THE FACTORS RELATED SMOKING OF THAI YOUTH IN KANCHANABURI DSS DURING 2003 TO 2004

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THE FACTORS RELATED SMOKING OF THAI YOUTH IN KANCHANABURI DSS DURING 2003 TO 2004

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ABSTRACT

OBJECTIVE. This study examined the change of smoking behavior among Thai youth and the relationship between individual factors, surrounding factors and health behavior factors, and smoking behavior of the youth in the Kanchanaburi Demographic Surveillance System area (KDSS) during the years 2003-2004.

METHODS. This study used secondary data from the KDSS survey and the sample for this study included a total of 2,510 youth aged 15-24 years. Pooling cross-sectional data for these two years across time, the number of cases became totally 5,020 cases. The reason for using independently pooled cross-section data is to increase the sample size at different points in time so we can get more precise estimators or test statistical significance with more power. Observations within clusters more likely had similar characteristics or intra-cluster correlations embedded in the data structure. So robust standard errors estimate for cluster sampling data in logistic modeling had to be taken into account.

RESULTS. The total smoking rate increased slightly from 13% in the year 2003 to 16% in the year 2004. There was a marked increase in the smoking rate among male youth from 25% in the year 2003 to 33% in the year 2004. Smoking rates were very high among those 20-24 years of age, low-educated, from poor households, upland stratum, non-agricultural occupations, those whose father smoked, households with at least one other smoker, those from villages with a moderate and high percentage of people smoking, and among those who also drank alcohol. Logistic regression analysis also pointed out that the most statically significant factors related to youth smoking in the Kanchanaburi DSS were sex, age at first starting to regularly smoke, education, marital status, household economic status, occupation, father smoking, percentage of other people who smoke in the village, number of household members smoking, number of shops in the village, drinking alcohol and time.

CONCLUSIONS. This study pointed out that most youth smokers had different characteristics when compared with youth who did not smoke, such as individual factors including sex, education, marital status, age at first starting to smoke, and household economic status; and environmental factors including a smoking father, number of smoking household members, and percent of smokers in the community. Moreover, the study showed that youth who drank alcohol were much more likely to smoke than youth who did not drink alcohol. Therefore, campaigns to stop smoking and drinking alcohol should be combined for all ages and have to focus on parents, family and community members including youth/ peers from the time that they are young and educating them about the harm of smoking and its impacts on their health.

KEY WORDS: SMOKING BEHAVIOURS/THAI YOUTH
KANCHANABURI DEMOGRAPHIC SURVEILLANCE SYSTEM

83 p.

ปัจจัยที่มีความสัมพันธ์กับการสูบบุหรี่ของวัยรุ่นในพื้นที่เฝ้าระวังทางประชากรกาญจนบุรี (THE FACTORS RELATED SMOKING OF THAI YOUT IN KANCHANABURI DSS DURING 2003 TO 2004)

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บทคัดย่อ

วัตถุประสงค์ การศึกษาครั้งนี้มีวัตถุประสงค์เพื่อศึกษาความสัมพันธ์ของปัจจัยทางด้านบุคคล, ปัจจัยด้านสิ่งแวดล้อม และปัจจัยด้านพฤติกรรมสุขภาพกับการสูบบุหรี่ของวัยรุ่นในพื้นที่เฝ้าระวังทางประชากรกาญจนบุรี ในปี พ.ศ. 2546 และ 2547

ระเบียบวิธีวิจัย การศึกษาครั้งนี้ใช้ข้อมูลทุติยภูมิของโครงการเฝ้าระวังทางประชากรกาญจนบุรี โดยศึกษากลุ่มตัวอย่างวัยรุ่นอายุ 15-24 ปี ในแต่ละปีมีจำนวนตัวอย่าง 2,510 ราย ในการวิเคราะห์ครั้งนี้ เนื่องจากกลุ่มตัวอย่างมีขนาดไม่ใหญ่มาก จึงได้นำข้อมูลภาคตัดขวางของทั้งสองปีมาต่อกันเป็นข้อมูลระยะยาวชุดเดียวกัน ทำให้กลุ่มตัวอย่างมีขนาดใหญ่ขึ้นเป็น 5,020 ราย เพื่อให้ค่าประมาณการต่างๆ มีความถูกต้องแม่นยำมากขึ้น และทำให้การทดสอบนัยสำคัญทางสถิติมีอิทธิพลมากขึ้น และเนื่องจากตัวอย่าง 1 คน จะมีข้อมูล 2 ชุดทำให้คุณลักษณะที่คล้ายคลึงกันมีความความสัมพันพันธ์เชิงโครงสร้างกันภายในกลุ่ม ในการวิเคราะห์ข้อมูล จึงต้องมีการปรับค่าความคลาดเคลื่อน โดยใช้ Robust standard errors

ผลการศึกษา ผู้สูบบุหรี่มีสัดส่วนเพิ่มขึ้นเล็กน้อย จากร้อยละ 13 ในปี 2546 เป็น ร้อยละ 16 ในปี 2547 โดยเฉพาะกลุ่มวัยรุ่นชาย โดยเพิ่มจากร้อยละ 25 ในปี 2546 เป็น ร้อยละ 33 ในปี 2547, โดยวัยรุ่นที่สูบบุหส่วนใหญ่มีคุณลักษณะดังนี้ คือ มีอายุระหว่าง 20-24 ปี, มีการศึกษาในระดับต่ำ, อาศัยอยู่ในครอบครัวยากจน, โดยเฉพาะในเขตพื้นที่สูง, ประกอบอาชีพนอกภาคเกษตรกรรม, มีพ่อสูบบุหรี่ หรือมีสมาชิกในครัวเรือนอย่างน้อย 1 คนสูบบุหรี่, อาศัยอยู่ในชุมชนที่มีเปอร์เซ็นต์คนสูบบุหรี่ปานกลางจนถึงสูง นอกจากนี้วัยรุ่นที่ดื่มสุราด้วยก็ยังเป็นนักสูบบุหรี่มากกว่าวัยรุ่นที่ไม่ดื่ม จากการวิเคราะห์ถดถอยโลจิสติกแบบปรับค่าความคลาดเคลื่อน พบว่าปัจจัยที่มีความสัมพันธ์กับการสูบบุหรี่ของวัยรุ่นในพื้นที่เฝ้าระวังทางประชากรกาญจนบุรีอย่างมีนัยสำคัญทางสถิติ ได้แก่ เพศ, อายุที่เริ่มสูบบุหรี่, การศึกษา, สถานภาพสมรส, ฐานะทางเศรษฐกิจของครัวเรือน, อาชีพ, พ่อสูบบุหรี่, มีจำนวนสมาชิกในครัวเรือนที่สูบบุหรี่, เปอร์เซ็นต์คนสูบบุหรี่ในชุมชน, จำนวนร้านขายของชำในหมู่บ้าน และการดื่มสุรา

สรุปผลการศึกษา การศึกษาครั้งนี้สอดคล้องกับทฤษฎีของแบนดูราที่กล่าวว่า คนที่สูบบุหรี่ส่วนใหญ่จะมีคุณลักษณะที่แตกต่างจากคนไม่สูบ ได้แก่ คุณลักษณะส่วนบุคคล เช่น เพศ การศึกษา สถานภาพสมรส อายุที่เริ่มสูบบุหรี่ ฐานะทางเศรษฐกิจของครัวเรือน และปัจจัยด้านสิ่งแวดล้อม ได้แก่ การสูบบุหรี่ของพ่อ จำนวนสมาชิกในครัวเรือนที่สูบบุหรี่ เปอร์เซ็นต์คนสูบบุหรี่ในชุมชน นอกจากนี้ยังพบว่า วัยรุ่นที่มีพฤติกรรมการดื่มสุราจะเป็นนักสูบมากกว่าวัยรุ่นที่ไม่ดื่มสุรา แม้ว่าแนวโน้มการสูบบุหรี่ของวัยรุ่นจะไม่มากนัก ก็ควรมีการป้องกันวัยรุ่นจากการสูบบุหรี่ และการติดบุหรี่ระยะยาว โดยต้องมีการรณรงค์ส่งเสริมให้เลิกสูบบุหรี่ไปพร้อมกับการเลิกดื่มเหล้าของคนทุกกลุ่ม รวมถึงสมาชิกในครอบครัวและคนในชุมชนด้วย นอกจากนี้ควรให้ความรู้เกี่ยวกับพิษภัยของบุหรี่ที่มีผลต่อสุขภาพด้วย

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CHAPTER 1
INTRODUCTION

1.1 Significant of the Problem

Smoking is a risk factor that contributes to at least 36 chronic and life-threatening diseases, e.g. cancers, cardiovascular diseases and emphysema. All the mentioned diseases also cause early death. As reported by the World Health Organization (WHO), the number of deaths from smoking has increased annually. In 2030, or 25 years from now, it is estimated that each year ten million people will die of smoking-related diseases. In other words, there will be 27,000 deaths per day or twenty deaths per minute. This means worldwide deaths from smoking will outnumber deaths from HIV/AIDs, tuberculosis, accidents, suicides and death during delivery altogether (WHO, 2004).

According to the Action on Smoking and Health (ASH), Thailand Health Promotion Foundation, 52,000 Thai people died of smoking annually, or 142 deaths daily or 6 deaths an hour. As reported by medical studies, risks due to smoking-related diseases and deaths were higher than expected. Half of the smokers who started to smoke at an early age and continued to be a regular smoker died in his/her middle age, with their lifespan being 22 years shorter than non-smokers (Thai Health Promotion Foundation, 2006). Smoking resulted in medical expenses for treatment, which accounted for economic loss at the family, country and global levels. In addition, the surrounding people will be second hand smokers who will be at risk of serious illnesses such as lung cancer, heart diseases (Raupah et al, 2006) and stroke (Ross, 1999).

Considering the smoking trend in Thailand, surveys from 1976 to 2005 found a reduction in regular smoking in Thai people from 30.1 percent in 1976 to 17.9 percent in 2005 (See Figure 1.1).

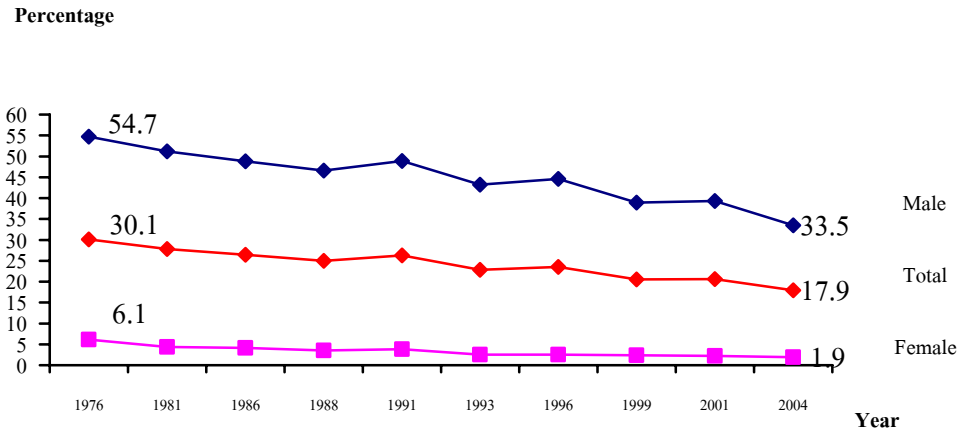

Figure 1.1 Percentages of Regular Smokers in 1976-2004

Note: 1. 1976 – 1986 presented the percentage of regular smokers of 10-year-old and above
2. 1988 – 2005 presented the percentage of regular smokers of 11-year-old and above
3. Regular smoking means daily and habitual smoking

Sources: National Statistical Office:
1. Survey on Health and Welfare in 1976, 1981, 1986, 1991 and 2001
2. Survey on Smoking Behaviour of Population in 1988, 1993 and 1999
3. Survey on Smoking and Drinking Behaviour of Population in 2004

Although the overall number of smokers in Thailand has been decreasing, there were still more than 10 million smokers. The proportion of smokers, who started smoking at 15 – 24 years of age, was 84.0 percent for male, and 58.6 percent for females in 2004 (National Statistical Office, 2005). The percentage of young smokers increased a bit from 24.5 in 1999 (24 percent of males and 0.3 percent of females) to 26.2 (26 percent of males and 0.6 percent of females) in 2001. In addition, there were about 1.26 million regular youth smokers (about 11.2 percent) in 2002, most of them being male (1.23 million) (National Statistical Office, 1999, 2001,2003 and 2004), whereas the smoking rate of female smokers is increasing.

Data from the Survey on Smoking and Drinking Behaviour of Population in 2004 (National Statistical Office, 2004) showed that most smokers started smoking at a young age (24 years and under), and nearly 10 percent started smoking at a very young age less than 15 years. Average age at first smoke was about 18 years old in 1999 to 2004. Males began smoking earlier than females, at age 18 years and 22 years respectively (see Table 1.1).

Table 1.1 Percentage of smokers by sex, age at first smoke and average age at first smoke in 1999, 2001 and 2004

Sex	Total (%) (Number : '000)	Age at first smoke (years)			Average age at first smoke
		Before 15	15-24	25 and over	
1999					
Total	100 (10,219.7)	11.4	80.8	7.8	18.2
Male	100 (9,627.4)	11.3	82.3	6.4	17.9
Female	100 (592.3)	12.0	57.6	30.4	22.2
2001					
Total	100 (10,551.2)	6.9	85.9	7.0	18.5
Male	100 (9,993.1)	6.9	87.3	5.8	18.3
Female	100 (558.1)	8.0	62.1	29.9	21.9
2004					
Total	100 (9,627.6)	8.1	84.0	7.9	18.4
Male	100 (9,101.9)	8.1	85.5	6.4	18.2
Female	100 (525.6)	9.3	58.6	32.1	21.7

Source: National Statistical Office (1999, 2001 and 2004)

Each year youth are becoming new smokers and finally becoming addicted smokers in their adulthood. These new smokers replace those who die and quit

smoking, so this situation keeps the number of smokers constant at about 11 million. Very few smokers were found among the youth who were never exposed to smoking during their teenage years. Therefore, campaigns or building the social value of non-smoking in the society will be successful if youth are targeted.

