, 1 farmer, 1 research expert and 1 teacher.

6.4.1 Availability and awareness of a national policy for tobacco control

One consistent issue emerging from the interviews was that Ghana does not have one overriding/overall tobacco control policy or strategy. Some acknowledged that there had been several individual pronouncements and directives from Ministers of Health over the years but that these were made in an ad hoc fashion. In Ghana, 'Legislation' or 'law' has legal status and in order to be enforced it needs to be

passed through a legislative assembly (parliament). All offences under these are punishable as prescribed in the relevant legislation and the offender can be tried in a court of law. Under a 'Directive' or an 'Executive order' however, a policy for a particular aspect is pronounced but the offender cannot be tried under a court of law.

"I don't think that Ghana has had any policy for controlling tobacco use in the past" (Lawyer 3)

"I don't think that I am aware of any policy for controlling tobacco in Ghana. We have bits and pieces of control efforts but not sure whether there is any tobacco control law in this country" (Communications Specialist 1)

"We had banned tobacco advertisements on both the radio and Television through previous directives from the Ministry of health, so by way of controlling tobacco activities we have been doing quite well except that these were adhoc and has never been a policy for doing that" (Doctor 2)

6.4.2 Awareness of FCTC

Most participants understood what the FCTC meant in terms of the broad concepts and some even went on to give details about particular areas that the FCTC covers. It was generally thought to be a WHO treaty that governs tobacco control for countries that have signed and ratified the treaty.

"FCTC is the first WHO treaty that ensures the health and safety of the public through corporate action by sovereign states to ensure that individuals and populations are protected from environmental smoking" (Doctor 2)

"It is primarily a convention to control tobacco worldwide. It gives guidelines and provisions needed for the control of tobacco activities by countries" (Doctor 3)

"So yes it is an international treaty under the auspices of the WHO meant to help countries control tobacco use and its effects" (Media Person 1)

"Yes, what it seeks to do is to protect the present and future generations from the harmful effects of tobacco" (pharmacist 1)

6.4.3 Basis of Ghana's Tobacco Control

Interviewees were of the opinion that Ghana's tobacco control efforts had not generally been implemented by law, rather, policy makers have appealed to the conscience of the population and the tobacco industry to accept and adopt directives from the Ministry of Health and the Food and Drugs Board (FDB).

> *"therefore although we are doing some things in relation to tobacco control, they have just been at the willingness of the population to accept the few measures that we have implemented without recourse to any legal backing" (Research Expert)*

> *"No, we were just appealing to people's conscience as it were to without any laws backing it" (NGO Respondent 1)*

The main areas that were expressed by respondents as constituting policy directives for Ghana so far to date were a ban on all advertisements in the media, price increases of tobacco products by the Customs, Excise and Preventive Service (CEPS) of Ghana and a ban on smoking in public health buildings and the premises of some hotels as well as government buildings, but the extent to which some of these directives are being adhered to was said to be unknown.

> *"There have however been some directives from the ministry of health regarding smoking in health institutions and of course the advertisement ban in the media" (Doctor 4)*

> *"No smoking signs in public hotels, public hospitals and other public places are gradually being made smoke-free especially Ghana Health Service/Ministry Of Health buildings" (Doctor 1)*

In the case of hotels, the policy comprises an appeal made by the Ministry of Health to ensure that no smoking signs are displayed in premises, but compliance is not enforced as there is no legal backing for enforcement.

6.5 Specific FCTC policy implementation

6.5.1 Price and tax measures to reduce demand on tobacco products

There were mixed opinions on achievements in this area. A majority of interviewees said that achievements had been modest; and that tobacco tax had been increased by CEPS but that this was not enough to be a deterrent, and therefore called for higher taxation. Some expressed the idea that these taxes had not been aimed at tobacco control but at revenue mobilisation.

> *"CEPS have raised taxes on tobacco products. Excise duty on tobacco products is 140% of the Customs Insurance Freight (CIF), Value Added Tax (VAT). Import duty is 20% for a pack of cigarette to make it expensive to buy" (Lawyer 1)*

> *"The prices of cigarettes and other tobacco products have been increased in recent times but it does not appear to be deterring enough, those who smoke are still smoking" (Lawyer 2)*

> *"The prices of cigarettes are rising and have been continuously increased to improve revenue. A legislative instrument has been passed to make prices of tobacco products high" (Parliamentarian)*

6.5.2 Protection from exposure to tobacco smoke (smoke free policy)

Interviewees reported that achievements in smoke free policy had been modest, consisting of a directive from the Minister of Health to ban smoking in public health buildings, and a designation that some places, such as airports, public educational institutions and some hotels, were to be 'smoke free'. There was no formal legislation yet in place.

> *"We have managed to appeal to people's conscience not to smoke and to ban smoking in some public areas. For example hotels, public buildings and all Ministry of Health premises and sports stadia, but these do not have any legal backing as yet. But because the law has not been passed yet, people can still smoke in all these areas that have been designated no smoking areas" (NGO Respondent 1)*

> *"Not much has been done in this area. The public is largely unaware of the harmful effects of passive smoking and the adverse health effects of smoking" (Farmer)*

"At the moment, all public health institutions and facilities are smoke free. Various institutions have put up the "NO SMOKING" sign. But here again, the generality of the nation is not doing well as this has only come from the directive of the minister for health without any legal backing by parliament" (Doctor 1)

6.5.3 Regulation of the contents of tobacco products

Respondents were of the opinion that until now, nothing much had been achieved in this area of control. They were of the hope that Ghana's draft bill for tobacco control, which had been in the pipeline for some time, would help enforce this FCTC element, when passed into law. The national tobacco control bill of Ghana seeks to align the health system with the democratic values of the constitution and to enhance and protect the fundamental rights of citizens by discouraging the use, promotion and advertising of tobacco products in order to reduce the incidence of tobacco related illness and death. It also seeks to prevent the effect of smoking on health and for strong action to deter people from taking up smoking and to encourage existing smokers to give up smoking.

"Ghana has two regulatory agencies that are supposed to be dealing with the regulation of tobacco and its products. However, the extent to which these institutions are succeeding in the examination and accurate determination of the content of these products cannot be determined as they are highly under resourced" (Doctor 1)

6.5.4 Regulation of tobacco product disclosure

The majority agreed that achievement here had been minimal, as there is no binding legislation on product disclosure. Most respondents intimated that at least some of the tobacco companies disclosed product ingredients although they queried whether the tar and nicotine levels disclosed on the packs were meaningful. They were also concerned that in most cases the contents could not be verified independently by institutions of state thereby putting the users at risk

or that the writing on the packs (warning labels) warning about cigarette use are too small to read. Here, the tar/nicotine labels were sometimes confused with ingredients disclosure by some of the interviewees.

> *"The drafted bill mandates the FDB to regulate tobacco but since the bill has not been passed into a law yet what we do now is just follow the Minister's directive and ensure that all the three importers of tobacco in the country sign a document that ensures that they declare the content of the product they intend to import into the country. At the moment the three companies are BAT, Market direct and Target link. They are all complying with the demands of the FDB now" (Pharmacist 1)*

> *"You at least find out that these content have been declared by tobacco companies. Whether people see these and are capable of understanding these contents and to what extent they believe these things is another thing altogether" (Lawyer 2)*

> *"We have designed a form for all importers to register as an importer and a form to register each product that intends to import even if there are 10 of them. For each of these products they need to adhere to specific requirements and that include disclosing the contents of their products. This form in disguise actually is asking for all the core components of the requirements of the FCTC". (Pharmacist 1)*

6.5.5 Packaging and labelling of tobacco products

The majority of respondents were of the opinion that packaging conformed largely to the FCTC requirement of not promoting tobacco product by means that is false, misleading, deceptive or likely to create an erroneous impression about its characteristics, but were quick to add that it was difficult to validate some of these. In relation to warning labels, many of the interviewees said that very little had been achieved. They wondered why in developed countries packaging and particularly warning labels were made explicitly clear, conforming to the requirements but the same could not be said of developing countries like Ghana. It appeared likely that this was due to other countries having national legislation for warnings. Again, some expressed the idea that the warning labels were not a

sufficient deterrent, and therefore requested the use of pictures which will help communicate the message better for a largely illiterate population like Ghana.

> *"When it comes to the issue of packaging and labelling, it's so funny as sometimes what has even been written on the pack cannot be read. The WHO treaty ensures that a certain percentage (at least 30%) of the pack is given to warning but all this is not being done in Ghana. I guess the fact that some of the packs carry MoH warning labels "cigarette smoking can be harmful to your health" is some achievement" (Doctor 4)*

> *"We have a long way to go on this. As still we do have these companies not complying with the requirements about labelling to conform to at least 30% of the size of the pack for all health warnings. I even think that we need to use symbols rather than writings to ensure that the majority of our people who cannot read can at least know from looking at these labels" (Pharmacist 1)*

6.5.6 Education, communication, training and public awareness (media campaigns)

This is the area of tobacco control under the FCTC for which the majority of respondents said Ghana had performed well and achieved a lot. They said that public education on the use of tobacco was on-going, being carried out in particular in schools and on the radio. But some were of the opinion that with the exception of the celebration of World No Tobacco Day when campaigns appeared to be intensified, these campaigns were not sustained, thus making them in effect annual initiatives.

> *"Ghana is doing a lot on awareness creation and celebration of world no tobacco days. But education has to be sustained and built into the general framework of control measures" (Lawyer 3)*

> *"In Ghana there are no tobacco advertisements at the moment. Sometime ago the tobacco industries were supporting beauty pageants etc., those days are over. Public awareness has been made through the GHS, Health promotion unit and other agencies but they complain of resources for public education. During world no tobacco day celebration you also find a few media campaigns but beyond that nothing is happening. I met one of the top people in the BAT, who said to me that*

they folded up in Ghana largely because of the campaign that was going on to get people to stop smoking cigarette and the use of other tobacco products. I was told that it was strategically more economical to send manufacturing to Nigeria and import into the country" (Doctor 1)

6.5.7 Demand reduction measures concerning tobacco dependence and cessation services.

Many interviewees took the view that Ghana was not doing at all well in this area of tobacco control, that tobacco control was not a priority, and expressed the wish for a more concerted approach to reduce demand for tobacco products across the country. They intimated that the current situation where there are only a few smoking cessation services confined largely to the national capital and limited to quit and win contests was not optimal. The confinement of only a few cessation therapies such as the use of medicines and nicotine replacement therapies to only the capital was considered an affront to tobacco control effort and should be scaled up.

"Not much is being done in this area that I know of. The thing is that it appears tobacco control is not high on the agenda of the health ministry and therefore does not attract the same concern and perhaps budgetary allocation as there is with other diseases of public health concern" (Teacher)

"Because the MoH does not see tobacco control as an urgent subject, they have not created the necessary measures to reduce demand and to aid ban. What I can say, is that a bill has been submitted to cabinet and hopefully when passed that will in itself show that we are ready to aid banning tobacco product use in public places" (Doctor 4)

"The government should consider increasing access to those who would like to quit smoking through the provision of medicines that help quitting and also increase access across the country" (Pharmacist 1)

6.5.8 Illicit trade in tobacco products

Nearly all of the respondents were of the view that smuggling of tobacco products was occurring, and that efforts to control smuggling were a good thing. They said

that on a few occasions, Customs Excise and Preventive Service (CEPS) had managed to intercept and destroy smuggled tobacco products, motivated by the rewards for revenue mobilisation and the incentive being given for tracking these illicit products. These incentives had been put in place by a memorandum of understanding between CEPS and Philip Morris [282]. They reported however that the resources for dealing with this menace were very low and this posed a problem.

> *"The Customs, Excise and Preventive Service (CEPS) has done a lot in this area. CEPS are trying to come out with a law on tobacco product labelling meant for the Ghanaian market so that they will be able to differentiate between smuggled goods and which products have been dully imported into the country" (Pharmacist 1)*

> *"CEPS are involved in preventing smuggling but our borders are porous thereby allowing people to smuggle into the country. The intention by CEPS here is to reduce smuggling but you cannot eradicate smuggling" (NGO 1 respondent)*

> *"Smuggling is still a problem but it is not as it used to be. The propensity, I think is going down a bit now. However, there is the need to keep checking smuggling and they tend to make cigarettes cheaper and more affordable" (NGO 2 respondent)*

6.5.9 Sales to and by minors (youth policy)

Respondents were unanimous in their condemnation of the absence of a youth policy for tobacco control. They said that although the current draft bill included an age limit of 18 years for the sale to and by minors, nothing is being done currently to check the use of tobacco products by minors. The fact that there is no youth policy for tobacco control currently was a situation that many lamented over.

