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The Socioeconomic Trends in Tobacco Use Among Finnish Adolescents 1977- 2005

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LIST OF ABBREVIATIONS

AHLS- Adolescents Health and Lifestyle Survey

AIDS-Acquired Immune Deficiency Syndrome

ASH- Action on Smoking and Health

HIV-Human Immunodeficiency Virus

CDC- Center for Disease Control

GDP- Gross Domestic Product

WHO- World Health Organisation

ABSTRACT

Introduction

Tobacco use has been identified as the most important source of preventable mortality and premature death globally. Although tobacco use among adults has been declining in recent years in many parts of the world, among adolescents it has been generally increasing. This is a cause of worry because numerous studies have shown that most of the adult who are daily tobacco users today begun in their adolescent age. Young smokers are said to be very probable to continue into adulthood due to the addictive nature of tobacco.

On the other hand, the correlation between socioeconomic status and health outcome has been of significant concern in public health in recent years. A survey through the global burden of diseases shows that most of them are related to poverty (social class). Besides, the major burden of death, communicable diseases, maternal mortality and perinatal conditions, nutritional deficiency and cardiovascular diseases can all be linked to socioeconomic status.

Although the issue of socioeconomic status affects both adults and adolescents, unfortunately, only few studies have looked at the differences in the trend of this phenomenon among adolescents in different socioeconomic groups. This study aims at investigating the changes in tobacco use among Finnish adolescents by socioeconomic groups from 1977 to 2005.

Method

The data for this study was collected as part of a national monitoring system on adolescent health behaviour (the Adolescent Health and Lifestyle Survey). It consists of a 12 page self-administered questionnaire mailed biennially since 1977 to a nationally represented sample of ages 12,14,16 and 18 with two re-inquiries to

non-respondents. The Finnish Population Registry was the source of the sample. The samples were selected so that the average ages of respondents were 12.6, 14.6, 16.6 and 18.6. The data were collected during February to April of each study year. The data collection methods, timing of the survey, size of the questionnaire questions were maintained as similar as possible to enhance the comparability of the results.

Family structure, father's/ guardian's occupation, father's/ guardian's education, mother's education, adolescent's school performance and school career were used in assessing the socioeconomic status of adolescents whiles tried smoking, tried snuff, daily smoking and snuff use were the measures of tobacco use. Simple line graphs, percentages, cross-tabulation, and binary logistic regression were used to analyse the differences in the trends of tobacco. The regression was done separately for each of the socioeconomic indicators and both age- and gender-adjusted and unadjusted odd ratios are presented. The regression models were tested using Chi-square test with $p < 0.05$ at 95% confidence interval. All the analysis was done using SPSS win.13.

Results

There were differences in the trend of tobacco use among adolescents by socioeconomic groups. Remarkable differences were observed in the regular use of tobacco (daily smoking and snuff use) among the socioeconomic groups rather than tobacco experimentation (tried smoking and tried snuff). The results indicate that family structure; school performance and school career were the most important socioeconomic indicators that showed large differences in the risk of tobacco use among Finnish adolescents.

Conclusion

Generally, there were differences in the trend of tobacco use by socioeconomic groups among Finnish adolescents. It was found to be polarized mainly towards the lower socioeconomic group and seems to be widening up over the years. Further, it can be concluded that the factors that indicate the adolescent's present and future social positions namely school performance and school career are the most socioeconomic risk factors that yielded differences in the risk of tobacco use among Finnish adolescents.

1. INTRODUCTION

Cigarette smoking has been identified as the most important source of preventable mortality and premature death worldwide. Smoking-related diseases claim an estimated 4.9 million people each year (WHO, 2003 and 2005). In America alone, about 44000 lives are wiped away each year, including those affected indirectly such as babies born prematurely due to prenatal maternal smoking and victims of 'secondhand smoking' (America Lung Association).

Judging from current trends, it is estimated that worldwide tobacco mortality will rise to 10 million deaths by the year 2030 (CAS Fact Sheet 1). Even though smoking among adults has been declining in recent years, in Western Europe, smoking among adolescents has been generally increasing. Different studies have shown that most adult smokers begin smoking before their 18th birthday. Also, young smokers are likely to continue smoking as adult due to the high addictive nature of tobacco (CAS Fact Sheet 2). The issue of socioeconomic status and its health outcome has been an increasing concern to public health in recent years (Casswell, Megan & Rhonda Hooper 2003).

Generally, there is a correlation between economic well being and health. According to the World Development Report, there is a relationship between gross national product (GDP) per capital and life expectancy among the developing countries of the world. It demonstrates that even the small increases in per capital GDP leads to corresponding large increases in life expectancy (World Bank 1993). Maternal, infant and childhood mortality, which are the result of malnutrition and infectious diseases, are clearly related to poverty. A careful scrutiny of the WHO report on ten statistical highlights in global public health reveals that behind the major global burden of death, communicable diseases, maternal and perinatal conditions, nutritional deficiencies and cardiovascular diseases, lies poverty. Undoubtedly, poverty is the root cause of many of the public health issues that the world is reckoning with today. A number of studies have also disclosed that socioeconomic status has significant influence on health (Mackenbach et al 2002). Risk behaviours such as smoking, lack of physical exercise

and malnutrition are identified as accounting for health inequalities. The on set of these behaviours is at adolescent age and their health consequences transcends through the adolescence to adulthood (Brunner et al 1999; Holmen et al 2000; Chiolero and Schmid 2002). Although the issue of socioeconomic status and health risk affect both adolescents and adults, the latter had been the concern of many researchers while the former has attracted little attention (West 1997). According to Richter and Leppin, students' own socioeconomic status affects adolescent smoking substantially (Richter and Leppin 2007) even though previous studies say that the relationship between socioeconomic status and health risk behaviours in adolescents are not parallel and even sometimes contradictory (West 1999; Tuinstra et al 1998). The challenge to the scientific community is to study trends of health behaviour among adolescents in different socioeconomic groups.

Indeed, smoking poses a global threat and a major public health problem; therefore studying the socioeconomic trends of tobacco use among adolescents over this long threshold will among other things help in finding which group of adolescents are in particular risk. The study will aid in designing and building up tobacco preventive strategies among adolescents especially those in the cycles of the less privileged in society.

2. LITERATURE REVIEW

2.1 Tobacco use-the global perspective

On the global burden of disease ranking, tobacco related disease is identified as the most preventable cause of death. Currently, there are over 1.2 billion tobacco users in the world. Of these, well over 800 million are living in developing countries (WHO 2005). Projections indicate that if current trend continues, by the year 2020, tobacco related diseases would claim more lives than any single disease, including HIV/AIDS, violence, road accident, malnutrition, and war (Murray and Lopez 1996). Today, one third of the world's population aged 15 and above uses tobacco.

An estimated 4.9 million lives, both young and old, is lost through tobacco related diseases annually (WHO 2005). Furthermore, about 500 million people who are alive today would die of tobacco-related diseases while approximately half of these would taste death before their 65th birthday (Brundtland 2001), irrespective of the fact that life span has increased dramatically across the length and breadth of the globe.

Tobacco consumption has fallen over the past 20 years in most high-income countries such as the United States, Australia, Britain, Canada and most European countries. However, the levels of tobacco use (especially among adolescents) in these countries still needs much to be desired- particularly, in the United States where tobacco use among kids is escalating.

On the contrary, tobacco use has risen to unprecedented levels in low-income countries, especially in Asia and Africa. Out of the total burden of tobacco-related diseases globally, 70% will occur in developing countries by 2030. The figure is presently about 50% (WHO 1999). In china, it is estimated that 61% of Chinese men smoke, accounting for 300 million smokers in China alone. The implication is that, tobacco consumption in only China is at par with the consumption in all developed countries combined. Considering the population of China, it is predictable that if current trend continues the projections above would be highly under-estimated.

It is heartbreaking how multinational tobacco corporations have targeted the poorest countries of the world, enslaving them with this deadly tobacco. In these countries there are already huge health challenges. Closely three out of five of the inhabitants lack access to proper sanitation, one third have no access to portable water, one quarter lack decent accommodation, a fifth have no access to health care and the mass of these people are illiterate, not to mention the suffering as a result of the burden of disease caused by other risk factors (Assunta 1999).

The economic burden of tobacco use on governments is great. Huge sums of national budgets are spent in treating tobacco-related diseases. Active and productive men and women who constitute the core of the work force shortened their live span through deaths caused by tobacco related diseases. This does not only burden governments but also families, especially where the victims are the breadwinners of the families the effect is gross. The result among other things is a large number of school dropouts, street children and indulgence in social vices. The long-term effect is a never-ending vicious cycle of poverty especially in the poorest countries.

Tobacco transnational is very tactful in employing notorious advertising and promotional strategies to hook and enslave the poor to tobacco use in their home countries. They take advantage of the weak economic situation in such countries and blind governments through their so-called sponsorship of developmental projects. Indeed they employ very callous and aggressive methods of advertising, which could never be allowed in their home countries viz, America and Britain (Assunta 1999).

Roughly, 1.3 billion people in developing countries live on less than a dollar per day, yet smoking makes them even poorer. In Malaysia, for example, it is estimated that smoking two packs a day siphons some 30% of a poor man's income while in China a poor man can waste up to 60% of his earning on cigarette (Assunta 1999).

Truly, the effect of smoking is alarming. The future of humanity is at stake by this substance called tobacco. The most to hit by the predicament are the young nations of

Africa and Asia; the rest of the world owes it a responsibility to rescue these fragile nations that are already torn by conflict and diseases.

2.1.1 Smoking

Tobacco smoking is the act of burning the dried leaves of tobacco plant and inhaling the resulting smoke. The practice, including the use of cigars and pipes, was notable to many indigenous American cultures. It is believed that sailors following European exploration of the Americas introduced tobacco smoking to the rest of the world. The smoke from tobacco contains nicotine; a substance, which according to some studies is a stimulant, which temporarily improves alertness and memory but also, leads to strong physical and psychological chemical dependence (addiction). Scientific and medical researches have discovered that smoking is one of the major risk factors of many health problems. In particular, smoking is a major risk factor for lung cancer, emphysema and countless cardiovascular diseases (WHO 2003, 2005).

History has it that smoking dates back some 1500 years ago when it was depicted in the art of the classic-era Maya civilization. It is believed that Mayans smoked tobacco and mixed it with lime and chewed it like snuff. Mayans used tobacco for medicinal purposes. It was accepted in those days that tobacco had magical powers, which aid in divinations and talismans. Historians further claim that tobacco leaves were burned to pacify the gods. Also, midwives worn tobacco gourd as a form of identification. The famous American leader, Christopher Columbus, was said to have been given some dry leaves from the Arawaks, which was believed to be tobacco leaves, but he threw them away (Tobacco News and Information).

Whether these revelations stand the test of time or not, one thing is obvious, that today, tobacco has become a canker. It is doing humanity more harm than good. It presents a worrisome public health issue globally today. It is one of the most physiologically damaging substances ever used by man.

2.1.2 Snuff use

Snuff is a form of tobacco, which has been ground into powder. It is sniffed into the nostrils rather than smoked. Snuff use started in America and European countries centuries ago. However, snuff use is nowadays more common in third world countries, it is regaining popularity in America and Canada due to the deceptive advertisement by tobacco industries and some sponsored health professionals who are throwing dust into the eyes of the innocent public that smokeless tobacco is safe (Plantation House, Sharrow Snuff). Although the snuff sale is banned in the European Union, Sweden had the permission for selling snuff. As a result, the ban did not affect much the quantity of snuff use even in the EU member countries because Sweden and other non European Union neighbouring countries serve as inlets. Snuff use is still high in some countries. In Sweden for instance, the Swedish snuff is very widely used not only within Sweden but also in other neighbouring countries and across Europe (Rosendahl et al 2003). Thus the prevalence of snuff use is high globally. Numerous studies have shown that tobacco use, whatever the form it takes, snuff, cigar, pipe, cigarette, smoked or chewed, the health effect is devastating (Henley et al 2004, Foulds et al 2003, Fernberg et al 2006).

2.2 Socioeconomic determinants of health

The term socioeconomic status is a multi-concept with many contextual meanings. In some cases it is used to refer to social; sometimes it refers to social hierarchy, yet in other cases it means social status. Generally, it is associated with income, education, occupation and area characteristics (socioeconomic status). In whatever context it is used, however, it strongly relates to health in totality. Over the past two decades, there have been increases in health inequalities worldwide (Davey et al. 1996; Sorlie et al. 1995; Link and Phelan 1995). This and the evidence that income inequality is positively associated with national mortality rates (Wilkinson 1992 and 1996) have led to the growing interest in socioeconomic determinants of health. Knowledge and

understanding of the socioeconomic determinants of health is vital in unfolding the reasons behind behaviour and life style, which impact negatively on the health of individuals and the population at large.

Social and economic environment contributes in no small way to inequalities in health. Childhood environment, the work environment, unemployment, patterns of social relationships, social affection, diet, addictive life style, transportation, among other things, are causal to ill health (Marmot and Wilkinson 1999). Indeed, correlations are not only causal but also account for the disparities in disease rates intra and inter societies globally.

Generally, there is a correlation between economic well being and health. According to the World Development Report, there is a relationship between gross national product (GDP) per capital and life expectancy among the developing countries of the world. It demonstrates that even the small increases in per capital GDP leads to corresponding large increases in life expectancy (World Bank 1993). Maternal, infant and childhood mortality, which are the result of malnutrition and infectious diseases, are clearly related to poverty. A careful scrutiny of the WHO reports on ten statistical highlights in global public health reveals that behind the major global burden of death, communicable diseases, maternal and perinatal conditions, nutritional deficiencies and cardiovascular diseases, lies poverty. Undoubtedly, poverty is the root cause of many of the public health issues that the world is reckoning with today.

Similarly, there are social inequalities in health caused by the social environment. In the Whitehall studies, it was unfolded that at younger ages, men in the lowest office support employment grades have four times mortality rate than men in the highest administrative grade. It was again noted that men in the second higher employment grade have higher mortality than the top grade civil servants, and clerical officers have higher mortality than the men on the top of the ladder (Marmot and Shipley 1996). This amplifies the correlation between mortality risk and social status. In addition, this study also manifests that social inequality in health transcends all the social spectrum and not only applicable to the extremes ends of the socioeconomic ladder, neither is it

limited to only the less affluent members of the society, since the study setting is a relatively affluent environment.

2.3 Socioeconomic status: a cause or outcome?

There are hot debates as to whether socioeconomic status is a causal or an outcome of health. Two schools of thought on the social circumstances affecting health are presented in this text (Marmot and Wilkinson 1999). School one is those who presents that a person's socioeconomic status is causal to health outcome. They argue that wealth decides not only a person's socioeconomic position but also social factors influencing health. This means that people who are at the lower end of the socioeconomic status are more vulnerable to risk factors; consequently they become prey to poor health. Thus there is a causal relationship between socioeconomic status and health.

The second school of thought is what is sometimes referred to as health selection theory, it holds the view that it is not social position per se that determines health but rather, it is health status that selects people into various social classifications. This school explains that people would normally not be poor if they have good health; therefore it is as a result of poor health that socioeconomic classification exists, health being an outcome rather than causality (Marmot and Wilkinson 1999).

In accordance with the health selection theory, it means that ill health leads to lower socioeconomic status, implying that social exclusion, indecent job, unemployment, job insecurity, poor accommodation, low self esteem, poor diet, addictive behaviour and unhealthy life style such as smoking and drug use, among others are as a result of ill health. Although there is some degree of plausibility, this thus not necessarily validates health selection. In his study of the 1946 birth cohort, Wadsworth observed that children who showed sign of ill health were less likely to belong to the top social hierarchy compared to their counterpart healthy children. More so, the former group was more likely to belong to the lower social class (Wadsworth 1986). The effect

however was insignificant and thus could not validate the correlation between social position and ill health in adult life. (Blane et al 1993). Another weakness in the health selection theory is that many social circumstances have no plausibility with health. Admittedly, health could lead to unemployment, job insecurity or perpetual unemployment but where this is caused by externalities such as industrial economic depression, it is not convincing to attribute individual health to be a determinant of socioeconomic status. Parallel to this, differences in disease rate by geographical regions and population could be as a result of selective migration of healthy people to decent neighbourhood or unhealthy population to deprived neighbourhood. It is rather the characteristics of the social environment that results in the differences in disease rate (Marmot and Wilkinson 1999). Convincingly, social environment is likely to be causal with health as the outcome and not the reverse.

2.4 Income inequalities and health

Although there is agreement among most researchers on the effects of socioeconomic status on health, there is little agreement on the effect of individual income and health vis-à-vis population health and individual health.

Rodgers pioneered the association between income inequality and health. He debated that there is a curvilinear correlation between individual income and health. This he explained that countries with greater income inequality would experience lower life expectancy (Rogers 2002). Another discovery was made by Wilkinson, stating that a relationship exist between income inequality and health but such a relationship affect the population health independent of the effect of the individual income (Wilkinson 1992).

Studies have shown that in New Zealand, mortality rates drastically fell in the mid 70s at a time when the country has experienced huge increase in income inequality. Similar trends were observed in Finland, Britain, Japan and the United States. Thus although income inequality is important determinant of health, it is not of much

importance in determining population health as individual health (Easton; Lynch; Davey 1997)

2.5 Measurement of socioeconomic status

The indicators used in the measurement of Socioeconomic Status have been of interest to the scientific community, particularly public health of late. Many measures have been developed and used based on the income level, expenditure/consumption, household assets, level of education and/or occupation. Other researchers prefer composite measures, which combine several indicators simultaneously. Classic examples of such measures are those postulated by Duncan and that of Hollinghead, Duncan's Socioeconomic Index and Hollinghead's Index of Social Position respectively. Each method employed in assessing SES produces unique meaning, depending on the country and the geographical setting as well as the available data. As a result, different methods produce different levels of SES as well as its correlation with health. Studies on socioeconomic status must therefore take into account multiple indicators due to the complex and multidimensional nature of what is generally classified as low socioeconomic status (Nguyen et al 2003).

Oakes and Rossi also argue the lack of conceptual clarity as a drawback of SES measurement. Further, they said that there is the need for social epidemiologists to review and revise the current SES measurements to ensure a richer and psychometrically induced techniques. Conclusively, they suggest uniformity between SES measures as well as a consideration for a new approach (Oakes and Rossi 2003).

Unlike in adults, measuring socioeconomic status among adolescents is often captured in the frame of parental socioeconomic status (Lynch and Kaplan 2000). Thus family wealth, parental education and occupation are widely used to indicate the social position of adolescents. Recently, Koivusilta et al in their study on health inequalities among adolescents put forward that in studying the health inequalities among adolescents, their personal social position should be considered as an indicator

(Koivusilta et al 2006). In this case, however, it will be problematic to assess personal income, wealth, education and occupation, which constitute the main indicator of socioeconomic status, at the adolescent age.

2.6 Health and poverty

2.6.1 Tobacco use and socioeconomic status

The use of tobacco products and its attendant health problem seems to be a tide in the world's poor regions. It is discovered that 800 million out of an estimated 1.2 billion smokers in the world currently are living in developing countries. The consumption of tobacco is increasing at an unprecedented rate among the world's poorest countries. Already, the standard of living in the developing countries where these 800 million smokers inhabit reveals that the effect of smoking will be very devastating in the very near future; perhaps now forth. A projected 7 million people will die of tobacco use by 2030. Tobacco consumption has fallen, and continue to fall over the past 20 years in most high- income countries such as the United States, Australia, Britain, Canada and most European countries (WHO 2005). According to the WHO records, the income per head on consumption of tobacco in these countries has dropped by nearly 10% from 1970 to 1990. On the contrary, tobacco consumption rates are expected to increase to about 5.09 million tones in developing countries, a figure which represents 1.7% growth rate between 1998 and 2010, a period less than two decades. The per head consumption in these countries have increased to about 64% within the same period, 1970 to 1990. (Assunta 1999).

The impact of tobacco on these poor countries cannot be over emphasized. Many of these countries are living on less than a dollar per day, yet tobacco costs governments colossal sum of money caring for tobacco related-diseases, within their already tight budget constraints. The worst affected people are children in these countries. Being already disadvantaged in health problems caused by malnutrition, under weight, and the like. These children are lured by the seemingly fashionable and attractive

marketing strategies of tobacco companies. An estimated 92% of children in India are underweight; nonetheless, 55000 of her children initiate using tobacco each passing day. This is a cause for alarm indeed.