In Thailand, various studies related to factors influencing the first cigarette smoking of youth were conducted. Many factors were found such as smoking of relatives and peers (Acharawan Soithong, 1999; Chutharat Taimek, 1998; Buppha Sirirassame et. al., 2005), colleagues or boy friends (Nittaya Romruen, 2002), as well as family members (Kattika Pongsiri in 1993, Supicha Kingkeawkanthong in 1997 and Buppha Sirirassame et. al., 2005).

In other countries, many studies found similar findings that peers and parents (father or mother) smoking highly contributed to smoking of the youth (Flay, 1994; British Columbia Statistical Office, 1996; Horn, 1997). In contrast, a study by Cohen found that parent's smoking had a minimal influence on youth smoking because parents used preventive measures to prevent their children from smoking such as giving information on cigarette harms and closely monitor smoking behaviour of their children (Cohen, 1994). In addition, a study by Bobo found a relationship between smoking and advertisement, price and an easy access to cigarettes, and all of these factors contributed to the increasing of youth and adult smoking (Bobo, 2000).

The Thai Ministry of Education reported that among students in schools and universities, 16,278 persons were smoking and drinking alcohol; and addicted to drug such as heroine (3,110 persons), volatile substances (1,442 persons), amphetamines (1,069 persons) and marijuana (690 persons) (Ministry of Education, 1997). As reported by high schools under the Department of General Education, the addictive substance used most among students was cigarettes, which was the first step to trying stronger substances. These findings corresponded to studies from the ASH Thailand Foundation and the ABAC poll (that collected data from secondary schools and universities students in 25 provinces countrywide), that smoking tended to bring

students towards drug use. The ABAC poll revealed that the lower the age at smoking, the greater the possibility of using drugs (Assumption University, 2004).

Many studies using the Kanchanaburi Demographic Surveillance System (KDSS) survey from the year 2000-2005, such as a study of youth's smoking behaviour by Somsak Suraiphrom (which used the fourth round data of 2003), found that 16.7 percent of youth were smoking. Among these, boys (32.4 percent) outnumbered girls (2.9 percent) and factors that contributed to youth smoking were friend's persuasion, curiosity, socialization, stress, broken heart and adult imitation (Somsak Suraiphrom, 2005). Using the KDSS data in 2000-2005, Kulratanamaneeporn, et.al., 2005 found that the average age at first smoking cigarette was about 17 years. Moreover, those who smoked normally drank beer and other alcoholic beverages, and vice versa (Kulratanamaneeporn, C. and V. Thongthai, 2005).

However, most of the studies on youth smoking conducted by using the KDSS data were cross-sectional studies, and none used panel data for the longitudinal analysis, which applied either data of the same sampling group or panel data. The panel data of youth smoking can explore the change over a time period, and longitudinal analysis of panel data will help make the estimation of logistic regression of factors influencing youth smoking more reliable by decreasing the bias of the estimation. So the policies implication from this study will be more accurate and help to design the strategic plan for reducing cigarette smoking among the youth in the KDSS area.

1.2 Objectives of this Study

To study the change of smoking behaviour among the youth and the relationship between the individual factors, the surrounding factors and health behaviour factors, and smoking behaviour of the youth in the Kanchanaburi Demographic Surveillance System area (KDSS) during the year 2003-2004.

1.3 Hypotheses

1. Youth from the richer families smoked less than youth from the poorer families.
2. Youth who had higher education smoked less than those with lower education.
3. Youth who had fathers smoking begin or adopt the habit of smoking more than those who had non-smoking fathers.
4. Youth who had a household members smoking, tended to smoke more than those who had no household members smoke
5. Youth who lived in the community that had community members/peers' smoked tend to adopt smoking more than those who had not.
6. Youth who drank alcoholic beverage tend to smoked more than youth who did not drink.

1.4 Scope of the Study

The samples in this study covered both smoking and non-smoking youth aged 15-24 years old and living in the KDSS area in 2003 and 2004.

1.5 Definitions

'Youth' means the people aged 15 to 24 years including females and males who lived in the KDSS area between July 1, 2003 and July 1, 2004 (Kulratanamaneeporn, Chayanis and Varachai Thongthai, 2005).

'Cigarettes' means both cigarettes produced from factories in Thailand and overseas, and non-factory made types, i.e. handmade cigarettes that are made from paper, banana leaf and thatch.

'Smoker' means a current smoker.

'Non-smoker' means a non-current smoker.

Wealth index means that socio-economic status of individual calculated from household assets by using the principle component analysis (PCA) to reduce totally 23 household assets into one variable (index) for convenience in analysis. The integration of all related-variables could categorize socio-economic status (wealth) into three categories; rich, (first quintile) moderate (secondary to fourth quintile), and poor. (last quintile).

1.6 Expected Outcomes

Findings from this study will benefit policy planning; campaign and strategies to prevent smoking and long-term smoking among the youth promote the stopping to smoking and control the number of new smokers. These preventive measures will keep youth from risk behaviours, particularly drug abuse that possibly leads to health problems and other riskier behaviours.

1.7 Limitation of the Study

Due to data limitation, the researcher cannot explore and provide information on the following variables: the amount of cigarette smoking per day, the frequency of smoking, and peer influence on smoking, which were extensively studied at the international level

CHAPTER 2
LITERATURE REVIEW

This longitudinal study is an analysis of secondary data of the 4th and the 5th round survey conducted in 2003 and 2004 of the Kanchanaburi Demographic Surveillance System. The sample consists of those sampled between these two years. The objective of the study is to find factors relationship youth smoking in the surveillance area.

To conduct the survey, the researcher reviewed relevant books and research studies that covered the smoking situation in Thailand, campaigns against smoking, concepts of smoking behaviours, youth-related concepts and conceptual frameworks.

2.1 Smoking Situation in Thailand

There were totally 11 studies on smoking behaviours of the population conducted by the National Statistical Office (NSO). The first study was in 1975. The later studies were in 1981, 1986, 1988, 1991, 1993, 1996, 1999, 2001, 2003 and 2004 (See Figure 1.1). Overall, the number of smokers in the population, both males and females, declined. However, an increase in smoking was found in the population aged 15-24.

According to the latest study of the National Statistical Office in 2004, 92 thousand or 8.8 percent of totally 9.6 million regular smokers, or daily smokers in other words, were found reducing their amount of smoking from the year 2001. This study also found a declining number of regular smokers in all regions. Regular smoking prevalence remained highest in the Northeast region, while the lowest rate of regular smokers existed in Bangkok. Habitual smoking in males was 18 times greater than in

females, or 37.2 percent and 2.1 percent respectively. The largest proportion, or 22.8 percent, of habitual smokers existed in the working age group (25-29 years old), followed by the elderly group at 17.7 percent and in the adolescent group (15-24 years old) at 11.2 percent. Among the different age groups, the youngest group had the least reduction in smoking.

The term 'regular smoking' was defined as regular and daily smoking. Thus, a temporary stop of smoking possibly occurred because of being otherwise engaged or sickness. The number of cigarettes, were counted on a one-day basis, at least one cigarette per day. Various kinds of cigarettes were included. However, this given definition was different from others. The study of Sirirassamee (Buppha Sirirassamee et al, 2006) defined 'smokers' as women and men aged 15 year and over who, once in their life, had ever smoked 100 cigarettes or tobacco and who had ever smoked cigarettes or tobacco at least once a week.

In the group of regular smokers aged 15 and over, people with a primary education or lower were in the majority. Most regular smokers worked in the agricultural sector and for low-paid jobs, for example street vending, door-knocking sales and hireling works. Following the above jobs were skill-related jobs and machinery-related jobs respectively.

Of the regular smokers surveyed in 2004, 88.5 percent revealed that they smoked while being at home with their families and 42.2 percent of them had never intended to quit smoking. The percentage of the latter, rose from 32.1 percent in 2001.

Considering reasons for the failure to quit smoking, most smokers felt irritable without smoking. Some felt used to it and desired to smoke when seeing others smoke. Looking at reasons of first smoking, the majority of smokers wanted to try. Many followers were persuaded by friends. Other reasons were in small numbers such as socialization, stress, anxiety, feeling cool and maturity.

2.2 Policies, Laws, Regulations and Anti-smoking Campaigns

2.2.1 National policies on tobacco consumption control

Under the Ninth National Economic and Social Development Plan (2002 – 2006), the national health development scheme was set up to reduce tobacco consumption of the population aged 15 and over by 20 percent in 2006.

For years, the government has taken measures to reduce tobacco consumption, for example the enactment of laws on tobacco consumption and the launch of tobacco-related measures.

The latest initiative to control the consumption was on 25 March 2005, where the placement of anti-smoking pictorial warnings on the cigarette packets was enforced or the first time. To obey the law, the cigarette importers must print four-color warning pictures, along with warning messages, covering at least 50 percent of the total space of the packets. During the first period, six warning pictures were used but late in 2006 four pictures would be used.

On the packet, there were different pictures of a man dying of lung cancer, an old woman with wrinkles and white hair, a man showing yellow teeth in a grin, a father holding his child while smoking, a man breathing out the smoke, a skull of the dead from smoking and a man who died of emphysema. Originally, before the pictorial initiative, the government had introduced message warnings in 1992. However, these messages were considered insufficient to promote the realization of cigarette harms among the people. The government, therefore, launched the measure of warning pictures.

To strictly enforce the law, the cigarette producers and dealers will be fined 100,000 Baht and 20,000 baht, respectively for selling the cigarettes without any pictorial warnings.

In addition to the warning measures, there were other regulations that would be legally required by 30 September 2002 as follows;

- The ban on advertisements at places at sale, with the fine imposed on law breakers of up to 200,000 Baht

- The increase of taxation, from 75 percent to 80 percent, which then resulted in a higher price (from 35 Baht to 43.75 Baht) as well as higher revenue of 34 billion Baht at minimum for the government

- The ban on sales of small packets containing less than 20 cigarettes

- The ban on cigarette sales within a range of 500 metres of educational and religious institutions

- The prohibition of flavoured cigarette imports, for example fruity and chocolate flavoured cigarettes

-The prohibition of any request for supports from cigarette companies by the government organizations. This includes a bribery prohibition and the provision of rewards to the informers and government officers.

Looking at other attempts of the government concerning tobacco consumption control, the excise tax on tobacco was increased in early 2001 from 71.5 percent to 75 percent. Later at the end of 2003, the government announced the extension of smoking-free zones. In the same year, the enforcement of the 2003 Child's Health Protection Act and the ban on cigarette sales in all shops to people under 18 years of age was imposed. The punishment of the ban included jail sentence of up to three months or a fine of no more than 30,000 Baht, or both. To punish the legal guardians whose children under 18 years old bought a cigarette, they would be warned and placed on probation simultaneously.

2.2.2The Royal Remark of His Majesty the King Bhumiphol

Given on December 4, 2004, the King had made a royal remark concerning Thai youth. His remark put a priority on health, places leading youth astray, and education. This ignited movements from both private and public sectors for health risk prevention, particularly the cigarette-related risks.

The leaders of such movements were health promotion organizations, the Ministry of Public Health and the Smoking and Health Action Foundation, and the two moved continually towards campaigns and events. These attempts showed collaboration and the follow-up of the remark for the well-being of Thai youth, with a hope that they would be in a healthier condition without any risk factors, especially regarding cigarettes.

2.2.3 Laws, regulations and policies to control the tobacco consumption in Thailand

For over ten years Thailand had put importance on cigarette-related impacts. Starting in 1986, the Smoking and Health action Foundation, the first endeavour to control tobacco consumption, was established. The Foundation put the focus on campaigning against smoking and non-taxed import of cigarettes. In 1989, the government set up the Tobacco Consumption Control Committee, which then lobbied for the Act to Control Tobacco Products and Consumption that were accepted the Cabinet in 1992. The Tobacco Products Control Act of 1992 included a ban of advertisements, the various forms of sale promotion and the sale to people less than 18 years. The Non-Smoker's Health Protection in 1992 included the identification of smoke-free and smoking locations (Department of Disease Control, Ministry of Public Health, 2003).

In 2000, the Ninth Announcement was launched by the Ministry of Public Health. It mainly mentioned about cigarette labels. The policies on cigarette imports,

sales and warnings were included in the Announcement. Later in 2000 and 2003, the 10th and the 13th Announcement of the Ministry were publicly released. The announcements contained the identification of names or types of locations where the health of non-smokers would be protected. They also stated about the locations as non-smoking zones or cigarette-free zones.

To better support health promotion movements, including the tobacco and alcohol consumption reduction, the Thai Health Promotion Foundation (ThaiHealth) was founded in 2001. The financial source of the Foundation mainly came from 2 percent of the excise tax or 'sin tax'. The Foundation also served another purpose, the push towards the laws to control the tobacco consumption (cited in Buppha et. al, 2006).

Under Article 10 of the Child Protection Act of 2003, the Ministry of Public Health announced in the same year that it prohibited to sell, exchange and provide alcohol or tobacco products to children, even with their parents consent. However, the prohibition excluded medical purposes. The violators would be sentenced for up to three months or fined 30,000 Baht at maximum, or both. Under Article 45, persons under 18 were not allowed to buy or consume alcohol or tobacco. They also were prohibited from entering any places to sell or consume alcohol and tobacco. Those who violated the prohibition would be punished. Their legal guardians would be warned and placed on probation or ordered to perform social services. In addition, the guardians were required to control and look after their children closely to prevent the same mistake. The guardians who missed the requirement would be put on probation and put up bail, based on their financial status (cited in Buppha Sirirassamee et al, 2006).

2.3 Concepts of Smoking Behaviours

Smoking has existed in communities worldwide for decades. In the American society, people in the past preferred chewing tobacco rather than inhaling its smoke (Rothman 1996, cited in Acharawan Soythong, 1999). However, today's society,

the American loves to smoke tobacco, either cigarette, cigars or pipes. Along with smoking, new patterns of tobacco application and development have also coexisted. New innovations have fulfilled smoker's desires such as low-nicotine and smokeless cigarettes (Snyder, 1989 cited in Chutarat Taimek, 1998). According to Snyder, there are five steps of smoking development in terms of social psychology.

Step 1 Smoking preparation: The preparation includes positive thinking of smoking and modelling of surrounding people. Modelling, either of those surrounding or role models like parents, teachers, celebrities and social leaders, is a supporting factor in smoking behaviours.