> *"As far as I am concerned we have spelt out all this in the draft control bill but it's up to us to pass the law that will enable defaulters to be prosecuted under the law. For now, nobody really cares who smokes and at what age. So to put it bluntly, we are not doing much in this area" (Lawyer 2)*

> *"So far there is no law or policy in this country barring children of a certain age not to sell or buy tobacco products, so any child even at the age of four (4) can walk into a shop and buy any cigarette product without any restriction at all" (Doctor 1)*

"As far as concerned children in this country still smoke and use other forms of tobacco products. They can sell and buy them at will since no law prevents them from doing so. One of my children at the moment sells in a shop where he dispenses tobacco to children his age and sometimes younger without any questions raised by his employer, we have tried to stop him but he appears to enjoy working in this environment" (Farmer)

6.5.10 Provision of support for viable alternative activities

Again, this is an area of control that respondents were unanimous in saying that very little had been achieved. They intimated that currently there was very little known about the number of tobacco farmers in Ghana and that apart from the offers from tobacco industry, very little was being done by the government either by way of direct policy interventions or through collaboration with the industry to offer alternatives to growing tobacco.

"I am not aware of any real measures to give these farmers any alternative livelihoods" (Doctor 1)

"I am not even sure we know how many farmers are producing tobacco in the country at present and what other crops they might like to cultivate should we ask them to stop cultivating tobacco" (Communications Specialist 2)

"BAT promised to help us grow mangoes as they said to us that 2008 was the last crop season. Some of the farmers have been made to start growing oranges and mangoes" (Farmer)

6.5.11 Research, surveillance and exchange of information

Almost all interviewees felt that nothing was being done in the area of research, surveillance and exchange of information. They were of the view that tobacco control is not high on the agenda of government, and that areas where capital is required, such as research and surveillance, are not priorities. They welcomed the present study as work to address the problem. Some however were of the view that a bit of research and monitoring was ongoing in the northern part of the country.

"This is a very difficult area. Nothing has been done as yet" (Pharmacist 1).

"I am very happy that your work is being done to at least give us some idea as to the nature of the problem and to comprehensively address the issue". (Pharmacist 2)

"Some research has been done in the MOH. Some people are permanently stationed in the northern part of the country doing some research to inform decision as you know, more people smoke in the north than anywhere else in the country" (NGO respondent 1)

6.6 Challenges of FCTC implementation

The challenges of implementation of the FCTC in Ghana as indicated by our respondents were: absence of a clear strategy and legal framework for tobacco control; lack of enforcement of existing directives for tobacco control, limited resources, lack of prioritization of tobacco control policy, lack of capacity to effectively deal with the global epidemic and slow implementation of FCTC.

6.6.1 Absence of legal framework for tobacco control

The absence of a legal framework to enforce tobacco control measures in Ghana was seen to be a major obstacle to progress. Although many of the FCTC policies have been captured in a draft bill currently in parliament, without passage of the bill into law very little could be done by way of enforcement. They were unanimous in calling for the passage of the national tobacco control bill, which has been held up in cabinet for the past four years.

"The tobacco control bill has to be passed into law to enable the country implement the ideals of the FCTC" (Teacher)

"The challenge is that Ghana needs a law that will mandate the Customs Excise and Preventive Service to increase tobacco taxes based on a comprehensive tobacco law aimed at controlling tobacco" (Doctor 2)

"There is the need to pass the tobacco control bill into a law to ensure that there is a legal backing to what regulatory agencies are doing. It will help to enforce its implementation" (Media Person 2)

"The national tobacco control bill contains elements on how to deal with the issue of illicit trade based on the requirements of the FCTC. The law therefore has to be passed first to implement the FCTC" (Teacher)

"I think we have dedicated team of people on the steering committee and therefore I think we are on the right way. Ghanaians are generally law abiding and therefore if we pass this law it will help. Again, many of the people who smoke now are the working class people and are not in the majority. With the passage of the law we should be able to move forward" (Lawyer 2)

6.6.2 Lack of enforcement of existing directives for tobacco control

Many respondents were of the view that there was also a lack of enforcement of existing directives from the Ministry of Health and other agencies of state, thereby leading to blatant non-adherence to existing regulations and directives.

"To resource the enforcing agents to be able to do their work but first with a legal backing, otherwise we should forget it. People will do what they want and get away with it" (Lawyer 2)

"We have had bits and pieces of some sort of directives for the control of tobacco from the ministry of Health, but to what extent these are holding cannot be told" (Lawyer 3)

"We all had the concern but no one wants to bell the cat. We had been making efforts but there has not been any legal backing and therefore making this very difficult" (Lawyer 2)

6.6.3 Limited resources for tobacco control

The majority of respondents said that there were very limited resources available for tobacco control activities, and until government adequately resourced agencies of state, there would be very little to show for FCTC implementation.

"Allocation of resources to adequately monitor and implement regulation of tobacco products is just not there. Resources for tobacco control are few and personnel are non-existent to ensure that this is carried out" (Doctor 2)

"Capacity building and resource allocation to ensure that tobacco control education and training as well as public awareness creation is sustained not only at the national level but with the involvement of all agencies mandated under the law" (Lawyer 4)

"There are limited resources for carrying out these activities and it appears as though there is no team work among those involved in tobacco control". (Doctor 2)

6.6.4 Lack of prioritization of tobacco control policy

Most of the respondents expressed the view that there was lack of prioritisation of tobacco control efforts in Ghana. Interviewees were of the opinion that tobacco control has to be made a priority, and efforts made to determine what needs urgent attention now and what can wait for the future. For example, a youth policy was seen as something that needs urgent attention and for which immediate gains could be made whilst waiting for the passage of the tobacco control bill.

"....Lack of priority for tobacco control activities in the country, there is limited education by only a few concerned individuals" (Parliamentarian)

"We have so many problems with the implementation of the FCTC, including slow implementation and lack of priority of tobacco control measures" (Pharmacist 1)

"First tobacco control has to be a priority and then the law has to be passed which will enable public health practitioners and other agencies to enforce the law to protect the public from the harmful use of tobacco" (NGO respondent 3)

"There is the need to prioritize tobacco control in Ghana, and then move on to pass the bill into a law. Resources will then have to be mobilized for the implementation of tobacco control activities" (Lawyer 2)

6.6.5 Slow implementation of FCTC

Respondents were unanimous in stating that Ghana's implementation of the FCTC has been very slow, in spite of the fact that Ghana was among the first countries to have ratified the treaty. They stated that the proposed tobacco control bill has taken over four years to be turned into legislation and it has still not been passed thus slowing the process of implementation. They were of the opinion that if

Ghana's state of control was backed by legislation, Ghana would further be able to control tobacco use.

> *"...it's a shame that we have not been able to pass the bill into law since we were among the first countries to ratify in Africa. The main problem is that we have been slow at implementing the treaty" (Doctor 2)*

> *"I think we have served our intention but the progress of implementation is very slow. I think it's really frustrating as it appears as though we are standing still" (Pharmacist 2)*

> *"Ghana is meant to be a signatory to this WHO convention but there is very little to show for its ratification as a country after several years" (Teacher)*

> *"The fact that the law has not been passed is making people use that against us, as they would say there is no law in the country preventing smoking or use of cigarette and related products. The law is very comprehensive and I think the most urgent thing to do now is to pass the law. The problem is that government does not attach the same premium it attaches to disease like HIV/AIDS, Malaria etc and therefore thinks that there are not many diseases associated with smoking in this country. I realise that the tobacco industry people are everywhere can you believe that when we finish our meetings, the next day the news is out there with them on our decisions and what we want to do. Ghana took the lead in West Africa in the ratification of the FCTC, but now even Nigeria which just started is nearly passing their bill. We need to move forward with the passage of the bill" (NGO respondent 1)*

6.7 Discussion

Implementing effective tobacco control policy is a major challenge for all governments, particularly those in developing countries where resources and capacity are limited. Since Ghana was one of the first 40 countries to ratify the FCTC, was one of the first to prohibit tobacco advertising [195], and currently has a low prevalence of smoking [198;342], Ghana might be expected to be making particularly strong progress with FCTC implementation. This, to our knowledge is

the first qualitative study to explore the progress of implementation of the FCTC in a developing country. Our study sample was purposive, targeting tobacco control policy makers who were members of the national steering committee for tobacco control in Ghana, set up in 2003 with responsibility for advocacy and recommending policy initiatives for tobacco control in Ghana. Although our study participants would be expected to be familiar with the FCTC and a broader mix of policy makers might have produced further insights, in the event the study sample was probably the most appropriate for identifying reasons for the lack of progress with FCTC implementation.

Transcription of the data (interview transcripts) was done by just one person (the student) and not two independent researchers; this could introduce potential bias in the way data were analyzed. This situation was minimized by random cross-checking of transcribed scripts with data input into the Nvivo software to ensure that they were consistent with what was said originally. That notwithstanding, the ideal situation would have been to have two independent researchers perform separate transcription to avoid biases in the analysis. Again, study participants were members of the steering committee for tobacco control and therefore may have had a better knowledge of the FCTC and its key elements compared with other policy makers. A broader mix of policy makers in the future with policy makers who are not necessarily involved in tobacco control may give a better picture of the situation.

In spite of the above limitations however, our findings demonstrate that Ghana has made modest progress in tobacco control since the ratification of the FCTC, mainly in the areas of advocacy and awareness creation, celebration of world no-tobacco day, communications to schools and parliamentarians on the harmful

effects of tobacco, and smoke-free public places and health facilities. However, whilst a five-year plan of action for tobacco control which is based on the draft tobacco bill has been drawn up, it has not yet been implemented. Although there have been several tobacco policy directives from the Ministry of Health in recent years, these are not necessarily legally binding.

Before the introduction of the FCTC, many developing countries had begun to control tobacco use [190;356;357], and in Ghana for example, there was an advertising ban [211]. The introduction of the FCTC in 2005 [37] might therefore have been an opportunity to develop a more concerted approach, particularly in setting the legal framework and resource allocation for tobacco control. However, whilst the treaty offers great potential to improve tobacco control, its effectiveness depends on how fully governments implement the obligations within it. Whereas some countries have made very substantial progress since ratification of the treaty, others are yet to see the full implementation and benefit of the FCTC [353]. Ghana is a good example of the latter.

Africa is at a crucial phase of the tobacco control as it is generally in the first phase of the tobacco control epidemic model [33]. Effective incorporation of the FCTC into individual countries' programmes and legislation could therefore avert a future epidemic. Like Ghana before the ratification of the FCTC, many African countries [300;358;359] had directives or other forms of legislature for tobacco control, but these were not coordinated to achieve substantive results. Yet the success of any tobacco control efforts is dependent on good coordination and adequate resources [227]. It is not enough to ratify without enacting laws to implement protocols. The FCTC has raised the political profile of tobacco as a public health problem and has laid the foundation for a set of principles and duties for nations to address based on their own unique circumstances. However, the adoption of the

treaty without the needed support and urgency to tackle the goals therein could undermine the objective of the treaty.

Participation in the FCTC Conferences of Parties requires certain specific targets to be achieved by all initial ratifying countries under the Framework Convention Alliance (FCA) initiative; an international non-governmental organization made up of more than 250 organizations representing over 90 countries around the world. The FCA was created to support the development, ratification, and implementation of the FCTC, but without pressure or penalties to encourage compliance. In Ghana, progress with implementation since FCTC ratification has been slow, being limited predominantly to the drafting of a national tobacco control bill [220], based on the FCTC treaty, which has been held up in cabinet since 2005. Other targets set by the Framework Convention Alliance (FCA), such as the recommendation to end smoking in public places such as hospitals, schools and universities, and illicit trade have also not been achieved [225;228]. The lack of progress with the bill questions the political will to enact it, and although the reasons for the delay are unclear, the possibility of tobacco industry influence and lobbying cannot be excluded [304;360]. In many countries the transnational tobacco companies have managed to get into high profile government businesses to ensure that tobacco laws are both watered down and diluted as is the case of Zambia, where political influence has helped [347]. In Ghana similar reaction is purported to have happened after the implementation of the advertisement ban in 1982 when the industry made alliances with high profile government officials to overturn the advertisement ban or to render it ineffective [195]. Regulatory capture, whereby available resources become tied to the development rather than enactment of policy is also a problem. In the midst of the need for other urgent and pressing diseases such as Malaria, Tuberculosis and HIV/AIDS, it can also be difficult to

maintain tobacco control as an urgent priority. Our study demonstrates that the challenges to implementing the FCTC, including the absence of a legal framework, lack of enforcement of existing tobacco control initiatives, limited resources, lack of prioritisation of tobacco control initiatives and lack of capacity, are major obstacles to effective policy implementation in countries such as Ghana, and overcoming these obstacles represents a major challenge to the future success of the FCTC.