The correlation between smoking and poverty or social class is not limited to classification on country level. In the so-called high-income nations also, the menace stretches across the lower social economic margins. In the United States, for instance, it is grossly generalized that many social vices such as crime, violence, substance abuse, including tobacco use is linked with socioeconomic status (Center for Disease Control and Prevention). Although this association between socioeconomic status on one hand and health and anti-social behaviour on the other hand does not always imply causality, other studies maintain stronger evidence of causality (Marmot and Wilkinson 1999). In Finland, studies have shown that smoking is associated with socioeconomic status. Smoking is more prevalent in the lower socioeconomic class. Research proves that among the uneducated women in Finland the rate of smoking is not only high but also rising. In this group, it has almost doubled (from 18 to 30) within the past two decades whereas only 13% of the highly educated women smoke and only 19% of the middle class women are smokers. Additionally, it was found that as much as 80% of smoking during pregnancy is explained by socioeconomic factors (Finnish National Public Health Institute-KTL 2003).

2.6.2 The role of the family

The family constitutes the immediate society of the adolescent hence it plays an important role in the life style and behaviour modification of the child. It is a useful tool that when effectively employed can prevent, eradicate or contribute immensely towards helping the child to cultivate healthy life style and behaviour.

The study of the impact of two different socioeconomic status measures on child and adolescent self reported quality of life (HRQoL) in seven European countries, it was revealed that among adolescents ages 8 to 18 years, two SES indicators, namely

parental educational status and the number of material goods in the family (family affluence scale) are risk factors for HRQoL. Exposure to low parental educational attainment may result in a reduced HRQoL in childhood, while a low access to material and social resources may result in a lower HRQoL particularly in adolescents (Spencer 2006)

The life styles of parents and guardians have huge bearing on the behaviour of their offspring and wards (Rossow and Rose). Parental cigarette smoking is correlated with a greater probability that the child also smokes. This correlation however differs with geographical settings, socioeconomic status and family. In a Swedish cohort study of the influence of smoking mothers and snuff fathers on youth tobacco use, the conclusion drawn was that, parental smoking, particularly maternal smoking and paternal use of smokeless tobacco, is a buffer for the risk of tobacco experimentation in the youth. (Rosendahl et al 2003). Their study however did not assess these influences across the socioeconomic spectrum.

In the case where the parents/guardian of the child are smokers, it is incumbent on them to seek counseling about the effect of their smoking habit on the adolescent child/children they are living with and help them not to initiate smoking at all (Ziedonis et al 2006). And in the event where the child have already initiated tobacco use, the family can aid in the treatment of its dependence

2.7 Tobacco use among adolescents

Tobacco use among adolescents is nowadays a common sight in both developed and developing countries. In the United States for example, among adolescents age 8, 10 and 12, self reported smoking within a month are 10%, 17% and 24% respectively as of 2003 (Moolchan et al 2005). Current statistics indicates that 58.4% of adolescents have tried smoking in their life time, 28.4% used one form of tobacco or the other such as snuff, cigar and cigarettes in within a history of one month and yet another 15.8% are daily tobacco users. It is estimated that everyday, 5500 adolescents under

the age of 18 try smoking for the first time and about 3000 of them become daily smokers (Ziedonis et al 2006; CDCP; US Dept of Health and Human Services).

Cigarette smoking has become the most common form of tobacco use among adolescents but this is not limited to only that. There is increasing rate of other forms of tobacco use among them. Some 28.4% and 13.3% of high and middle schools respectively in the US are reported of using cigars, kreteks, bidis, moist snuff and other forms of tobacco. (CDCP). Various forms of smokeless tobacco are surfacing very now and then on the market. There is now what is called a “dip” or “rub”, which is a small amount of snuff, which is held in-between the cheek and the gum in the mouth. There is also the chewing tobacco, which is chewed. All these are meant to lure smokers especially adolescents until they become addicted to tobacco. Sadly, it does not matter the form of the product, all of these contain some amount of nicotine capable of promoting the development of dependence/ addiction.

2.8 Tobacco addiction

Tobacco addiction among adolescents is similar to those of adults. Studies have shown that the age at which adolescent initiate smoking has an impact on whether they will continue as regular daily smokers as well as the probability of quitting. (Everett et al 1999; Breslau and Peterson 1996). There are drawbacks symptoms as they try to quit. This explains why many of them have made fruitless efforts through various methods of quitting (Rojas et al 1998). No wonder about half of tried smokers progress not only to become daily smokers but also heavy dependents (Ziedonis et al 2006).

Majority of smokers today begun as teenagers. Today, initiation of smoking starts even at younger ages, especially in developing countries (Warren et al 2002). It is known that adolescents become addictive to nicotine at teenage and this occurs 1 to 2 years after the first cigarette. Of those who become daily smokers, less than 20% quit

for one month with majority of them reporting withdrawal symptoms when they try to quit (Colby et al 2000). Furthermore, the US Department for Health and Human services reports that about 70% of adults smokers in the western world report that they want to quit smoking but out of those who make the effort to quit, only about 5% of them are able to abstain for 6 months or more (US DHHS 2000; US PHSR 2000)

Globally, numerous measures have been employed in different countries to regulate and deter substance abuse among adolescents. In the United States, for example, measures such as restrictions on smoking in the home, in public places and enforcement of school policies which prevents smoking have contributed significantly to the reduction of tobacco use among adolescents (Wakefield et al 2003). There is however room for more public health strategies and interventions to rescue the adolescent, the hope of the future generation from the tobacco menace.

2.9 Tobacco use –the case of Finland

2.9.1 Finnish tobacco prevalence and legislation

Tobacco use in Finland has declined drastically over the years. About eight decades ago, Finland was the highest consumer of cigarette in the world. Smoking in Finland was far higher than in all the other Nordic countries in the 1920s. According to statistics, in the 1950s, 76% of men and 13% of women in Finland were smokers. By 1976 Finnish first tobacco legislation came into force. Already, by 1977 smoking was banned in schools, although the enforcement of this was loose until 1980s. In 1995, the age limit for buying tobacco moved from 16 to 18 years. In the same year, the selling of snuff was forbidden, but this had less effect on its use as consumers were buying from Sweden, the neighbouring country. The latest in the series of these legislations was in 2005. In that year, smoking was forbidden in all public buildings, including offices, banks, transport and many such. By and large, smoking is forbidden

indoors except in private and owner occupied houses. In restaurants and pubs, certain areas, including the bars are non-smoking arenas (Finnish Law Act 693/1976; Act 765/1994; Statistics Finland 2001; Rahkonen and Berg, Puska 1992). Thus Finland has one of the strictest tobacco legislations in Europe. Consequently, there have been remarkable decline of tobacco use in Finland over the years at the population level. However, the decline has not cut across all classifications, that is, age, sex and social class. For example, smoking has risen among women and girls over the years (Rimpelä et al 2005). At the beginning of 1960, the prevalence of smoking was estimated at 58% among men and 14% among women. By 1975, smoking prevalence dropped to 40% among men but rose to 17% among women. The prevalence descended to 26% among men and for women it stood at 19% in the year 2003 (WHO 2005).

Despite the success chalked over the years, tobacco use still remains relatively high, particularly among women, adolescents, the poorest and the less educated members of the population in Finland. (Patja and Vartiainen 2003).

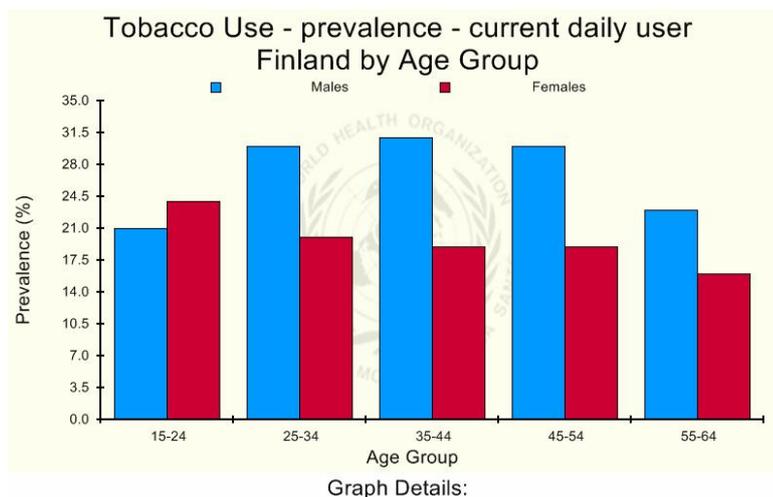


Fig. 1. The Prevalence of Tobacco Use (current daily users) in Finland by age group.

2.8.2 Tobacco use among Finnish Adolescents

Among adolescents in Finland, tobacco use is still a problem; it is particularly higher among girls. Figures from Adolescents Health and Life Style Survey indicate that tobacco use among girls has been swelling since 1993 (Rimpelä 2003). Some 13% of girls and 17% of boys age 12 have tried smoking in the year 2005. In the same year tobacco use among boys and girls ages 14-18 was almost at par, 22% and 23% respectively.

Sales of snuff was forbidden in Finland since 1995, yet, snuff experiment and daily use increased among ages 14-18 year old boys from 1990s through 2000s. In 2005 usage and experiment was higher among boys compared to their female counterparts (Rimpelä 2005) Records show that an estimated 30% of 15-year-old adolescents in Finland use tobacco at least once per week (Ulla et al 2002).

In comparison with other western/European countries, studies show that there was significant decline in daily smoking among adolescent boys ages 14 and 15 in Finland and Sweden from 1990 to 2002 while the prevalence in Norway, Australia and Hungary remained more or less the same. In Belgium, Canada and the UK, increasing prevalence was reported in 1994 and 1998; however, a notable decrease was reported in 2002. For Poland, Switzerland and Latvia smoking among boys increased since 1990 but became stable in 2002. Smoking among adolescent girls in the same age group was fairly stable in Finland, Norway and Sweden from 1990 to 2002 (Hublet et al 2006) unlike in the other European countries where the prevalence mostly increased (appendix table 25).

2.10 Justification of study

The review highlighted that in general, there is an association between socioeconomic status and health. In the case of smoking, the literature suggests the prevalence of smoking seems to be targeting the minority, the weak, the poor and the disadvantaged

in society. This, according to the literature review is not only limited to the poor countries of the world but also within the lower social class in even the wealthy countries.

In addition, only a handful of studies, if any at all, considered the trend in the socioeconomic perspective. Furthermore, none of the studies have data covering a long time period as in this study. Studies are therefore needed to investigate the trends of tobacco use among adolescents in socioeconomic groups.

This study will among other things, help in designing and building up tobacco preventive strategies among adolescents especially those in the cycles of the lower socioeconomic groups.

3. AIMS OF THE STUDY

The overall aim of the study is to investigate the changes in tobacco use among Finnish adolescents by socioeconomic groups from 1977 to 2005. Daily smoking, tried smoking, daily snuff use and tried snuff are used as indicators of tobacco use.

To achieve the above aim, the following specific aims are set:

To ascertain the differences in daily smoking, tried smoking, daily snuff use and tried snuff family structure, father's/ guardian's education, father's /guardian's occupation, mother's education, adolescent's school performance and school career.

To evaluate the differences in daily smoking, tried smoking, daily snuff use and tried snuff by adolescent's childhood social position using father's/guardian education, father's/guardian occupation and mother's education from 1995 to 2005.

To measure the differences in daily smoking, tried smoking, daily snuff use and tried snuff by adolescent's present and future social position using adolescent's school performance and school career from 1977 to 2005.

To assess the differences in daily smoking, tried smoking, daily snuff use and tried snuff by adolescent's family structure from 1977 to 2005.

4. MATERIAL AND METHODOLOGY

4.1 Data Source

The data for this study was collected as part of a national monitoring system on adolescent health behaviour (the Adolescent Health and Lifestyle Survey). It consists of a 12 page self administered questionnaire mailed biennially since 1977 to a nationally represented sample of ages 12,14,16 and 18 with two re-inquiries to non-respondents. The Finnish Population Registry was the source of the sample. The samples were selected so that the average ages of respondents were 12.6,14.6,16.6 and 18.6. The data were collected during February to April of each study year. The data collection methods, timing of the survey, size of the questionnaire questions were maintained as similar as possible to enhance the comparability of the results. The response rate from 1977 is as tabulated below.

Table 1. A) Number of respondents in the Adolescents Health and Lifestyle Surveys in 1977-2005, by sex, age and survey year.

Age and Sex/ Years	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2005
BOYS															
12	369	491	483	450	353	414	406	426	399	395	427	442	351	368	395
14	345	565	488	429	395	1128	361	1196	1203	1177	1168	1187	1251	1092	1092
16	386	528	535	413	452	1183	362	1008	1168	1232	1126	1110	892	1003	806
18	347	523	519	489	401	1134	328	893	1029	1071	1088	1112	771	570	681
Total	1447	2107	2025	1781	1601	3859	1457	3523	3799	3875	3809	3851	3268	3033	2974
GIRLS															
12	341	540	514	440	359	367	430	399	437	424	440	407	425	390	418
14	367	535	548	482	433	1202	431	1337	1299	1301	1347	1313	1485	1245	1189
16	347	579	529	509	497	1284	380	1272	1389	1469	1379	1333	1138	1296	985
18	330	512	524	509	463	1401	407	1103	1265	1313	1415	1315	976	797	937
Total	1385	2166	2115	1940	1752	4254	1648	4111	4390	4507	4581	4368	4024	3728	3529
Grand Total	2832	4273	4140	3721	3353	8113	3105	7634	8189	8382	8390	8219	7292	6761	6503

Response Rate	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2005
BOYS															
12	90	88	88	85	80	81	76	77	73	78	76	79	72	69	67
14	88	86	87	78	74	81	75	74	74	75	69	74	66	66	64
16	85	83	85	75	76	77	70	68	70	72	68	68	62	59	57
18	83	78	81	75	68	69	63	31	66	67	60	63	53	50	49
Total	86	83	85	78	74	76	71	69	70	72	67	69	62	60	58
GIRLS															
12	91	90	92	91	84	83	82	82	84	86	87	85	82	75	75
14	94	91	92	86	88	90	90	86	86	85	84	85	79	78	75
16	89	91	91	91	87	89	82	86	87	88	87	85	82	79	76
18	88	85	88	87	83	84	80	82	83	86	83	80	76	74	68
Total	91	89	91	89	86	87	84	84	85	86	85	83	79	77	73
Grand Total	88	86	88	83	80	81	77	77	78	79	76	76	70	69	66

Table 1. B) Response rates in the Adolescents Health and Lifestyle Surveys in 1977-2005, by sex, age and survey year.

The basic themes in the questionnaire were smoking, use of alcohol, physical activities, background information and health. In addition, questions relating to more specific area of health behaviours such as physical activities in schools, hobbies, and whether smoking is permitted at home were asked. Generally questions on the assessment of specific phenomenon were not altered except where it was unavoidably necessary to do so. In assessing tobacco use, questions were worded to class respondents into tobacco experimenters, daily smokers, daily snuff users, daily user of tobacco products, snuff experimenters, current snuff users, self-rolled cigarette smokers, attitude towards tobacco restrictions and use, and daily exposures to tobacco smoke.

4.2 Indicators of tobacco use.

In this study, four of the variables, that is, Daily smoking, tried smoking, snuff use (daily snuff use) and tried snuff are used as indicators of tobacco use.

Tobacco experimenters (tried smoking) were those who responded yes to the question “Have you ever smoked (tried) tobacco?” Those who answered “No” to this but reported smoking in the later questions were classified as tobacco experimenters.

Daily smokers were those who reported having smoked 50 sticks of cigarettes in all, had smoked during the past week, and reported smoked once a day or more often. Respondents who selected the response, “I smoke once a week or more often, but not daily” as well as reported smoking more than one cigarette a day were also classified daily smokers.

Daily snuff users were those who reported taking snuff daily.

Daily users of tobacco products were the respondents classified as daily smokers or daily snuff users, with respect to the above working definitions.

Snuff experimenters (tried snuff) were those who answered, “Yes” to the questions, “Have you ever tried snuff?”

Current snuff users were those respondents who reported using snuff occasionally or once a day or more often.

Self-rolled cigarette smokers were those who reported their daily self-rolled cigarette consumption as one or more, including those who reported the number of self-rolled as well as of manufactured cigarette or pipefuls.

Using the indicators, “definitely agree”, and, “agree to some extent” directly from the questionnaire assessed attitudes to tobacco restriction and use. This was assessed first in 2005.

Daily exposure to tobacco smoke was examined by two indicators namely: those who reported no exposure to tobacco at all, and proportion of those who reported being in smoke filled rooms for an average of one hour or more daily.

4.2.1 Indicators of socioeconomic status.

Six socioeconomic factors were used in assessing the socioeconomic status of the adolescents (Appendix 2). These are Family Structure, Father's/ Guardian's Occupation, Father's/ Guardian's Education and Mother's Education. The rest are Adolescent's School Performance and School Career. Family structure questions assessed whether respondents live in the nuclear family with both parents or not. Father's / guardian's occupation as well as mother's occupation were put into four classes, namely, managers and entrepreneurs one as class (upper white-collar), lower white-collar employees, agriculture and forestry workers and other workers/blue-collar. Elementary school, middle school and high school graduate were the classes for both father's/ guardian's and mother education. Adolescent's school performance was assessed based on his/ her school grade compared with the class average. Thus adolescents were classified as much better, slightly better, average, and poorer while adolescent school career were categorized into not in school, vocational/poor average, vocational/good, high school /poor average and high school/good. The socioeconomic indicators were measured so that father's/guardian's education, father's/guardian's occupation and mother's education describe the adolescent's childhood social position while adolescent's school performance and school career describe the adolescent's own present social position and a prediction of the future social position. Figure 2 shows a flowchart of the categorization of the socioeconomic background indicators used in this study.

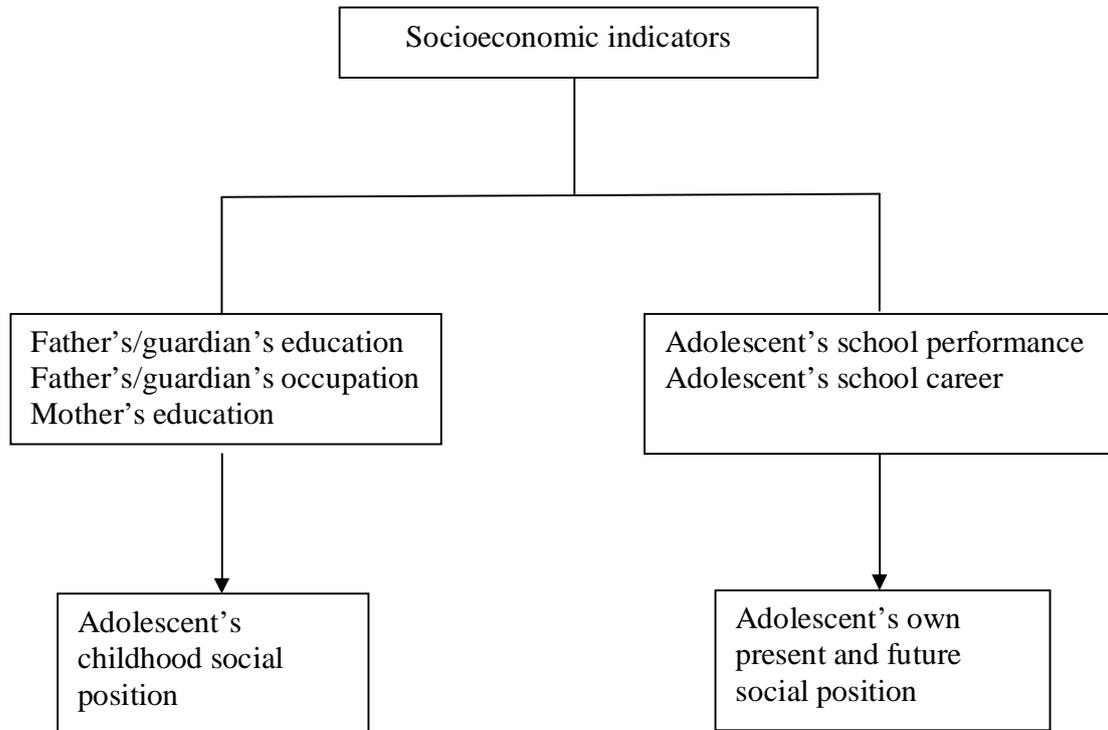


Fig. 2 A flow chart of the categorization of the socioeconomic background indicators

The study is conceptualised in a model as presented in the Figure 3. The socioeconomic factors that impact on health at childhood manifest themselves in adolescence either as health damaging behaviour (tobacco use) or as health enhancing behaviours (no tobacco use). In the model, it is predicted that health-damaging behaviour, including tobacco use will result in poor health whereas health-enhancing behaviour i.e. no tobacco use, will end in good health.