Step 2 First smoke: The first smoke responds to peer pressure, persuasion, easy access to cigarettes, curiosity, violation of restrictions imposed by adults and the thought of maturity and freedom.

Step 3 Smoking habit: The habit consists of psycho-social and physical factors. It is a response to body's need for nicotine, emotional desires, environment and peer encouragement.

Step 4 Smoking cessation: The cessation is caused by psychological, social and physical factors that affect the smoker's mind to quit. These factors involve health reasons, social support and emotional self-control.

Step 5 Smoking continuation: Both socio-psychological factors and physical factors contribute the continuation after the cessation. Continuation can also occur without an attempt to quit. This step involves nicotine withdrawal symptoms, stress and side effects of the cessation of smoking, social pressure and self-control failure.

It takes approximately 2-3 years for a person to complete all steps to have permanent smoking behaviour. Similar findings were shown in the study of Chuleerat

Bovornwattanuwong (cited in Chutarat Taimek, 1999), which revealed that youth take some time to become addicted to smoking.

Smoking behaviours

According to Tomkins (cited in Nittaya Romruen, 2002: 28-29), smoking behaviours are classified as following;

1. Habitual smoking: Smokers habitually have cigarettes held in their mouth or close at hand, even in the period of smoking suspension. For them, habitual smoking automatically exists in their everyday lives. While smoking, these habitual smokers feel relief and happy, while some think of the dignity.

2. Positive affect smoking: Smokers have positive affects of smoking. Many of them have the feelings of stimulation, pleasure, excitement and tension relief. Smokers with positive attitudes smoke after each meal. Looking at young smokers, they feel mature and imitate their parents or surrounding people. Some are happy just holding a cigarette or feeling smoke breathed out by their parents.

3. Negative affect smoking: Smoking is not constant and continual. It is only emotionally effected, such as by the feeling of pressure, problems and a wish to restore calm. Some situations may cause smoking, for instance, excitement, feeling ashamed, socialization and isolation.

4. Addictive smoking: Smokers in this category are totally addicted to cigarettes. In their feeling, smoking is so crucial. They would possibly get ill and felt physically abnormal when they stop smoking. For them, smoking could help release stress and have clear mind.

2.4 Youth-Related Theory

2.4.1 Youth Development Theory

According to Sucha Chanem (1986), all adolescents are in a transition period, moving from children to adults. Without a clear boundary of transition, only the rapid growth and great physical changes can be seen. These developments are a continual process which makes it difficult to classify by exact ages.

In terms of emotion, youth in general experience strong emotions and love to straightforwardly show off, with fearless reactions that often lead to arguments with adults. Regarding socialization, they spend most of their time with peers dressing up, creating words and showing off to get attention. People in teen years get along with friends they like or those having similar interests or personalities (Srireun Kaewkangwan, 1987).

Considering physical needs, adolescents, as humans, naturally have physical needs such as food, water and desires (Suthee Thongsena, 1991). For emotional desires, youth feels the need to be happy, secure, loved and forgiven, particularly from parents, teachers, peers and relatives. For social needs, what they need most are love, warmth, understanding and sympathy from families and teachers, being in groups and being accepted by peers (Suthee Thongsena, 1991).

Generally, adolescents are in the stage of physical, social and emotion changes to step out of their childhood and enter the in adult life. It is possible that great difficulties in adaptation can pose an influence over their behaviours. Therefore, unless they are taught good things, they are likely to be exposed to the wrongs.

2.4.2 Erikson Theory

Cited in Thanayuth Tnanathiti, 2000: 46-47, Erikson illustrates personality development in psychosocial terms that include concepts used by social scientists. Mentioning the components of personality, he supports Freud's ego concept (Ego controls gradual mental changes so that the person can adapt to a changing society). In his opinion, ego controls personality as well as generates behaviours which then result in the adaptation, decisions making, belief and attitude of a person.

Eriksson's theory of a person's, psychosocial development is categorized into 8 stages;

1. Age 1-1.5 years: development of trust
2. Age 1.5 – 3 years: physical functional development
3. Age 3-6 years: social interaction development
4. Age 6-12 years: competence and skill development
5. Teen years: development of sense of self
6. Late teen years: relationship development
7. Middle age years: security in life
8. Elderly ages: reflection on life

Personality is normally based on individual differences, similarities, various patterns of behaviours and attitudes (Chamrong Nguendee, 1986: 290). All individuals experience all development stages. Proper development during childhood stages makes a person develop a good personality in their adulthood. On the other hand, failure to develop properly, the person is likely to face difficulties in the transition to adulthood.

2.4.3 Social Cognitive Theory

This theory stemmed from the social learning theory by Albert Bandura (Kaplan, Saillis and Patterson, 1993). As explained, under external and internal pressures, humans can learn and choose to behave in different ways. Human learning is called "vicarious learning" which is a result of observing other's behaviours. Learning through observation leads a person to understand human behaviours. According to

Bandura (Bandura, 1977 cited in Acharawan Soythong, 1999), human behaviour is an interaction of three factors; personal, behaviour and environment.

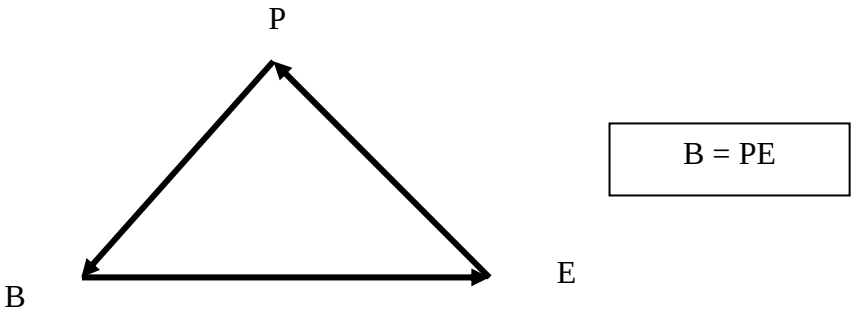

Figure 2.1 Human behaviour is an interaction of three factors

Source: (Bandura, 1977 cited in Acharawan Soythong, 1999),

From the theory, the researcher selected sub-components of each factor to analyze smoking behaviour as follows;

Personal factor: sex, age, education, occupation, marital status and economic status

Behavioural factor: playing sports and exercising, and drinking

Environmental factor: Smoking in parents, the number of smoking members of the household, the percentage of smokers in the community and the number of grocery stores in the living areas

Personal behaviours are traceable from a very young age and reflect social learning, either directly or indirectly. According to Bandura, a continual process of model learning contributes to the concepts that determine how a person will behave. This learning includes observation, listening and understanding other's behaviours and personal symbols.

Bandura's social cognitive theory incorporates model observation, either live model or symbolic models presented through experiences, lessons, media and etc. Considering children's behaviours, how they behave is related to what they have learned from their teachers and schools. It is, therefore, important for children to have good traits instilled so that their growing-up behaviours do not deviate from social norms in the future.

Imitation

Imitation is part of a person's social learning to develop behaviours. Model imitation is not considered as a the meaning of this phrase's not clear. The level of imitation depends on the satisfaction of the person to imitate the model.

According to Bandura's theory of imitation, four factors are necessary for a person to learn through observation and then imitate behaviour: attention, retention, reproduction, and motivation. The process starts from the person paying attention to the model's behaviour, then keeping or retaining the information of behaviours in memory. If the retained information is satisfactory, the person will reproduce the behaviour.

However, to imitate the model, it is necessary for the person to have the motivation. For example, if a child expects the maturity from smoking, the child will imitate adult's smoking. On the other hand, if negative attitudes of smoking exist in children, the desire to imitate adult's smoking is likely not to happen. Bandura's concept of imitation consists of six categories as follows;

1. Reproducing behaviours: behaviours of the model are integrated into the imitator's experiences and produce new behaviours in a more appropriate way.

2. Reproducing principles: principles of the model are integrated into the imitator's experiences and create new principles to guide behaviour.

3. Reinforcing behaviours: positive results of the model's behaviour are adapted by the imitator, who then motivates himself/herself to behave the same way to the get the same results.

4. Restraining behaviours: The imitator adapts negative results of the model's behaviour to restrain himself/herself from behaving the same way with the same results.

5. Complying with behaviours: The imitation experiences the same situation as that of the model. The imitator then feels the same way and agrees with the way that the model behaves.

6. Disseminating behaviours: The imitator disseminates the model's behaviour and attitude to other people for social changes.

2.4.5 Behaviours of Thai Youth

Amidst economic development, the Thai society has been facing a downturn, particularly in people aged 15-24, or youth, whose lives are in critical transition. These young people spend their time out chatting and gaming online. Books and sports are replaced with consumerism, sex at early age, violence, gang fighting, car racing, smoking and drinking. According to Kusol Soonthorndhada et. al (2006), the following behaviours of Thai youth are considered risky;

1. Computer game addiction

Being isolated at home during their parents working hours teens therefore hang out with friends playing online games in internet cafés. Many of them become game addicts and their families and studies are left behind.

2. Improper internet usage

30 percent of teens aged 15-19 regularly access the internet. Among them, up to 71 percent admitted that they visited a pornography website for at least time,

while 45 percent repeatedly visit the websites and 73 percent provide false information on their internet access. Looking at activities in the chatroom, 74 percent want to find new friends, 70 percent say they would like to meet on-line friends, 45 percent surf the net and know people online and 11 percent use the internet to seek a mate.

3. Sexual assemblage

Being far away from home to study and work in the city, many of youth choose to live alone in apartments. With freedom and loneliness, many seek wrong solutions such as living together unmarried and so on. From a latest study, the age of first sex is considerably at a very younger age. Non-use of condoms is in the majority and causes the risk of sexually transmitted diseases. Some males have their first sex at 9 years of age and some females experience their first sexual intercourse as early as 10. About 50 percent of young males in general, have sexual experiences before high school graduation. For females, 30 percent have their first sex before graduation.

According to a 2004 study by the Ministry of Public Health (Ministry of Public Health, 2004) around a hundred thousand Thai youth prepared to have sex on Valentine's Day. 70,000 – 80,000 teens had more than two sexual partners, while 10,000 – 20,000 teens had swinging experiences. The following behaviors were found by study:

1. Prostitution

Female youth, at the high-school or vocational level in particular, enter the sex industry. The major reason is because of a lack of money for luxuries. Furthermore, the idea of nothing to loose makes them continue a life of prostitution.

2. Smoking

At present, 375,900 teens under 19 are smoking addicts and 78,000 of them smoke occasionally. Approximately, 600-800 people per day start smoking cigarette. Among these new smokers, 11 percent are children and youth. The very first reason for smoking is the desire to try it and feeling cool. The highest percentage of young

smokers is among vocational students at 31 percent. Smokers in universities, smoke about 8 cigarettes per day maximum.

A report by schools under the jurisdiction of the Department of General Education finds that, cigarettes are mostly used among students. Cigarettes are also the first step to using other critical addictives. This finding is similar to the study of the Action of Smoking and Health Foundation and the ABAC Poll Research Center in 2004. From the study, cigarette smoking tended to cause drug abuse. The younger the age teens smoke, the greater the likelihood for them to use other addictives.

3. Drinking

Among drinkers countrywide, 21 percent are youth. To make the situation worse, the number of young girls aged 15-19 increased by six times from 1996 to 2003, or from 1 percent to 6 percent in seven years.

4. Gang fighting

The study in a one-year period, from 2003-2004, found the number of gang fights was very high at 3,051 times. 41 percent of young students had fighting experiences. From this study, 50 percent were vocational students, followed by junior and senior high school students at 49 percent. Comparing students in suburban to those in the city, the former was in more fights than the latter. In addition, 41 percent saw their friends carrying weapons. In the group of armed students, 57 percent carried knives, 20 percent had home-made guns, 11 percent had swords and 6 percent carried bottle bombs. In addition to the fighting, some students desired to take revenge for their attacked friends.

5. Gambling

Football gambling is a major problem in tertiary students. Totally, 25 percent of students gamble, mostly on card games, football gambling, the underground lottery and the government lottery. Among these young gamblers, vocational students are in the majority at 47 percent. Comparing by region, the largest proportion of student gamblers live in the lower northern part of Thailand, or 47 percent.

6. Imitation culture

The influence of Japanese cultures pose great impacts on Thai teens, who always crave for Japanese products, for instance, fashion, celebrities, foods, knick knacks, video cameras, hand phones, computers, cars etc.

7. Racing

68 percent of youth join motorcycle races. However, 31 percent of them do not use helmets for reasons of sight obstruction, feeling hot and being not attractive.

8. Pornographic media

The majority of tertiary students receive pornographic information from television, at 56 percent, and from the internet, at 29 percent. Only 6 percent receive through printing media and 1 percent gets from friends. Last year alone, there were 7,000 cases of pornographic media. In addition to this, pornographic media is a cause of most sex-related crimes. Most hard core pornographies are presented through videos and VCDs, or 70 percent.

From the 2005 research conducted by the Surveillance Project on Future Quality of Thai Youth by the ABAC Poll Research Center, Assumption University, there are five most critical problems in youth as follows;

1. Drinking and smoking: Young people aged from 12 to 24 got involved in alcohol drinking (5,921,257) and smoking (2,023,893).
2. Skipping class: Around 2,086,527 students were absent from class.
3. Drug abuse: 516,823 students were involved in drugs and amphetamine use.
4. Sex at an early age: 472,575 students reported having sex.
5. Gambling: 101,306 students in Bangkok were involved in gambling games.

2.5 Environments Influence Youth Smoking

2.5.1 Field Theory

Developed from Gestalt theory, the psychologist, Kurt Lewin explains that the individual's situation determined behaviours. Individuals behave differently according to the way they perceive and the environment/situation in which they are involved, or the life space where individuals participate in. To illustrate the smoking behaviour, if the perception of smoking appears to be positive and the surroundings are favourable for a person to smoke, the person will then smoke.

The surroundings pose an influence on a person's life, particularly for children. If the wrong tracks, for instance positive attitudes towards smoking and an easy access to cigarettes exist in the community where the children live, it is possible that children will develop improper behaviours (cited in Thanayuth Thanathiti, 2000).

2.5.1.1 Personal environment

To instil the right things in children, adults should behave in the right way to avoid improper behaviour being imitated by them. The people with high impacts on children are surrounding people such as families' members, relatives, teachers, friends, neighbours and people in the community. If one of them smokes, there is likelihood for children to imitate smoking.