6.8 Conclusion and interpretation

This chapter has demonstrated that although Ghana, like many other countries, has had no formal tobacco control policy, it has issued government directives on tobacco control, although adherence to these has been problematic. It was the hope that implementation of the FCTC would lead to new and better ways of tobacco control but this has not yet been the case. Among the reasons identified to explain Ghana's slow implementation from this study are: absence of a legal framework, lack of enforcement of existing tobacco control initiatives, limited resources, lack of prioritization of tobacco control initiatives and lack of capacity.

The slow implementation of the FCTC by Ghana has significant implications for monitoring and evaluation of the specific targets set to be achieved within a particular time frame. Many of the targets have not been achieved [225;228]. This may cause frustration among the members of the national steering committee on tobacco control. If Ghana and other developing countries are able to pass national tobacco control laws, adequately resource tobacco control efforts, build capacity for tobacco control and prioritize tobacco control efforts, they will be in a better

position to implement the ideals of the FCTC, thus helping to prevent an escalation of tobacco use in the future.

CHAPTER SEVEN: FINAL REVIEW AND RECOMMENDATIONS

CHAPTER SEVEN: FINAL REVIEW AND RECOMMENDATIONS

7.1 Introduction

In this thesis I have demonstrated that the prevalence of smoking in Ghana is low, identified key factors that may have contributed to this low prevalence, characterized the main risk factors for smoking and attitudes to tobacco control policy among a representative sample of the Ghanaian population, and assessed the awareness of policy makers in current tobacco control policies to further understand where Ghana stands in relation to a national response to the tobacco epidemic. In this chapter, I summarise the main findings of these studies in the context of the wider literature, and attempt to identify the key challenges in advancing and implementing effective tobacco control policy, and in particular the FCTC, in Ghana in the future. I also attempt to make recommendations for the effective control of tobacco use in Ghana.

7.2 Tobacco use and industry activity in Ghana

Tobacco use is recognised to be the largest preventable cause of death and disability worldwide, and accounted for 5 million deaths in 2006 [361]. The projections are that these deaths and disabilities are set to rise by 2025, with developing countries bearing the brunt of the epidemic [243;362]. Tobacco used in Ghana began in the 15th century but remained relatively inconsequential until the return of soldiers from Second World War service in Burma [279]. British American Tobacco, through its local agent the Pioneer Tobacco Company (PTC) established a manufacturing presence in Ghana in 1952 with the first locally made manufactured cigarettes being marketed in the same year. Predictably, since the establishment of PTC, tobacco use and particularly the smoking of manufactured cigarettes has

become increasingly common in Ghana, and the industry has grown; this is reflected, among other things, in the rise in the number of cigarette brands available in Ghana from 5 in 1954 to about 25 in 2008 [194;363].

Although the initial dominance and monopoly of the market by BAT (PTC) later challenged by the establishment of International Tobacco Ghana Limited (ITG) in 1976, BAT ultimately re-established its monopoly through the purchase of ITG. The adaptability of the tobacco industry is also reflected in BAT's survival in Ghana during periods of relative economic and political difficulty through a range of tactics, including increasing the production of tobacco in Ghana (to overcome leaf shortages), and making their presence felt in the Ghanaian economy through a range of activities including sponsorship of national events [364]. As a result, per capita use of Ghanaian cigarettes (that is, excluding illicit sources) increased from around 200 sticks per capita in the late 1960s to over 600 cigarette sticks per capita in the year 1978; however consumption has fallen back, to about 200 sticks per capita, in more recent years [151]. Since the closure of BAT in Ghana (and relocation of production to Nigeria) in 2006, three companies have registered as tobacco importers into Ghana: Target Link, BAT and Super Kings. BAT has however retained about 90% of the total market share; imports of cigarettes have more than doubled in the last three years [33], in part due to the change in the BAT manufacturing base.

Smoking prevalence in Ghanaian society has remained relatively low in comparison with other African countries. The reasons for this remain uncertain, and an investigation of the evolution of the tobacco industry in other African countries is beyond the scope of this thesis, but the results of this thesis suggest that they include the hostile economic environment of the 1970s to the introduction of the advertising ban, the general social aversion to cigarette

smoking, other socio-cultural factors such as the rise of Christianity, higher taxation of the manufactured product relative to other consumables, and latterly the general awareness of the country towards tobacco control measures such as education on health risks. The adoption of the FCTC may signal a new phase of tobacco control in Ghana, though at this stage adoption constitutes a statement of intent rather than actual implementation [211].

7.2.1 Industry activity in Ghana

Although the tobacco industry has been successful in many countries, the evidence in this thesis suggests that in Ghana, commercial success in terms of the smoking prevalence achieved in the local population has been relatively modest. The industry has had to deal with a relatively hostile economic and political climate, and has done so by working to create a good corporate image and to avoid or deflect measures that might impact adversely on demand for their product. The release of the depository documents on the industry has provided a unique resource for insight into the activities of the industry in both developed and developing countries, and this thesis has utilized this resource to characterize and understand the role of the tobacco industry in Ghana. Previous research has, among other things, revealed how the industry has deceived the public and policymakers about the harms of tobacco, manipulated science, used third parties to promote its agenda, targeted vulnerable populations [9;10], and interfered with regulatory and public policy processes [283]. These behaviors are not exclusive to the tobacco industry; research on internal asbestos and chemical industry documents has uncovered similar actions. In Ghana, after the advertising ban, the industry response included attempts to counteract health concerns by publicizing the economic benefits of the industry, reduce the publication of anti-tobacco articles

and place pro-industry articles in the media, and increasing networking to infiltrate influential committees and associations. BAT also used donations, and programmes of sponsorship for beauty pageants, sports and cultural events to generate good publicity in the press, television and radio.

However these efforts and strategies have not to date succeeded in achieving the high levels of consumption in Ghana that might have been anticipated had Ghana followed a more traditional track of epidemic development. This relatively favourable outcome may be the result of a combination of factors including adverse economic conditions that restricted industry growth and an early advertising ban, which together may have averted a major smoking epidemic and the consequent toll of death and disability that would otherwise ensue. However the true reasons for this relative lack of success are probably understood only by those involved in the tobacco industry itself. The important priority for Ghana now, and for other countries at a similar stage of smoking epidemic development, is to prevent further uptake of smoking in the future.

7.3 Smoking prevalence, attitudes and knowledge of health risks

After over half a century of the existence of the industry in Ghana, this research has shown that smoking uptake has risen slowly and that prevalence of smoking is low. The estimated prevalence of less than 4% measured in this study is consistent with the consumption data described above, and represents one of the lowest prevalence figures in Africa. The determinants of smoking status in Ghana

included some that were consistent with experience in other countries, such as male gender, alcohol consumption and having friends who smoke, and some that are less so, such as a higher prevalence among older and educationally and economically disadvantaged individuals. The use of smokeless tobacco by almost 5% in this study is relatively high however, higher however than the 2% reported in the national survey [363], suggesting that smokeless use may be more widespread than previously appreciated, and perhaps calls for further research to understand the use of smokeless tobacco, and approaches to prevention.

Although awareness of the health risks of smoking, and for measures to reduce tobacco smoking were high, it is not clear how much these characteristics arise from, or indeed may have contributed to the causation of, government tobacco control measures such as the early ban on tobacco advertising. That there is strong support for smoke-free policies in public places is a reflection of this general attitude to smoking however, and indicates that cultural factors and attitudes in Ghana may in general be less receptive to tobacco smoking than in other countries. Knowledge of the constituents of tobacco smoke was however very low, and access to help in quitting smoking was minimal, indicating that there is still a great deal of work to be done in informing the public about the hazards of tobacco smoking, and developing and promoting effective treatments for those who want to quit.

7.3.1 Status of tobacco epidemic in Ghana

According to the stages of development defined in the Lopez smoking epidemic model [365], Ghana is in Stage I of the smoking epidemic. However, recognition that smoking has been present in Ghanaian society for well over 50 years, and that the

demographics of the smoking population reveal that smokers tend to be older and on relatively low income, and the high proportion of ex-smokers, indicate that Ghana is in other respects at a more advanced stage of epidemic development. This disparity between prevalence and other markers of the stage of the epidemic questions the validity of the standard epidemic model in Ghana and similar developing countries; further work on other developing countries in Africa and elsewhere is indicated to establish whether alternative models might be more appropriate.

7.4 Tobacco control in Ghana past, present and future

7.4.1 Past tobacco control efforts

Before the larger global effort to control tobacco use now exemplified by the FCTC, Ghana had been among the very few first countries in the world to initiate a ban on advertising tobacco products, in 1982. The ban resulted from a ministerial pronouncement and was implemented without serious recourse to legal enforcement [212]. However the tobacco industry actively counteracted the health concerns underlying the ban by emphasising the economic benefits of growing tobacco in Ghana [212;220], by active networking and lobbying of government, and by promotion through sponsorship (for example) of the 'Miss Ghana' beauty pageants and 'Embassy double do' entertainment shows in the 1990s. The advertising ban has not been completely successful, since a sizeable proportion of respondents in our study reported seeing advertisements on television or radio, though it is likely that much of this arises from programmes transmitted from outside Ghana.

Although there is little evidence that partial advertising bans have an effect on consumption, comprehensive bans have been proven to have a huge effect over

time [212], though probably not enough to explain the observed low prevalence of smoking in Ghana. Other factors have therefore also had an important effect, and these are likely to include social pressures. Our studies suggest that religion is a particularly important influence on smoking behaviour, with smoking being particularly rare among those of the Christian faith, and Ghana is a strongly religious society, with over 65% being Christian and about 12% Muslim. The remainder are predominantly traditionalist. The existence of strong socio-cultural taboos against smoking, particularly among women, has perhaps also been a limiting natural factor in the use of tobacco particularly cigarette smoking. Currently, although being steadily eroded through globalisation, there is still strong social aversion to cigarette smoking by women, among whom the practice is still uncommon (prevalence still under 1%) [220].

7.4.2 Current and future tobacco control strategy

Tobacco control strategies such as education and information campaigns, celebration of 'World No Tobacco Day', tax increases, smoking restrictions in public places, the formation of the national steering committee and several stakeholder sensitization and participation groups for tobacco control and the adoption of the FCTC with all of its antecedents represent recent achievements for Ghana. The Customs, Excise and Preventive Service (CEPS) of Ghana has systematically tried to increase taxes on tobacco products relative to other consumer goods, but the real value of the price paid for tobacco products has in fact changed very little over recent decades as a result of both restricted availability (leading to higher price) in earlier decades, and increased supply and the effect of exchange rate variations in more recent years. Currently, taxes on cigarettes differ between

brands according to classification into premium, high, medium and low categories, and the tax payable on a pack of 20 cigarettes in these categories typically constitutes 25, 22, 20 and 17% of the full retail price respectively [225;228]. High taxes increase the likelihood of smuggling of illicit cigarettes however, and CEPS has attempted to reduce this through laws such as the Provisional National Defence Council (PNDC) law 330 of 1993, which imposes heavy fines and prison sentences of up to 10 years on those who smuggle tobacco whether by direct importation, exportation or in transit. The smuggled goods, including the means of conveyance, can also be seized [221]. It is difficult to obtain the exact figures for smuggling in Ghana, as indeed in most countries, but it has for many years ranged from about 10 to about 20%.