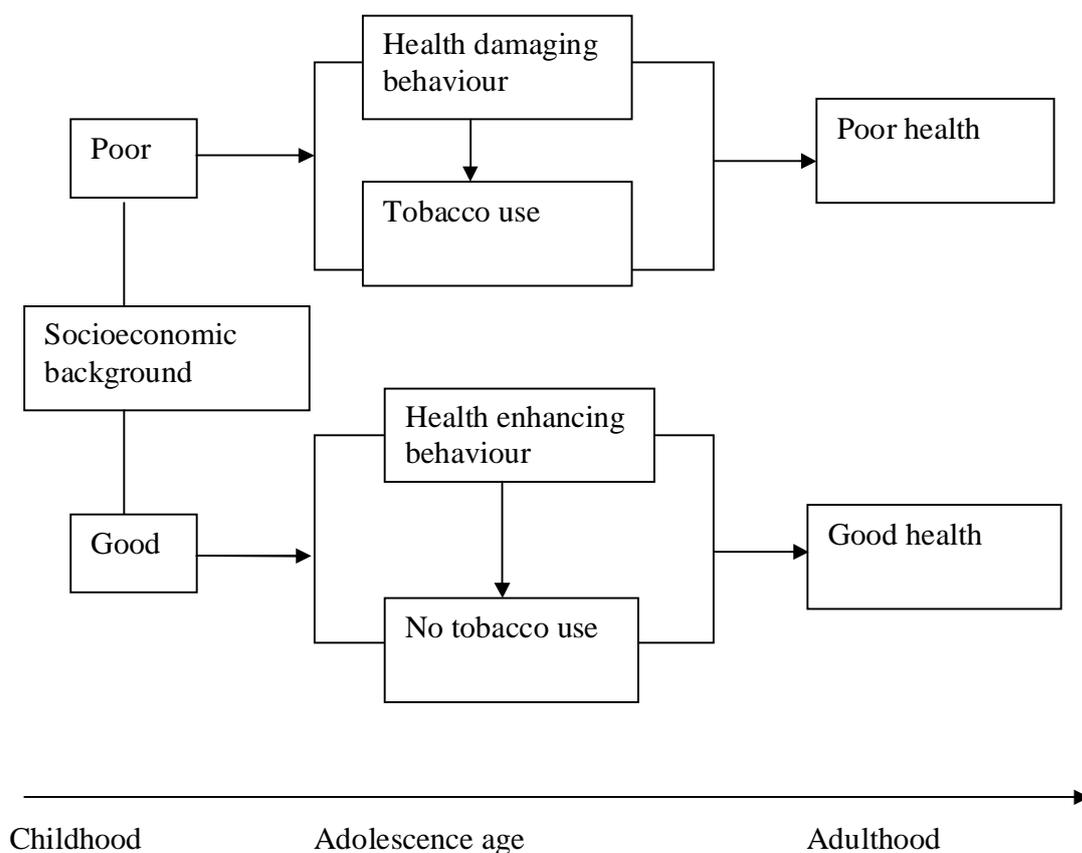


Fig. 3 The conceptual model of the study.

4.3 Data analysis

Simple line graphs, percentages and cross-tabulation were used in describing the trend of tobacco use. The analysis was done for boys and girls separately in some instances because gender disparities were established to be significant. For daily smoking, the 12 year olds were excluded in the analysis because the risk within that age group was negligible.

Second level of analysis involves the use of logistic regression in modeling tobacco use. This is so because the outcome measures were categorical in nature and dichotomous. Binary logistics regression was mainly performed using Statistical

Programme for Social Sciences (SPSS) 13 version (Hosmer and Lemeshow 1989) to estimate the odd ratios of tobacco use among the groups in order to ascertain the relative risk of tobacco use among the various socioeconomic groups. Interaction between year of questionnaire, age and sex were checked and no interaction was found between these variables. The regression was done separately for each of the socioeconomic indicators and both age- and gender-adjusted and unadjusted odd ratios are presented. The regression models were tested using Chi-square test with $p < 0.05$ at 95% confidence interval.

5. RESULTS

5.1 Tobacco use by adolescent's childhood socioeconomic position

5.1.1 Father's / guardian's education

5.1.1.1 Tried snuff

There were alternating variations in the risk of tried snuff by father's / guardian's educational attainment. In 1981, the risk was highest among those whose father's / guardian's educational attainment was High school, followed by those whose father's / guardian's educational attainment was Comprehensive school and lowest among those whose father's / guardian's educational attainment was Primary school. There was an increase among those whose father's / guardian's educational attainment was Comprehensive school in 1987, bringing it at par with the wards of the High school leavers. In early 90s, the risk decreased in all the groups but increased during the rest of the 90s. The differences in the risks among the groups were very irregular until in the new millennium when even though the risk fell among all the groups, the differences were clearly observed. Currently, the children whose fathers / guardians were Primary school leavers, have the highest risk of tried snuff, followed by the wards of the High school leavers with the children of the Comprehensive leavers being the lowest risk group as shown in Figure 4 below. A slight gender differences were observed in 2001 and 2003 between those whose fathers / guardians were Primary school and Comprehensive school graduates.

Tried snuff by father's/guardian's education

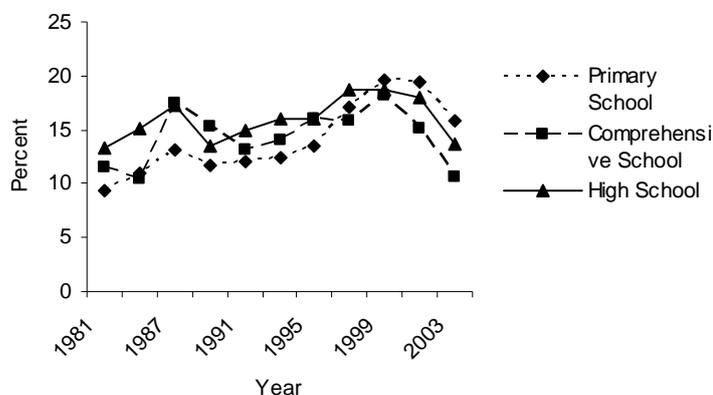


Fig. 4 Tried snuff by father's/guardian's education

5.1.1.2 Tried smoking

Adolescents whose fathers / guardians are High school graduates had the lowest risk of tried smoking from 1981 to 1989 (Figure 5). During that period there was little difference in the risk among those whose fathers / guardians are Primary and Comprehensive school graduates. In 1991 there was a decrease in the risk among the entire father's / guardian's educational level categories and increases were observed in all categories the following year. From 1997 a significant decrease was seen among those whose fathers / guardians are High school and Comprehensive graduates but very little decrease occurred among the children of the Primary school graduates, thus creating a margin of risk above the other classes. By 2005, the risk of tried smoking was 1.5 folds among adolescents whose fathers / guardians are Primary school leavers as compared to those whose fathers / guardians are High school leavers (Appendix table 3). No difference was observed among the sexes (Appendix figure 14)

Tried smoking by father's/guardian's education

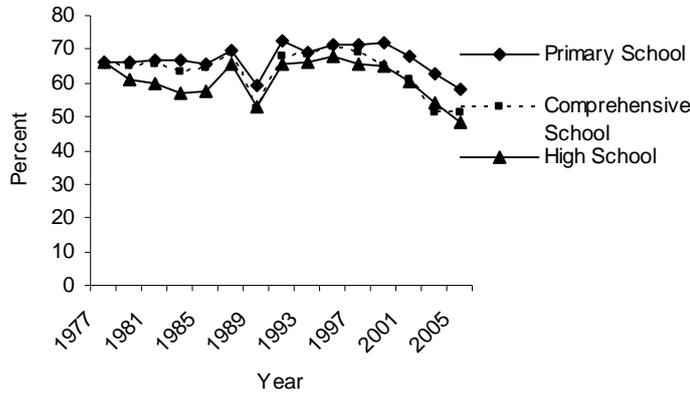


Fig. 5 Tried smoking by father's/guardian's education

5.1.1.3 Daily smoking

Differences in the risk of daily smoking by father's / guardian's educational attainment were remarkable. The difference increased towards the lower socioeconomic group (those whose fathers / guardians are Primary school graduates), especially during the past nine years. Prior to that, the differences were thin except in 1981 when the margin was wider by increases in the risk of those whose fathers / guardians are Primary school and Comprehensive graduates but decrease among those whose fathers / guardians are High school graduates (Figure 6, Appendix table 9). Also, sharp increases and decreases were observed in 1987 and 1989 respectively in all the categories but it did not change the margin of difference between them. Modest differences were observed in the gender classification since 1997 and wider differences were seen among the older adolescents (16 and 18 year olds).

Daily smoking by father's / guardian's education

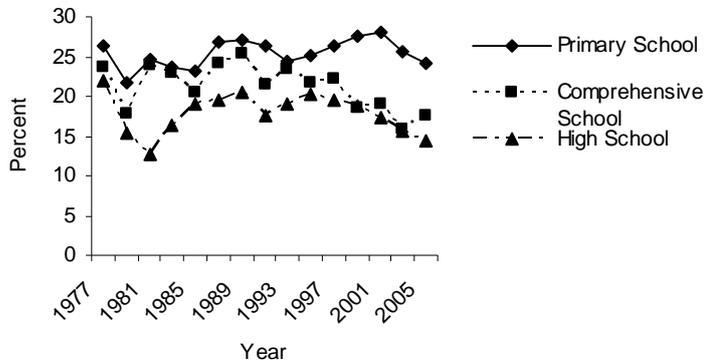


Fig. 6 Daily smoking by father's/guardian's education

5.1.1.4 Snuff use

Differences exist in the risk of snuff use by adolescents whose fathers / guardians education. At the beginning of the survey, the risk was highest among those whose fathers / guardians are High school graduates, lowest among those whose fathers / guardians are Primary school graduates and for those whose fathers / guardians are Comprehensive school graduates; the risk was in between the two educational classes. Although the differences were not correspondingly seen throughout the period, an increase was however measured in all the categories until in 2001 when a downward trend occurred. Currently, the risk is 1.2 folds among those whose fathers / guardians are Primary school graduates compared to those whose fathers / guardians are High school graduates (Appendix table 15)

Snuff use by father's/guardian's education

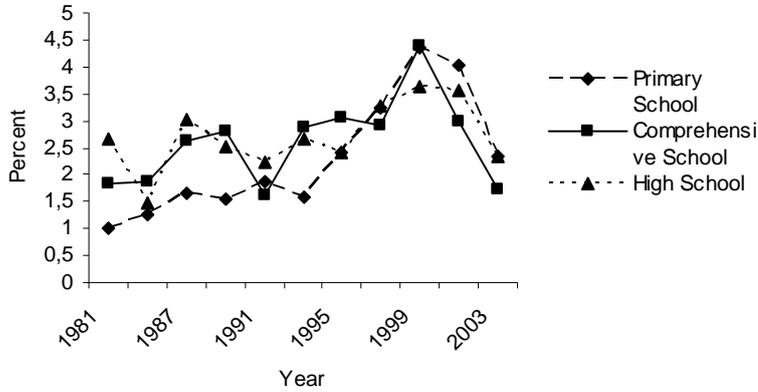


Fig. 7 Snuff use by father's/guardian's education

5.1.2. Father's / guardian's occupation.

5.1.2.1 Tried snuff

In 1981, 13.2% of adolescents whose fathers/guardians are White collar employees were snuff experimenters, 11.1% of those whose fathers/ guardians are lower White collar employees, 5.4% of adolescents whose fathers/guardians are Farmers and 12.1% of those whose fathers/ guardians belong to the workers or blue collar employees category tried snuff (Figure 8)

The trends were undulating among the children of white-collar employees, the lower white-collar employees and the workers or blue-collar employees over the years (1981 to 2003). On the other hand, adolescents whose fathers / guardians are farmers had a relatively low but increasing trends across the period. Although the trends in the other classes of father's / guardian's occupation assumed a significant decrease since 1997, no significant decrease is observed among those whose fathers/ guardians are farmers, even though that group remained relatively the lowest risk group.

The risk of tried snuff by father's / Guardian's occupation is lower among adolescent girls than boys. In addition there was a bigger difference in the risk among the wards of the framers compared with the other occupational statuses in the boys category but no such difference is found among the girls (appendix figure 11).

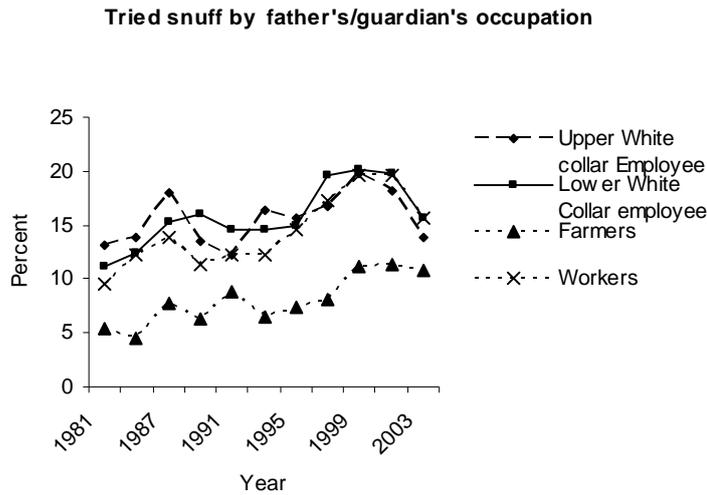


Fig. 8 Tried snuff by father's/guardian's occupation

5.1.2.2 Tried smoking

No much differences were observed in the risk of tried smoking by father's / guardian's occupation over the period. The risks among those whose father's / guardian's belong to the upper white collar and the farmers categories were lower than those the children of the lower white collar and the blue-collar employees over the years (Figure 9). In the year 1989, however, all the statuses had a sharp decrease in the risk. There were no differences in the sexes as well (Appendix figure 9).

Tried smoking by father's/guardian's occupation

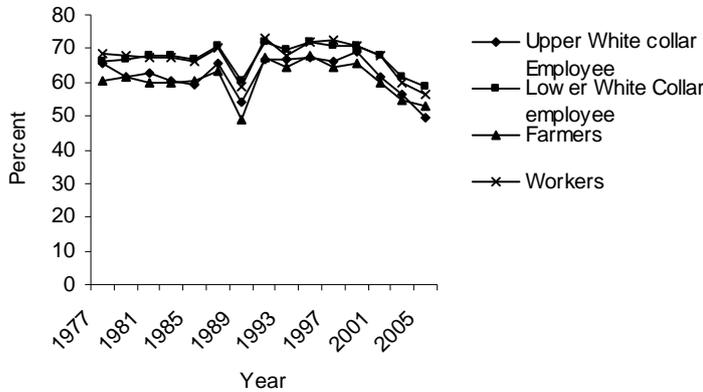


Fig. 9 Tried smoking by father's/guardian's occupation

5.1.2.3 Daily smoking

The risk of daily smoking among adolescents in all the four classes of father's / guardian's occupation seems similar but at different level of prevalence throughout the years. The pattern is pretty similar to the risk of tried smoking, the only exception being that the differences among the occupational statuses were a little larger in the risk of daily smoking (Figures 9 and 10). In 2005, however, the trend among those whose fathers/ guardians are in the lower white-collar employment and those who are farmers seems to begin an increasing trend. Relatively, those whose parents are in the upper white-collar employment have the lowest risk of daily smoking, followed by those whose fathers/ guardians are farmers. Adolescents whose fathers/ guardians belong to the blue-collar category are the most vulnerable of the risk daily smoking. It is noted, however, that, the trend in this group have assumed a significant decreasing trend since 2001. Currently, their risk falls below those whose fathers/ guardians are in the lower white-collar employment. A wider trend is observed among girls compared to the boys (Appendix figure 10)

Daily smoking by father's / guardian's occupation

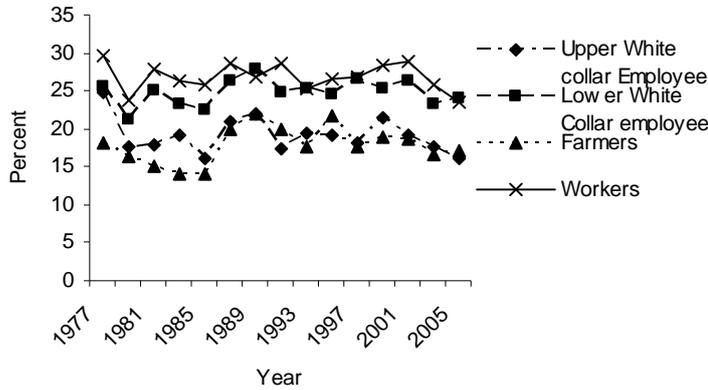


Fig. 10 Daily smoking by father's/guardian's occupation

5.1.2.4 Snuff use

There were variation in the risk of snuff use in the various father's / guardian's occupational statuses. The risk was lowest among those whose fathers / guardians belong to the farmers division (Figure 11). Among the other categories the risk was very undulating and increased throughout the period. Thus, although the risk of snuff uses was relatively low, the difference by occupation statuses have increased since the start of the survey. This increases was most remarkable in 1989 and between 1995 and 1999. In 2001 and 2003 however, drastic decreases have occurred in all the other groups except among those whose fathers / guardians are farmer (although it remains the lowest risk group), thus reducing the differences among the occupational status. Slight differences were seen among the sexes (Appendix figure 12).

Snuff use by father's/guardian's Occupation

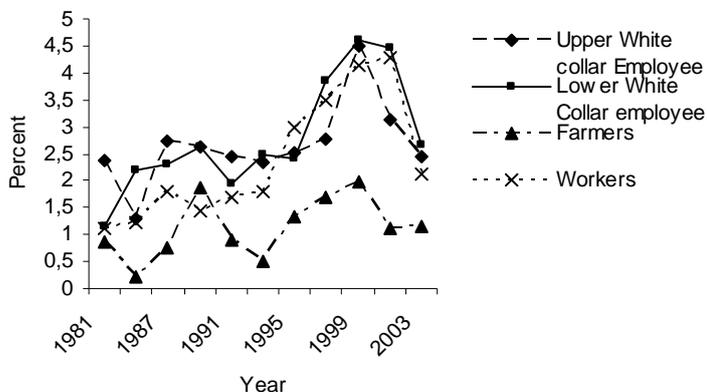


Fig. 11 Snuff uses by father's/guardian's occupation

5.1.3 Mother's education

5.1.3.1 Tried snuff

Tried snuff among adolescents was measured by their mother's education in only four questionnaire years namely 1995, 1999, 2001 and 2003. In 1995, the risk of tried smoking was almost at par between all the classifications of mother's educational attainments. Differences were however seen in the following year (1999) and these differences increased among these classes substantially in the year 2001. Adolescents whose mother's had the lowest educational level were the highest at risk of snuff experimentation. In 2003 a narrowing up of the differences were observed (Figure 12, Appendix table 19). Small gender differences were seen between 1999 and 2003 (Appendix figure 19).

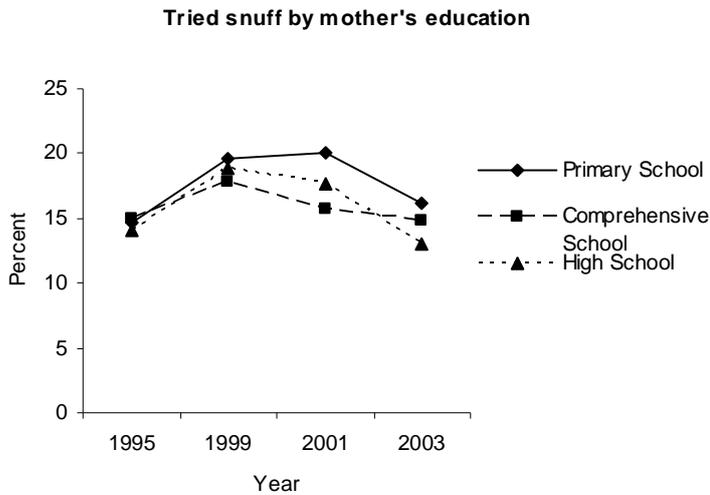


Fig. 12 Tried snuff by mother's education

5.1.3.2 Tried smoking

In 1995, the exposure to tried smoking was high among adolescents whose mothers are Primary school and Comprehensive school graduates but very low among those whose mothers are High school graduates (Figure 13). The risk however rose up over the years in the latter group thereby blurring the huge difference that existed in the mid to late 1990s. Currently, the risk of tried smoking is highest among those whose mothers are Primary school graduates, followed by those whose mothers are Comprehensive school graduates and least among those whose mothers are High school graduates. Gender did not affect the risk of tried smoking (Appendix figure 17).