2.5.1.2 Influences of families and relatives

The family institution has great impacts on social learning and personality development of the children. Good families contribute positive personalities of youth, according to Nipa Nithayanon (1977). However, due to rapid changes in the society, economy and population, the family institution has been less prioritized, while parents also spend most of their time working to make ends meet. Children, therefore, are left with their friends and some solve things using the wrong solutions.

According to the study Flay, et. al (1994) on the difference between parents and peers in the influence on youth smoking, it was found that smoking parents had an indirect impact on the first smoke of youth. The greater impact derived from smoking peers. However, parent's behaviours greatly influence behavioural responses of the children. If parents highly expect their children to behave a certain way towards something, it is not possible for the children to respond to that high expectation. Instead, they are likely to respond to lower expectation (Morton et al, 2001).

2.5.1.3 Physical environment

If the children find an easy access to cigarette sources, they are also likely to try smoking. Despite the attempt of the government to strictly enforce the ban on cigarette advertisement and promotion, the success is not clearly seen as there are still advertisements through sport sponsorships and through other indirect ways.

2.6 Related Literatures

The researcher categorized the groups of literature reviewed according to influencing factors.

2.6.1 Population Factors

Chayanis Kulratanamaneeporn et. al (2006) studied the situation and trends of addictive consumption in the Kanchanaburi Demographic Surveillance System. The study found that during the five-year period (from 2000-2005), more than half of the male population smoked and the 40-49 age group was in the majority. For females, only one in ten reported smoking and the 50-59 age groups smoked most. Comparing males to females, 5 times as many makes smoke as female.

Boonsri Prohmmapan et al (1999) studied about the expenditures on treatments of smoking-related diseases. The sample group was 60 patients with the diseases that were admitted to 5 government hospitals and 4 private hospitals. Another sample group was 60 relatives of the sampled patients. The researcher randomized both sample groups to find smoking-related expenses and what factors influenced smoking.

The study found that factors of sex, age, occupation, income and education level had influences on smoking.

Acharawan Soythong (1999) conducted research on factors influencing smoking behaviours in youth. From the study, sex and school record had influences on smoking behaviours.

Chutarat Taimek (1998) conducted research on smoking behaviours and opinions about the enforcement of the Non-Smoker's Health Protection Act of 1992. In the study, the students of the Sirinthorn Public Health College were sampled. The researcher found that sex, age, course and a source of income had a significant relationship with smoking behaviours. The environment, social learning and smoking experiences of a person were factors possibly contributing to different smoking behaviours.

Supicha Kingkaewkanthong (1997) studied about factors that influenced smoking of women in Bangkok. From the study, there was a relationship between smoking behaviours and age of first smoke, marital status, the number of cigarettes per day and the number of smoking members of the family. Age of first smoke had a negative relationship with the behaviour. Older ages of first smoke related to less smoking. Married women smoked more than the single. The longer years of smoking led to a higher number of cigarettes per day. Finally, women tended to smoke less if their family members smoked.

2.6.2 Economic Factors

Boonsri Prohmmapan (1999) found that most patients smoked 11-20 cigarettes per day or one packet. Their average expenses on smoking were 31-50 baht per day. The average expense of government hospitals to treat the patient was less than 500 baht per day, while the expense of private hospitals was around 5,000-10,000 baht per day. The major effects of smoking were emphysema and lung cancer.

Supicha Kingkeawkanthong (1997) reported that the sampled women with earnings could buy cigarettes by themselves. Also married women were likely to feel tension from raising their children and insufficient income, so they coped with their problem by smoking.

Sathirakorn Pongpanit (2003) compared the current and future expenditures on smoking-related disease treatments to the government's revenue from the tobacco tax in Thailand. He revealed that the expenditure on emphysema treatment in 2003 was 10,057 million baht. In the same year, the government spent 4,500 million baht to treat patients suffering from lung cancer.

He also estimated the total treatment expenditure of the three diseases and the revenue from taxation between 1999- 2007. He found that the expenditure was higher than the revenue in 2000. The expenditure increased in the next year, and was likely to be higher in the future.

The National Statistical Office (2004) conducted the survey on population behaviours in smoking and drinking. It revealed that regular smokers smoked 7.9 cigarettes per day. The daily average expense was 14.6 baht per person. According to the 2005 study conducted by the Kasikorn Thai Research Center, the country experienced the expenditure caused by smoking as high as 57,380 million baht.

2.6.3 Social Factors

There were a number of researchers who studied the relationship of social factors on smoking in youth.

Chutarat Taimek (1998) reported that most students bought cigarettes from grocery stores because of their convenient locations. This also made it easy to buy cigarattes. This finding is similar to Nittaya Romruen's (2002). She found that the sample group bought cigarettes by themselves from general shops. Supicha Kingkaewkanthong (1997) found 90.4 percent of the sampled women bought cigarettes

by themselves due to favourable conditions, for example a short distance from their places to shops and easy of buying.

Montha Sooksalee (2003) conducted qualitative research on smoking behaviours of workers in gas stations: a case study of gas stations in municipal areas of Nakhon Pathom. From the study, there was a relationship between the fist smoke and lack of attention from parents. The study also revealed the influence of smoking in relatives and peers on the decision to have the first smoke. Most of the sampled workers reasoned that they wanted to try. Some were persuaded by friends; some did because of fake intention and wanted to be accepted by friends. Similar to the study of Chutharat Taimek in 1998, smoking in relatives or people whom children knew was significantly related to smoking behaviours.

Acharawan Soithong (1999) conducted a study on the factors that influenced smoking in youth. From her study, factors relating to smoking behaviours were varied, for instance, being sportsmen, drinking, smoking in relatives to decrease stress and anxiety.

Kattika Pongsiri (1993) did research on factors that influenced smoking in military students in Lop Buri province. The researcher surveyed 379 students and found that there were two factors, namely wrong attitudes towards smoking and smoking of family members.

The British Columbia Statistical Office (1996) surveyed smoking behaviours of youth aged over 15 in Canada. The sampled group was categorized into the 10-14 age group and the 15-19 age group. The under 15 age group was represented by school students. The information of the over 15 age group was collected from the Labor Force Survey done between Septembers to December of 1994. From the study, girls smoked more than boys, at 26 percent and 21 percent respectively. In the group aged 10-14 year, regular smokers accounted for 6 percent and the 15-19 age groups at 24 percent. Factors relating to smoking were found such as smoking peers, peer persuasion, smoking in parents and smoking at home.

Horn (1997) conducted research on determinants of youth tobacco use in West Virginia, a comparison of smoking and smokeless tobacco use. He compared smokers who used normal cigarettes to those who used smokeless tobacco. The finding revealed that determinants of normal cigarette smoking were smoking peers and relatives and attitudes towards smoking. For smokeless tobacco users, determinants were peers and relatives who used smokeless tobacco. Smoking attitudes and information and family problems also contributed smoking.

Rodriguez (2005) conducted research on physical activity, global physical activity and adolescent smoking. He reported physical activity, such as sport activities and exercise, indirectly influenced smoking and the self-perception of physical capacity. This research drew out the relationship between physical activity and smoking. This was further studied by Kusol Soonthorndhada et. al, (2007). She did a comparative study between social capital and the well-being of children and youth. From the study, these young people who participated in social activity were less likely to smoke than those who did not without social activity. The recommendations that arose were that there should be public space provided for youth to show off their capabilities, for example the To Be Number One Project, the Youth Creation for the King and the 18 Years for the Nation Project etc. All youth-related activities could reduce risk behaviours of young people.

Flay (1994) compared the difference between smoking in parents and smoking in peers to find what influenced adolescents to have a first smoke and increase smoking. From his finding, direct influences were from smoking peers rather than from parents, who posed more indirect influences on their children.

Bobo (2000) analyzed the relationship between socio-cultural factors and smoking and drinking. The data was collected from 48 case studies in the USA. He found that smoking had a relationship with the following available factors; advertisement, price, provision from friends, parents, relatives and vending machines. At the same time, these socio-cultural factors were associated with the increase in numbers of cigarettes smoked in both adolescents and adults.

Morton (2001) researched the relationship of friends and parents on smoking and drinking in young people at early teen age. The research found that teens with smoking parents had the likelihood to smoke and try drugs. As reported by the Action on Smoking and Health Foundation and the ABAC Poll Research Centre in 2004, smoking in younger years related to a greater likelihood of drug abuse. However, these two findings were contrasting with the 1994 study of Cohen. He revealed that smoking in parents contributed less chance of smoking in their children. He reasoned that parents provided information on smoking harms to their children. Also parent's attention to their children helped prevent smoking.

San San Oo (2005) did the research to health risk behavior of upland youth in Kanchanaburi Demographic Surveillance System. In this study the results also point out that surroundings influence in household level, living arrangement and parental imitation were the most influential factors for both health risk behaviors. (Smoking and drinking)

Sumanasekara, Amith (2006) researched a gender synthesis on non-communicable disease factors using the KDSS data. The research findings were total smoking rates had not changed considerably from year 2000 to 2004 in almost all socio-economic sectors. There is marked increase of smoking rates among male adolescents from 2000 to 2004. Smoking rates were very high both in males and females in low-educated, poor household and upland stratum.

Li, et. al (2002) researched a parental substance use as a modifier of adolescent substance use risk. The research finding parent's tobacco may have a considerable impact on the initiation and persistence of smoking in the adolescent child. It use was significantly associated with the later use of cigarette and strongest influence found for smoking.

Simon-Morton, 2004 (cited in Brook et. al., 2006: 1340) research a cigarette smoking in the adolescent children of drug-abusing fathers. The research found that an increase in the number of friends/peers who smoke were predictive of smoking

initiation among the youth. The suggestions of this study were provide evidence of the mechanisms that underlie the association between parental drug use characteristics and smoking in the adolescent child.

2.7 Conceptual Framework

The researcher used relevant factors from the data that were collected from the Kanchanaburi Demographic Surveillance System to analyze their relationship with smoking in youths. Individual factors are sex, age, age at start smoking, education, marital status, occupation, living areas and economic status. Surrounding factors are father's smoking, mother's smoking, family member's smoking, number of grocery stores, the percentage of smoking, and health behaviour factors are exercise and drinking alcohol.

According to the literature reviewed findings, gender is a factor contributing different living styles of both males and females. It also reveals the more likely of males to smoke than females.

Looking at age, age at start smoking, education level and occupation factors, all are associated with smoking. Living areas pose a relationship with smoking. From the 2004 survey conducted by the National Statistical Office, the percentage of smokers outside municipalities is higher than in municipalities. In the survey, there are 5 categories of areas; urban/semi-urban area, rice field area, farm area, highland area and integrated area.

Considering wealth index, as revealed by the National Statistical Office in 2001, the poor smoke more than the rich. Smoking of parents and family members also causes smoking in their children. The number of shops in community relates to an easy access to buy cigarettes. Exercise and drinking alcohol have a relationship with smoking. Finally drinking peers tend to smoke, and vice versa.

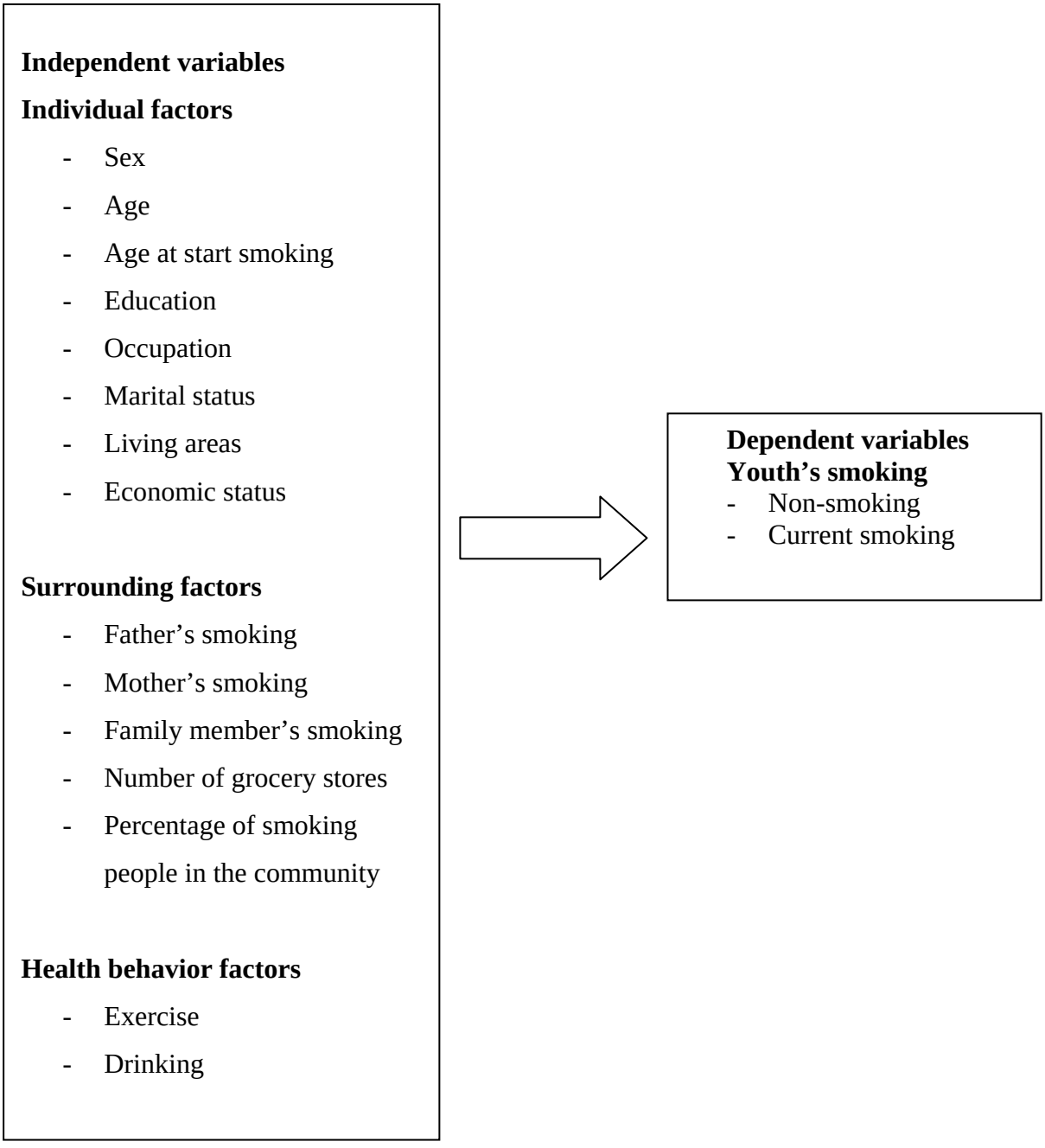

Figure 2.2 Conceptual Framework

CHAPTER 3
RESEARCH METHODOLOGY

This quantitative research study used secondary data from the Kanchanaburi Demographic Surveillance System (KDSS) survey, which had been collected from 2000-2004. This chapter describes about source of data, sample size, variables, measurement and data analysis.