Ghana has maintained momentum in relation to health education and promotion in relation to tobacco since 1993, when the first national tobacco committee (currently the national committee for tobacco control) was formed, and through several government and non-governmental (NGO) stakeholder organizations. The national steering committee has gradually become a lobbying body for several anti-tobacco campaigns, and has been instrumental in the drafting of the national tobacco control bill and the five-year plan of action for tobacco control in Ghana, together with other stakeholders such as the Food and Drugs Board (FDB) and the World Health Organization (WHO). However the resources provided for tobacco control activity are low, now amounting to funding for one person working in the non-communicable disease control unit. There is no specific budget for tobacco control activities. The celebration of World No Tobacco Day and the associated educational and publicity campaigns has a short-term impact; other campaigns include television and radio advertisements, although there has been relatively

little use of the print media. Several stakeholders such as the World Health Organization, Food and Drugs Board (FDB) and the Movement against tobacco and Substance Abuse (MATOSA), among others, have also contributed to health education campaigns. However the use of health warning labels on cigarette packs as a means of health promotion in Ghana has not been fully exploited, since the current messages are small and occupy a small surface area (less than is recommended by the FCTC), suggesting that improving the warnings and introducing pictorial messages could be an effective future policy. The availability of booklets, leaflets, or other self-help materials is limited, and this approach could therefore be more widely exploited despite their relatively small effect on cessation [221]. To incentivize smoking cessation in Ghana, attempts have been made through quit and win promotion competition campaigns, which were judged to have been successful in the past [169]. Ghana does not have a comprehensive ban on smoking in workplaces and indoor public areas. The closest the country has come to this is the issuance of a directive to partially ban smoking in Ministry of Health buildings and some selected public areas [37].

Perhaps the most significant achievement in Ghana's quest for tobacco control is the adoption of the FCTC, which the country ratified on November 29th 2004 after signing the treaty on 20th June 2003. The FCTC which represents the first global treaty of the WHO has been ratified by about 170 countries worldwide, and Ghana was the 39th country to sign and ratify the FCTC. Implementation has been slow, however. A tobacco bill, which seeks to prohibit smoking in public places among other things was submitted to cabinet in 2005 but has made little progress since. There are still no controls on cigarette sales. Interviews carried out among policy makers indicate that there have been a number of directives (laws) issued apart from the advertising ban, all in a bid to control tobacco use but these are all

without legal binding. Additionally, a five-year plan of action based on the FCTC has been drawn up but is yet to be implemented. Since ratification, Ghana has managed to sensitize her parliament through stakeholder advocacy to create the necessary legal environment for implementation of the treaty, but little has been done beyond that [366;367]. The drafting of the national tobacco control bill [368] is based on the elements of the FCTC and needs to pass through parliament. At the last assessment of the country through a civil society survey, carried out by the Framework Convention Alliance (FCA), very little was found to have been achieved by way of the implementation of the FCTC, as almost all questions answered by the representative in that assessment were negative [10].

Through the Food and Drugs Board, Ghana has developed a tool for tobacco importers based on the tenets of the FCTC and which includes prohibition of advertising through trademarks, logos, brand names or company names on billboards, walls, murals, vehicles, transport stops or stations including airports and seaports [10]. Promotional offers and items are also prohibited, the minimum age for purchase of tobacco is specified at 18 years, and sale in health institution premises and educational facilities will also be prohibited [367]. Similarly, in the draft tobacco bill, the areas covered include prohibition on smoking in public places, emphasis on the ban on advertising, sponsorship and promotion, prohibition of organized activity, labeling of tobacco products, permitted tar and nicotine yield of cigarettes, youth access and minimum age restrictions and limitation on sale of tobacco products. This notwithstanding, the various contents in both the draft bill and the rules for tobacco importers are at this stage, not binding.

Ghana is set to achieve middle-income status by 2015, and since involvement in the tobacco epidemic is directly related to income and economic development, policy makers must ensure that tobacco control is a priority for the country if a sustained rise in smoking prevalence is to be avoided. The interviews with policy makers in this study demonstrate that they believe that implementing FCTC measures was not a high priority for politicians. Other areas that have posed a problem towards implementing the FCTC include the absence of a legal framework as discussed above, with its consequent lack of enforcement of both existing and potential policy directives and initiatives, limited resources for tobacco control, and lack of capacity. Future tobacco control initiatives should involve immediate passage of the tobacco control law and full-scale implementation of the FCTC without further delay. Without greater effort to ensure that its provisions are implemented in accordance with the spirit and not just the letter of its articles, the achievement of the FCTC for such countries where legal enforcement remains a problem would be marginal [169]. Ghana's future tobacco control measures therefore should involve the national obligations in the FCTC, namely: banning the promotion of tobacco products; requiring large health warnings on all tobacco packaging; banning deceptive labeling such as 'low tar'; banning smoking in indoor public areas and workplaces; implementing specific measures to combat smuggling; using taxation to reduce consumption; regulating toxin delivery by tobacco products; requiring disclosure of tobacco product ingredients; requiring litigation to make tobacco companies pay for the harm caused by their products; endeavouring to include tobacco cessation treatment in national health programmes; seeking to prohibit distribution of free tobacco products; and prohibiting sales of tobacco products to minors .

7.5 The current state of tobacco control in Ghana

The degree of implementation of tobacco control policy in Ghana can be assessed objectively by using the Tobacco Control Scale (TCS) developed by Luk Joosens and Martin Raw [366]. The TCS is generated by computing a score for each of several components of tobacco control policy implementation in relation to objectively defined standards, generated by an expert panel [366]. The policies include those endorsed by the World Bank in the MPOWER package comprising: price increases through higher taxes on cigarettes and other tobacco products, bans or restrictions on smoking in public places and work places, better consumer information including public information campaigns, media coverage and publicizing research findings, comprehensive bans on advertising and promotion of all tobacco products logos and brand names, health warning labels on cigarette boxes and other tobacco products, and treatment to help dependent smokers stop increased access to medications [10]. A breakdown of the score system is given in appendix 8.

Applying the TCS system to the state of tobacco control in Ghana is difficult because the score system has been created for and used entirely in developed countries, and does not translate fully to the developing country context in all areas. This is particularly true for price, which in the TCS is based on ranking of countries within Europe by price in purchasing parity, and uses the price of 20 Marlboro as one of its two standards. Since purchasing parity in a rich country measures the cost of goods that may be deemed unnecessary in the context of a poor country, this measure is not directly applicable. It is also complicated by the fact that Marlboro are not widely sold in Ghana. Provision of cessation services is also a less relevant criterion, since these might not be such a high priority in

countries with a very low prevalence of smoking. Nevertheless, it is an exercise worth pursuing to possibly set the stage for further assessment, and an attempt to score Ghana on all of these policies (with explanations of the scores given) is presented in Table 7.1.

The allocation of a score of 2 for price is arbitrary, but even allowing a score of up to 10 for price would place Ghana close to the bottom in terms of tobacco control policy implementation in Europe [366;367]. Further studies, applying the score to other African or developing countries, are needed to overcome the difficulty of scoring relative price in Ghana, and to set the status of Ghanaian tobacco control policy implementation into context.

Table 7.1 Tobacco control scale assessment for Ghana

(Scores available per category given in bold; responses and the scores allocated in italics)

Price of cigarette and other tobacco products	**30**
The price of 20 Marlboro *Marlboro not available. Premium brands are inexpensive relative to Europe however*	*1*
The price of a packet of cigarettes in the most popular price category in May 2008 *Inexpensive relative to Europe*	*1*
Smoke-free work and other public places May 2008	**22**
Meaningful restrictions enforced	*4*
Restrictions in public transport and other public places, such as educational, health, government and cultural places but with designated smoking places	*7*
Spending on public information campaigns in 2008	**15**
No designated budget for tobacco control activities	*0*
Comprehensive bans on advertising and promotion	**13**
Complete ban in Ghana except for internet, cinemas and point of sale	*10*

Large direct health warning labels in May 2008	**10**
Text warning occupying less than 10% of packet	*1*
Treatment to help dependent smokers stop	**10**
Smoking cessation support limited to just a few centres and not free	*1*
Total score	**33**

7.6 Implications for tobacco control policy in Ghana in the future

This research has identified important policy issues for the development of tobacco control, and the prevention of a full scale tobacco epidemic in Ghana, and with relevance to other developing countries, as follows:

1) Governments need to be aware of the tactics used by the TTCs. Perhaps most importantly, they need to know that TTCs are likely to attempt to be involved in governance and to lobby to minimize the implementation and impact of tobacco control policy. They are also likely to be involved in supplying tobacco products that enter the country illicitly. Every effort must therefore be made to prevent these influences.
2) Tobacco control laws to implement the FCTC, based on the current national tobacco control bill, need to be passed, and enforced, as quickly as possible. Since Ghana has ratified the FCTC, it is imperative that the country adheres to the requirements of the WHO treaty in order to sustain tobacco control. Civil society and NGOs must be engaged as actively as possible in this process.
3) The overwhelming support for smoke-free policy in Ghana demonstrates that the country is ready for the passage of a law that entirely prohibits smoking in public places. Acting on this is of particular priority.

4) The sources of tobacco advertising in the media in Ghana, in breach of the advertising ban, need to be traced and blocked from further advertising. Preventing cross-border advertising will require cooperation between neighbouring countries.

5) Given the low prevalence of smoking in Ghana, prevention measures such as health promotion campaigns should be targeted at high risk groups, which are primarily relatively disadvantaged men living in urban areas, and at the small proportion of the population who currently smoke. Graphic health warnings on packs may well therefore prove to be particularly effective in this context, and implementation of these is another urgent priority. Health warnings as used in Ghana at present are likely to be minimally ineffective.

6) The price of tobacco products must be increased, through taxation and where possible by prevention of illicit supplies

7) Expenditure on tobacco control measures is limited in Ghana and as in all countries is subject to pressure from other demands. Development and growth of more effective advocacy in Ghana, to help to inform and persuade politicians of the need for change, is therefore important. Linkages between developing country advocacy groups and successful groups in developed countries, as is now encouraged for medical service providers in the NHS, should therefore be encouraged.

8) Cessation services for smokers who want to quit are embryonic. There is a need in Ghana as in many countries to teach healthcare professionals to recognize smoking as a problem they can help with, and to provide them with the skills, knowledge and access to therapies needed to deliver effective cessation interventions.

7.7 Lessons learnt in the course of this thesis

I have learnt much from undertaking this PhD. As expected, I have developed skills in a number of areas, including epidemiological data analysis and designs, qualitative research, in the writing of grant applications but most notably in document analysis where great thought had to be given to the most appropriate way of obtaining, organising and analysing the tobacco industry documents. My work has thus contributed to the body of knowledge on the methods that should be used in this emerging field of enquiry. This study involved several methods (mixed methods), some of which I was completely unfamiliar with, and involved expertise in epidemiology, document analysis, qualitative research, tobacco control policy and some economics. All of these are highly complex fields in their own right. Tobacco control is a complex subject that needs some degree of competence across a very broad range of disciplines.

7.8 Suggestions for future studies

- There is the need to perform regular monitoring of tobacco use to detect early evidence of uptake within Ghana. The Health Research Unit (HRU) has already decided to use the survey instrument used in this study to carry out a national survey on tobacco use in the future.
- Further research should be conducted to track uptake of smoking in particular among young people as this would indicate future trends
- The socio-cultural factors, such as religious beliefs or other factors that may have contributed to the low prevalence of smoking in Ghana need further exploration.
- There is a need for collaboration between the Ghana Health Service and the Food and Drugs Board to conduct research into appropriate and effective

pictorial warning labels on cigarette packs for Ghana instead of the current miniscule labels of "Ministry of Health warning; cigarette smoking can be harmful to your health". This could be done in preparation for guidelines of Article 11 of the FCTC to utilize the most effective health warnings for Ghana.

- As a result of this work, The Health Research Unit (HRU) of the Ghana Health Service has received funding from the International Development Research Centre of Canada (IDRC), to perform a situation analysis of tobacco use in Ghana in collaboration with the University of Nottingham's UK Centre for Tobacco Control Studies (UKCTCS), represented by Professor John Britton. Our intention is to continue with this project, to strengthen research and capacity building in tobacco control for Ghana further.
- To establish collaboration with interested African countries (Ethiopia has made contact) to help establish and define how national tobacco surveys can be done using the study instruments here.