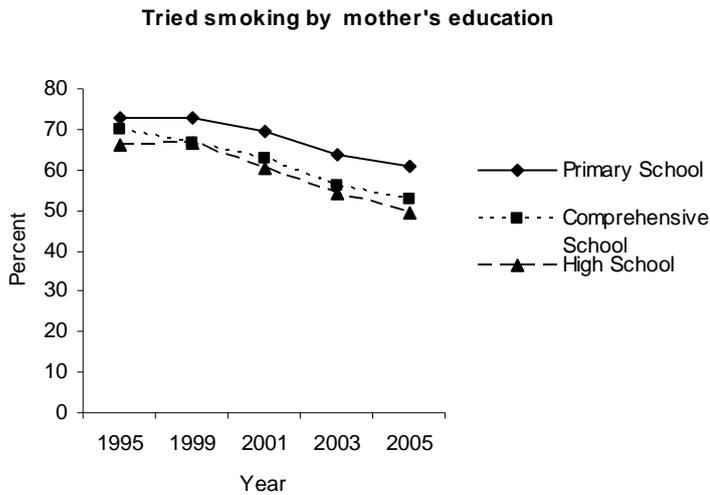


Fig. 13 Tried smoking by mother’s education

5.1.3.3 Daily smoking

There were significant differences in the risk of daily smoking by mother educational level (Figure 14, Appendix table 14). Adolescents whose mother are Primary school graduates have by far a higher risk of daily smoking compared to those whose mother are High school graduates and the difference has increased from 1999 up to date (2005). Similarly, those whose mothers are Comprehensive school graduates have higher risk compared to those whose mothers are High school graduates; and the margin has increased slightly from 1999 to 2003, although the difference was not as large as in the Primary school graduates mothers category, in 2005 however, the margin seems to be narrowing. Furthermore, it was observed that the difference in the risk is more pronounced to the disadvantage of those whose mothers are Primary school graduates among girls than their male colleagues (Appendix figure 18) and large differences within the classes were measured among the older adolescents.

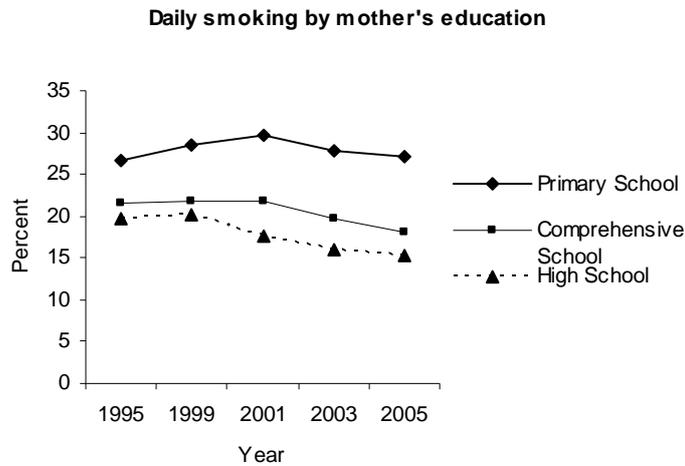


Fig. 14 Daily smoking by mother's education

5.1.3.4 Snuff uses

Relatively, large differences in the risk of snuff uses among adolescents by mother's education were seen between 1997 and 2001 (Figure 15). Within the same period significant differences were seen in the sexes (Appendix figure 20). The most vulnerable group were those whose mother's highest educational level is Primary school, with those whose mothers are Comprehensive graduates seems to be the least vulnerable. Before 1997 and after 2001 the differences in the risks were negligible.

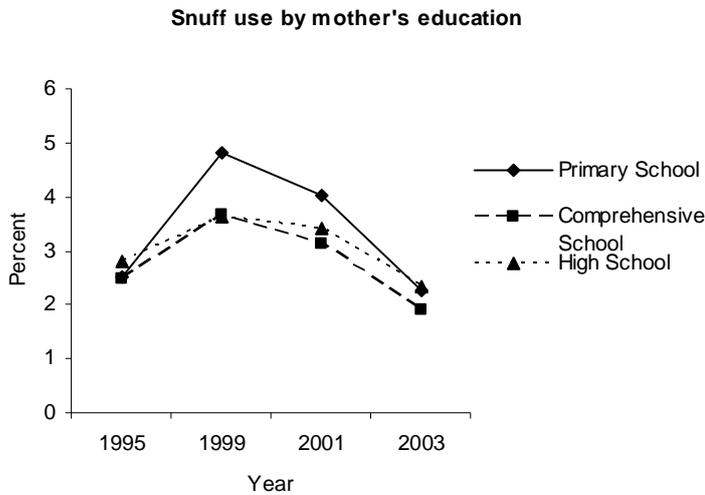


Fig. 15 Snuff uses by mother's education

5.2. Tobacco use by adolescent's present and future socioeconomic position

5. 2.1 School performance compared with class average

5.2.1.1 Tried snuff

Adolescents whose school performance is poorer have by far the highest risk of tried snuff since 1981. Those whose school performance is much better remained less vulnerable to the risk of snuff experimentation over the years. This is followed by those who are slightly better, with those who are average being the next highest risk group after the poorer ones. The risks have relatively increased among all the groups over the years but the increase was more magnificent among the poorer adolescents with a peak in 1999. In addition, the vulnerable group (average performance) is larger compared with the differences between the other three classes of school performance. The same pattern is seen among the girls is the distinction between the genders (Appendix figure 23)

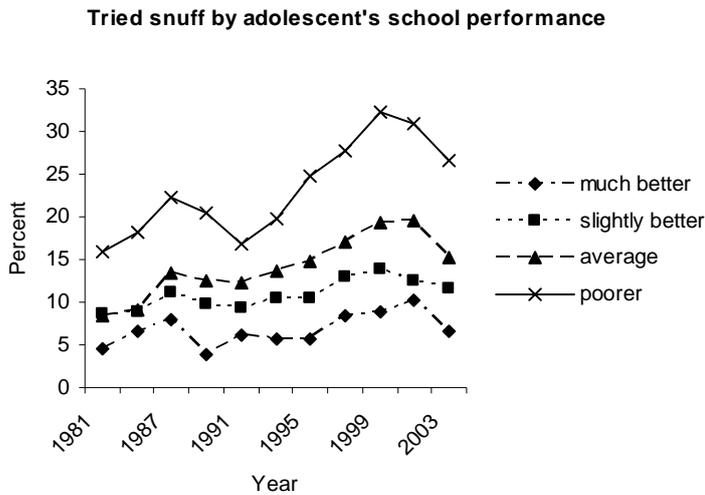


Fig. 16 Tried snuff by adolescent's school performance

5.2.1.2 Tried smoking

The risk of tried smoking by adolescent's school performance varies according to the school performance compared with the class average. Like in the case of daily smoking, the better the school performance, the lower the risk of tried smoking and vice versa. The differences were almost the same from 1977 through to 1991, but from 1993 until 2001 slight increases were observed. In 1989, however, there were considerable falls in the risks in all the classes of school performance. In the millennium, the differences seem to be narrowing up between those whose school performances were much better, slightly better and average. Among those who have poor school performance; the risk went up in 2005 (Figure 17). Generally, no significant gender differences were seen until 2005, where the difference in the risk among the poorer adolescent boys increased in comparison to the rest while among the girls such widening of the difference was seen between the much better and slightly better adolescents (Appendix figure 21)

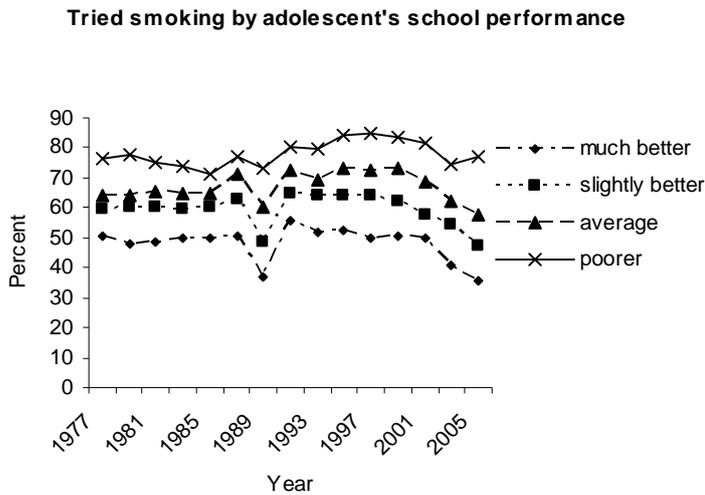


Fig. 17 Tried smoking by adolescent's school performance

5.2.1.3 Daily smoking

Differences in the risk of daily smoking by adolescent's school performance were large. The better the school performance of the adolescent, the lower the risk of daily smoking and vice versa. The difference in the risk have been widening over the years among those whose school performance is poorer compared to the other category. Not only that, but also the margin of the difference is large (Figure 18). Similar pattern was seen among the sexes. There are nonetheless no much differences between boy and girls (Appendix figure 22).

Daily smoking by adolescent's school performance

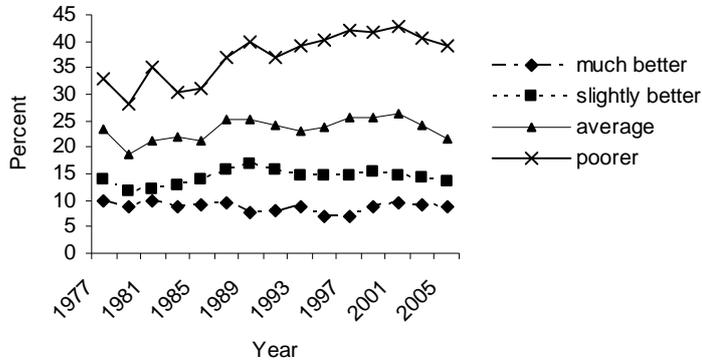


Fig. 18 Daily smoking by adolescent's school performance

5.2.1.4 Snuff uses

The differences in the risks of snuff uses by adolescent's school performance were similar to that of snuff use. The contrast being that, in the latter the differences are smaller and relatively uniform than in the former (Figure 19). Among the sexes, the levels of the risks were higher and differences between the groups are larger among boys in most of the years (Appendix figure 24).

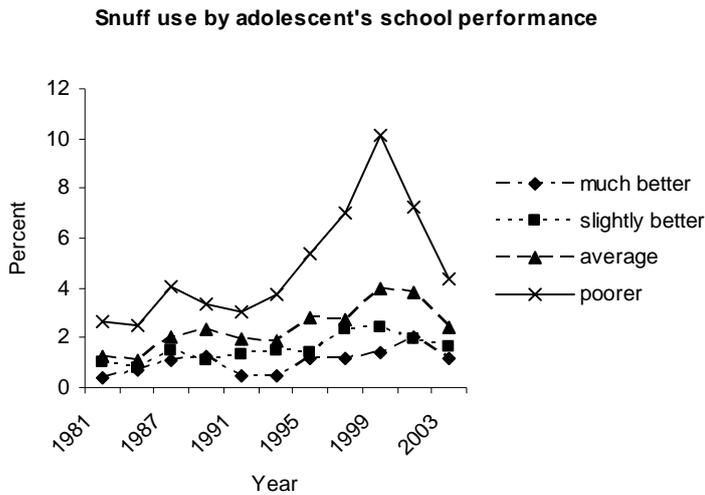


Fig. 19 Snuff uses by adolescent's school performance

5.2.2 Adolescent school career

5.2.2.1 Tried snuff

There were remarkable differences in the risks of snuff experimentation by adolescent's school career and these differences have increased from 1989 to 2001. Adolescents who have dropped out of school were more exposed to tried snuff. Those in the vocational school with poor average school performance were the runner up. The risk is lowest among those who are in high school and have good school performance. Interestingly, those who are in high school and have poor average performance have lower risk than those in 1995 and 2001 (Figure 20). Not all, the largest difference occurred in 2001, the year in which the risks were at their peaks in all the groups except in those in vocation school with good average and those in high school with good performance. Currently, the differences seem to be decreasing.

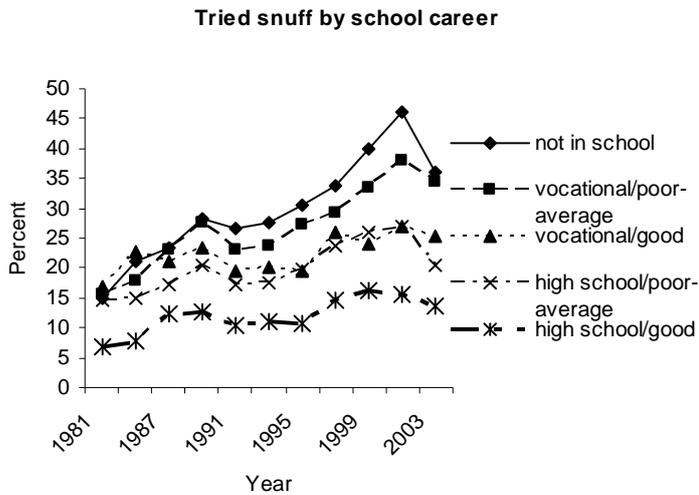


Fig. 20 Tried snuff by adolescent's school career

5.2.2.2 Tried smoking

The risk of tried smoking varies according to adolescent's school career. Those in High school with good performance have the lowest risk since 1977; further, the risk is decreasing among this group. On the other hand, the risk was highest since 1983 among those who have dropped out of school and their risk have been increasing slowly but firmly over the years. The differences in the risks between all the groups except those who are in High school with good performance were small. In 1989, there was sharp increase in the risk among those in Vocational school with good performance thereby narrowing the difference between them and those in High school with good performance in that year. From thence, their risk increased again. Among boys the risk was undulating among those in High school with good performance compared to girls, but between the other categories there were gender differences.

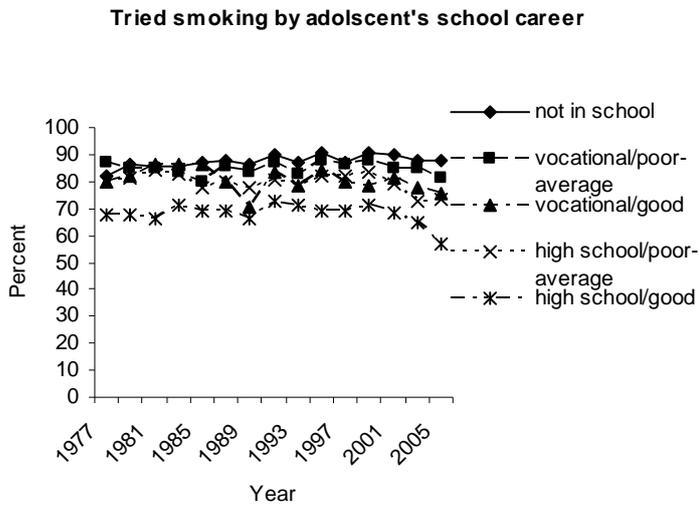


Fig. 21 Tried smoking by adolescent's school career

5.2.2.3 Daily smoking

The risk of daily smoking corresponded to adolescent's school career and it was much similar to the risk of tried snuff. There were differences in the risk by school career and these are increasing to the disadvantage of those who have dropped out of school. Currently, about 54.0% of adolescents who are not in school are daily smokers whereas only 12.0% of their colleagues in High school with good performance smoke daily. A significant difference among the sexes is that, since 2003 the risk has been decreasing among boys who are not in school but among girls in the same category, the risk is increasing (Appendix figure 26)

Daily smoking by adolescent's school career

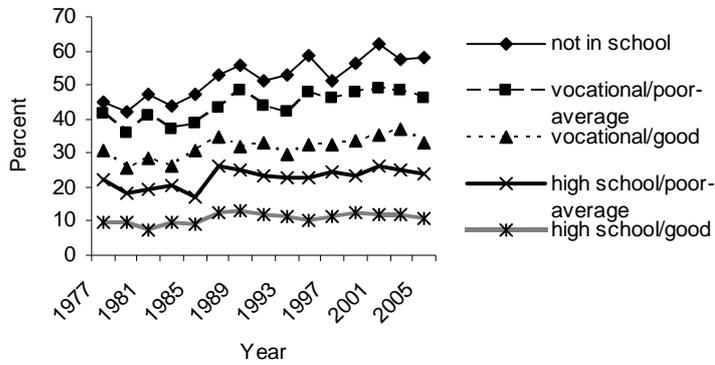


Fig. 22 Daily smoking by adolescent's school career

5.2.2.4 Snuff uses

The trend of the risk of snuff uses by adolescent's school career was very different from the other forms of tobacco uses. The risk of snuff uses although lowest among those in High school with good performance, it has been increasing over the years. Between the other categories of school career differences exist though but the trend have been fluctuating at an increasing rate over the years. In 2001, however, the four other classes of school career apart from those in High school with good average have assumed a relatively fast downward trend (Figure. 23)

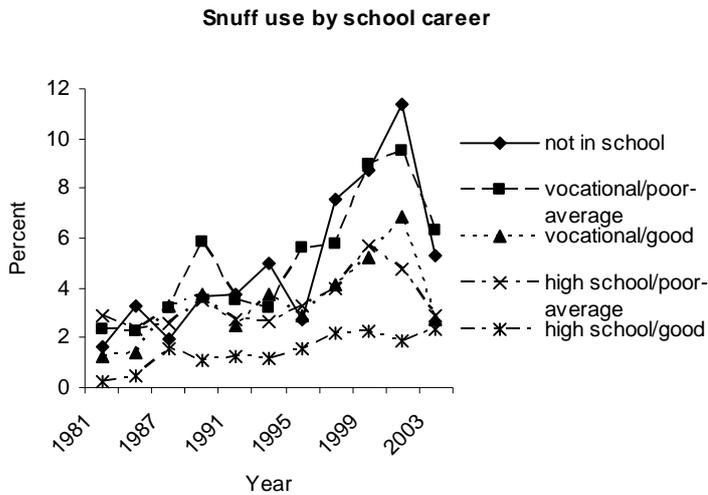


Fig. 23 Snuff use by adolescent's school career

The risk was generally low in the general population and particularly low by school career among girls than among boys. In 1997, a relatively sharp rise in the risk was seen among adolescent girls (Appendix figure 28)

5.3. Family structure

5.3.1 Tried snuff

The risk of snuff experimentation was more popular among adolescents who were not living in the nuclear with both parents compared to those are living in the nuclear family with both parents (Fig.24, Appendix table 5). The margin of the difference in two family structures increased from 1981 through 1987, decreased in 1988 and again increased throughout the 1990s reaching their peaks in 1999 where the highest difference between the family structure categories was recorded. In 2001 and 2003, however, the trend went down but the difference in the classes remained the same.

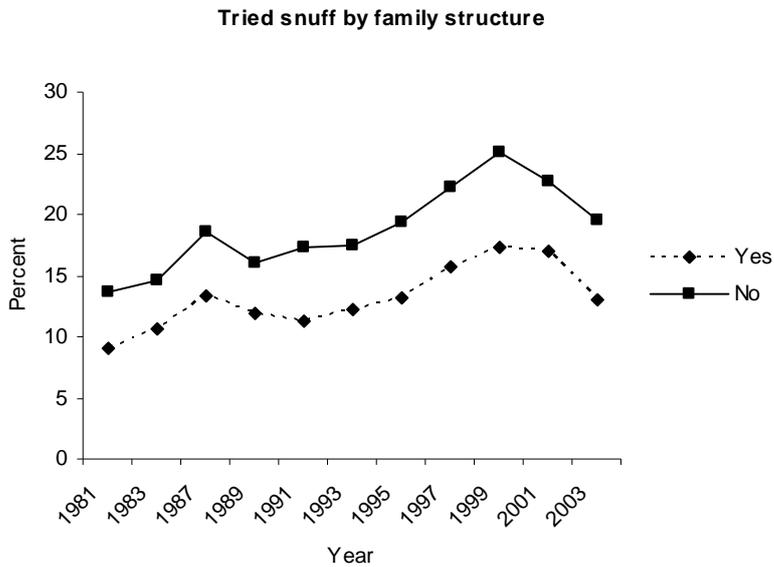


Fig. 24 Tried snuff by family structure

5.3.2 Tried smoking

There was high risk of tried smoking among adolescents who are not living in the nuclear family with both parents compared with those living in the nuclear family with both parents. In 1977, the risk was 1.6 folds among those who were not living with both parents in the nuclear family compared with those who were living with both parents in the nuclear family (Fig. 25 and Appendix table 7). The difference in the risk by family structure decreased between 1987 and 1991 when there was a ‘V’ shaped prevalence of tried smoking in both categories. Except for this decrease, the difference have been pretty the same throughout the year with a very infinitesimal increase in 2005.