3.1 Sources of Data and Sample Size

The data from the KDSS used for this study included only the years 2003 and 2004 because the data had the same independent and dependent variables, while the other years did not. In addition, the KDSS data were diverse in terms of geographic, economic, social, race, and cultural factors. The economy of KDSS included agricultural, industrial and tourist areas of Thailand

The Kanchanaburi Demographic Surveillance System (KDSS) was conducted by the Institute for Population and Social Research, Mahidol University under the Khanchanaburi project. The Kanchanaburi project is based on the principle of demographic surveillance study and follow-up of the population changes including economic, social, and health related information, including community activities of the government and private sectors engaged by people in the communities. The Kanchanaburi project started to collect population census data in July 2000 and after that, annually collected data and ended in 2004. The study units are 86 villages/communities and 14 census blocks in urban areas distributed throughout Kanchanaburi province, covering approximately 16,000 household and 50,000 persons. The study areas were divided into five strata by geography and categorized into the main economic activities of population. These strata are: 1) urban/semi-

urban, 2) Rice, 3) plantation, 4) Upland, and 5) Mixed economy. Each strata have the outstanding characteristics as follow : 1) urban/semi-urban strata covered the population living in municipal areas which were categorized into census blocks by the National Statistical Office (NSO), or the strata covered villages that have urbanization or a significant proportion of the labor force employed in non-agricultural occupation; 2) Rice strata villages are those located in lowland areas where the main occupation is rice cultivation; 3) Plantation strata comprise villages that are also located in lowland areas, and where the major occupation of the local people is cultivating cassava or sugar cane; 4) Upland strata contain villages located in the highland areas, where the major occupation is not rice cultivation or farm plants; and 5) Mixed economy strata contains villages that could not be classified into the other categories as mentioned above.

Selection of the villages used a systematic random sampling that covered every stratum whereas urban/semi-urban section used two stage random sampling. The first stage was formulated of proportion census block and villages by total population in urban and rural areas, and systematic random sampling was used in the second stage. The data collection was supported by the Wellcome Trust of the United Kingdom. (Sureeporn Punpiung, 2002; Varachai Thongthai, 2003).

The sample of this study included total of 2,510 youth aged 15-24 years in the year 2003, which consisted of 314 cases for those who were currently smoking and 2,196 cases for those who were non-smoking and in the year 2004 equally 2,510 cases including 398 cases who were currently smoking and 2,112 cases who were non-smoking. Pooling cross-sectional data for these two years across the time, the number of cases became totally 5,020 cases.

3.2 Variables and Measurements

The individual, surrounding, and behavioral factors consisted of totally 15 independent variables such as sex, age, education, occupation, marital status, strata, wealth index, smoking of father and mother, number of household members

who are currently smoking, number of grocery shops in community, association with smokers in the community, exercise and alcohol drinking of the youth. The dependent variable was smoking of youth. Details of the variables were as follows in table 3.1:

Table 3.1 Variables and Measurements

Variable names	Measurement Scale	Description
Independent Variables		
1.1 Individual Factors		
Sex	Categorical	Female®
		Male
Age	Ordinal	15-19 years ®
		20-24 years
Age at start regularly smoking	Interval	Use reported age
Education	Ordinal	No education to primary ®
		Secondary and over
Occupation	Categorical	No occupation ®
		Agriculture
		Non-agriculture
Marital status	Categorical	Married®
		Single
		widow, and separated

Table 3.1 Variables and Measurements (Continued)

Variable names	Measurement Scale	Description
Wealth index	Ordinal	Rich 20% highest quintile®
		Middle 60% Middle quintile
		Poor 20% lowest quintile
Stratum	Categorical	Upland®
		Rice
		Plantation
		Urban/semi- urban
		Mixed economy
1.2 Surrounding Factors		
Father smoking	Categorical	Non-smoking®
		Smoking
		Do not have father ’s information
Mother smoking	Categorical	Non-smoking®
		Smoking
		Do not have mother ’s information
members smoking		One hh member smoking
		More than one hh member smoking
Number of household (hh)	Ordinal	Nobody smoking®

Table 3.1 Variables and Measurements (Continued)

Variable names	Measurement Scale	Description
Number of shops in the community	Categorical	No change in number®
		Increasing
		Decreasing
% Smoking in community	Interval	Used reported % smoking in community
1.3 Health behavior		
Exercise	Categorical	No exercise®
		Exercise
Drinking alcohol	Categorical	Not-drinking alcohol
		Drinking alcohol
1.4 Time variable	Categorical	year 2546®
		year 2547
2. Dependent Variable		
Youth smoking	Dummy	Not-smoking®
		Smoking

Wealth Index Method

Wealth index is an index that categorizes respondents socio-economic status. The index was calculated from 23 household assets by using the Principle Component Analysis (PCA), which applied factor analysis. PCA involves breaking down assets (e.g. television, radio) into categorical or interval variables. The variables

are then processed in order to obtain weights and principal components (explaining the most variability) that are usually used to develop an index. The asset scores are then used to assign a wealth index value to each household and its members. Eventually households and their members are assigned into quintiles based on the value of their asset index. For the purpose of the analysis in this study the lowest quintile is considered as a socio-economic status (wealth) proxy for the poorest and the highest quintile represents the richest. So wealth index variables could be categorizes into three categories; poor, moderate, and rich.

The reason for using wealth index to take place of income in this study was that most people did not answer the questions about income, or their answers were incorrect (less than actuality). The wealth index included information about the household's property ownership. All respondents have information about their household's property ownership because they were willing to answer the questions. Therefore, measuring the economic status by using the wealth index could provide accurate and easily understandable information for this study.

3.3 Data Analysis

The statistical analysis of the data for this study can be divided into three parts: univariate bivariate and multivariate analysis. The details are as followed:

1. Univariate and bivariate was used to describe statistics such as frequency, percentage and cross tabulation to describe general characteristics of the sample (smoking and non-smoking youth) classified by individual factors (such as age, sex, age at start regularly smoking, education, occupation, marital status, wealth index and stratum), surrounding factors (such as father or mother smoking, number of household members who are smoking, number of shops in the village/community and percentage of people who are smoking in the village/community) and behavior factors (such as exercise and drinking alcohol).

2. Logistic regression analysis was used to analyze the factors related to smoking of the youth. This analysis used the panel data set (or longitudinal data) of the same sample collected in the two periods across the time in 2003 and 2004. The random samples of individual youth drawn from the same population were pooled together, so the resulting random samples gave us independently pooled cross- section data. The reason for using independently pooled cross-section data is to increase the sample size at different points in time so we can get more precise estimators or test statistical significant with more power. (Wooldridge, 2003:449-454).

As the sampling of KDSS data was undertaken by first selecting 100 communities to be a sample of Kanchanaburi. The project then collected the data from every individual and every household in the sampled communities repeatedly for 5 years since 2000-2004. This sample design was based on cluster sampling and pooled data of the same individuals in the year 2003 and 2004 together. This may contribute to the intra-cluster correlation when analyzing data. The traditional standard error estimate for logistic regression based on maximum likelihood from independent observations is no longer proper for data sets with cluster structure since observations in the same cluster tend to have similar characteristic and are more likely correlated with each other. So, it's necessary to correct some standard error when using logistic model. The robust standardize error estimate for cluster sampling data in logistic modeling was used for standard error correlation by using STATA software. The outputs gave us not only the robust standard error (rse.) but also the whole logistic model fitting information, the statistical test of the parameter estimates based on the robust standard error as well as the confidence interval for odds ratio (Lui, 2005).

CHAPTER 4
RESEARCH RESULTS

In this Chapter, the research results are illustrated in the contexts of differential factors among individual factors, surrounding factors and behavior factors related to youth smoking and non-smoking in KDSS areas during 2003 and 2004. The samples consisted of the same respondents during both periods. With regard to analysis, the researcher analyzed only the population aged 15-24 years, and the results will be presented in 3 main parts. Firstly, univariate analysis was used to describe background characteristics of youth. Second, bivariate analysis by using cross tabulation was employed to analyze the characteristics of youth who are smoking and non-smoking. Lastly, multivariate analysis was used to examine factors related with youth smoking while controlling others factors.

4.1 Background Characteristics of the Respondents

4.1.1 Individual Characteristics

Personal characteristics include sex, age, education, marital status, economic status, occupation and stratum variables. The proportions of males and females in the years 2003 and 2004 did not change (males 45.3 percent and females 54.7 percent). Most of the samples consisted of youth of age between 15-19 years. During the years 2003 to 2004 the proportion of age 15-19 years declined by 8 percent. (Declined from 60.6 percent in the year 2003 to 52.5 percent in the year 2004), while the proportion of youth of age between 20-24 years increased by the same proportion (39.4 percent to 47.5 percent). There was not much difference between 2003 and 2004 in the proportions of youth that completed the education levels, however, by 2004 more than half of the youth finished the lower secondary, followed by 25% who finished the primary, 15% who finished upper secondary and higher, and 6% with no education. During the year 2003-2004, the sampled youth

who had no education were of similar proportions (6.3 percent and 5.9 percent respectively). The proportions were the same for those who had finished primary education (25.2 percent and 25.5 percent), even though the proportion of those who had finished lower secondary declined slightly from 57.4 percent to 53.2 percent. The sample youth those who had finished upper secondary and higher are increased from 11.1 percent to 15.1 percent during 2003 to 2004. Regarding marital status, most of the sampled youth were single followed by married/widow/separated (the proportion of youth who were single declined from 70.3 percent in the year 2003 to 66.5 percent or two-thirds of total in the year 2004) while the proportion of youth those who were married/widow/separated increased from 29.7 percent into 33.5 percent, or one-third of total in the year 2004 (See Table 4.1).

Regarding the economic status (wealth index) of the sample youth reclassified into three categories namely poor, moderate and rich, most of the sample had a moderate economic status followed by those who were rich and poor respectively. The proportion of youth with a poor rating declined slightly in the year 2004. The proportion of youth who have a moderate and rich status are similar, but those who have rich rating increased slightly from 36.7 percent in the year 2003 to 39.3 percent in the year 2004 (See Table 4.1).

The Kanchanaburi Demographic Surveillance System (KDSS) areas were divided areas into five stratums according to the main occupation. These stratums are: 1) urban/semi-urban; 2) rice; 3) plantation; 4) upland; and 5) mixed economy. The stratums were categorized according to the geography and main occupation of the population. The outstanding characteristics of each stratum are as follow: 1) urban/semi-urban stratum covers the population living in municipal areas. The latter have been categorized into census blocks by the National Statistical Office (NSO) and the stratum also covers villages that have urbanization or villages that have a significant proportion of the labor force employed in non-agriculture; 2) Rice stratum villages are those located in lowland areas where the main occupation is rice cultivation; 3) Plantation stratum comprises villages that are also located in lowland areas, and where the major occupation of the local people is cultivating cassava or

sugar cane; 4) Upland stratum contains villages located in the highland areas, where the major occupation is not rice cultivation or farm plants; and 5) Mixed economy stratum contains villages that could not be classified into the other categories as mentioned above. Most of the sampled youth were living in urban/semi-urban (23.8 percent) followed by mixed economy (22.4 percent), uplands (20.1 percent), rice, (18.4 percent) and plantation (15.3 percent) respectively (See Table 4.1).

Regarding occupation, the proportion of the sampled youth who had no occupation and those who were students declined. In other words, the proportions of sampled youth who had no occupation declined from 16.8 percent in the year 2003 to 15.3 percent in the year 2004. Similarly, the proportion of sampled youth who were students declined from 35.7 percent in the year 2003 to 28.0 percent in the year 2004. However, those who were working in agricultural and non-agricultural jobs increased in proportion. In other words, the proportion of those who were working in agriculture increased from 26.3 percent in the year 2003 to 29.9 percent in the year 2004 and those working non-agricultural increased from 21.3 percent to 26.6 percent (See Table 4.1).

4.1.2 Surrounding Factors

Surrounding factors include father smoking, mother smoking, number of household members smoking, number of shops in the village/community and percent smoking in the village/community. The results showed a slight increase in proportion of fathers smoking (30.6 percent and 35.4 percent in the years 2003 and 2004 respectively). There was a decrease in proportion of youth who did not have father's information (46.6 percent in the year 2003 and 38.5 percent in the year 2004). There was a slight increase in proportion of youth with mothers smoking (8.4 percent in the year 2003 and 8.7 percent in the year 2004), while the proportion who did not have mother's information declined (38.5 percent in the year 2003 and 29.6 percent in the year 2004). In this case, the proportion with nobody smoking in their household increased from 34.3 percent to 37.3 percent, and the proportion with more than one

person in the household smoking were similar (18.5 percent and 17.3 percent in the year 2003 and 2004 respectively) (See Table 4.1).

The Village Survey Form included a question that asked whether or not the number of shops in this village changed from last year till now? The survey results show that between the year 2003 and 2004 the percentage of those who answered that the number of shops was unchanged declined in percentage (63.1 percent in the year 2003 and 56.1 percent in the year 2004. On the other hand, there was an increase in the proportion of the sampled youth who answered that the number of shops increased (31.5 percent in the year 2003 and 39 percent in the year 2004). Actually, the proportion of sample youth who answered that the number of shops decreased declined from 5.4 percent to 4.9 percent (See Table 4.1).