7.9 Recommendations

Although findings from this study have indicated that Ghana's smoking prevalence is low, the following recommendations are made based on the fact that there is anticipated growth in the Ghanaian economy (already witnessed in the steady rise in GDP) and the attendant use of tobacco demonstrated elsewhere still remains a possibility.

- Given that Ghana has neighboring countries from which tobacco advertisements are still emanating, it is important to work with these countries to help close this channel of promotion. This is not only applicable to tobacco advertising but also such measures as control of smuggling and transited tobacco products.
- There is the need for the Ghana Health Service and the Ministry of Health to make tobacco control a priority by allocating resources and building capacity for tobacco control. The current situation of one focal person being employed to cover all of tobacco control is not enough to ensure that tobacco control is to be taken seriously. It is important that support is mobilized for the immediate passage of the national tobacco control bill to facilitate a systematic implementation of the ideals of the FCTC and the five-year action plan for tobacco control in Ghana. Civil society groups should come together and engage parliament impressing upon them the moral case for passing the tobacco control bill in order to be able to implement the ideals of the FCTC. It is only right that after unanimously ratifying the treaty, that parliament only does what is right by passing the law and creating the enabling environment for its implementation.
- Tobacco control activities need to be sustained by implementing a multifaceted approach based on the country's specific areas of need. Evidence based effective policies outlined earlier in this thesis should be comprehensively implemented.
- It is difficult to institute serious anti-smoking interventions without national surveys being performed. The Ministry of Health should conduct regular national surveys or at least increase the number of questions included in the Demographic and Health Surveys (DHS) on tobacco use and smoking,

in particular to define the way forward for Ghana's future approach to tobacco control.

- Evidence from this study indicates that many people who wanted to quit were given advice to do so by spouses and friends but not necessarily from health workers. This reinforces the need to continue educational campaigns to denormalise smoking and to equip citizens with skills and knowledge to support smokers when trying to stop. In addition, however, health workers need specific targeted education and training to impart the skills needed to support smokers to stop. The tobacco control strategy should include affordable and culturally acceptable and available smoking cessation medications such as nicotine replacement therapy and other services for smokers who want to quit. Quit and win contests introduced sometime ago should also be encouraged and may be more beneficial compared with pharmacological interventions which may be expensive and difficult to purchase.

7.10 Conclusion

Ghana has used tobacco since the fifteenth century but increased use only occurred in the middle of the 20th century. Increased consumption of the product occurred following robust marketing and distribution till the late 1970s, further on however, consumption has fallen till date following tobacco control interventions in addition to hostile economic environment in the past and the general social aversion for tobacco use. In spite of this the industry has survived and with Ghana's poise for economic growth, future involvement in the global tobacco epidemic is a realistic possibility. Ghana has thus far avoided major involvement in the epidemic; this thesis has identified a number of areas in which further action is needed to ensure that tobacco smoking remains rare among the Ghanaian population.

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APPENDICES

APPENDIX 1

Household questionnaire; smoking study Ashanti region, Ghana

HOUSEHOLD QUESTIONNAIRE_SMOKING STUDY

ASHANTI REGION, GHANA

PART I DEMOGRAPHICS

A. General Background Information

Locality Name/EA Name.....

Name of Household.....

EA Code | | | | | | | | | | |

Index Case Number | | | | | | | | | | |

District.....

Urban/Rural (Urban=1, Rural=2).....

INTERVIEWER VISITS

Visit	1	2	3	Final visit
Date	.....	.....	.....	Day | | | | Month | | | | | Year
Interviewer's Name	.....	.....	.....	Name.....
Result*				

	.....	.....	.....	Result
Next visit:				
Date				Total No. of
Time	.....	.....	.....	Visits
	.....	.....	.....	

***Result codes:**

1. Completed
2. No household member at home or no competent respondent at home at time of visit
3. Entire Household absent for extended period of time
4. Postponed
5. Refused
6. Dwelling vacant or address not a dwelling place
7. Dwelling destroyed
8. Dwelling not found
9. Other..... (specify)

Total Persons in household ☐☐ Total Eligible Women ☐☐

Total Eligible Men ☐☐ Total number of Respondents ☐☐

Language of Questionnaire: ENGLISH

*Language of Interviewer: .....

Native Language of Respondent.....

TranslatorUsed?(Yes=1,No=2).....

*Languages Codes: 1. ENGLISH 2. ASANTE TWI 3. EWE 4. DAGBANI 5. HAUSA6.FANTE 7.OTHER.....(Specify)

B. Household Schedule (Table 1)

Now we would like to ask some information about the people who usually live in your household or who are staying with you now.

LINE NO.	USUAL RESIDENTS AND HOUSEHOLD VISITORS	RELATIONSHIP TO HEAD OF HOUSEHOLD	SEX	RESIDENCE		AGE ELIGIBILITY			
	Please give me the NAMES of the persons who live here.	What is the relationship of the NAME to the head of the household?*	Is NAME male or female?	Does NAME usually live here?	Did NAME stay here last night?	How old is NAME?	Please Tick box for consent	Please Tick box for whether forms have been filled in	Tick LINE NUMBER OF ALL ELIGIBLE PERSONS
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
01		☐☐	M F 1 2	YES NO 1 2	YES NO 1 2	IN YEARS ☐☐	01	01	01
02		☐☐	1 2	1 2	1 2	☐	02	02	02
03		☐☐	1 2	1 2	1 2	☐☐	03	03	03
04		☐☐	1 2	1 2	1 2	☐☐	04	04	04

05			1 2	1 2	1 2		05	05	05
06			1 2	1 2	1 2		06	06	06
07			1 2	1 2	1 2		07	07	07
08			1 2	1 2	1 2		08	08	08
09			1 2	1 2	1 2		09	09	09
10			1 2	1 2	1 2		10	10	10

CODES FOR Q.3

RELATIONSHIP TO HEAD OF HOUSEHOLD:

01=HEAD

02=WIFE OR HUSBAND

03=SON OR DAUGHTER

04=SON-IN-LAW OR DAUGHTER IN-LAW

05=GRANDCHILD

06=PARENT

07=PARENT IN-LAW

08=BROTHER OR SISTER

09=CO-WIFE

10=OTHER RELATIVE

11=ADOPTED/FOSTER/STEPCHILD

12=NOT RELATED

98=DON'T KNOW

C. EDUCATION AND WEALTH OF HOUSEHOLD MEMBERS

TABLE 2 SECTION IIa. THE DETAILS OF FAMILY MEMBERS

Serial number of family members (01= head of the family, the rest follow the survey sequence)		01	02	03	04	05	06	07	08	09
1	The name of family member:									
2	The question will be answered by: Yourself.....1 Somebody else instead.....2									
3	Sex: Male (M).....1 Female (F).....2									
4	Date of birth: (__year/__month/)	/	/	/	/	/	/	/	/	/
5	Ethnic group: Akan (Asante).....1 Ewe.....2 Dagbani.....3									

	Others 4									
6	Religious affiliation Christian.....1 Muslim.....2 Traditionalist.....3 Other.....4									
7	Martial status Unmarried .....1 Married .....2 Divorced .....3 Widowed or widowered? 4									
8	Educational qualification (age 14 or over) Illiterate or sem-iliterate .....1 Primary school .....2 Junior secondary school .....3 Senior secondary school/vocational school .....4 Polytechnic school .....5 College (2-3 years) .....6 University or above.....7									
9	What is your main employment? (1) Civil administrative and managerial staff (2) Managerial staff at middle level or above or big enterprise (not owner) (3) Private entrepreneur									

	(4) Skilled technical worker (5) Office worker (6) Self-employed (7) Employee in service industries (8) Urban manufacturer worker (9) Migration worker in the city (10 Migration worker in the rural areas (11) Rural worker (farmer, forest farmer, herdsman and fisherman) (12) Student (13) Retired (14) In the city: unemployed, redundant and underemployed.									
10	Are you and your family in any Health insurance scheme? Yes.....1 No.....2	01	02	03	04	05	06	07	08	09
11	Type of your health insurance (no commercial one): (1) No (go to question 13) (2) Private mutual schemes (3) Government insurance scheme (NHIS) (4) Private for profit schemes (5) Others..... (please specify)									
12	In the above question, please state how much you have to pay for your insurance scheme each year as your premium? GHC¢.....									
13	Which of the following items does your									

	household have? ***Give the number for each that applies*** 1. Electricity 2. A radio 3. Television 4. A video deck 5. A telephone 6. Refrigerator									
14	Type of drinking water used in your home is: ***Give the number for each that applies*** (1) tap water (2) hand-pumped well water (3) Bore hole (4) collecting rain water (5) other state									
15	Type of toilet is: ***Give the number for each that applies*** (1) Water flushing (WC) (2) Excrement-urine collected separately (3) Pit latrine (4) Funnel style with double jars (5) Bucket latrine (6) KVIP (7) Other									
16	Do any of your household members own any of the following? ***Give the number for each that applies*** 1. A bicycle 2. Motorcycle/motor scooter									

	3. Car/truck 4. A tractor 5. Other 6. None									
SECTION IIb SMOKING STATUS/ADDICTION										
1	Have you ever smoked a cigarette, a cigar or a pipe? *W'anom sigrete, cigar anaa se ebua pen?* **(GHS)** Yes.....1 No.....2	01	02	03	04	05	06	07	08	09
2	Just to check, which best describes you: *Kyere nea eka fa woho* **(AM)** I have never smoked.....1 I have ever tried smoking but never smoked regularly (have smoked less than 100 cigarettes, cigars or pipes in my life).....2 I used to smoke but I never smoke a cigarette, cigar or pipe now.....3 I smoke nowadays.....4 If **never smoker (1 or 2)**, continue from **Q1 section IIc** **If ex-smoker, (3) continue from Q. 23**									
3	How old were you when you first tried smoking a cigarette even if it was only a puff or two? *Wo firi se w'nom sigrete no na w'nya mfie sen?* **(AM)**									
4	Do you smoke cigarettes at all currently? *Sesie wo nom sigrete anaa?* If **no**, continue from **Q23 GHS** Yes.....1									

	No.................................2										
5	About how many cigarettes A DAY do you usually smoke? Number of sticks............If less than 1,enter 0 for each person. *Da koro biara wo nom be ye sen?* GHS										
6	How many cigarettes do you usually smoke at weekends? If less than 1, enter 0 *Nawotwe ewie ye sigrete dodoɔ sen na wo nom?* **GHS**										
7	How many cigarettes A DAY do you usually smoke on weekends? If less than 1, enter 0 *Da koro wɔ nawotwe ewie mu sigrete dodoɔ sen na wo nom?*GHS										
8	Where do you normally smoke your cigarette? *Ehene fa na wo taa nom sigrete no?* ***Please indicate number for each person in the corresponding box. (Indicate all that apply)*** **ITC** Workplace.................................1 Pubs/Drinking spots........................2 Bus/Lorry station...........................3 Home.......................................4 Bus/car.....................................5 Other.......................................6										
9	Which brand(s) of cigarette do you usually smoke? Give full brand name for each person. *Sigrete no, emu neɛhene na wo taa nom?* If possible check with packet. Indicate if brand packet checked (√) **ITC**	01	02	03	0 4	05	06	07	08	09	
10	Is there any particular reason for the choice of brand? *Den nti w'ani gye nea wo nom yi ho* **(ITC)**	01	0 2	03	04	05	0 6	0 7	0 8	0 9	

	Yes.....1 No.....2 If yes, please state what the reason is The listed tar and nicotine levels for the brand.....1 It may not be as bad for your health.....2 As a way to help you quit.....3 The price.....4 Howthey taste.....5 How satisfying they are.....6									
11	How soon after you wake up do you smoke your first cigarette? *Wo sore firi mpa so bɛyɛ mmrɛ sen ansa wo nom sigrete?* **FQ** 0-5 min.....1 6-30 min.....2 31-60 min.....3 After 60 min.....4									
12	How difficult or easy would you find it to go without smoking cigarette for a day? *Ne den sen anaa ne mmre sen na dakoro wonnom sigrete?* Would you find it **FQ** Very easy.....1 Fairly easy.....2 Fairly difficult or.....3 Very difficult.....4									
13	Do you find it difficult to refrain from smoking in places where it is forbidden (e.g. church, library, and cinema)? *Eye den ma wo se wonnom sigrete wo bɛɛbi a womma ho kwan anaa?* **FQ**									