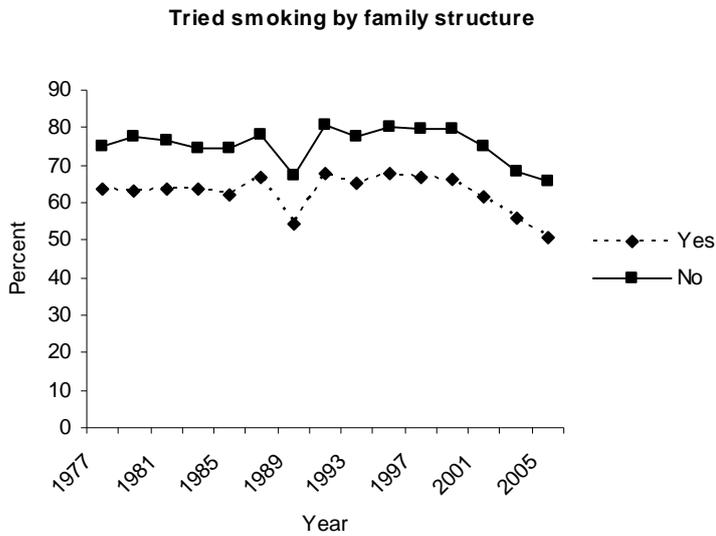


Fig 25 Tried smoking by family structure

5.3.3 Daily smoking

In 1977, 17.0% of adolescents in the nuclear family were daily smokers while 25.9% of those who were not living in the nuclear with both parents were daily smokers (fig. 26). The pattern of the trends between both groups were similar except that those in the latter group had a downward trend as early as in 1979, at the period when the former group had increasing trend. The risks between both groups reached their peaks in the year 1987 but descended in the following questionnaire year. The differences between the two family structures increased in the 1990s but began to narrow down at the beginning of the millennium. Among adolescent girls, the differences between the two family structures are wider (appendix figure 6).

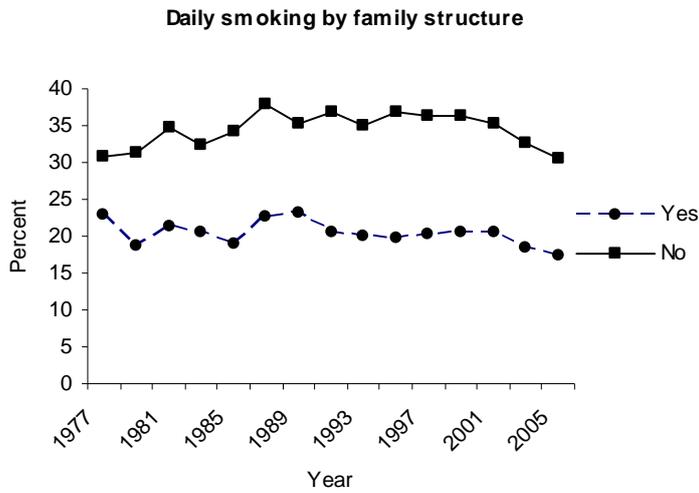


Fig 26 Daily smoking by family structure

5.3.4 Snuff use

There was high risk of snuff uses among adolescents who were not living the nuclear family with both parents compared with those who were living in the nuclear family with both parents. Although the trend was low relative to other tobacco uses, it rose steadily from 1981 to 1999, with just a small depression in 1991 and 1993 among those who were living with both and those in living in the broken homes respectively (Figure 27). The differences in the groups grew larger in 1991, where there was an increase in the prevalence among those in the broken homes but a decrease among those living with both parents in the nuclear family. Another increase in the difference among the group was seen in 1999 but thereafter, there was a narrowing up.

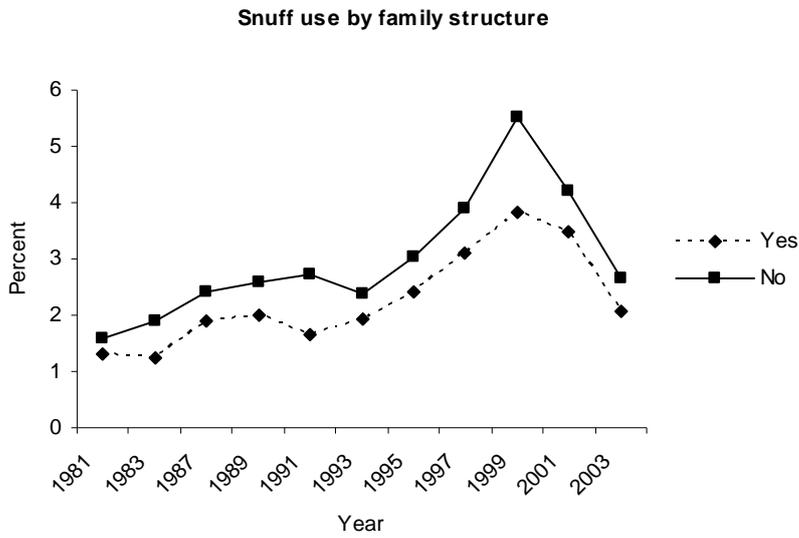


Fig. 27 Snuff use by family structure.

There were large differences in the risk of tobacco use (tried smoking, tried snuff, daily smoking and snuff uses) among adolescent girls compared to adolescent boys (appendix figure 8). Also the differences were more pronounced among the ages 16 and 18 than among ages 12 and 14 adolescents.

6. DISCUSSION

6.1 Tobacco use by adolescent's childhood social position

The results of this study show that no significant differences exist in risk of tobacco use among adolescents using the factors that estimate adolescent's childhood social position as used in this study, except for mother education.

6.1.1 Father's/guardian's education

Generally, educational attainment is a predictor of health related behaviours not only in adolescence but also in adulthood (Koivusilta, Rimpelä & Rimpelä, 1995; Power & Peckham, 1993; Koivusilta et al, 2003). Father's educational attainment is therefore essential in determining health behaviour among their children. This can be viewed in many ways. Father's educational attainment is linked with his occupation, which in turns determines the availability of economic resources and hence social class. Also, the higher the educational level of a parent, the higher the likelihood of him placing premium on the education of their children as well as their health behaviour. This is not only seen in theoretical terms but through practical ways, including assisting them with schoolwork and providing health related parental care and counseling (Argyle, 1994; Erickson and Jonsson, 1996).

The results of this study show that the differences in the risk of tobacco use by father's/guardian's education is becoming more important in recent years than in the 70s and 80s. The differences in the risks since the 1990s have increased to the disadvantage of those whose fathers/guardians are primary school graduates compared with the others. Tobacco use is strongly linked to poor school attainment, unwillingness to continue with education, adoption of anti social behaviours, compromising of healthy life style and very enthusiastic towards health damaging activities (Aaø et al; Gledinning et al, 94, 95).

Consequently, adolescents who fall in the hands of this category of parents are more likely to end up with low education themselves thus the creation of a vicious cycle of tobacco users and low educational attainders among other things.

6.1.2 Father's / guardian's occupation

The results of this study show that there are differences in tobacco uses by father's occupation. It seems that these risks are not consistent for the various forms of tobacco uses. However, by and large, the risk is relatively low for those whose fathers/guardians are white-collar employees and those who are farmers. Some studies show that occupation is a very important socioeconomic tool that measures the disparities in health and health behaviours more than other socioeconomic indicators such as housing, income and car. Further, non-occupational measures of socioeconomic status is said to have failed to bring out any differences in health and health behaviours not observed using occupational measures (Macintyre 1986 and West 1991). In this study, it was expected that differences in tobacco uses would be clearly marked between the various occupational classes, with more risk margin among the adolescents whose fathers/guardians are at the lower socioeconomic end by occupational classification. The inconsistency in the results could be possibly attributed to the inability of some adolescents to classify their fathers/guardians into their occupational classes.

6.1.3 Mother's education

In this study mother's low educational attainment has been identified as an important risk factor of tobacco use among adolescent. The results indicate that there are huge differences in the risk of tobacco use by mother's education. Adolescents whose mothers are primary school graduates have the lowest risk of tobacco use, followed by those whose mothers are comprehensive school leavers with those whose mothers are

high school leavers being the lowest risk group. This underscores the role of parental educational level, particularly mothers on the health of their offspring. Although in Finland there is gender equality in all spheres of the economy as well as in the marital home, it seems, like in most parts of the world mothers have more influence on their children, especially at the early stages of life than the fathers. This may explain why their educational level is a more important risk factor of tobacco use. As identified by Glendinning and other researchers, tobacco use indicates wide varieties of life styles that produce low level of education as well as unhealthy ways of living and their resultant outcomes (Gledinning et al 1992; Nutbeam et al, 1989; West, 1991). It is possible therefore to think that those mothers with low educational levels are also tobacco users as in Finland tobacco use is more prevalent among less educated women. More information is needed on the behaviour and life style of parents to evaluate fully and holistically their influence on adolescents.

6.2 Tobacco use by adolescent's present and future social position

In this study, it was observed that the most differences in the trend of tobacco use among adolescents in the different social groups exist in the factors that describe the adolescent's present social position and the prediction of the future social class, namely school performance and school career.

6.2.1 Adolescent's school performance

The findings in this study show a large difference in the risk of tobacco use among the extreme ends of school performance. It further indicates that these differences have been widening up especially in recent years. Studies have shown that the educational success of young people is strongly associated with their health related behaviour such that health damaging behaviours are more characterized with those who do not consider education as being capable of improving one's life as well as those who lack

the means to cater for their educational career (Nutbeam et al, 1989; Gledinning et al, 1995). This way of living is not only limited to the adolescent population but transcends to adulthood, particularly those in the lower socioeconomic class (Macintyre, 1986). Primarily, health compromising behaviours are typical of adolescents who have poor educational achievement and less enthusiasm for attaining high levels of education. This correlation of health compromising behaviours and school performance has multiple pathways. One school of thought link it with difficulties in the homes or single parenting (Mulkey, Crain & Harrington, 1992)

Among the health damaging life styles, tobacco use has a leading role in determining success at, preference or dislike for school and hence their decision to continue education, where such policies exist, after the compulsory phase. The results of this study thus raise a cause of worry about educational prospects of these adolescents as well as their health in later life. Already, there is evidence from Finland indicating that as early as at the age of 16, life style behaviours have categorized adolescents into those with healthy life style and those leading unhealthy lifestyle, such that those in the latter group end with low educational attainment in their adulthood (Koivusilta et al, 1998). This means that there is the likelihood of a vicious cycle of health endangering life style and low socioeconomic status among such group. School performance is therefore a crucial marker of the future well being of today's adolescents.

6.2.2 School career

It has been established that life style at adolescent age is a predictor of their educational track, which in turn determines educational career and expected future social class (Koivusilta, Rimpelä & Vikat, 2001). It was also revealed that adolescents who indulge in health compromising life style have poor school performance. This does not only affect their educational attainment in adulthood but also their educational career since socioeconomic background and accumulative experiences of

successes and failures are known to influence children's educational career (Erickson & Jonsson, 1996). In this study school career has been found to be one of the important factors in the differences in the risk of tobacco use among adolescents. What is more, is the fact that the differences are widening up over the years largely to the disadvantage of those who have dropped out of school and those in vocational schools with poor average. Social background sets the pace for the development of a child's life style, educational career as well as his/her future personality, class and status in society. Arguably, some of these life styles are significantly independent of one's background. Behaviours could be rooted in people's ability to control their own course of life. Thus health-damaging behaviours could be partly blamed on feeling of faithlessness that life is not fully under control to buttress adopting healthy life living, which includes; planning for the future and having the inspiration and support to pursue these plans. Among adolescents however, background seems to have a central role in behaviour and life style than any known factors.

6.3 Family structure

The results of this study show that adolescents who are not living in the nuclear family with both parents have higher risk of tobacco use. Further, the differences in the risks between those who are not living with both parents compared to those living with both parents is large and for daily smoking the differences in the risks have been increasing over the years except in 2005 where a small decrease in the differences was measured. Other studies have also shown that adolescents who do not live with both parents not only have high risk of tobacco use (Narring, 1996; Moore, 1998), but also exhibit largely most health problems and risk behaviours as well as the highest mortality (Rimpelä et al, 1990). Not all, adolescents who are not living in the nuclear family with both parents have also been reported to have problems in their educational and family careers (Goldscheider and Goldscheider, 1993; and 1998; White and Lacy 1997). Also, Spencer Nick in his study of the impact of different socioeconomic status on children and adolescents, he discovered that the family is a risk factor to HRQoL

(Nick, 2006). The findings from this study confirms that broken home is a risk factor for adolescents; and this risk according to the results is increasing in Finnish adolescents. Notwithstanding this revelation, however, there is the need for a careful study into the types of family structures, family relations and composition since according to Spruijt; adolescent's good relation with even one adult in the family may better predict the adolescent's behaviour than the family structure itself (Spruijt, 1997).

6.4 Age and gender

Gender and age differences were most seen in family structure, school performance and school career. In most cases girls had wider risk differences than boys. Studies have shown that in the Nordic countries girls have better academic attainments than boys (Rimpelä et al, 1990; Emanuelson and Svensson, 1985). Moreover, girls are found to be more disciplined and hard working; they are more concerned with their social standing now and in the future, rather than the monetary reward of education (Svensson 1971; Shavit and Blossfeld, 1996). Notwithstanding this results studies have shown that tobacco use is increasing among adolescent girls in Finland (Rimpelä et al, 2005). This study suggests that girls are most hit by consequences of break ups and are more affected by socioeconomic changes than boys.

Among the age categories, the differences in the risks of tobacco use were seen mostly among age 16 and 18 years. The explanation may be that since tobacco use in general is deferred to older ages in adolescence (Rimpelä et al, 2005), the socioeconomic differences are also deferred to the older ages.

6.5 Response rates

Generally, in health-related studies, non-response rate has been associated with poor school performance and negative health behaviours (Pietilä; Rantakallio & Läära, 1995). In this study, one of the challenging issues is the persistent decline in the response, a regrettable common phenomenon in postal surveys in Finland and in many other settings (Rimpelä et al, 2005). The decline was most sharp in 16-18 year old boys (table 1). From 2003 to 2005, the response rate dropped by three percent point mainly among girls. The increase in non-response rate may have an impact on the trends of tobacco use, among other variables covered by the survey as well as the proportion of users in a single survey. Thus the falling response rate does not change the direction of the trend in any single indicator, either over the entire study period or during 2003 to 2005. However, the prevalence rate of smoking and snuff uses, among other variables are underrated in each survey due to the selection of the non-respondents (Rimpelä et al, 2005). The trends reported in this study are therefore reliable. In all, it is likely that the results of this study is an under estimation of the actual situation.

6.6 Reliability and validity

The data for this study were based on self-reported response to series of biennial cross-sectional mailed surveys conducted in Finland since 1977. As the questionnaires were sent to respondents in their homes, it is possible that their parents, siblings and other members of the family might be aware of the study. To guide against interference by parents and siblings in answering the questions, respondents were advised to fill out the questionnaires independently. Notwithstanding this caution, it is still possible that parents and siblings may have influenced the responses especially among the 12 and 14 year old. Thus the effect on the trend of tobacco use is uncertain,

but most likely to result in under rather than overestimation of the results herein reported.

Responses to questions about health-related behaviours as have been reported in some studies may depend on the social desirability of these behaviours in families and among peers (Herbet, Clemow, Pbert, Ockene, & Ockene, 1995) but there is also evidence from other studies that reliability and validity of self reported behaviour measure produce good to excellent reliability in adolescence (Brener, Collins, Kann, Warren & Williams, 1995; Lintonen & Rimpelä, 2001; Koivusilta 2000). Particularly, all the indicators of tobacco used in this study have been tested since the start of the Adolescent Health and Life style Survey Programme in 1977 and found to be reliable and valid (Ahlstöm et al, 1995; Rimpelä et al, 1997, Karvonen 1997; Koivusilta 2000).

7. SUMMARY AND CONCLUSIONS

7.1 Summary

This study was designed to examine the socioeconomic profile and its relationship with the trend of tobacco use among Finnish Adolescents. The data for this study was collected as part of a national monitoring system on adolescent health behaviour (the Adolescent Health and Lifestyle Survey). It consists of a 12 page self administered questionnaire mailed biennially since 1977 to a nationally represented sample of ages 12,14,16 and 18 with two re-inquiries to non-respondents. The Finnish Population Registry was the source of the sample. The samples were selected so that the average ages of respondents were 12.6,14.6,16.6 and 18.6. The data were collected during February to April of each study year. The data collection methods, timing of the survey, size of the questionnaire questions were maintained as similar as possible to enhance the comparability of the results. Statistical analysis was performed using Statistical Programme for Social Sciences (SPSS) 13 version. Simple line graphs, percentages and cross-tabulation were used in describing the trend of tobacco use. Second level of analysis involves the use of logistics regression in modeling tobacco use.

The main findings of this study are as follows:

1. The socioeconomic factors viz adolescent's school performance and school career, which indicate the adolescent's present as well as future social class were found to be the most important risk factors that shown differences in tobacco use among adolescents in the socioeconomic groups
2. Family Structure was found to be one of the three most important socioeconomic indicators that affect the risk of tobacco use among adolescents. Not only were

there large differences seen in the risk among those in the broken homes compared with those who are living with both parents in the nuclear family, but also these differences were observed to be increasing over the years to the disadvantage of the former group.

3. Although differences exist in the trends of the risk of tobacco use by father's/guardian's occupation, no clear pattern of the trend of the risk was found in the various occupational categories. Nonetheless, for daily smoking, which is the most popular form of tobacco use among adolescents, the trends remained highest among the children of the blue-collar employees.
4. This study unfolds that father's/guardian's education is becoming more important indicator of the differences in the risk of tobacco use among adolescents in recent years than in a couple of decades ago. These differences are skewed to the peril of adolescents whose fathers/guardians have lower education.
5. Large differences were found in the trends of the risk of tobacco use by mother's education among adolescents. The trends seem to be increasing to the detriment of adolescents whose mothers have lower educational attainment, with the exception of snuff uses, where the trend was seen to be closing up.
6. This study shows that adolescent's school performance is the most important socioeconomic indicator that affects the trend in the risk of tobacco use among adolescents. Very clear differences were seen among the various school performances. Besides, these differences continue to widen up to the disadvantage of adolescents whose school performances are poorer.

7. Among the seven socioeconomic indicators used in this study, adolescent's school career was found to be the second most important risk factor of tobacco use. Huge differences were observed between the extreme ends of school career. Additionally, these differences were seen to be increasing steadily over the years. Adolescents who have dropped out of school were found to be the most vulnerable to the risk of tobacco use while those in high school with good performance were the least, with the others in between.

8. Remarkable gender differences were only observed in the risk of tobacco use by family structure, school performance and school career. The differences in the trends were found to be slightly larger among girls than boys. Also, where differences were observed, they were slightly larger among the older adolescents (16 and 18 year olds) than the younger ones (12 and 14 year olds).

7.2 Conclusions

This study has shown that there are socioeconomic variations in the trends of the risk of tobacco use among Finnish adolescents. Generally, the trend was found to be polarized mainly towards the lower socioeconomic group. The variations in the trends were found to be most pronounced in the regular use of the tobacco rather than experimentation. Thus, clearer and larger differences were seen in daily smoking and snuff uses than in tried smoking and tried snuff.