The proportion of people smoking in the village was calculated by integrating the number of people smoking in their household to the village level and categorizing the percent smoking in the village into 3 levels; few, moderate and much. Few indicates less than or equal to 30 percent; moderate indicates from 31-60 percent, and much indicates 61 percent and over. Considering that the percent smoking in the village is an interval scale, it was found that the highest percent smoking in the village was found in the few categories, which increased from 60.9 percent to 65.5 percent from 2003 to 2004. At that time the percent smoking in the village in the moderate and many categories are similar ratios. (See Table 4.1)

4.1.3 Health Behavior Factors

Health behavior categories cover the exercise, drinking alcohol, and smoking variables. It was found that most youth (about two-thirds of youth) do not exercise; however, the proportion of youth who do exercise was higher in the year 2004. That is to say, the proportion of youth who exercise increased from 24.3 percent to 33.8 percent (See Table 4.1).

Regarding drinking alcohol and smoking, it was found that most youth did not drink alcohol and did not smoke. It should be considered that the proportion of youth who drank alcohol was higher than that of smoking. But, the percentage drinking alcohol changed only slightly (29.9 percent to 31 percent). On the other hand, the proportion of smoking increased from 12.5 percent in the year 2003 to 15.9 in the year 2004 (3.4 percent) (See Table 4.1).

Table 4.1 Number and Percent Distribution of Youth by Individual Factors, Surrounding Factors and Health Behavior Factors during 2003 and 2004

Factors	Year 2003		Year 2004	
	Number	Percent	Number	Percent
Individual Factors				
Sex	1,137	45.3	1,137	45.3
Male	1,373	54.7	1,373	54.7
Female				
Age (years)				
15-19	1,522	60.6	1,318	52.5
20-24	988	39.4	1,192	47.5
Mean age at first smoke =		16.6		16.6
Education				
No education	158	6.3	147	5.9
Primary	633	25.2	647	25.5
Lower secondary	1,440	57.4	1,336	53.2
High secondary and above	279	11.1	380	15.1
Marital Status				
Single	1,765	70.3	1,670	66.5
Married/widowed/separated	745	29.7	840	33.5
Total	2,510	100.0	2,510	100.0

Table 4.1 Number and Percent Distribution of Youth by Individual Factors, Surrounding Factors and Health Behavior Factors during 2003 and 2004 (Continued.)

Factors	Year 2003		Year 2004	
	Number	Percent	Number	Percent
Wealth Index (Economic Status)				
Poor	651	25.9	625	24.9
Moderate	938	37.4	898	35.8
Rich	920	36.7	985	39.3
Individual Factors				
Stratum				
Urban/semi-urban	598	23.8	598	23.8
Rice	461	18.4	461	18.4
Plantation	384	15.3	384	15.3
Upland	504	20.1	504	20.1
Mixed economy	563	22.4	563	22.4
Occupation				
No occupation	421	16.8	390	15.3
Student	895	35.7	702	28.0
Agriculture	659	26.3	751	29.9
Non-agriculture	535	21.3	667	26.6
Surrounding Factors				
Father smoking				
No smoking	572	22.8	654	26.1
Smoking	768	30.6	889	35.4
Do not have father's information	1,170	46.6	967	38.5
Mother smoking				
No smoking	1,334	53.1	1,550	61.8
Smoking	210	8.4	218	8.7
Do not have mother's information	966	38.5	742	29.6
Total	2,510	100.0	2,510	100.0

Table 4.1 Number and Percent Distribution of Youth by Individual Factors, Surrounding Factors and Health Behavior Factors during 2003 and 2004 (Continued.)

Factors	Year 2003		Year 2004	
	Number	Percent	Number	Percent
Numbers of household members smoking				
No smoker	860	34.3	936	37.3
One smoker	971	38.7	1,045	41.6
More than one smoker	465	18.5	435	17.3
No Answer	214	8.5	94	3.7
Surrounding Factors				
Number of shops in the village				
No change	1,585	63.1	1,409	56.1
Increase	790	31.5	978	39.0
Decrease	135	5.4	123	4.9
Percent people smoke in the village				
A few	1,528	60.9	1,643	65.5
Moderate	907	36.0	789	31.4
Very much	78	3.1	78	3.1
Health Behavior Factors				
Exercise				
No	1,897	75.6	1,660	66.2
Yes	609	24.3	849	33.8
Drinking Alcohol				
No	1,759	70.1	1,731	69.0
Yes	751	29.9	777	31.0
Smoking				
No	2,196	87.5	2,112	84.1
Yes	314	12.5	398	15.9
Total	2,510	100.0	2,510	100.0

The conclusion and summary of individual factors, surrounding factors and behavior factors related to youth smoking or non-smoking in the KDSS during 2003 and 2004 are as follows:

Individual Factors The research results showed that sample youth consisted of fewer males than females (Male 45.3 percent, Female 54.7 percent) and were the same proportions during 2003 to 2004. More than half of the sample youth were 15-19 years of age and this proportion declined from 60.6 percent in the year 2003 to 52.5 percent in the year 2004. More than half of the youth (about 68 percent) finished a lower secondary education or higher. Most of the youth were single and the proportion declined from 70.3 percent in the year 2003 to 66.5 percent in the year 2004. Regarding economic status, most of the sample youth had a rating of moderate or rich with similar proportions (about 36-39 percent). In this case, similar proportions of the sampled youth lived in urban/semi-urban, mixed economy, upland, rice and plantation during both years. Most of them worked in agriculture or were students, and the proportion who worked in agriculture increased from 26.3 percent in the year 2003 to 29.9 percent in the year 2004. While the proportion who was students decreased from 35.7 percent in the year 2003 to 28.0 percent in the year 2004.

Surrounding Factors The research results showed that the largest proportion of the sample youth were those who didn't know their fathers information. The proportion that had a father who smoked increased from 30.6 percent in the year 2003 to 35.4 percent in the year 2004. The proportion of youth who had a mother smoking slightly increased from 8.4 percent in the year 2003 into 8.7 percent in the year 2004. Regarding the number of people smoking in their house, most of the sample youth had at least one smoker in their household and the proportion remained similar of about 38.7 percent and 41.6 percent respectively during 2003 to 2004. For the highest proportion of respondents, the number of grocery shops did not change during both years (63 percent). However, regarding percent smokers in their community/village more than half of the sample youth reported only a few. There was a slight decrease in the proportion of youth reporting a moderate number of other

smokers in the village, from 36 percent in the year 2003 to 31.4 percent in the year 2004.

Behavior Factors It was found that most of the sample youth did not exercise, but the proportion who did not exercise decreased by almost 10 percent from 75.7 percent in the year 2003 to 66.2 percent in the year 2004. While most of the sample youth (about 69-70 percent) did not drink alcohol or smoke tobacco, the proportion that did not smoke decreased from 87.5 percent to 84.1 percent during the two years. It can be said that from 2003 to 2004 most of the sampled youth did not smoke, drink or exercise, but the proportion those who did so increased during that time.

4.2 Characteristics of Youth Smoking

4.2.1 Individual Factors

Table 4.2 shows that the majority of male youth did not smoke tobacco, and that the proportion of male smoker increased while the proportion of female smokers remain the same. The proportion of male smokers increased from 25.1 percent in the year 2003 to 32.5 percent in the year 2004, but the proportion of female smokers decreased very slightly from 2.1 percent to 2.0 percent. The classification of smokers by age group shows that about one-tenth of those aged 15-19 years smoke, and the proportion increased slightly from 2003 to 2004 (7.5 percent to 11.3 percent respectively) while two-tenth of those aged 20-24 years smoked and the proportion increased slightly from (20.2 percent to 20.9 percent). A comparison of the two age groups shows that there are about double the proportion of smokers in the older age group. (See Table 4.2)

When observing the education status of smokers one can see that the largest proportion of youth smokers (about 30 percent) are among those with no education and the proportion decreased slightly from 31.6 percent in the year 2003 to

27.9 percent in the year 2004. The next highest proportion was found among those with a primary education (approximately 18-22 percent) (See Table 4.2).

A comparison of the proportion of smoker's marital status shows that the proportion of smokers increased among both those who are single and those who are married/separated/widowed. The comparison also shows that there is a slightly higher proportion of smokers among those who are married/separated/widowed (15.2 to 17.1 percent) compared to those who are single (11.4 to 15.2 percent) (See Table 4.2).

Regarding economic status, it was found that there are higher proportions of smokers among the poor to moderate groups than the rich and it can be said that in the year 2003 the percentages of poor and moderate smokers were 18.9 percent and 12.8 percent respectively and increased to 21.9percent and 16.1 percent respectively in the year 2004. The percentage of rich smokers increased from 7.7 percent to 11.2 percent during 2003 to 2004 (See Table 4.2).

Concerning occupational status, it can be said that the proportion of smokers a many those with no occupation increased from 10.0 percent to 11.3 percent. The proportion of smokers' students was much lower, but increased from 3.5 percent to 4.8 percent. The proportion of smokers among agricultural workers was much higher and remained the same at about 20 percent in the year 2003 and 2004. The highest proportion of smokers increased in this group from 19.8 percent in 2003 to 24.6 percent in 2004. (See Table 4.2).

4.2.2 Surrounding Factors

The proportion of youth smokers was highest among those whose fathers also smoked, and the proportion increased from 14.6 percent to 18.9 percent during 2003 to 2004. The proportion of youth smokers was lower among those whose father did not smoke, and the proportion remained the same at about 12 percent in 2003 and 2004. The proportion of smokers among youth lacking information on their father

increased from 11.5 percent to 15.8 percent from 2003 to 2004. The proportion of youth smokers seemed similar in all of the mother smoking categories and also increased in all categories from 2003 to 2004 (See Table 4.2).

Regarding the number of others in the household that smoked, the results showed that there was only a very slight relationship in 2003 as the proportion increased only 12.1 percent to 12.9 percent as the number of other smokers increased. However, in 2004 the proportions increased much more from 2.0 percent with no others smoker to 15.8 percent with one other smokers to 45.5 percent with more than one other smoker in the household (See Table 4.2).

Concerning the number of grocery shops in the village which indicates access to cigarettes, the result showed no relationship between proportion of youth smoking and the change in number of shops. The proportions of youth smokers were similar in all categories and increased in all categories between 2003 and 2004. However, there did see to be a slightly higher proportion of youth smokers where the number of shops decreased. (See Table 4.2).

When viewing the percent of others in the villages/communities that smoked, it can be seen that the proportion of youth smokers increased greatly as the percent of others in the villages increased. In 2003, there were only a percent of youth smokers where a low proportion of others in the villages smoked, which increased to 16.4 percent and 37.2 percent as the number of others increased to moderate and high proportion respectively. In 2004, there was a similar relationship but all categories increased by 2.5 to 4 percent. (13.3 percent in low villages, 18.9 percent in moderate villages and 39.7 percent in high villages) (See Table 4.2).

4.2.3 Health Behaviors Factors

Exercise did not seem to be a factor strongly related to youth smoking behavior. The slight relationship seem to be opposite of the expected relationship as a

higher proportion of youth smokers was found among those who exercised in both 2003 and 2004. The proportion of youth smokers increased from 12.3 percent to 13.4 percent from 2003 and 2004 among those who did not exercise, while it increased from 13.1 percent to 20.6 percent among those who did exercise. (See Table 4.2).

Unlike exercise, alcohol drinking behavior was very strongly related to youth smoking behavior as the proportion of youth smokers was 7 times greater among those who also drank alcohol. In 2003, only 4.3 percent of those who did not drink alcohol smoked, while 31.8 percent of those who did drink alcohol also smoked. In 2004, the proportions of youth smokers increased to 5.1 and 39.8 percent respectively (See Table 4.2).

Table 4.2 Percent Distribution of Youth by Population Characteristics, Economic Social, Surrounding Factors and Health Behavior Factors by smoking during 2003-2004

Factors	Year 2003		Year 2004		Total
	Non-smoker	Smoker	Non-smoker	Smoker	
Individual Factors					
Sex					
Male	74.9	25.1	67.5	32.5	100.0
Female	97.9	2.1	98.0	2.0	100.0
Age (years)					
15-19	92.5	7.5	88.7	11.3	100.0
20-24	79.8	20.2	79.1	20.9	100.0
N	2,196	314	2,112	398	2,510

Table 4.2 Percent Distribution of Youth by Population Characteristics, Economic Social, Surrounding Factors and Health Behavior Factors by smoking during 2003-2004 (continued)

Factors	Year 2003		Year 2004		Total
	Non-smoker	Smoker	Non-smoker	Smoker	
Education					
No education	68.4	31.6	72.1	27.9	100.0
Primary	82.0	18.0	78.4	21.6	100.0
Lower secondary	91.3	8.8	87.0	13.0	100.0
High secondary and above	91.4	8.6	88.7	11.3	100.0
Marital Status					
Single	88.6	11.4	84.8	15.2	100.0
Married/widowed/separated	84.3	15.2	82.9	17.1	100.0
Economic Status (Wealth Index)					
Poor	81.1	18.9	77.1	22.9	100.0
Moderate	87.2	12.8	83.9	16.1	100.0
Rich	92.3	7.7	88.8	11.2	100.0
Individual Factors					
Stratum					
Urban/semi-urban	90.1	9.9	84.1	15.9	100.0
Rice	89.3	10.7	82.6	13.4	100.0
Plantation	89.6	10.4	85.9	14.1	100.0
Upland	78.2	21.8	77.0	23.0	100.0
Mixed economy	90.1	9.9	87.4	12.6	100.0
Occupation					
No occupation	90.0	10.0	88.7	11.3	100.0
Student	96.5	3.5	95.2	4.8	100.0
Agriculture	79.5	20.5	79.2	20.8	100.0
Non-agriculture	80.2	19.8	75.4	24.6	100.0
N	2,196	314	2,112	398	2,510

Table 4.2 Percent Distribution of Youth by Population Characteristics, Economic Social, Surrounding Factors and Health Behavior Factors by smoking during 2003-2004. (Continued.)