	Yes.....1 No.....2									
14	Do you smoke more frequently during the first hours after waking than the rest of the day? *Wonom sigrete wasore anopa kyen da mu no anaa?* **FQ** Yes.....1 No.....2	01	02	03	04	05	06	07	08	09
15	Do you smoke if you are so ill and bedridden most of the day? *Wo yare koraa na wope sɛ wonom sigrete anaa?* **FQ** Yes.....1 No.....2									
16	Since you became a regular smoker, what is the longest time that you have not smoked? *Efiri se wofiri aseɛ nom sigrete dabiara no bosome ahe na wakwa tiri nom* state.....(months) for each person (If it is less than one month, please write out '0') **GHS**									
17	How much do you spend on cigarette in a day? *Dabiara sika sen na wo sei no wo sigrete ho?* ***Please indicate appropriate number in each box*** **ITC** Less than 50p.....1 51p-¢1.....2 ¢1.1p-¢5.....3 More than ¢5.....4									
18	What is the price per pack of your brand of cigarette? *Sigrete a wonom no n' adaka boɔ ye sen?* GHC ₵.....**CS**									

19	If the price of a pack of cigarette went up from price in Q 18 what would you do? *Se sigrete a wonom no boɔ ko soro a den na wo be ye?* **ITC** Smoke fewer cigarettes.. .....1 Switch to a cheaper cigarette brand.....2 Look for a cheaper source for your current cigarette brand.....3 Buy smaller amount of cigarettes at a time?.....4 Buy cigarettes in bulk..... ....5 Try to quit smoking.....6 Would want to continue smoking the same brand.....7									
20	How do you normally buy your cigarettes? *Sigrete a wonom no dodoɔ sen na wotaa tɔ?* **ITC** Singly.....1 A few sticks.....2 In packs.....3	01	02	03	04	05	06	07	08	09
21	Where do you obtain your cigarette? *Ehene na wonya sigrete firi?* **CS** Shops.....1 Pubs.....2 Drinking spots.....3 Roadside.....4 Other.....(Please state)									
22	How easily do you obtain your cigarette? *Ne*									

	mmrɛ sen n'ɛyɛ se wo be nya sigrete? **GHS** Very easily.....1 Fairly easy.....2 Fairly difficult or.....3 Very difficult.....4 For all current smokers, Go to Q.27; **For current smokers in Q.2 continue here from Q.23**									
23	About how many cigarettes did you smoke IN A DAY when you smoked them regularly? *Sigrete dodoɔ sen na wonom no dakoro biara?* If less than 1 enter 0 **GHS Q.27 (Q.23, 24, 25 & 26 ever smokers)**									
24	How long ago did you stop smoking cigarettes regularly? *Wogyae nom be ye sen nie?* **GHS** Less than 6 months ago.....1 6 months but less than a year ago.....2 1 year but less than 2 years ago.....3 2 years but less than 5 years ago.....4 5 years but less than 10 years ago .....5 10 years or more ago.....6									
25	What was your main reason(s) for giving up smoking? ***(Indicate all that apply)*** *Den nti na wogyae sigrete nom?* **GHS** Have caught up some illness.....1 Prevention of disease.....2 Finance burden.....3 Disapproved by family.....4 Environment restraint.....5									

	Pregnancy.....6 Impact of health education.....7 Receive advice from Doctors.....8 Religious reasons.....9 Others.....10									
26	Do you smoke at least one cigar of any kind per month nowadays? *Wonom taa bi nansen yi anna?* ***If no, go to Q.29*** **GHS** Yes.....1 No.....2									
	FOR ALL RESPONDENTS CONTINUE HERE!!									
27	About how many cigars do you smoke in a week? *Dodoɔ bɛyɛ sen na wonom no naawotwe?* If less than 1, enter 0 **GHS**	01	02	03	04	05	06	07	08	09
28	Have you ever smoked at least one cigar of any kind per month? *Wanom taa ahodoɔ dodoɔ yi bi pen anaa?* **GHS** Yes.....1 No.....2									
29	Do you smoke a pipe at all nowadays? *Wonom abua sesie anaa?* **GHS** Yes.....1 No.....2									
30	Have you ever smoked a pipe regularly? *W'anom abua bi dabiara pen anaa?* **GHS** Yes.....1 No.....2									
31	Would you like to give up smoking? *Wo be pe sɛ wo begyae taa nom anaa?*									

	For anyone who is a current cigarette, pipe or cigar smoker CS Yes.....1 No.....2 Don't know.....3									
32	Over the last 12 months, have you ever tried to give up smoking? *Bɛyɛ afe nie, wa bɔ mmoden se wo be gyae sigrete nom anaa?* **CS** Yes.....1 No.....2 If yes, how many times have you attempted to give up smoking? *Mpen dodoɔ be ye sen?* **Please state how many times.....**									
33	What is the main reason for you going back to smoking on your last attempt to give up smoking? *Den nti na w'antumi angyae?* **CS** Cannot control the craving.....1 My health gets worse.....2 My health gets better.....3 My spouse/partner smokes.....4 Influenced by peers/environment.....5 Fashion.....6 Refreshing.....7 Others.....8	01	02	03	04	05	06	07	08	09
34	If answered ***yes to cigarette, cigar or pipe*** **(GHS)** Which one of the following statements best describes you? *Nsem fua yi, emu neahe na efa woho?* I intend to give up smoking within the next									

	month.....1 I intend to give up smoking within the next 6 months...2 I intend to give up smoking within the next year.....3 I intend to give up smoking but not in the next year.....4 I intend to give up smoking, but I'm not sure when.....5 I don't intend to give up smoking.....6									
35	In the last 5 years, have you been given advice on smoking? *Bɛ ye mfie num nie, Obi ama wo efuturo afa sigrete nom ho anaa?* ***Please indicate all applies*** **CS** Yes.....1 No.....2 If yes, who gave you this advice? Doctor.....1 Nurse.....2 Pharmacist.....3 Health professional.....4 Other (Please specify).....5	01	02	03	04	05	06	07	08	09
36	Have you heard about medications to help people stop smoking such as Nicotine Replacement Therapies like nicotine gum or the patch, or pills such as Zyban? *W'ate nnuro bi a ɛbua ma wogyae sigrete anaa taa nom anaa?* **ITC** Yes.....1 No.....2									

37	Have you received any Nicotine Replacement therapy (NRT) such as gums, patches, inhalator, or other drugs designed to help people to quit smoking? *W'anya saa nnuro yi bi anom pen anaa?* **ITC** Yes.....1 No.....2 If yes, which one of the above was given to you? Please state clearly.....									
38	Over the last year has anyone helped you to quit smoking? *Bɛyɛ afe nie no obi abua wo se wobɛ gyae sigrete nom anaa?* **CS** Yes.....1 No.....2 If yes, who has been trying to get you to quit smoking? ***Give the number for each that applies*** Partner/spouse.....1 Parents.....2 Children.....3 Sibling.....4 Friend.....5 Work mate.....6 Priest.....7 Other.....8	01	02	03	04	05	06	07	08	09
39	Some cigarettes are described as light, mild or low in tar. Do you currently smoke these types of cigarettes? *Sigrete bi mu ɛyɛ mmrɛ wonom bi sisie anaa?* **ITC** Yes.....1 No.....2									

40	Have you ever smoked any of these types of cigarettes? *Saa sigrete a emu ɛyɛ mmrɛ yi w'anom bi pen anaa?* **ITC** Yes.....1 No.....2	01	02	03	04	05	06	07	08	09
41	For the following questions, I will refer to all types of light, mild and low tar cigarettes as "Light Cigarettes." *Nsem yi a mere bisa wo yi kyere me deɛ wodwene fa ho wɔ sigrete a ɛmu yɛ mmrɛ yi ho* **ITC** Please tell me if you Strongly agree.....1 Agree.....2 Neither agree nor disagree.....3 Disagree or strongly disagree.....4 No idea.....5 With each of the following statements about light cigarettes. a. Light cigarettes make it easier to quit smoking b. Light cigarettes are less harmful than regular cigarettes c. Light cigarettes are smoother on your throat and chest than regular cigarettes. d. Smokers of light cigarettes take in less tar than smokers of regular cigarettes									
	SECTION IIc SMOKING REGULATION/ADVERTISING/PROMOTION/SMOKELES TOBACCO									
1	In your workplace or school, is there any regulation on smoking? *W'adwuma mu, nhyehyeɛ bi woho a ɛtia sigrete nom anaa?* No regulation.....1	01	02	03	04	05	06	07	08	09

	Smoking forbidden in certain areas.....2 Smoking forbidden in all areas.....3 Not applicable.....99									
2	In places you often visit (such as shops, restaurants, study rooms, entertainment places), do they have the following regulations on smoking? *Sɛ ɛfa no bɛbia wo taa sra, nhyehyeɛ bi tea sigrete nom anaa?* No regulations.....1 Smoking forbidden in certain areas.....2 Smoking forbidden in all areas.....3									
3	In your home do you have any rule on smoking? *Wo fie a wote mu no nhyehyeɛ bi tia sigrete nom anaa?* No regulation.....1 Smoking forbidden in certain areas.....2 Smoking forbidden in all areas.....3	01	02	03	04	05	06	07	08	09
4	Now I want to ask you about tobacco advertising. In the last 6 months, have you noticed cigarettes or tobacco products being advertised in any of the following places: *Bɛyɛ bosome nsia nie no w'ahunu sɛ wɔ bɔ sigrete ho dawuro wɔ mmea yi bi anaa?* Yes.....1 No.....2 If yes, where? On television.....1 On radio.....2 At the cinema/movie theatre before or after the film/movie.....3 On posters or billboards 4									

	In newspapers or magazines.....5 On shop/store windows or inside shops/stores where you buy tobacco.....6 Other.....7									
5	In the last 6 months, have you seen <u>any</u> advertising by tobacco companies that is NOT promoting particular products or brands, but the COMPANY itself? *Bɛyɛ bosome nsia nie, w'ahunu sɛ w'a bɔ dawuro fa won a ɛyɛ sigrete no ho nanso ɛnyɛ sigrete anakasa anaa?* Yes.....1 No.....2									
6	Have you come across any advertisement warning about smoking risks? *W'ahunu anaa sɛ w'ate kɔkɔbɔ bi fa sigrete nom ho anaa?* Yes.....1 No.....2 Don't know.....3 If yes, how many of these adverts have you seen around over the last one year? *bɛyɛ mpen dodoɔ sen?* One.....1 Two.....2 Three-five.....3 5-10.....4 >10.....5	01	02	03	04	05	06	07	08	09
7	Where did you see this advertisement? *Ehene fa na wo hunuu saa dawuro bɔ yi?* ***Multiple answers allowed***	01	02	03	04	05	06	07	08	09

	Roadside.....1 Market place.....2 Lorry station.....3 On Radio.....4 Newspaper.....5 Television.....6 Others.....7									
8	Which of the following best describes the rules about smoking in drinking establishments, bars, and pubs where you live? *Kyere deɛ ɛfa woho fa bebia wonom nsa a wotee* (read) Smoking is <u>not allowed</u> in any indoor area.....1 Smoking is allowed only in some indoor areas.....2 No rules or restrictions 3	01	02	03	04	05	06	07	08	09
9	Would you support law enforcement preventing smoking in public places? *Wo bɛ pene sɛ wɔ bɛ hyɛ mmra ɛtia sigrete nom anaa?* Yes.....1 No.....2 Don't know.....3 If yes, why would you? *Den nti?* Health Reasons.....1 Personal dislike.....2 Economic reasons.....3 Other.....please state	01	02	03	04	05	06	07	08	09
10	Which of the following places will you refer to as public place where a ban should be									

	enforced? *Nea ɛdidi soɔ yi mu neɛhene na wobɛ ka sɛ eyɛ bea nipa hyia a yɛbɛ tumi ahye saa mmra yi?* ***Multiple answers allowed*** Church.....1 Bar.....2 Bus stations.....3 Shops.....4 Mosques.....5 Bus/trains.....6 Airport/seaport.....7 Waiting areas.....8									
11	Would you support a complete enforcement or some sort of restriction on smoking? *Sen na wo bɛ pɛ sɛ wɔbɛ hyɛ mmra no? Kitee anaa sɛ emuda hɔ* Complete .....1 Restriction.....2	01	02	03	04	05	06	07	08	09
12	Do you mind if your friend/colleague smokes close to you? *W'damfo nom sigrete ben wo a, ɛbɛha wo anaa?* Yes.....1 No.....2 Don't know.....3 If yes, why *Den nti?* ***Multiple answers allowed*** Makes my breathing/asthma worse.....1 Makes me cough.....2 Gives me headache.....3 Gets into my eyes.....4									