Furthermore, it was observed that family structure; school performance and school career were the most important socioeconomic indicators that showed large differences in the risk of tobacco use among Finnish adolescents. In all these

indicators an increasing trend was discovered among adolescents in the lower end of the socioeconomic spectrum. Thus, the factors that indicate the adolescent's present and future social positions (school performance and school career) were seen to be the most socioeconomic risk factors that yielded differences in the risk of tobacco use among Finnish adolescents.

Finland, the study setting, is a Nordic Welfare state where equality is the central objective (Stephen, 1996). There are low poverty levels, equal income distribution and relatively low socioeconomic differences. Secondly, some studies uphold that association between health and socioeconomic background are less visible in adolescents than in adulthood (Blane et al 1994; Goodman, 1999). It is therefore likely that the findings of this study are underestimations of the actual situation both in Finland and globally. It would be more interesting to know what pertains in a more dynamic society, where huge socioeconomic differences exist, as in for example the US.

Arguably, it would have been of immense importance if the data set used in this study covered the smoking status of adolescents' fathers, mothers and guardians. There is also the need for further studies into family and the socioeconomic profile of western societies, particularly welfare states.

Notwithstanding the above, this study presents a clarion call for a pragmatic and goal oriented health promotion activities aimed at preventing tobacco use among adolescents in the lower socioeconomic class especially those in the broken homes, school dropouts and those with poorer school performance.

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To God be the glory!

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10. APPENDICES

10.1 APPENDIX 1 Crude and adjusted (for age and sex) Odd Ratios

Appendix table 1. Odd Ratios for daily smoking by father's/ guardian's occupation.

	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2005
Adjusted															
UWC	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
LWC	0.9	0.8	0.6	0.8	0.7	0.8	0.7	0.6	0.7	0.7	0.6	0.8	0.7	0.7	0.6
F	1.6	1.2	1.3	1.6	1.3	1.2	1	0.9	1.1	0.9	1.1	1.2	1.0	1.1	1.0
BC	0.7	0.7	0.6	0.7	0.6	0.7	0.7	0.5	0.7	0.6	0.6	0.7	0.6	0.6	0.6
Unadjusted															
UWC	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
LWC	1.0	0.8	0.6	0.8	0.7	0.8	0.7	0.6	0.7	0.7	0.6	0.8	0.7	0.7	0.6
F	1.5	1.1	1.2	1.5	1.2	1.1	1.0	0.8	1.1	0.9	1.0	1.2	1.0	1.1	0.9
BC	0.8	0.7	0.6	0.7	0.5	0.7	0.8	0.5	0.7	0.6	0.6	0.7	0.6	0.6	0.6

UWC-upper white-collar employees LWC-lower white collar employees F-farmers BC-blue-collar employees

Appendix table 2. Odd ratios for tried smoking by father's/ guardian's occupation.

	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2005
Adjusted															
UWC	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
LWC	1.0	1.3	1.2	1.3	1.3	1.2	1.2	1.3	1.2	1.3	1.3	1.2	1.3	1.1	1.3
F	0.7	0.8	0.7	0.7	0.8	0.8	0.7	0.9	0.9	1.0	0.9	1.0	0.9	0.7	0.9
BC	1.3	1.3	1.3	1.2	1.3	1.2	1.2	1.3	1.1	1.3	1.4	1.2	1.3	1.1	1.2
Unadjusted															
UWC	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
LWC	1.0	1.2	1.2	1.4	1.4	1.3	1.3	1.3	1.2	1.2	1.2	1.1	1.3	1.2	1.5
F	0.8	1.0	0.9	1.0	1.0	0.9	0.8	1.0	0.9	1.0	0.9	0.9	0.9	0.9	1.2
BC	1.1	1.3	1.2	1.4	1.4	1.3	1.2	1.4	1.1	1.2	1.3	1.1	1.3	1.1	1.3

UWC-upper white-collar employees LWC-lower white collar employees F-farmers BC-blue-collar employees

Appendix table 3. Odd Ratios for tried snuff by father's/ guardian's occupation.

	1981	1983	1987	1989	1991	1993	1995	1997	1999	2001	2003
Adjusted											
UWC	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
LWC	0.8	0.8	0.8	1.1	1.2	0.8	1.0	1.3	1.1	1.1	1.2
F	0.3	0.2	0.3	0.4	0.6	0.3	0.4	0.4	0.5	0.5	0.7
BC	0.7	0.7	0.7	0.8	1.0	0.7	0.9	1.0	1.0	1.1	1.2
Unadjusted											
UWC	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
LWC	0.8	0.9	0.8	1.2	1.2	0.9	1.0	1.2	1.0	1.1	1.2
F	0.4	0.3	0.4	0.4	0.7	0.4	0.4	0.4	0.5	0.6	0.7
BC	0.7	0.9	0.8	0.8	1.0	0.8	1.0	1.0	1.0	1.1	1.1

UWC-upper white-collar employees LWC-lower white collar employees F-farmers BC-blue-collar employees

Appendix table 4. Odd Ratios for snuff uses by father's/ guardian's occupation.

	1981	1983	1987	1989	1991	1993	1995	1997	1999	2001	2003
Adjusted											
UWC	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
LWC	0.5	1.5	0.8	0.9	0.8	1.1	1.0	1.5	1.1	1.4	1.1
F	0.3	0.1	0.3	0.7	0.3	0.2	0.5	0.6	0.4	0.3	0.4
BC	0.5	0.8	0.7	0.5	0.7	0.8	1.2	1.3	0.9	1.3	0.9
Unadjusted											
UWC	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
LWC	0.5	1.7	0.8	1.0	0.8	1.1	1.0	1.4	1.0	1.4	1.1
F	0.4	0.2	0.3	0.7	0.4	0.2	0.5	0.6	0.4	0.4	1.5
BC	0.5	0.9	0.7	0.5	0.7	0.8	1.2	1.3	0.9	1.4	0.9

UWC-upper white-collar employees LWC-lower white collar employees F-farmers BC-blue-collar employees

Appendix table 5. Odd Ratios for daily smoking by father's/ guardian's education.

	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2005
Adjusted															
HS	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
CS	1.3	1.5	2.2	1.5	1.2	1.4	1.4	1.6	1.4	1.3	1.5	1.6	1.8	1.9	1.8
PS	1.1	1.2	1.0	1.0	1.2	1.1	1.2	1.3	1.0	1.2	1.2	1.6	1.6	1.7	1.4
Unadjusted															
HS	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
CS	1.3	1.5	2.2	1.6	1.3	1.5	1.5	1.7	1.4	1.3	1.5	1.7	1.9	1.9	1.9
PS	1.1	1.3	1.0	1.0	1.2	1.2	1.1	1.3	1.1	1.2	1.3	1.7	1.7	1.8	1.5

PS-primary school CS-comprehensive school HS-high school

Appendix table 6. Odd Ratios for tried smoking by father's/ guardian's education.

	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2005
Adjusted															
HS	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
CS	1.0	1.3	1.3	1.2	1.2	1.1	1.0	1.2	1.2	1.1	1.2	1.0	1.1	1.0	1.2
PS	1.0	1.2	1.2	1.3	1.1	1.1	1.2	1.3	1.1	1.2	1.3	1.4	1.4	1.5	1.5
Unadjusted															
HS	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
CS	1.0	1.2	1.2	1.3	1.3	1.3	1.2	1.0	1.1	1.1	1.2	1.2	1.0	1.0	0.1
PS	1.0	1.3	1.3	1.3	1.5	1.4	1.1	1.3	1.4	1.1	1.2	1.3	1.4	1.4	1.4

PS-primary school CS-comprehensive school HS-high school

Appendix table 7. Odd Ratios for tried snuff by father's/ guardian's education.

	1981	1983	1987	1989	1991	1993	1995	1997	1999	2001	2003
Adjusted											
HS	1	1	1	1	1	1	1	1	1	1	1
CS	0.9	0.6	1	1.1	0.9	1	1	0.8	1	0.8	0.8
PS	0.6	0.6	0.6	0.8	0.7	0.7	0.8	0.8	1.1	1.1	1.2
Unadjusted											
HS	1	1	1	1	1	1	1	1	1	1	1
CS	0.8	0.7	1	1.2	0.9	0.9	1	0.8	1	0.8	0.8
PS	0.07	0.7	0.9	0.8	0.7	0.8	0.9	1.1	1.1	1.1	1.2

PS-primary school CS-comprehensive school HS-high school

Appendix table 8. Odd Ratios for snuff uses by father's/ guardian's education.

	1981	1983	1987	1989	1991	1993	1995	1997	1999	2001	2003
Adjusted											
HS	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
CS	0.8	1.3	0.9	1.0	0.8	1.3	1.3	0.9	1.3	0.8	0.8
PS	0.4	0.7	0.5	0.6	0.8	0.6	1.0	1.0	1.2	1.1	1.0
Unadjusted											
HS	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
CS	0.7	1.3	0.9	1.1	0.7	1.1	1.3	0.9	1.2	0.8	0.7
PS	0.4	0.8	0.5	0.6	0.8	0.6	1.0	1.0	1.2	1.2	1.0

PS-primary school CS-comprehensive school HS-high school

Appendix table 9. Odd ratios for daily smoking by mother's education.

	1995	1997	1999	2001	2005
Adjusted					
HS	1.0	1.0	1.0	1.0	1.0
CS	1.4	1.5	1.9	2.0	2.0
PS	1.3	1.4	1.5	1.5	1.6
Unadjusted					
HS	1.0	1.0	1.0	1.0	1.0
CS	1.5	1.6	2.0	2.0	2.1
PS	1.3	1.4	1.5	1.6	1.7

PS-primary school CS-comprehensive school HS-high school

Appendix table 10. Odd ratios for tried smoking by mother's education.

	1995	1997	1999	2001	2005
Adjusted					
HS	1.0	1.0	1.0	1.0	1.0
CS	1.1	1.0	1.0	0.8	1.2
PS	1.0	1.0	1.0	1.1	1.2
Unadjusted					
HS	1.0	1.0	1.0	1.0	1.0
CS	1.2	1.0	1.1	1.1	1.2
PS	1.4	1.4	1.5	1.5	1.6

PS-primary school CS-comprehensive school HS-high school

Appendix table 11. Odd ratios for tried snuff by mother's education.

	1995	1999	2001	2003
Adjusted				
HS	1.0	1.0	1.0	1.0
CS	1.2	1.4	1.1	1.2
PS	1.3	1.4	1.4	1.5
Unadjusted				
HS	1.0	1.0	1.0	1.0
CS	1.1	0.9	0.9	1.2
PS	1.1	1.0	1.2	1.3

PS-primary school CS-comprehensive school HS-high school Appendix table 12.

Odd ratios for snuff use by mother's education.

	1995	1999	2001	2003
Adjusted				
HS	1.0	1.0	1.0	1.0
CS	0.9	1.1	0.9	0.8
PS	0.8	1.4	1.1	0.9
Unadjusted				
HS	1.0	1.0	1.0	1.0
CS	0.9	1.0	0.9	0.8
PS	0.9	1.3	1.2	1.0

PS-primary school CS-comprehensive school HS-high school

Appendix table 13. Odd ratios for daily smoking by adolescent's school performance.

	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2005
Adjusted															
MB	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
SB	1.7	1.7	2	1.6	1.9	2.1	2.2	2.2	2.4	2.4	2.3	2.3	2.3	2.7	2.8
AV	3.5	4.1	3.1	3.1	3	3.6	3.5	3.9	4.1	4.1	4.6	4.3	4.7	4.9	4.8
P	5.1	4.1	4.9	4.6	4.9	5.9	8.2	7.9	6.8	8.6	10.2	8.2	7.2	7.4	7.4
Unadjusted															
MB	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
SB	1.6	1.7	2.0	1.7	1.7	1.7	2.0	1.8	2.2	2.2	2.1	2.1	2.1	2.2	2.3
AV	3.1	3.0	4.0	2.8	2.8	3.1	3.3	3.2	3.8	3.9	4.3	3.9	4.3	4	4.1
P	4.5	4.1	5.0	4.6	4.5	5.6	8.0	6.8	6.8	8.8	9.6	7.6	7.0	6.8	6.7

MB-mach better SB-slightly better AV-average P-poorer

Appendix table 14. Odd ratios for tried smoking by adolescent's school performance.

	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	1003	2005
Adjusted															
MB	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
SB	1.4	1.7	1.6	1.4	1.7	1.6	1.8	1.5	1.7	1.6	1.8	1.7	1.4	1.8	1.6
AV	2.0	2.0	2.2	1.8	2.1	2.3	2.7	2.3	2.0	2.4	2.8	3.0	2.2	2.3	2.5
P	2.9	3.4	3.2	2.8	2.9	3.7	5.3	3.7	3.9	4.9	5.9	5.7	4.7	4.5	6.9
Unadjusted															
MB	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
SB	1.4	1.6	1.6	1.5	1.5	1.6	1.6	1.5	1.6	1.6	1.8	1.6	1.4	1.7	1.6
AV	1.8	1.9	2	1.9	1.9	2.4	2.6	2.1	2.1	2.5	2.6	2.7	2.2	2.4	2.4
P	3.2	3.8	3.1	2.9	2.5	3.3	4.6	3.3	3.6	4.8	5.6	5.0	4.5	4.3	6.1

MB-mach better SB-slightly better AV-average P-poorer

Appendix table 15. Odd ratios for tried snuff by adolescent's school performance.

	1981	1983	1987	1989	1991	1993	1995	1997	1999	2001	2003
Adjusted											
MB	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
SB	1.8	1.3	1.4	2.6	1.5	1.9	1.8	1.5	1.7	1.2	1.8
AV	1.8	1.3	1.6	3.1	2.1	2.3	2.5	2.0	2.3	1.8	2.2
P	3.1	2.4	2.6	5.2	3.0	3.4	4.2	3.6	4.3	3.4	4.4
Unadjusted											
MB	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
SB	1.9	1.4	1.5	2.7	1.6	2.0	1.9	1.6	1.6	1.2	1.8
AV	1.9	1.4	1.8	3.6	2.2	2.7	2.8	2.3	2.5	2.1	2.5
P	3.9	3.1	3.3	6.4	3.1	4.2	5.4	4.2	4.8	3.9	5.1

MB-mach better SB-slightly better AV-average P-poorer

Appendix table 16. Odd ratios for snuff use by adolescent's school performance.

	1981	1983	1987	1989	1991	1993	1995	1997	1999	2001	2003
Adjusted											
MB	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
SB	2.3	1.0	1.3	0.7	2.9	2.7	1.2	1.9	1.8	0.9	1.4
AV	2.9	1.3	1.6	1.5	4.4	3.0	2.2	2.1	2.6	1.5	1.8
P	4.4	2.3	2.7	1.6	5.9	5.3	3.3	4.7	6.0	2.6	2.7
Unadjusted											
MB	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
SB	2.6	1.1	1.4	0.9	3.0	1.2	2.1	1.8	1.8	1.0	1.5
AV	3.2	1.6	1.9	1.9	4.6	2.5	2.5	3.0	3.0	2.0	2.1
P	6.7	3.7	3.8	2.8	7.2	5.0	6.5	8.1	8.1	3.8	3.9

MB-mach better SB-slightly better AV-average P-poorer

Appendix table 17. Odd ratios for daily smoking by adolescent's school career.

	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2005
Adjusted															
NS	7.2	6.7	10.8	7.1	9.8	7.8	8.6	7.8	8.5	12	8.5	8.9	12.2	9.3	11.2
VP	2.7	3.2	3.6	2.9	4.5	3.2	3.8	3.5	3.9	4.7	3.3	4.2	4.7	3.7	4.2
VG	1.6	2.0	2.2	2.2	2.2	2.1	2.8	2.2	2.7	3.0	2.2	2.5	3.0	2.0	2.6
HP	1.0	1.2	1.3	1.3	1.5	1.4	1.4	1.4	1.6	1.5	1.2	1.3	1.7	1.2	1.4
HG	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Unadjusted															
NS	7.9	6.9	11.1	7.5	9.2	7.9	8.5	7.8	8.6	12.1	8.4	8.9	11.7	10	11.5
VP	2.9	3.3	3.7	3.0	4.3	3.2	3.8	3.5	3.9	4.8	3.3	4.2	4.6	4.0	4.4
VG	1.8	2.1	2.2	2.2	2.0	2.1	2.7	2.1	2.7	2.9	2.2	2.6	3.0	2.3	2.8
HP	1.2	1.3	1.3	1.4	1.4	1.5	1.4	1.4	1.6	1.5	1.2	1.4	1.7	1.4	1.6
HG	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

NS-not in school VP-vocational poor average VG-vocational good average HP-high school poor average HS-high school good average

Appendix table 18. Odd ratios for tried smoking by adolescent's school career.

	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2005
Adjusted															
NS	2.0	2.6	2.7	2.1	2.9	2.9	2.8	3.0	2.7	4.0	2.8	3.8	4.1	3.3	5.0
VP	3.2	2.9	2.8	2.0	1.9	2.7	2.6	2.7	2.0	3.3	2.9	3.0	2.9	3.3	3.5
VG	1.9	2.2	3.3	2.5	3.2	1.8	1.2	1.8	1.5	2.3	1.8	1.5	2.1	2.0	2.4
HP	1.9	2.0	2.7	1.9	1.6	1.7	1.7	1.5	1.5	2.0	2.1	2.0	1.8	1.4	2.1
HG	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
NS	2.2	3.0	3.0	2.4	3.0	3.2	3.1	3.3	2.7	4.4	3.0	3.9	4.3	3.9	5.5
VP	3.2	2.8	2.8	2.0	1.8	2.6	2.6	2.6	2	3.3	2.8	2.8	2.7	3.0	3.3
VG	1.9	2.2	3.6	2.6	3	1.7	1.2	1.9	1.5	2.4	1.8	1.4	2	1.9	2.4
HP	1.9	2.1	2.7	1.9	1.6	1.7	1.8	1.5	1.5	2.1	2.1	2	1.8	1.5	2.1
HG	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

NS-not in school VP-vocational poor average VG-vocational good average HP-high school poor average HS-high school good average

Appendix table 19. Odd ratios for tried snuff by adolescent's school career.

	1981	1983	1987	1989	1991	1993	1995	1997	1999	2001	2003
Adjusted											
NS	1.8	2.2	1.6	2.5	2.4	2.3	2.9	2.4	2.9	3.9	3.3
VP	1.9	2.1	1.7	2.2	2.3	1.9	2.6	2.0	2.0	2.9	2.9
VG	1.8	2.6	1.5	1.7	1.6	1.5	1.5	1.7	1.2	1.7	1.8
HP	2.1	1.8	1.4	1.7	1.7	1.5	2.0	1.8	1.7	2.0	1.6
HG	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Unadjusted											
NS	2.3	3.1	2.1	2.7	3.1	3.0	3.7	3.0	3.4	4.7	3.6
VP	2.5	2.6	2.1	2.6	2.6	2.5	3.1	2.4	2.6	3.3	3.3
VG	2.7	3.5	1.9	2.1	2.1	2.0	2.0	2.1	2.6	2.0	2.2
HP	2.3	2.1	1.5	1.7	1.8	1.7	2.1	1.8	1.8	2.0	1.6
HG	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

NS-not in school VP-vocational poor average VG-vocational good average HP-high school poor average HS-high school good average

Appendix table 20. Odd ratios for tried snuff by adolescent's school career.

	1981	1983	1987	1989	1991	1993	1995	1997	1999	2001	2003
NS	5.0	3.6	1.0	3.5	2.1	2.7	1.2	2.6	3.4	5.4	2.1
VP	6.2	3.1	1.4	4.1	2.4	1.8	2.6	1.9	2.9	4.1	2.0
VG	2.9	1.6	1.5	2.5	1.4	2.1	1.3	1.4	1.7	3.1	0.8
HP	10.3	3.7	1.6	3.5	2.0	1.9	1.9	1.7	2.4	2.5	1.1
HG	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
NS	6.9	6.8	1.2	3.5	3.1	4.3	1.8	3.6	4.2	6.7	2.3
VP	10.1	4.6	2.1	5.8	2.9	2.7	3.7	2.7	4.2	5.5	2.8
VG	5.4	2.8	2.1	3.6	2	3.2	1.9	1.9	2.3	3.8	1.2
HP	12.2	4.8	1.7	3.4	2.3	2.3	2.1	1.8	2.6	2.6	1.2
HG	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

NS-not in school VP-vocational poor average VG-vocational good average HP-high school poor average HS-high school good average

Appendix table 21. Odd ratios for tried snuff by family structure.