Factors	Year 2003		Year 2004		Total
	Non-smoker	Smoker	Non-smoker	Smoker	
Surrounding Factors					
Father smoking					
No smoking	88.3	11.7	88.2	11.8	100.0
Smoking	85.4	14.6	81.1	18.9	100.0
Do not have father's information	88.5	11.5	84.2	15.8	100.0
Mother smoking					
No smoking	86.8	13.2	85.7	14.3	100.0
Smoking	86.2	13.8	70.6	29.4	100.0
Do not have mother's information	88.7	11.3	84.8	15.2	100.0
Numbers of household smoker					
No smoker	87.9	12.1	98.0	2.0	100.0
One smoker	87.3	12.7	84.2	15.8	100.0
More than one smoker	87.1	12.9	54.5	45.5	100.0
Number of shops in the village					
No change	88.4	11.6	84.3	15.7	100.0
Increase	86.1	13.9	84.4	15.6	100.0
Decrease	85.2	14.8	80.5	19.5	100.0
Percent smoker in the village					
Low (less than and equal 30 %)	91.0	9.0	86.7	13.3	100.0
Moderate (31-60 %)	83.6	16.4	81.1	18.9	100.0
High (61% and over)	62.8	37.2	60.3	39.7	100.0
N	2,196	314	2,112	398	2,510

Table 4.2 Percent Distribution of Youth by Population Characteristics, Economic Social, Surrounding Factors and Health Behavior Factors by smoking during 2003-2004. (Continued.)

Factors	Year 2003		Year 2004		Total
	Non-smoker	Smoker	Non-smoker	Smoker	
Health Behavior Factors					
Exercise					
No	87.7	12.3	86.6	13.4	100.0
Yes	86.9	13.1	79.4	20.6	100.0
Drinking Alcohol					
No	95.7	4.3	94.9	5.1	100.0
Yes	68.2	31.8	60.2	39.8	100.0
N	2,196	314	2,112	398	2,510

In conclusion, youth smoking in relation to individual factors, surrounding factors and health behavior factors in the KDSS during 2003 to 2004 revealed the following results.

Individual factors showed that the proportion of sample youth who smoked was much higher among males than females and increased from 25.1 percent to 32.5 percent during 2003 to 2004 while the proportion of female smokers decreased slightly from 2.1 percent to 2.0 percent during the same period. The highest proportion of youth smokers were 20-24 years of age (20 percent) and the proportion increased slightly during 2003 to 2004. The highest proportions of smokers were among those with no education (31.6 percent) and among those who were married/widowed/separated (15.2-17.1 percent). The highest proportion of smokers were among those with a poor economic status (18.9 to 22.9 percent) and those in the upland stratum (21.8-23.0 percent), while the proportion of youth smokers in the remaining stratum varied from about 10-16 percent from 2003 to 2004. The highest proportion of youth smokers were among those in the agricultural (20.5 to 20.8

percent) and non-agricultural (19.8 to 24.6 percent) occupations, while much lower proportion were found among those with no occupations (10.0 to 11.3 percent) and students (3.5 to 4.8 percent). The proportions of youth smoked increased by several percent during 2003 to 2004 in nearly all categories of individual factors, with a few exceptions.

The surrounding factors showed that the highest proportion of youth smokers was among those whose father smoked (14.6 to 18.9 percent) and the lowest proportion was among those whose father did not smoke (11.7 to 11.8 percent), while the proportion for those without father information was midway the two proportion at 11.5 to 15.8 percent. Mother smoking did not seem to be related to youth smoking in 2003, but in 2004 the proportion for youth smokers was double among youth with smoking mothers at 29.4 percent, compared to 14.3 percent among those with non-smoking mothers. Similarly, the number of others in the household that smoked had little relation to youth smoking in 2003, but it had a very strong relationship to the proportion of youth smokers in 2004, increasing from 2.0 percent among youth with no others in the household that smoked to 15.8 percent in households with one other smoker to 45.5 percent with more than one other smoked. The change in number of shops in the villages seemed to have little relationship to youth smoking, but the percent of people smoking in the villages had a strong relationship, increasing from 9 to 13.3 percent for those with low rating to 16.4 – 18.9 percent with a moderate rating to 37.2-39.7 percent for those with a high rating in 2003 to 2004 respectively.

Among the health behavior factors exercise had only a slight relationship to youth smoking, with 12.3 to 13.4 percent of youth smoking among those who did not exercise and 13.1 to 20.6 percent smoking among youth who did exercise in 2003 to 2004 respectively. However, alcohol drinking had a very strong relationship with youth smoking, increasing from 4.3 to 5.1 percent among those who did not drink alcohol to 31.8 to 39.8 percent among those who did drink alcohol during 2003 to 2004 respectively.

4.3 Factors Related to Youth Smoking

Logistic regression analysis by pooling cross sections and time series dimensions during 2003 to 2004 was conducted to study the relationship of youth smoking in the Kanchanaburi Demographic Surveillance System area (KDSS) with factors such as individual factors, surrounding factors and health behaviour factors to follow the same respondents. However, this study was a longitudinal study which was to use both period data series. In this way, one individual will have two data series. Analysis was done by adjusting high robust cluster standard errors.

4.3.1 Individual Factors

Table 4.3 showed the effects of individual factors on youth smoking after controlling other factors. In terms of gender it shows that males are about 19 times more likely to smoke than females and the relationship is statistically significant at a 99.99 % confidence interval and OR between 12.3 – 29.8. Regarding age, the results also point out that those 20-24 years old had 1.2 times more chance of smoking than those 15-19 years olds, but the relationship is statistically insignificant. At age starting regularly smoking shows that the chance of smoking declined by 5 percent and statistically significant at 99.99 % confidence interval and OR between 0.9-1.6. Regarding educational status, youth who had a secondary and above education had a 45 percent less chance of smoking than those with a lower and the relationship was statistically significant at 99.99 % confidence interval and OR between 0.4-0.7. It can be said that those youth who had a lower education were more likely to smoke than those who had a higher education. Based on one hypothesis of this study, this test determined whether there really is a difference in youth smoking among each educational level. The results base on The Survey on Smoking and Drinking Behaviour of Population in 15 year and above (National Statistical Office, 2005:13). Regarding marital status, youth who were single were 1.7 times more likely to smoke than those who were married/widowed/separated, significant at 95% confidence interval and OR between 1.1 - 2.3.

In regard to economic status, youth who were rated as moderate and poor were 1.6 and 2.2 times more likely to smoke than those who were rich respectively and statistically significant at 99.99 % confidence interval and OR between 1.2-22 and 1.5-3.2 respectively). Therefore, it can be said that when considering economic status youth those who were richer were less likely to smoke than youth who were poorer, which test hypothesis one that questioned whether or not there really is a difference among each economic status. Regarding stratum, the results showed that youth who lived in rice, plantation, upland and mixed economy stratum were 1.4, 1.4, 1.1 and 1.5 time more likely to smoke than youth who lived in urban/semi-urban respectively. Concerning working status, those working in the agricultural sector were about 1.5 times more likely to smoke than those with no works, but statistically insignificant. On the other hand, youth working in the non-agricultural sector were about 1.6 times more likely to smoke than those with no work and statistically significant at 99.99 % confidence interval and OR between 1.2-2.3.

4.3.2 Surrounding Factors

Table 4.3 showed the effects of surrounding factors while controlling other factors. It can be understood that in terms of fathers smoking, youth who had father smokers were 3.3 times more likely than youth who had non smoking fathers and statistically significant at 99.99 % confidence interval and OR between 2.2-5.0. It can be seen that fathers influence and imitation among youth living with father smokers were more likely to smoke based on hypothesis three, which questioned whether or not there really is a difference among youth who have smoking fathers for the youth to take up the habit of smoking more than those who have non-smoking fathers. In this case, the results also point out that youth who did not have father's information at that time were 3 % less likely than youth who had non-smoking fathers and statistically significant at 99.99 % confidence interval and OR between 0.05-0.18. These results showed that father's characteristics are important determinants for smoking behaviour in this study, that is to say youth who did not have father's information at that time had less chance of smoking than youth who had father smokers because of a variety of factors have been found to be associated with youth

smoking and peer influence in one of the factors most commonly linked to youth smoking, directly or indirectly. In addition the percent of others smoking in the community was also associated with youth smoking. Regarding mother's smoking, youth who had mother smokers were 1.2 times more likely to smoke than youth who had non-smoking mothers but statistically insignificant. Similarly, youth who did not have mother's information, who were 51 percent less likely to smoke than youth who had non-smoking mothers but statistically insignificant.

Regarding percent of people smoking in the village/community, were after controlling other factors, it can be understood that the percent of people smoking in the villages for those with moderate and high rating were 1.4 and 5.8 time more likely to smoke than those who were low rating and statistically significant at 95 % and 99.99 percent confidence interval and OR between 10.-2.1 and 2.5-13.3 respectively. That is to say, these results show the communities influence on youth smoking based on hypothesis five, which question whether or not in youth smoking there really is a difference among youth who have smoking village moderate and high rating compared to youth who have smoking village low rating. Regarding household smokers, youth who had 1 household smokers were 4.7 times more likely to smoke than youth who had no household smokers and statistically significant at 99.99% confidence interval and OR between 3.3-6.8. Similarly, youth with 2 household member smokers and above were 18.1 times more likely to smoke than youth who had no household smokers and statistically significant at 99.99% confidence interval and OR between 12-28. That is to say, these results show the family influence on youth smoking based on hypothesis four, which question whether or not in youth smoking there really is a difference among youth who have smoking household members compared to youth who have non-smoking household members. Regarding the number of grocery shops, the results show that youth with increased grocery shops are 2.1 times more likely to smoke than those with no change in number of grocery shop and statistically significant at 99.99% confidence interval and OR between 1.3-3.3

4.3.3 Behaviour Factors

Table 4.3 were shows the effects of health behavior factors after controlling other factors. In terms of exercise, youth who had no exercise were 1.2 times more likely to smoke than youth who had exercise, and statistically significant at 95% confidence interval and OR between 1.0-1.6. However, youth who drank alcohol were 4.7 times more likely to smoke than youth who did not drink alcohol and statistically significant at 99.99 % confidence interval and OR between 3.6-6.4. That is to say, related risk behaviors of youth are related such as when youth start to smoke them also to start drink, or smokers would be willing to enter to other risk behaviors too. That is to say, these results show the alcohol influence on youth smoking based on hypothesis six, which question whether or not in youth smoking there really is a difference among youth who have drank alcoholic beverage compared to youth who did not drink.

Table 4.3 Odd Ratio, Robust Standard Error and 95 percent confidence interval of Factors Related to youth smoking in KDSS during 2003 to 2004.

Variables	Odds Ratio	Robust Std. Err.	95 % Conf. interval	
			lower	upper
Individual Factors				
Sex				
Female®				
Male	19.1***	4.4	12.3	29.8
Age (years)				
15-19®				
20-24	1.2	0.2	0.9	1.6
Age at first start regularly smoking	0.95***	.003	0.94	0.96

® Reference group * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$

Table 4.3 Odd Ratio, Robust Standard Error and 95 percent confidence interval of Factors Related to youth smoking in KDSS during 2003 to 2004. (Continued)

Variables	Odds Ratio	Robust Std. Err.	95 % Conf. interval	
			lower	upper
Education				
No education and primary®				
secondary and above	0.55***	0.9	0.4	0.7
Marital Status				
Married/widow/separate®				
Single	1.7**	0.3	1.1	2.3
Wealth Index (Economic Status)				
Rich®				
Moderate	1.6***	0.3	1.2	2.2
Poor	2.2***	0.4	1.5	3.2
Stratum				
Urban/semi-urban®				
Rice	1.3	0.3	0.9	2.0
Plantation	1.4	0.3	0.9	2.3
Upland	1.1	0.3	0.6	2.0
Mixed economy	1.5	0.3	1.0	2.3
Occupation				
No occupation®				
Agriculture	1.5	0.2	1.1	2.1
Non-agriculture	1.6**	0.3	1.2	2.3
Surrounding Factors				
Father smoking				
No smoking®				
Smoking	3.3***	0.7	2.2	5.0
Do not have father's information	0.97***	.03	.05	.18

® Reference group * $p \leq 0.05$, ** $p \leq 0.01$, ***$p \leq 0.001$

Table 4.3 Odd Ratio, Robust Standard Error and 95 percent confidence interval of Factors Related to youth smoking in KDSS during 2003 to 2004. (Continued)

Variables	Odds Ratio	Robust Std. Err.	95 % Conf. interval	
			lower	upper
Mother smoking				
No smoking®				
Smoking	1.2	0.3	0.7	2.0
Do not have mother's information	0.49	0.2	0.2	1.2
Percent people smoke in the village				
Low® (less than and equal 30 %)				
Moderate (31-60 %)	1.4*	0.3	1.0	2.1
High (61% and over)	5.8***	2.5	2.5	13.3
Numbers of household member smoking				
No smoker®				
One smoker	4.7***	0.8	3.3	6.8
More than one smoker	18.1***	3.9	12	28
Number of shops in the village				
No change®				
Increase	2.1***	0.5	1.3	3.3
Decrease	0.9	0.1	0.7	1.1
Health Behavior Factors				
Exercises				
Yes®				
No	1.2*	0.1	1.0	1.6
Drinking Alcohols				
No®				
Yes	4.7***	0.7	3.6	6.4

® Reference group * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$

Table 4.3 Odd Ratio, Robust Std. Err. and 95 percent interval confident of factors Relationship to youth smoking in KDSS between 2003 to 2004 (Continued)

Variables	Odds Ratio	Robust Std. Err.	95 % interval Conf.	
			lower	upper
Time				
2003®				
2004	5.0***	0.8	3.6	7.1
Log likelihood = -952.3085 Number of cases = 5,020 Wald Chi^2 = 629.78 Pseudo r^2 = 0.5354 Prob>ch^2 = 0.000				

® Reference group * $p \leq 0.05$, ** $p \leq 0.01$, ***$p \leq 0.001$

The logistic regression analysis based on the objectives of this study was used to study the change of smoking behavior among the youth and the relationship between the individual factors, surrounding factors and health behavior factors and smoking behavior of the youth in KDSS during the year 2003 to 2004. The results also pointed out that the factors related smoking were sex, age at start regularly smoking, education, marital status, occupation, socio-economic status, number of others in the household smoking, father smoking, percent smoking in the village, number of shops in the village, drinking alcohol, exercises and time, which are statistically significant at a 95 percent confidence interval. This study's results based on overall hypothesis were that youth who had lower education, who were from a poor family, who had at least one and two household smokers, who had a father smoker, who lived in smoked the community that had community members smoked and who drank alcoholic beverage tended to smoke more than those who did not. On the other hand, the factors related to smoking, but not statistically significant were age, stratum, and mother smoking.