	Unpleasant smell.....5 Makes me feel sick.....6 Bad for my health.....7 Other.....8									
13	Other people's cigarette smoke is dangerous to non-smokers. *Sigrete nom ɛnyɛ ma won a ɛnnom ɛnso. Kyere w'dwene wɔ ho.* Please indicate if you strongly agree (1), agree (2), neither agree nor disagree (3), disagree or strongly disagree with this statement (4)									
14	How many of your close friends smoke? *Wo nnanfofoɔ sen na enom sigrete anaa taa?* Please state the number	01	02	03	04	05	06	07	08	09
15	How likely, if at all, do people think it is that their smoking will influence whether or not children in their household to become smokers? *Kwan ben so na wogyidi sɛ sigrete a amanfoɔ nom no bɛtimi ama mmofra a ɛwɔ fie asua nom?* Very likely.....1 Fairly likely.....2 Fairly unlikely.....3 Very unlikely.....4									
16	Are you aware of any smokeless tobacco products, such as snuff or chewing tobacco, which are not burned or smoked but instead, are usually put in the mouth? *Wonim taa a wonnom no wesie no bi anaa?* **ITC** Yes.....1 No.....2 Don't know.....99									

17	In the past 6 months, have you used any smokeless tobacco products? *Bɛ yɛ bosome nsia nie no w'awe bi anaa?* **ITC** Yes.....1 No.....2 Don't know.....99									
18	Have you used: (read checklist) ***Give the number for each that applies.*** *Emu nea hene na w'anom bi pen?* **ITC** Please state which Chewing tobacco.....1 Moist snuff placed in the mouth.....2 Nasal snuff.....3 Any other smokeless tobacco products?.....4									
19	In the past six months, have you used any of these smokeless tobacco products above as a way of cutting down on your cigarette smoking? *Bɛyɛ bosome nsia nie no w'anom bi pen sɛ ɛbɛ boa wo ama w'gyae sigrete nom anaa?* **ITC** Yes.....1 No.....2	01	02	03	04	05	06	07	08	09
20	As far as you know, are <u>any</u> smokeless tobacco products less harmful than <u>ordinary</u> cigarettes? *Wogyidi sɛ taa wonnom no ano ɛyɛ mmrɛ sen nea wohye nom no anaa?* **ITC** Yes.....1 No.....2									
SECTION IId OTHER FACTORS										
1	Do you drink alcohol? *Wonom nsa anaa?*									

	Yes.....1 No.....2 If no, go to **Q. 3** If yes, how many years have you been drinking? *Bɛ yɛ nfie bɛyɛ sen nie?* Less than a year.....1 1-3 Years.....2 3-5 Years.....3 More than 5 years.....4									
2	How often do you usually drink alcohol? *Mpen dodoɔ sen na wotaa nom nsa?* Everyday or almost everyday.....1 Twice a week.....2 Three times a week.....3 About once a fortnight.....4 Once a month.....5 Only a few times a year.....6 I never drink alcohol now.....7									
3	I use one or more of the following substances? *Emu nehene na wonom?* Marijuana.....1 LSD.....2 Amphetamines.....3 Cocaine.....4 Any other.....5									
4	How many times do you exercise per week? *Mpen dodoɔ sen na wo tenetene w'apon mu naawotwe?*									

	Never.....1 Once.....2 More than once.....3 Everyday.....4									
5	How many minutes do you exercise each time? *Bɛyɛ donhwere bɛyɛ sen na wode tenetene w'pomu?* Less than 10 min.....1 10-30 min.....2 31-60 min.....3 More than 1 hour.....4									
SECTION IIe KNOWLEDGE OF HEALTH EFFECTS/TOBACCO CONSTITUENTS/TB										
1	I am going to read you a list of health effects and diseases that may or may not be caused by smoking cigarettes. Based on what you know or believe, does smoking cause the following: *wogyidi sɛ sigrete nom de yareɛ yi mu bi ba anaa?* **Please indicate which, by filling each box with the appropriate number(s)** Heart disease in smokers.....1 Stroke in smokers.....2 Impotence in male smokers.....3 Lung cancer in smokers.....4 Mouth and throat cancer..... ..5	01	02	03	04	05	06	07	08	09
2	As far as you know, are each of the following chemicals included in cigarette smoke? ***For each of the listed chemicals please answer yes or no for each person.*** *Wogyididi sɛ nnuro yi bi wo sigrete mu anaa?*									

	εmu neahene? Cyanide.....1 Mercury.....2 Arsenic.....3 Carbon monoxide.....4 Don't know.....99									
3	In the last month, how often, if at all, have you noticed the warning labels on cigarette packs? *Bεyε bosome nie mpen dodoɔ sen na w'ahunu sε w'abɔ kɔkɔ wɔ sigrete adaka no ho bi anaa?* Never.....1 Rarely.....2 Sometimes.....3 Often.....4 Very often.....5									
4	Have you been made a diagnosis of any of the following diseases? *W'kyere wo sε w'anya yayerε yi a edidi soɔ yi bi anaa?* Yes.....1 No.....2 If yes, what diagnosis was made of you? *yayerε bεn?* Heart attack.....1 Asthma.....2 Diabetes.....3 Hypertension.....4 Tuberculosis.....5	01	02	03	04	05	06	07	08	09

	Liver disease.....6 Kidney disease.....7 Eyesight.....8 Nervous system.....9 Other 10									
5	Have you received any treatments for your chronic disease? *Wɔ ma w'aduro bi fa koankro yayerɛ bi ho sesei anaa?* Yes.....1 No.....2									
6	Over the past 12 months, have you experienced any kind of cough lasting for more than 2 weeks? *Bɛ yɛ afe nie w'abɔ wa a ɛbro naawotwe mienu?* Yes .....1 No.....2 (If no, go to question 14)									
7	If you have, was your sputum tinged with blood or were you coughing blood? *Na mogya wɔ w'horo no mu anaa?* Yes .....1 No.....2									
8	Have you sought medical advice for the above symptom? *ɛbaa no saa no w'hunu doctor anaa?* Yes.....1 No.....2									
9	Over the past 12 months, did you perform any sputum examination? *Wɔ hwehwɛɛ w'ahorɔ mu anaa?* Yes .....1 No.....2									

10	Over the past 12 months, have you had a chest X-ray taken? *Bɛyɛ afe nie no w'twa wokoko so nfonini anaa?* Yes .....1 No.....2									
If you have neither taken sputum nor chest X-ray exams, go to question 12										
	If you have taken examination(s) (sputum examination or X-ray), were you made a diagnosis of TB? *Wo ka kyere wo sɛ w'nya nsaman wa yayere no bi anaa?* Yes.....1 No.....2 Don't know.....3									
12	If you have been diagnosed as having TB, have you taken any treatment? *Sɛ w'nya yayere no bi a, wode wo ato aduro so anaa?* Yes.....1 No.....2									
13	If you have received some kind of treatment, where do you receive care? *Ehene fa na wo gye aduro firi?* Health Centre.....1 District Hospital.....2 Teaching hospital.....3 Others (CBSV).....4									
14	Have any of your family members been diagnosed as having TB? *Ebusua no bi anya nsamanwa yayere no bi pen anaa?* Yes.....1 No.....2									

15	In your opinion does smoking increase one's chance of acquiring TB? *Wogyidi sɛ obi nom taa obetumi anya nsamanwa yayere no bi anaa?* Yes.....1 No.....2 Don't know.....3									
16	What is the duration for TB treatment? *Nsamanwa yayaere bosome bɛyɛ sen na wode nom aduro?* Less than 1 month.....1 3 months.....2 6 months.....3 8 months .....4 Don't know.....99									

APPENDIX 2

Key informant interview guide; smoking study, Ghana

Key informant interview guide; Smoking study, Ghana.

This study is being conducted by the Department of Community Health, School of Medical Sciences, Kwame Nkrumah University of Science and Technology (KNUST) Kumasi, Ghana and the University of Nottingham's, School of Community Health Sciences, Division of Epidemiology and Public Health, in Nottingham, England.

My name is Dr Ellis Owusu-Dabo of the Department of Community Health, SMS, KNUST, Kumasi, Ghana.

This is an invitation to take part in a research study as a key informant in the area of tobacco control policy and activities. Before you decide whether to take part it is important for you to understand why the research is being done and what it will involve (Please refer to information sheet).

1. Please mention your full name, job title and designation
2. In your opinion, is there a known policy for controlling the tobacco epidemic in Ghana?
3. Are you aware of the WHO framework convention on tobacco control (FCTC)? If yes, continue with question 4 if no, move to question 7.
4. Before the ratification of WHO Framework convention on Tobacco Control (FCTC), did Ghana have any existing policy for tobacco control?
5. Which specific areas of the FCTC have been covered by the policy in Ghana?
6. Which areas do you think Ghana has made progress in its bid to implement the FCTC?
7. In the specific areas below, please specify achievements and challenges if any of Ghana's tobacco policy since she ratified the FCTC:
    - Price tax measures to reduce demand on tobacco products
    - Protection from exposure to tobacco smoke (smoke free policy)
    - Regulation of the contents of tobacco products
    - Regulation of tobacco product disclosure
    - Packaging and labelling of tobacco products
    - Education, communication, training and public awareness (media campaigns)
    - Demand reduction measures concerning tobacco dependence and cessation services (aid ban).
    - Are there other specific areas other than contained in the framework that has been carried out by Ghana as a unique sovereign state
    - Illicit trade in tobacco products
    - Sales to and by minors (youth policy)
    - Provision of support for viable alternative activities
    - Research, surveillance and exchange of information
8. Could you please share with me your recommendations on the way forward if we are to make gains in the area of tobacco control and policy implementation with regard to the FCTC?
9. Overall, would you say that Ghana is on course in the control of the tobacco epidemic?

On behalf of the Institution I represent, I would like to *thank you* very much for your time and kind reception in sharing with us what you know about the above topic.

Thank you

APPENDIX 3

Ethics approval certificate-Committee on Human Research Publications and Ethics, Kumasi, Ghana

COMMITTEE ON HUMAN RESEARCH PUBLICATION AND ETHICS
SCHOOL OF MEDICAL SCIENCES
UNIVERSITY OF SCIENCE AND TECHNOLOGY

Telephone: 233-51-60294
Telegrams: Kumasitech-Kumasi
Telex: 2555 UST (GH)
Fax: 233-51-60302

UNIVERSITY OFFICE
KUMASI-GHANA
WEST AFRICA

June 18, 2007

CHRPE/02/06/07

Dr. Ellis Owusu-Dabo
Department of Community Health
KNUST

Dear Sir,

SMOKING IN GHANA: A STUDY OF LOCAL INCIDENCE, PREVALENCE AND RISK FACTORS FOR SMOKING, TOBACCO INDUSTRY ACTIVITY, AND TOBACCO CONTROL POLICY

Your application for Ethical Committee clearance for the study "*Smoking in Ghana: A Study of Local Incidence Prevalence and Risk Factors for Smoking, Tobacco Industry Activity, and Tobacco Control Policy*" has been approved by the Committee on Human Research, Publication and Ethics (CHRPE) of the School of Medical Sciences, Kwame Nkrumah University of Science and Technology, Kumasi and the Komfo Anokye Teaching Hospital, Kumasi for a period of one year.

The Committee recommends that samples and or materials taken for this study should be used for the study only. Any subsequent use of the samples for other studies will need clearance from the CHRPE.

The Committee also recommends that it should be informed of any adverse events; it would therefore expect a periodic report of your study to the committee. Its permission should be sought for any amendments to the protocol. The Committee should be informed of all publications arising from the study and copies of the same should be sent to the committee.