	1981	1983	1987	1989	1991	1993	1995	1997	1999	2001	2003
Adjusted											
LBP	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
NLBP	1.6	1.4	1.5	1.3	1.7	1.6	1.7	1.6	1.7	1.5	1.6
Unadjusted											
LBP	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
NLBP	1.6	1.4	1.5	1.4	1.7	1.5	1.6	1.5	1.6	1.4	1.6

LBP-living with both parents NLBP-not living with both parents

Appendix table 22. Odd ratios for snuff use by family structure

	1981	1983	1987	1989	1991	1993	1995	1997	1999	2001	2003
Adjusted											
LBP	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
NLBP	1.3	1.5	1.3	1.2	1.6	1.3	1.3	1.3	1.5	1.2	1.3
Unadjusted											
LBP	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
NLBP	1.2	1.5	1.3	1.3	1.7	1.2	1.3	1.3	1.5	1.2	1.3

LBP-living with both parents NLBP-not living with both parents

Appendix table 23. Odd ratios for tried smoking by family structure.

	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2005
Adjusted															
LBP	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
NLBP	1.6	2.0	1.8	1.7	1.7	1.7	1.5	1.9	1.8	1.9	2.0	2.0	1.9	1.7	1.9
Unadjusted															
LBP	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
NLBP	1.7	2.0	1.8	1.7	1.8	1.8	1.7	2.0	1.8	1.9	2.0	2.0	1.8	1.7	1.9

LBP-living with both parents NLBP-not living with both parents

Appendix table 24. Odd ratios for daily smoking by family structure.

	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2005
Adjusted															
LBP	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
NLBP	1.5	2.0	2.0	1.8	2.3	2.1	1.8	2.2	2.1	2.3	2.2	2.2	2.0	2.1	2.1
Unadjusted															
LBP	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
NLBP	1.5	2.0	2.0	1.9	2.2	2.1	1.8	2.3	2.2	2.4	2.3	2.2	2.1	2.2	2.1

LBP-living with both parents NLBP-not living with both parents

Appendix table 25 a. Comparison of the prevalence of smoking among boys ages 14 and 15 between Finland and selected countries for some selected years.

Country	1990	1994	1998	2002	
	n	% daily smoking n	% daily smoking n	% daily smoking n	
Boys					
Sweden	582	9.5	596 9.7	605 8.6	614 5.5
UK	1739	9.1	1251 13.4	1536 14.5	1249 10.2
Canada	924	9.4	1066 15	1177 16.1	592 10.5
Switzerland	629	6.3	658 9.5	930 15.8	754 12.9
Norway	790	17.1	829 15.8	838 17.8	793 15.4
Finland	485	22.7	845 17.3	743 15.7	858 16.4
Belgium	496	10.1	1314 17.8	1089 21.9	1657 16.8
Poland	789	12.7	698 13.8	855 18.5	1010 18
Hungary	996	10.7	876 12.7	491 12.8	507 19.1
Austria	546	14.1	1151 20.1	618 20.1	641 19.5
Latvia	346	9.8	501 16.6	573 18	530 20
Total	8322	11.4	9785 15.3	9455 16.5	9205 14.9

Appendix table 25 b Comparison of the prevalence of smoking among girls ages 14 and 15 between Finland and selected countries for some selected years.

Girls										
Poland	692	4.3	705	6.1	782	9.8	1072	8.9		
Canada	1016	13.2	1139	19.8	1309	20.4	743	9		
Switzerland	608	2.1	736	12.3	924	15.8	751	13		
Latvia	668	1.8	788	5.7	774	9.9	655	13.1		
Sweden	541	13.7	562	13	541	16.1	606	13.7		
UK	1830	11.4	1437	17.5	1604	21.6	1228	16.7		
Hungary	1178	7.3	972	9.4	524	6.5	799	16.9		
Finland	449	20.3	823	13.9	772	15.7	870	18		
Belgium	445	13.4	1716	13.9	1113	22.3	1757	19		
Norway	846	15.7	793	14.9	811	20.5	818	19.9		
Austria	478	8.7	717	19.9	755	26	631	24.7		
Total	8751	10.1	10388	13.8	9909	17.8	9930	15.9		

10.2 APPENDIX 2 Frequency distribution of variables.

Table 1. The frequency distribution by family structure from 1977 to 2005

Year of Questionnaire	Family Structure		Total
	Yes	No	
1977	2072	437	2509
1979	3437	788	4225
1981	3333	775	4108
1983	2991	704	3695
1985	2652	686	3338
1987	6306	1715	8021
1989	2458	632	3090
1991	5883	1715	7608
1993	6297	1839	8136
1995	6375	1981	8356
1997	6329	1997	8326
1999	6074	2046	8120
2001	5333	1760	7093
2003	5063	1600	6663
2005	4813	1633	6446
Total	69416	20318	89734

Table 2. The frequency distribution by father's occupation 1977 to 2005

Year of Questionnaire	Father's Occupation				Total
	UWC	LWC	F	BC	
1977	316	680	560	1256	2812
1979	508	1096	746	1864	4214
1981	559	1167	597	1744	3673
1983	556	942	470	1705	3282
1985	537	849	364	1532	7960
1987	1482	2164	844	3470	3051
1989	666	823	273	1289	7356
1991	1655	2074	678	2949	8046
1993	1820	2355	600	3271	8046
1995	2032	2456	532	3117	8137
1997	2022	2441	545	3214	8222
1999	2762	1787	560	2880	7989
2001	2614	1481	459	2518	7072
2003	2247	1637	439	2283	6606
2005	2217	1643	407	2079	6346
Total	21993	23595	8074	35171	88833

**UWC-upper white-collar employees LWC-lower white collar employees F-farmers
BC-blue-collar employees**

Table 3. The frequency distribution by school career from 1977 to 2005

	School grades compared with class average level				Total	
	MB	SB	AV	P		
Year of 1977	318	651	926	453	2348	
Questionnaire1979	546	1066	1391	699	3702	
	1981	514	1008	1364	666	3552
	1983	465	974	1238	549	3226
	1985	464	851	1127	439	2881
	1987	1059	2051	2858	1063	7031
	1989	415	866	1141	436	2858
	1991	931	2091	2824	1072	6918
	1993	1008	2156	3289	1132	7585
	1995	977	2355	3416	1102	7850
	1997	991	2247	3514	1194	6946
	1999	966	2183	3518	1102	7769
	2001	922	2019	2861	941	6743
	2003	890	2059	2783	839	6571
	2005	803	1920	2798	775	6296
Total	11269	24497	35048	12462	83276	

NS-not in school VP-vocational poor average VG-vocational good average HP-high school poor average HS-high school good average

Table 4. The frequency distribution by adolescent's school performance from 1977 to 2005

	School grades compared with class average level				Total
	MB	SB	AV	P	
Year of 1977	318	651	926	453	2348
Questionnaire1979	546	1066	1391	699	3702
1981	514	1008	1364	666	3552
1983	465	974	1238	549	3226
1985	464	851	1127	439	2881
1987	1059	2051	2858	1063	7031
1989	415	866	1141	436	2858
1991	931	2091	2824	1072	6918
1993	1008	2156	3289	1132	7585
1995	977	2355	3416	1102	7850
1997	991	2247	3514	1194	6946
1999	966	2183	3518	1102	7769
2001	922	2019	2861	941	6743
2003	890	2059	2783	839	6571
2005	803	1920	2798	775	6296
Total	11269	24497	35048	12462	83276

MB-mach better SB-slightly better AV-average P-poorer

Table 5. The frequency distribution by father education from 1977 to 2005

	Father's Education			Total	
	PS	CS	HS		
Year of 1977	2287	246	203	2736	
Questionnaire1979	3400	416	312	4128	
	1981	3181	442	349	3972
	1983	2807	438	350	3595
	1985	2419	439	374	3232
	1987	5680	982	1021	7683
	1989	2033	403	488	2924
	1991	4830	1125	1315	7270
	1993	4964	1372	1454	7790
	1995	4709	1472	1659	7840
	1997	4793	1296	1896	7985
	1999	4872	1092	1762	7726
	2001	3912	930	1667	6509
	2003	3866	825	1706	6397
	2005	3324	900	1798	6022
Total	57077	12378	16354	85809	

PS-primary school CS-comprehensive school HS-high school

Table 6. The frequency distribution by mother's education from 1977 to 2005

	Mother's Education			Total	
	PS	CS	HS		
Year of 1995	4250	1711	2077	8038	
Questionnaire1999	3918	1409	2549	7876	
	2001	3089	1116	2431	6636
	2003	2988	955	2520	6463
	2005	2591	963	2682	6236
Total	16836	6154	12259	35249	

PS-primary school CS-comprehensive school HS-high school

10.3 APPENDIX 3. The trend of tobacco use by gender

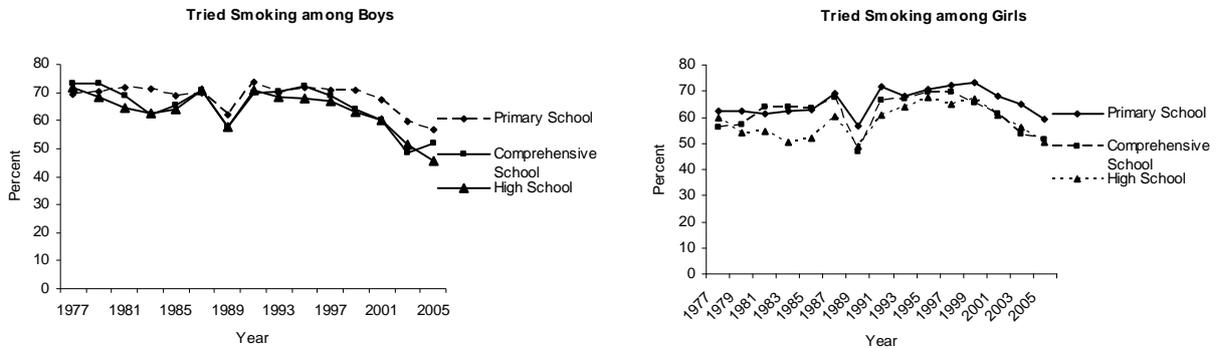


Figure 1. Tried smoking among boys and girls 12-18-year-old by father's/guardian's education

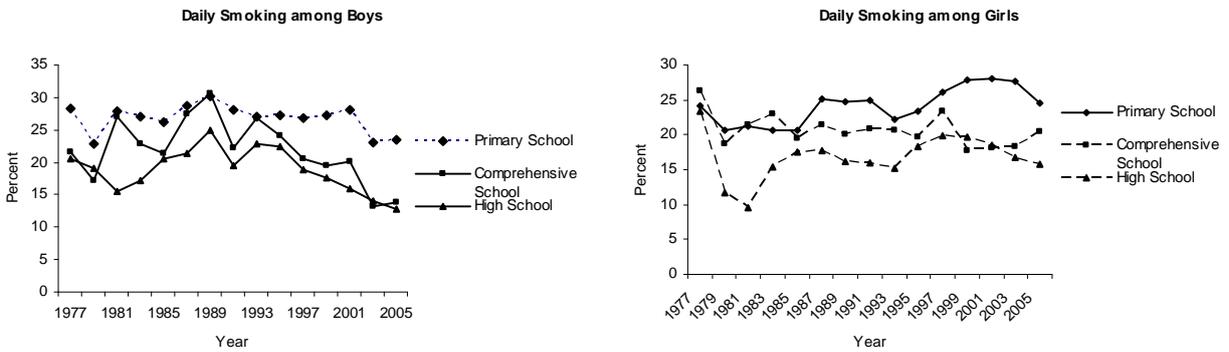


Figure 2. Daily smoking among boys and girls 14-18-year-old by father's/guardian's education.

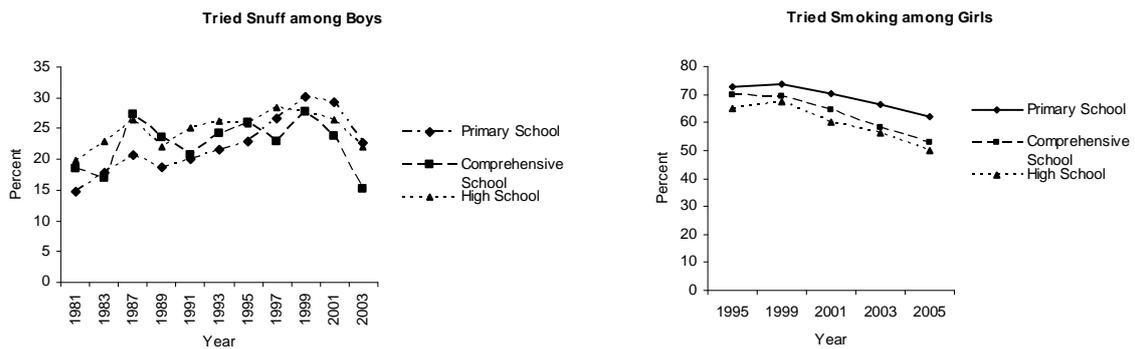


Figure 3. Tried snuff among boys and girls 12-18-year-old by father's/guardian's education.

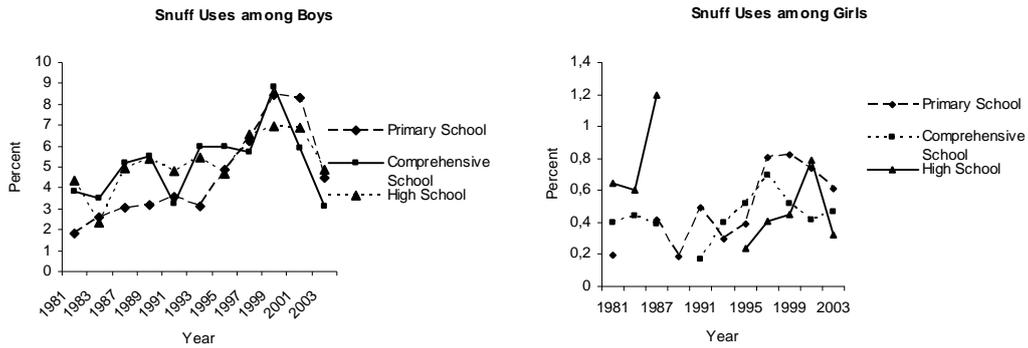


Figure 4. Snuff use among boys and girls 12-18-year-old by father's/guardian's education

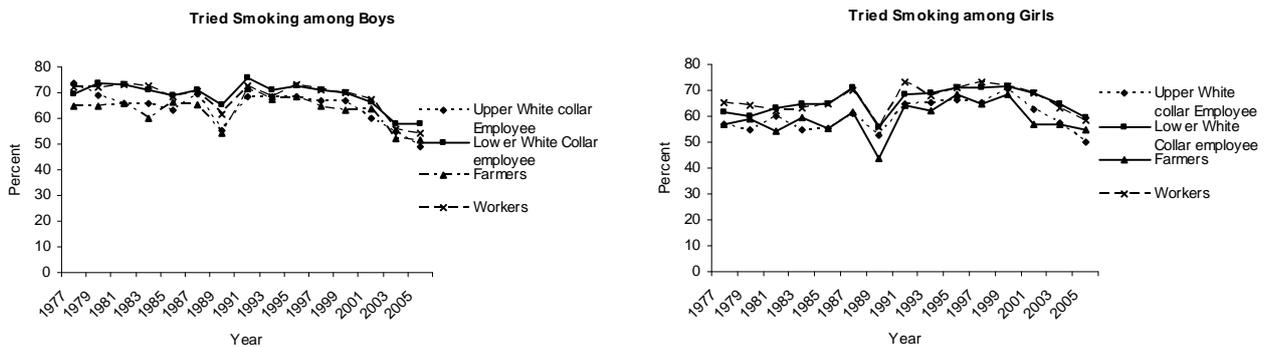


Figure 5. Tried smoking among boys and girls 12-18-year-old by father's/guardian's occupation.

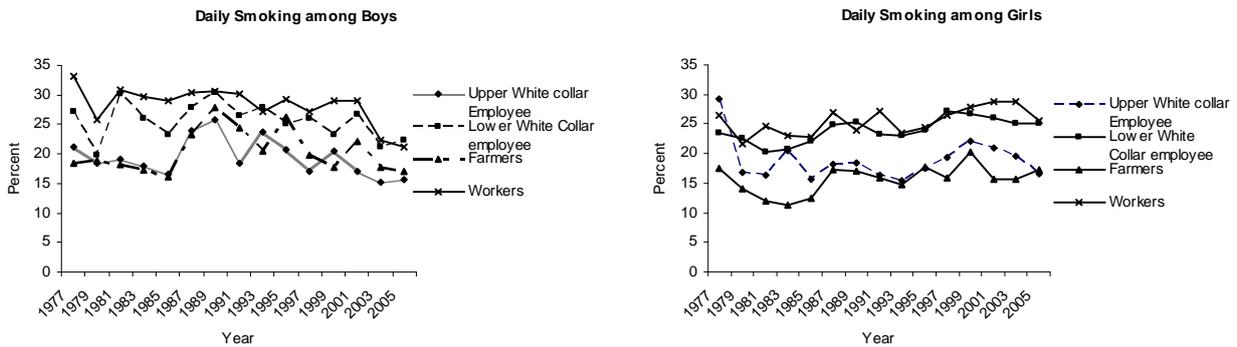


Figure 6. Daily smoking among boys and girls 14-18-year-old by father's/guardian's occupation.

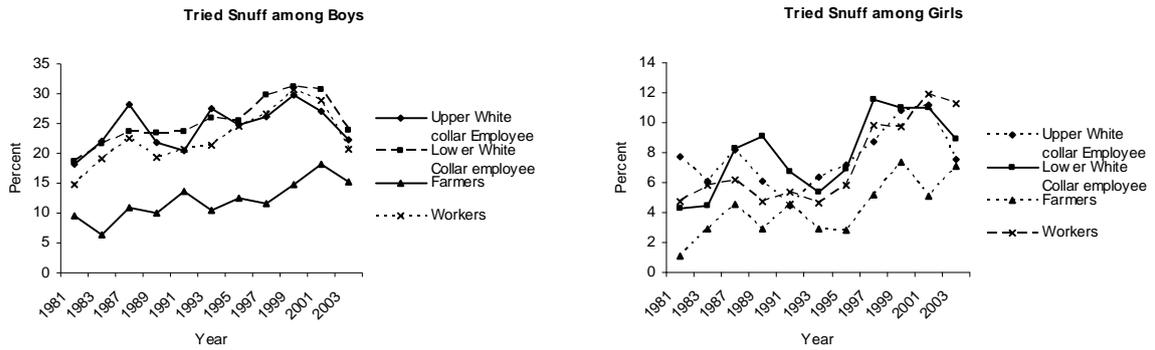


Figure 7. Tried snuff among boys and girls 12-18-year-old by father's/guardian's occupation

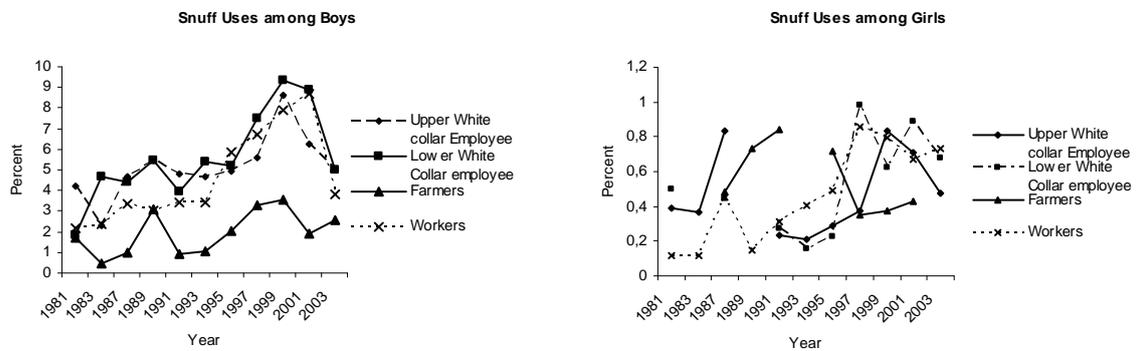


Figure 8. Snuff uses among boys and girls 12-18-year-old by father's/guardian's occupation.