As a limited number of longitudinal studies have tracked the prevalence of smoking over time, this study showed that smoking often began during the adolescent years and this behaviour increased by about 3 percent (from 12.5 percent to 15.9 percent) within one year. However, the use of other drugs in the KDSS, such as alcohol drinking among the youth, was found to increase less (from 29.9 percent to 31 percent) during the same period. However, the smoking rate among students dramatically decreased by about 8 percent (from 36 percent to 28 percent) during the same period. Whereas the smoking rate of youths who were out of school still increased.

Although the Thai government has been continuously putting forth much effort in terms of policies (on cigarette imports), law (Act to control Tobacco Products and Consumption of 1992) regulations (included a ban of advertisements and sale promotion), and the announcements by the Ministry of Public Health related to health promotion campaign/movements, all these efforts have not had much effect on awareness, attitude, knowledge on risk of smoking and changes in smoking behaviour. Information and awareness may be accessed by youth in school/students, whereas the youth out of school may not get this information or it is more difficult for them to access this information. Therefore, targeting of no smoking campaigns for youth should be aimed for out-of-school youth.

In addition, for youth who want to quit smoking, there has not been much effort to create a system to assist them to quit smoking.

In order to achieve the objective of investigating the factors influencing the change in smoking among the youth aged 15-24 years, binary logistic regression modelling for a categorical dependent variable was used to test the hypotheses. The results showed that all variables had a significant influence on youth smoking and the findings allow all hypotheses to be accepted. For individual factors, males, particularly single and age at first starting to be a regular smoker had a markedly higher effect than female and other groups. Most smokers in upland were minority groups mainly from Myanmar who had a specific social structure and tobacco

smoking behaviour. For socio-economic status, the first and second hypotheses confirmed that youth from the families with higher socioeconomic status (measured in terms of wealth index and education, respectively) smoked less than those from the poor. These findings were consistent with many previous studies (e.g. San San Oo, 2005 and Sumanasekara, 2006).

Regarding surrounding factors, it was found that parental cigarette smoking, particularly fathers' was significantly related to higher levels of youth smoking compared to those with parents not smoking and an increase in the number of family members smoking increased the chance of youth smoking by about 5-18 times. This means youth who lived with smokers in the same household as second hand smokers had more chance to be smokers. Previous research suggested that parental and household tobacco use might have a considerable impact on the initiation and persistence of smoking in the adolescent child. Li et al. (2002), for example, found that parents' tobacco use was significantly related to higher levels of youth smoking. In addition, the results showed that percent of people in the village/peer smoking and an increase in the number of grocery shops selling cigarettes in the village would increase the chance of youth to smoke. Simon-Morton, 2004 (cited in Brook et al., 2006: 1340), for instance, found that an increase in the number of friends/peers who smoke was predictive of smoking initiation among the youth. These findings are consistent with Bandura's Social Learning Theory, that whenever youth are exposed to surrounding influence, they can learn by observing the behaviour of others, so they will become smokers because of their learning perspective of smoking behaviour from those people. Bandura mentions four conditions that are necessary before individuals can successfully model the behaviour of someone else: pay attention, remember the behaviour, ability to replicate/imitate and desire to demonstrate the behaviour. Social learning theory acknowledges that some learning occurs through direct experience and consequences of individuals' actions that reinforce certain behavioural patterns. However, different youth will reproduce the same behaviour differently. So the findings were consistent with hypotheses 3-5 that environmental factors in terms of parental, household members

and people in the village/peers' smoking tended to have an important impact on youth smoking behaviour.

In regard to the sixth hypothesis, the results showed that youth who drink alcoholic beverages were 5 times more likely to smoke compared to those who did not drink and possibly vice versa (San San Oo, 2005). In addition, drinking alcohol was significantly more related to youth smoking than exercise. Studies in other countries showed that youth smoking was associated with other behaviours including drinking alcohol and drug use. (Buppha et.al, 2006 and White, 2002)

CHAPTER 5
CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

This thesis aims to study the relationship between the individual factors, surrounding factors, health behaviour factors, and youth's smoking in the Kanchanaburi Demographic Surveillance System (KDSS) area, by using 2 sets of panel data in 2003 and 2004 from the Kanchanaburi Project. The pooled sample of this study was totally 2,510 youth aged 15-24 years of age. The two years panel data of 2003 and 2004 were pooled together to get a bigger sample size at different points across time. This resulting sample gave us independently pooled cross-section data, but this might contribute to the intra-cluster correlation in the analysis. So the traditional standard error estimates for a logistic regression model based on maximum likelihood from independent observations was no longer proper for this data set with a cluster structure since observations in same cluster tended to have similar characteristics and are more likely to be correlated with each other. Robust standard error estimates were needed to take into account of the intra-cluster correlation in data analysis by using STATA software. STATA procedure could automatically fit logistic model, calculated robust standard error and provide confidence intervals for odds ratio.

5.1.1 Background Characteristics of the Respondents

The samples were youth aged 15-24 years with more than half of them being aged 15-19 years (61 percent in 2003 and 53 percent in 2004). A lager proportion of samples were females (55 percent) than males (45 percent) for both years. Majority of them finished lower and higher secondary school (67-68 percent each year) and about two-third were still single (70 percent and 67 percent in 2003 and 2004, respectively). The majority of them were living in moderate and rich

households (36-37 percent-moderate and 37-39 percent-rich). They lived in urban/ semi-urban, mixed economy, upland, rice field and plantation areas of the KDSS (24 percent, 22 percent, 20 percent, 18 percent and 15 percent both years, respectively). Regarding occupation, most of them worked in agricultural and non-agricultural sectors (30 percent and 27 percent) while some of them were students (28 percent) in 2004.

Surrounding factors included father and mother smoking, number of household members smoking, number of shops in the village and percent of people that smoke in the village. The majority of the sample did not provide their fathers (about 39-47 percent) and mothers' (30-39 percent) information on smoking. For those who had data, it was found that about one-third of youth's fathers smoked (31-35 percent) but only about 8-9 percent of mothers smoked. In addition, more than half had at least one other person smoking in the households (57 percent in 2003 and 59 percent in 2004), but about two-thirds had less than 30percent percent of people smoking in the village (61 percent in 2003 and 66 percent in 2004). The percent of those who answered that the number of grocery shops selling cigarette in the community remained the same was 63 percent in 2003 and 56 percent in 2004, but about one-third reported an increase in number.

Regarding health behaviour factors, the majority of youth neither exercised (76 percent in 2003 and 66 percent in 2004) nor drank alcohol (69-70 percent in both years), nor smoked cigarettes (88 percent in 2003 and 84 percent in 2004). It was observed that the percentage of youth who did exercise greatly increased by about 10percent, but did not increased much for smoking cigarettes and drinking alcohol during these two years (3 percent and 2percent, respectively).

5.1.2 Smoker Characteristics

Individual characteristics data showed that male smokers increased from one-fourth (25percent) in 2003 to one-third (33percent) in 2004 while the proportion of female smokers were only 2 percent for both years. Most young smokers were

aged 20-24 years (about 20-21 percent), and the mean age at first starting smoking was about 17 years. Although the proportion of young smokers aged 15-19 years was only about one-third (7.5 percent) of that of smokers aged 20-24 years (20percent in 2003) the proportion increased to become half that of the older age-group (11percent in 2004). The proportions of youth with primary, lower and higher secondary and over education were increasing by about 2-4 percent from 2003, but decreased by about 4 percent among those who had no education. The proportion of smokers who were married was higher than those remained single. Regarding economic status and occupation, smokers in all economic status and occupational groups smoked more in the year 2004 compared to 2003, particularly the poor and those who worked in the non- agricultural sector. In addition, about 2 times more youth who lived in the upland area smoked than those who lived in other areas in 2003, and higher proportions of youth smoked in all areas in 2004. These data indicated that male youth with higher age-group, uneducated, poor, lived in upland and worked in non-agricultural sector smoked more compared to other groups.

Surrounding factors included both the personal and physical environment. Not only parents and family members, but also neighbours smoking and sources of selling cigarettes (grocery shops) in the community had an impact on the increasing number of youth smoking. The data showed that the proportion of fathers and mothers who smoked increased from 15 and 14 percent in 2003 to 19 and 29 percent in 2004, respectively. In addition, proportion of youth with more than one family member that smoked increased more than 3 times and a high percentage of people in the community smoked and also increased, but not much in 2004. These surrounding persons might be the role models for youngsters' smoking. As for the number of village grocery shops where youth could easily find cigarettes, it was found that the percentage of shops remained mostly unchanged and the proportion of smokers where shops were growing in number were higher (about 25 percent in 2003 and 30 percent in 2004) compared to those decreasing in number (about 15 and 20 for both year).

Regarding health behaviour factors, although youth smokers exercised less than those who did not smoke, the proportion of those who did exercise increased

from 13 percent in 2003 to 21 percent in 2004. Regarding health risk behaviour, youth smokers also drank alcohol and the proportion increased from 32 percent in 2003 to 40 percent in 2004. This means that youth smokers had a higher risk factor for both communicable and non-communicable diseases such as heart disease, hypertensions, diabetes, cancer etc. since they were young.

5.1.3 Factors Related to Youth Smoking

The results from the logistic model when controlling the influence of other variables showed that the factors that affected youth smoking at a statistical significance of 95 percent or higher included gender, age at first started regular smoking, education, marital status, economic status, occupation, parents smoking, number of households member smoking, percent of smokers in the community, youth who were drinking alcohol, youth who did exercises and time/ years. Males were nearly 20 times more likely to smoke than females with a high level of significance. With each year increase of age at first starting to regularly smoke, youth became five percent less likely to smoke. This means that if youth started smoking at a higher age, a lower percentage would become regular smoker.

Regarding education level, youth who had secondary education and higher were 45 percent less likely to smoke compared to those with primary and no education. This finding was consistent with the survey by the National Statistical Office that the lower education, the higher the smoking rate among the youth (National Statistical Office, 2004:13). Youth living in the rice, plantation, upland and mixed-economy areas were about 1.4, 1.4, 1.1 and 1.5 times more likely to smoke compared to those living in urban/ semi-urban areas.

Considering marital and economic status, single youth were 1.7 times more likely to smoke compared to those who were married. Youth living in the middle and poor economic status households were 2 times more likely to smoke than those from rich households. Youth who worked in agricultural and non-agricultural

sectors were about 1.5 and 1.6 times more likely to smoke compared to those who were unemployed or had not occupation respectively.

Regarding family and community surrounding factors, youth who lived with smoking fathers and mothers were 3.3 and 1.2 times more likely to smoke than those with non-smoking parents, respectively. Also, youth who lived in households that had at least one smoker, and two smokers and over were about 5 and 18 times respectively more likely to smoke when compared with the youth in households without a smoker. This showed that smoking behaviour of parents and family members were a strong influence as the role models on their children's smoking. However, smoking behaviour of youth could be influenced not only by family members but also by their friends or community members. The data showed that youth who lived in communities with high percentages of smokers were 5.8 times more likely to be smokers compared to those who lived in communities with low percentage of smokers.

Regarding health risk and good health behaviours, youth who drank alcohol were 5 times more likely to smoke than those did not drink, and youth who did not exercise were 1.2 times more likely to smoke than those who did exercise.

Since the data used in this study was pooled cross-sectional panel data of the same individuals from the years 2003 and 2004, observations within clusters more likely had similar characteristics or intra-cluster correlations embedded in the data structure. So robust standard errors estimate for cluster sampling data in logistic modelling had to be taken into account. While controlling for other variables in the model, results of binary logistic regression modelling showed that time was effect in the number of smokers more likely 5 times compared to the year 2003.

5.2 Recommendations

1. Health education programs and campaigns related to the dangers of smoking and alcohol drinking behaviours have to focus on parents, family and community members, including youth/peers since they are young. The challenge is to find effective ways of reaching the parents, family members and people in the village of early youth and educating them about their practices.

2. Promoting social skills and self-regulation training by teaching the individual youth to reject bad behaviours (e.g. smoking, drinking and drug use etc.) and reward themselves after doing the needed/good behaviour. Social skills will protect youth from early initiation of smoking by his self-regulation.

3. Additional research may offer future insight for example, into why same youth avoid smoking altogether whereas others take up smoking later on, and why some seem to quit smoking while other do not.

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APPENDIX

APPENDIX

"The study of the risk factors related smoking of Thai Youth in Kanchanaburi DSS during 2003 to 2004"

INDIVIDUAL QUESTIONNAIRE

Part I : Personal Data

1. How old are you? Age in years…….years
2. Sex of respondent 1. Male 2. Female
3. What is your marital status?
   1. Single 2. Married 3. Divorced 4. Separate 5. Widowed
4. Are you studying?
   1. Yes……
   2. No I completed level……in years……or at age…….
5. Are you working?
   1. Working 2. Student/vocational student 3. Looking for job
   4. Housewife 5. Do not work 6. Working and studying
6. What type of work do you do?
   Main occupation…….
   Minor occupation……

Part II : Behavior factors

1. At this month, do you smoking cigarette
2. At what age you start to smoking
3. At this month, do you drinking alcohol
4. Exercise for daily activities such as work, have you exercised regularly?
   1. Yes 2. No

HOUSEHOLD QUESTIONNAIRE

Contribute Wealth index

1. Does your family own any of the following items? If so, how many of each?

Items	Number (if none fill-)
a. Colour T.V.	
b. VDO/VCD/DVD/Karaoke Player	
c. Satellite disk	
d. Audio Equipment Stereo	
e. Mobile Phone	
f. Telephone	
g. Computer	
h. Pump Water machine/Springer	
i. Air conditioner	
J. Sewing machine	
k. Washing machine	
l. Microwave	
m. Refrigerator	
n. Boat (Use motor)	
o. Bicycle	
p. Motorcycle	
q. Tuk tuk	
r. Local Truck	
s. Car	
t. Pick-up/Van	
u. Bus/coach	
w. Tractor/Harvest Tractor	

2. Basic Information on Household Occupants

First/Last name, Age, Sex, Relationship with head of household, Order no. of Father in household, Order no. of mother in household

VILLAGE QUESTIONNAIRE

1. From 1st July 2003 till now, has any shop/convenience store in this village change?
   1. No change 2. Increase 3. Decrease

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