Professor Sir J. W. Acheampong, MD, FWACP
Chairman

APPENDIX 4

Ethics approval certificate, University of Nottingham, UK

The University of Nottingham

Faculty of Medicine and Health Sciences

Medical School Research Ethics Committee
Division of Therapeutics & Molecular Medicine
D Floor, South Block
Queen's Medical Centre
Nottingham
NG7 2UH

Tel: +44 (0) 115 8231063
Fax: +44 (0) 115 8231059

Please quote ref no: **I/5/07**

Direct line/e-mail
+44 (0) 115 8231063
Louise.Sabir@nottingham.ac.uk

Professor John Britton
Head of Division
Dr Ellis Owusu-Darbo
PhD Student
Division of Respiratory Medicine/Epidemiology and Public Health
Clinical Sciences Building
City Hospital Campus
NG5 1PB

04 June 2007

Dear Professor Britton

Ethics Reference No: I/5/07 - *Please quote this number on all correspondence*
Study Title: Smoking in Ghana: A study of the local incidence, prevalence and risk factors for smoking, tabacco industry activity and tabacco control policy
Lead Investigator: Professor John Britton, Head of Division
Co Investigators: Dr Ellis Owusu-Dabo, PhD Student, Division of Respiratory Medicine/Epidemiology and Public Health, Community Health Sciences.

Thank you for submitting the above application which was considered at the Medical School Research Ethics Committee at its meeting on 31st May 2007. The following documents were reviewed:

- Application form dated 25/4/07
- Study Protocol
- Volunteer information sheet v4 dated 25/4/07
- Volunteer consent form dated 25/4/07
- Interview guide
- Questionnaire

This study was approved subject to the following concerns:

1. Since this study essentially deals with two sets of individuals you will need two separate information sheets.

2. The Committee would like clarification about how you will approach the key informants, whether you will tape record the interview. It would seem appropriate to have a consent form and a separate information sheet.

3. The current questions seem very technical but may be appropriate to the key informants. However without knowing who these are the Committee found it impossible to assess. Can you clarify their status. If they are government

officials then we would expect to see a letter approving the study from a relevant government official.

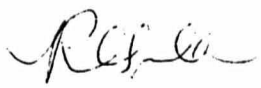
4. Although we are able to give ethical approval to cover the student we would also expect that you would obtain local ethical approval.

5. The Committee is always concerned about chaperoning arrangements to protect both the interviewer and the interviewee. We recommend a third party be present or in a room adjacent.

Please reply to the specific comments that we make listing our comments first and then give your response underlined, this will make it much easier for us to confirm that you have indeed done what was asked and will speed the processing of your revision. You should also highlight all the changes that have been made in any documents you resubmit.

On receipt of clarification of the above issues I am empowered to give Chair's approval.

Yours sincerely



Professor R C Spiller
Chairman, Nottingham University Medical School Ethics Committee

APPENDIX 5

Published papers from this thesis

PAGE/PAGES EXCLUDED UNDER INSTRUCTION FROM THE UNIVERSITY

Appendix 6

Collaboration letter from the Ghana Health Service

In case of reply the Number and date of this Letter should be quoted.

My Ref.: Tobacco Control/FCTC
Your Ref. No.

Health Research Unit
Ghana Health Service
P. O. Box GP-184
Accra
Tel: +233-21-679323/681109
Fax + 233-21-226739

Email: Edith.Wellington@hru-ghs.org

June 12, 2007

SUBJECT:

COLLABORATION OF THE HEALTH RESEARCH UNIT (GHS) - SMOKING IN GHANA: A STUDY OF LOCAL INCIDENCE, PREVALENCE AND RISK FACTORS FOR SMOKING, TOBACCO INDUSTRY ACTIVITY AND TOBACCO CONTROL POLICY

This letter is to confirm the support of Health Research Unit of the Ghana Health Service in the form of advice on local sources of information, methods of measuring smoking behaviour and any other information to assist in completing the above study.

The study is very important to the HRU-GHS since Ghana is at its early stage of Tobacco Control and there is paucity of data to inform policy.

Yours sincerely,

Edith K. Wellington (Mrs)
Senior Health Research Officer

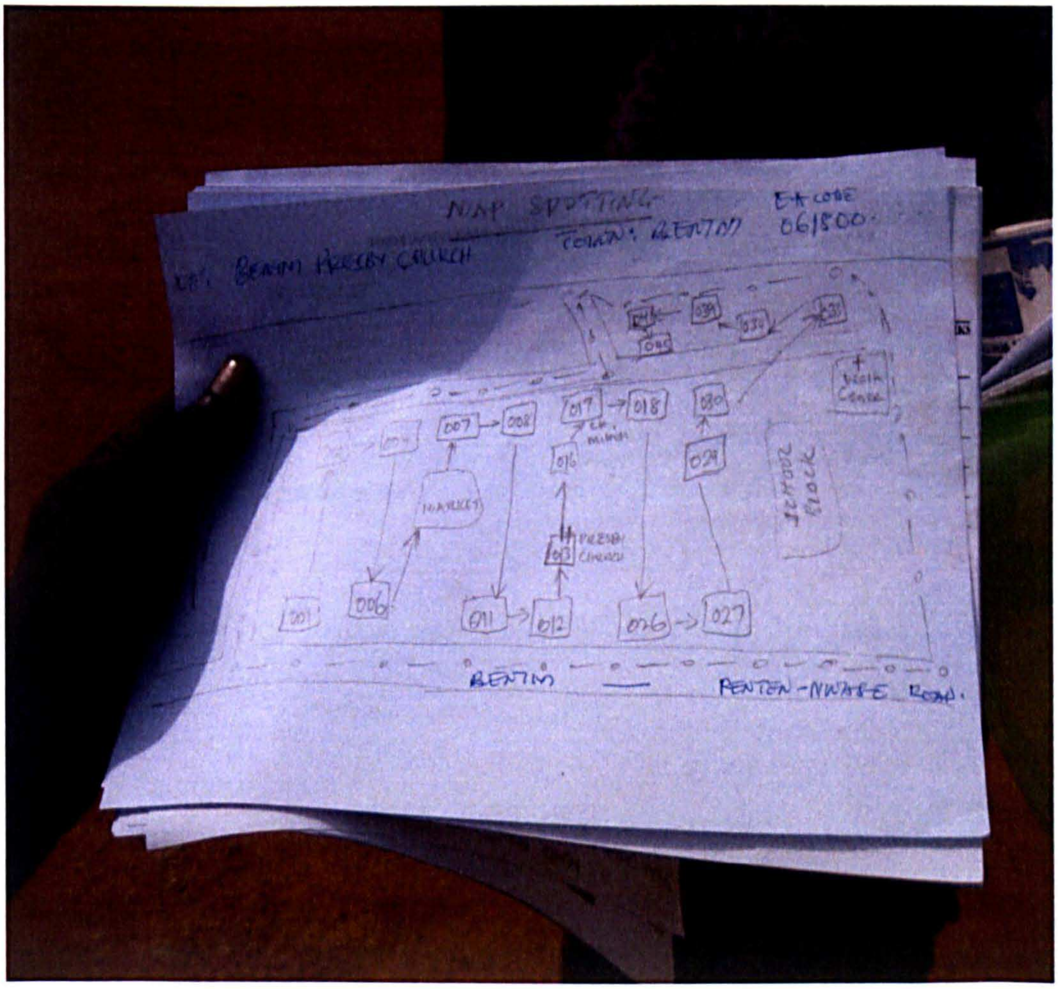
For further information, please contact:

Mrs. Edith Koryo Wellington
Senior Health Research Officer
Health Research Unit
Ghana Health Service
P.O. Box GP 184
Accra – Ghana

Tel: 233 21 681109
Fax: 233 21 226739
Cell: 233 2442212 or 233 206768
Email: Edith.Wellington@hru-ghs.org or ediwel@hotmail.com

APPENDIX 7

Enumeration area map


MAP SPOTTING
EA CODE
061500
MARKET
SCHOOL BLOCK

APPENDIX 8

Tobacco control scale

The Tobacco Control Scale (TCS)

Price of cigarettes and other tobacco		**Score**
Price of Marlboro, and price of most popular price category, in January 2005 – additive		**30**
The price of Marlboro in January 2005, taking into account Gross Domestic Product per capita expressed in Purchasing Power Standards (PPS). Country with highest price ratio receives 15 points. (see notes)	15	
The price of a packet of cigarettes in the most popular price category in January 2005, taking into account Gross Domestic Product per capita expressed in the PPS. Country with highest price ratio receives 15 points.	15	
Smoke-free workplaces and other public places as at July 2005		
Workplaces excluding cafes and restaurants – one only of	**10**	**10**
Complete ban without exceptions (no smoking rooms); enforced	10	
Complete ban, but with closed, ventilated, designated smoking rooms; enforced	8	
Complete ban, but with ventilated, designated smoking rooms; enforced	6	
Meaningful restrictions; enforced	4	
Legislation, but not enforced	2	
Cafes and restaurants – **one only** of	**8**	
Complete ban; enforced	8	
Complete ban, but with closed, ventilated, designated smoking rooms; enforced	6	
Meaningful restrictions; enforced	4	
Legislation, but not enforced	2	
Public transport and other public places – additive	**4**	
Complete ban in domestic trains without exceptions	1	

Complete ban in other public transport without exceptions	1	
Complete ban in educational, health, government and cultural places without exceptions **OR** Ban in educational, health, government and cultural places, but with designated smoking areas or rooms	2 1	
Spending on public information campaigns		**15**
Tobacco control spending by the government in 2004, as a proportion of Gross Domestic Product (GDP). Country with highest ratio receives 15 points (see notes).		**15**
Comprehensive bans on advertising and promotion on July 1 2005		**13**
Points for each type of ban included – additive		
Complete ban on tobacco advertising on television	3	
Complete ban on outdoor advertising (e.g. posters)	2	
Complete ban on advertising in print media (e.g. newspapers and magazines)	2	
Complete ban on indirect advertising (e.g. cigarette branded clothes, watches, etc)	2	
Ban on point of sale advertising	1	
Ban on cinema advertising	1	
Ban on sponsorship	1	
Ban on internet advertising	½	
Ban on radio advertising	½	
Large direct health warning labels on July 1 2005	**10**	**10**
Rotating health warnings	**2**	

Size of warning – **one only** of	**4**	
10% or less of packet	1	
11 – 25% of packet	2	
26 – 40% of packet	3	
41% or more of packet	4	
Contrasting colour (e.g. black lettering on white	1	

background)		
A picture	**3**	
Treatment to help dependent smokers stop	**10**	**10**
Quitline – **one only** of	**2**	
Well funded national quitline or well funded quitlines in all major regions of country **OR** National quitline with limited funding or a patch work of small local quitlines	2 1	
Network of smoking cessation support	**3**	
Reimbursement of treatment	**3**	
Cessation support network covering whole country (3); free (3)	6	
Cessation support network, but only in selected areas, e.g. major cities (2); free (3)	5	
Cessation support network covering whole country (3), partially free (2)	5	
Cessation support network, but very limited, just a few centres (1), free (3)	4	
Cessation support network, but only in selected areas, e.g. major cities (2), partially free (2)	4	
Cessation support network covering whole country (3), not free (0)	3	
Cessation support network, but very limited, just a few centres (1), partially free (2)	3	
Cessation support network, but only in selected areas, e.g. major cities (2); not free (0)	2	
Cessation support network, just a few centres (1), not free (0)	1	
Reimbursement of medications – **one only** of	**2**	
Reimbursement of pharmaceutical treatment products **OR** Partial reimbursement of pharmaceutical treatment products	2 1	
Maximum possible score		**100**

Table notes. **Cigarette price**: Gross Domestic Product can be expressed in PPS (purchasing Power Standard). PPS per capita has been used to take account of real purchasing power in different countries; points are awarded using the same method as for public information campaign spending. **Public information campaign spending**: the top country, the UK, is awarded 15 points; the UK ratio (spending/GDP) is then divided by 15 and the resulting number receives 1 point; countries achieve points for multiples of that number. **Advertising**: television is the medium most used for tobacco advertising in countries with no advertising

restrictions; outdoor advertising (e.g. posters) is a prominently used medium when television advertising is banned; indirect advertising (e.g. clothing, watches, or other products with cigarette branding, is the industry's favoured loophole when there are otherwise comprehensive advertising bans.

Why rankings for price and spending? PPS takes account of affordability within a country. This introduces a (constantly changing) ratio, rather than absolute figures. In order to simplify this abstract ratio ranking system, we attributed the highest score to the country with the highest ratio. The method is best understood by consulting the raw data and resulting points scored, on the website