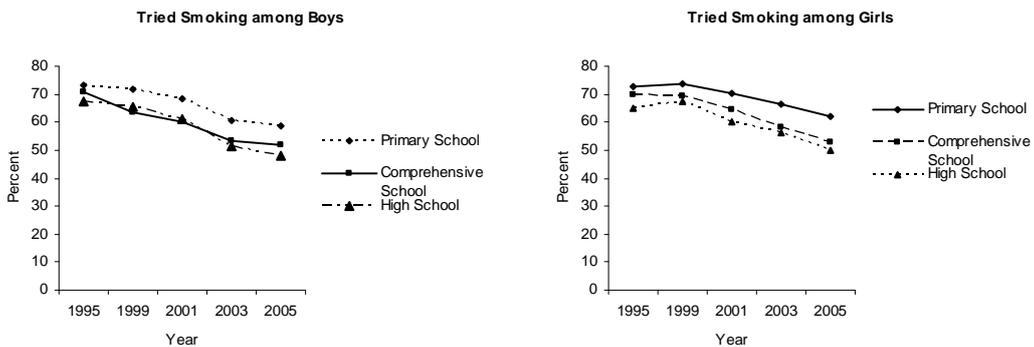


Figure 9. Tried smoking among boys and girls 12-18-year-old by mother's education.

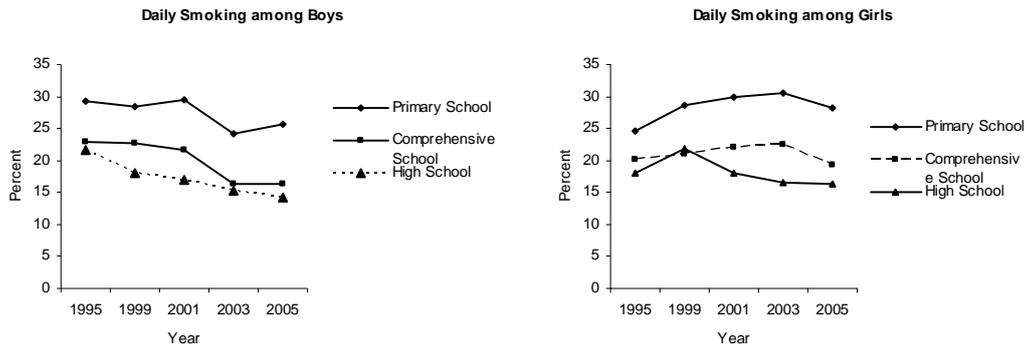


Figure 10. Daily smoking among boys and girls 14-18-year-old by mother's.

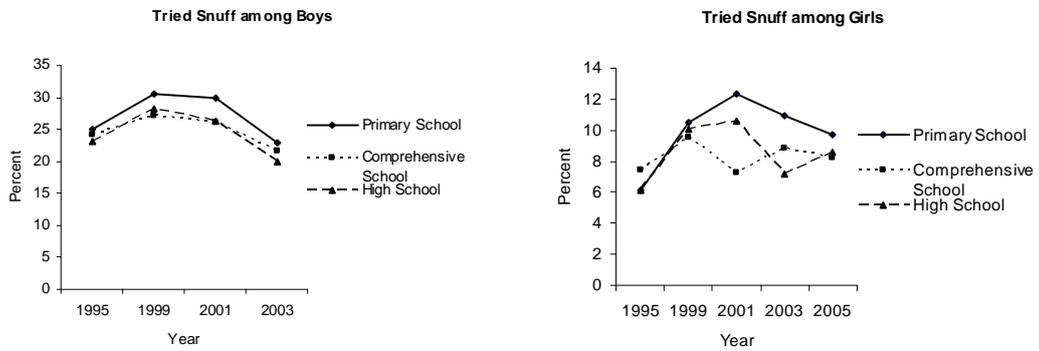


Figure 11. Tried snuff among boys and girls 12-18-year-old by mother's education.

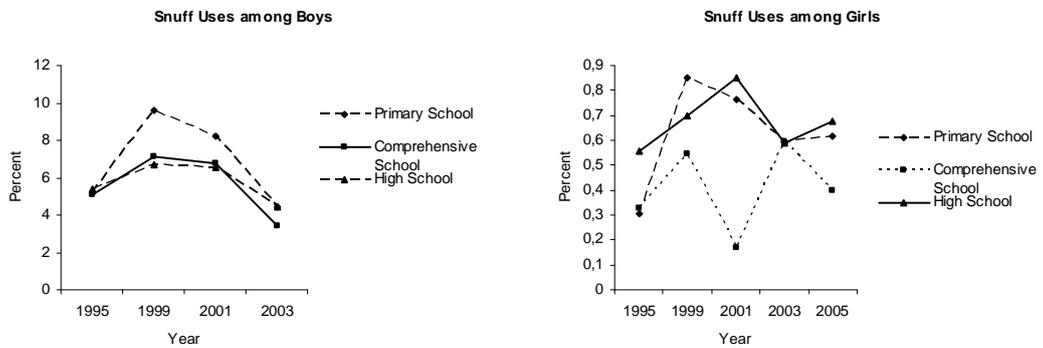


Figure 12. Snuff use among boys and girls 12-18-year-old by mother's education.

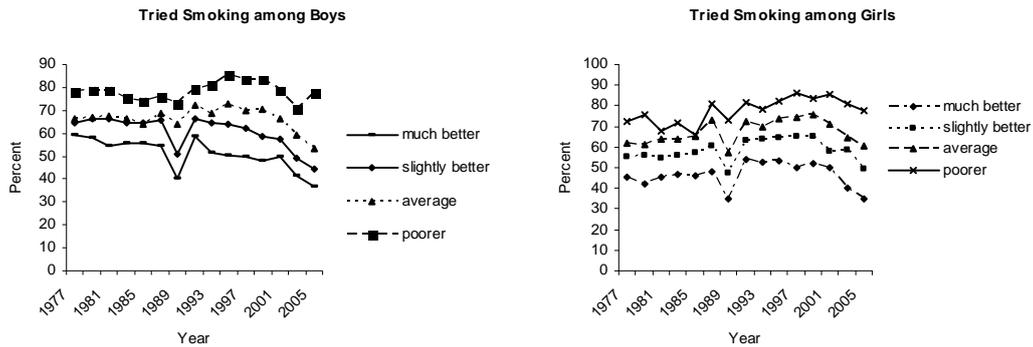


Figure 13. Tried smoking among boys and girls 12-18-year-old by school performance.

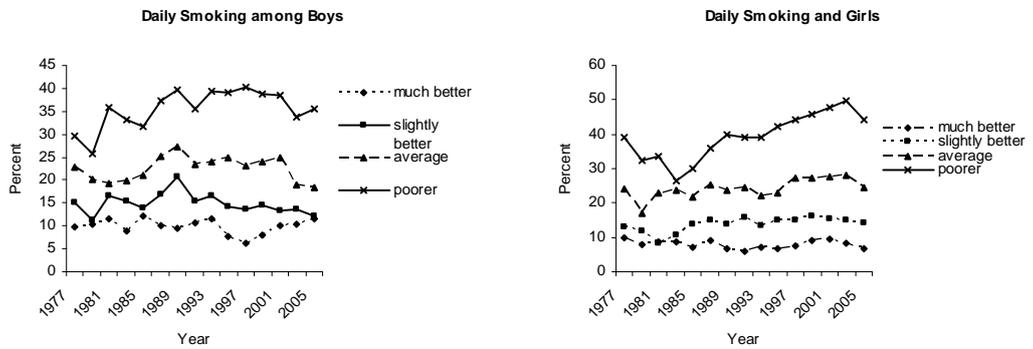


Figure 14. Daily smoking among boys and girls 14-18-year-old by school performance.

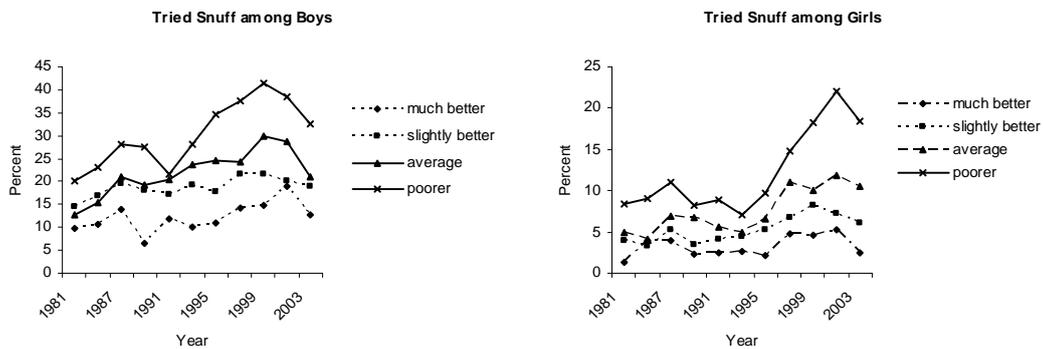


Figure 15. Tried snuff among boys and girls 12-18-year-old by school performance.

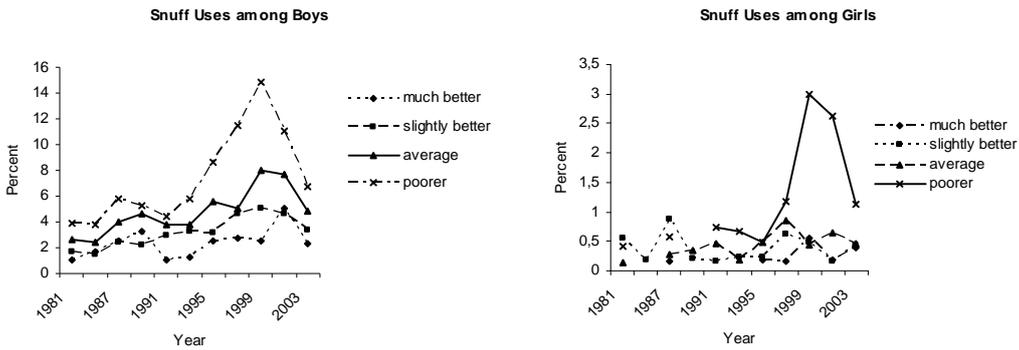


Figure 16. Snuff use among boys and girls 12-18-year-old by school performance.

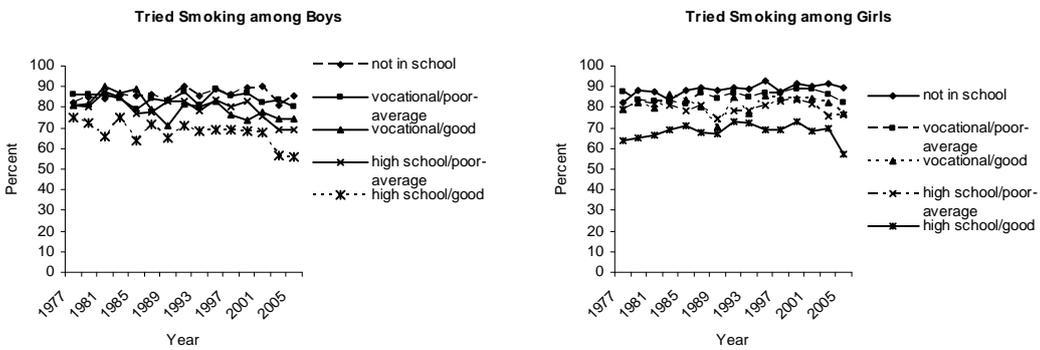


Figure 17. Tried smoking among boys and girls 12-18-year-old by school career.

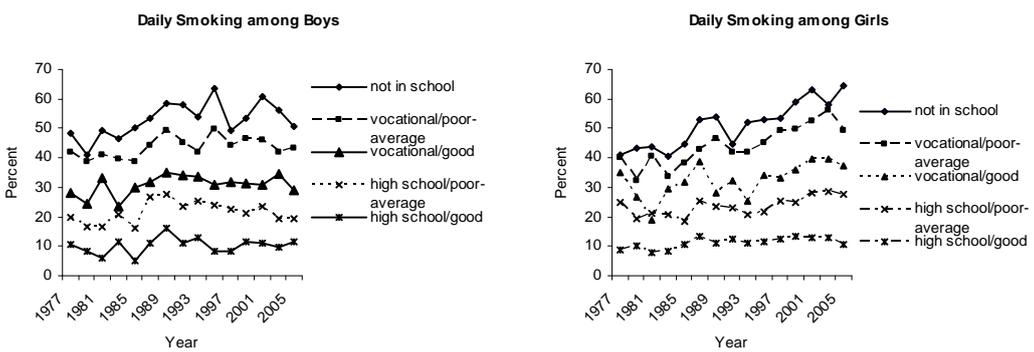


Figure 18. Daily smoking among boys and girls 14-18-year-old by school career.

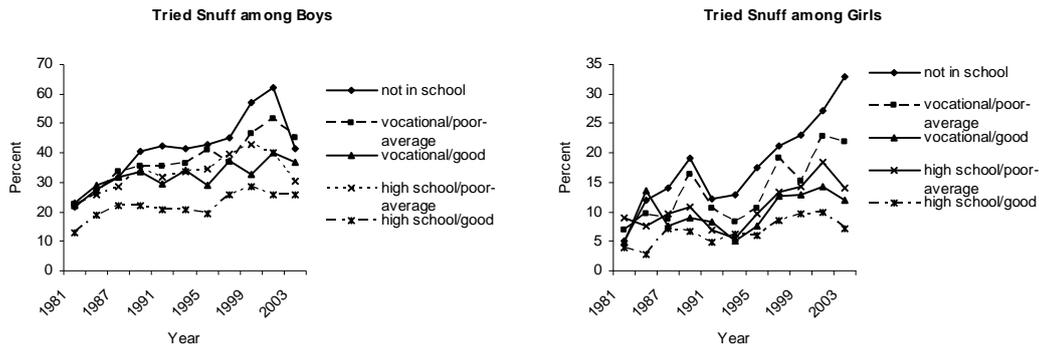


Figure 19. Tried snuff among boys and girls 12-18-year-old by school career.

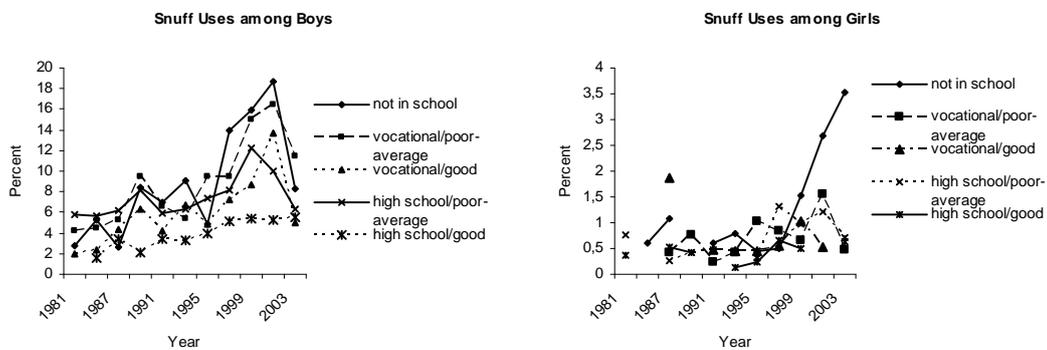


Figure 20. Snuff use among boys and girls 12-18-year-old by school career.

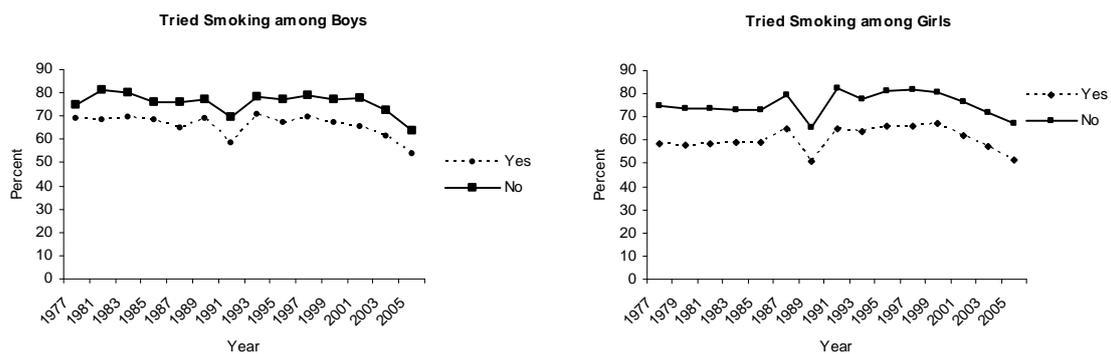


Figure 21. Tried smoking among boys and girls 12-18-year-old by family structure.

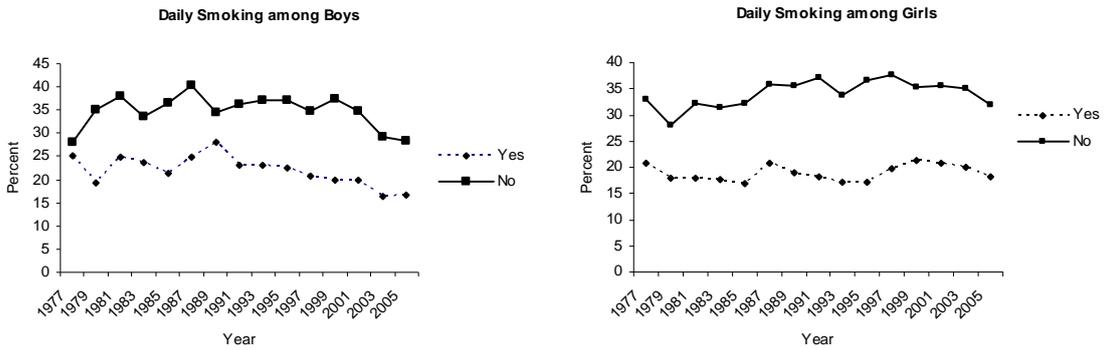


Figure 22. Daily smoking among boys and girls 14-18-year old by family structure.

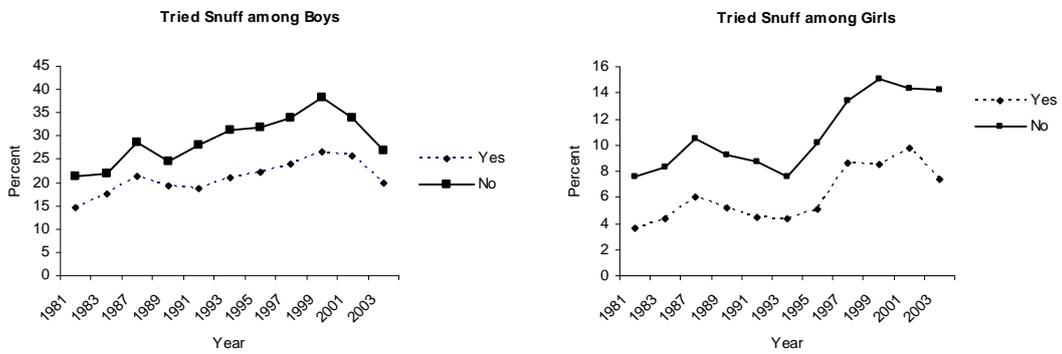


Figure 23. Tried snuff among boys and girls 12-18-year-old by family structure.

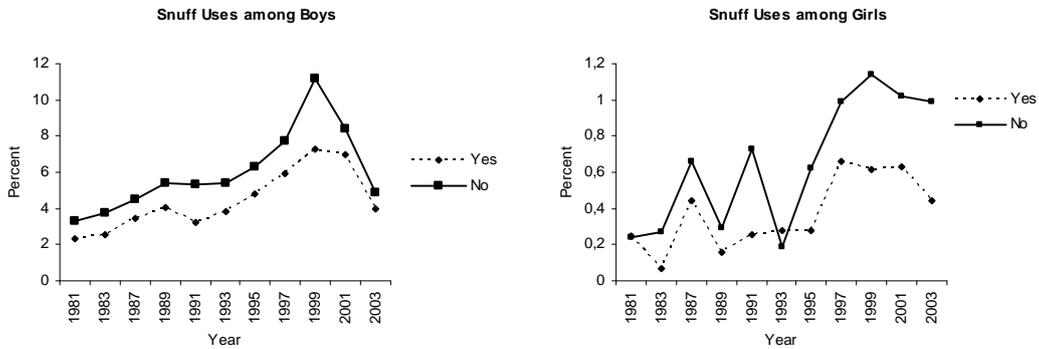


Figure 24. Snuff use among boys and girls 12-18-year-old by family structure.