# EVALUATING THE EFFECTIVENESS OF ANTI-SMOKING MESSAGES ON KNOWLEDGE ABOUT HEALTH EFFECTS, NEGATIVE THINKING AND BEHAVIOUR AMONG MALAYSIANS

**By**

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## DEDICATION

This thesis is dedicated to my beloved parents, siblings, wife, son Mohamed Ammar and daughter Fathima Mahrifa. Thanks for their sincere love, patience, sacrifices, and Duaas. May Allah pour his utmost mercy on them.

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| Abbreviation | |
|---|---|
| AD | Administrative District |
| CD | Census District |
| DSM-IV | American Psychiatric Association's Diagnostic and Statistical Manual |
| EB | Enumeration Block |
| FCTC | Framework Convention for Tobacco Control |
| IARC | International Agency for Research on Cancer |
| ICD-10 | International Classification of Diseases (ICD-10) |
| ITC | International Tobacco Control Policy Evaluation Project |
| NHMS III | The Third National Health and Morbidity Survey |
| PM | Particulate Matter |
| SD | Standard Deviation |
| SHS | Second Hand Smoke |
| US | United States |
| USM | Universiti Sains Malaysia |
| WHO | World Health Organization |
| GYTS | Global Youth Tobacco Survey |
| IQ | Intelligence Quotient |
| RM | Ringgit Malaysia |
| OR | Odds Ratio |
| CI | Confidence Interval |
| SCT | Social Cognitive Theory |

# MENILAI KEBERKESANAN MESEJ-MESEJ ANTI-MEROKOK TERHADAP PENGETAHUAN TENTANG KESAN-KESAN KESIHATAN, PEMIKIRAN NEGATIF DAN TINGKAH LAKU DALAM KALANGAN RAKYAT MALAYSIA

## ABSTRAK

Penggunaan tembakau telah dikenalpasti sebagai penyebab utama kematian dan ketidakupayaan di dunia. Di Malaysia, keseluruhan (umur ≥ 15 tahun) prevalens merokok adalah 23.2%, dengan kadar merokok lelaki adalah 44.6%. Dalam kalangan remaja, 15% menyatakan bahawa mereka pernah cuba merokok, lagi 8% mengakui mereka adalah perokok biasa. Penyakit-penyakit berkaitan merokok telah menyebabkan 35% daripada jumlah kematian di hospital-hospital kerajaan dalam tahun 2006. Kerajaan Malaysia telah melancarkan satu kempen media anti-merokok peringkat kebangsaan yang komprehensif dikenali sebagai "Tak Nak" yang mensasarkan golongan kanak-kanak, remaja, wanita serta perokok dan bukan-perokok. Pendidikan di sekolah dan nasihat daripada profesional kesihatan mengenai bahaya merokok juga telah dilaksanakan di Malaysia. Kajian ini bertujuan menilai keberkesanan mesej-mesej anti-merokok (kempen media dan pendidikan) dalam kalangan remaja, perokok dewasa dan bukan-perokok dewasa di Malaysia.

Data didapati daripada satu kaji selidik kohort longitudinal prospektif yang dijalankan dalam kalangan remaja Malaysia (n=1008), perokok dewasa (n=2004) dan bukan-perokok dewasa (n=1555). Responden telah ditanya mengenai pendedahan kepada mesej-mesej anti-merokok melalui pelbagai sumber termasuk kempen "Tak Nak", kekerapan terpandang mesej-mesej anti-merokok, pengetahuan mengenai kesan

merokok terhadap kesihatan, kepercayaan mengenai risiko merokok terhadap kesihatan, kecenderungan merokok, keinginan sosial untuk merokok, bercadang berhenti merokok, tingkah laku dan maklumat demografik. Data dianalisis menggunakan ujian *chi-square* dan model regresi logistik.

Hasil daripada kajian kami menunjukkan bahawa televisyen merupakan media yang paling berkesan untuk menyebarkan mesej-mesej anti-merokok kepada perokok dewasa, bukan-perokok dan remaja di Malaysia (>81%) dalam julat yang lebih luas. Secara keseluruhan, hasil kajian menunjukkan bahawa kempen media anti-merokok di Malaysia (Tak Nak) telah menghasilkan tahap kesedaran awam (>87%) dan pengetahuan yang tinggi tentang kesan merokok terhadap kesihatan dalam ketiga-tiga kumpulan yang dikaji.

Namun begitu, dengan kedua-dua tahap kesedaran mengenai kempen dan pengetahuan yang tinggi mengenai kesan buruk merokok, mesej-mesej media anti-merokok mempengaruhi tingkah laku bukan-perokok dewasa (Adj.OR=1.22; 95% CI=1.06-1.40, p=0.009), dan pemikiran mengenai keburukan merokok disebabkan oleh mesej-mesej media anti-merokok menggalakkan perokok dewasa untuk bercadang berhenti merokok (OR=2.21; 95% CI=1.15-4.27, p=0.021). Pendidikan anti-merokok di sekolah melindungi remaja perempuan daripada kecenderungan untuk merokok (Adj.OR=28; 95% CI=0.15-0.55, p=0.001).

Oleh itu, kerajaan perlu memperkukuhkan lain-lain polisi berkaitan tembakau bagi menyokong perokok untuk berhenti merokok dan melindungi remaja daripada mula merokok. Strategi-strategi ini mungkin termasuk memperluaskan zon-zon bebas asap rokok, menyediakan perkhidmatan berhenti merokok, serta menaikkan cukai tembakau dan harga rokok. Pendidikan anti-merokok di sekolah perlu disemak semula dengan memfokuskan kepada kedua-dua golongan pelajar lelaki dan perempuan. Hasil kajian memberikan bukti untuk menyokong pembiayaan berterusan bagi kempen-kempen media anti-merokok.

**EVALUATING THE EFFECTIVENESS OF ANTI-SMOKING MESSAGES ON KNOWLEDGE ABOUT HEALTH EFFECTS, NEGATIVE THINKING AND BEHAVIOUR AMONG MALAYSIANS.**


## ABSTRACT

Tobacco use has been identified as the leading cause of death and disability in the world. In Malaysia, overall (age ≥15 years) smoking prevalence of 23.2%, with male smoking rate is 44.6%. Among teenagers, 15% indicated as experimenters, another 8% confessed to being regular smokers. Smoking-related diseases had caused 35% of the death in Government hospitals in 2006. The Malaysian government launched a comprehensive national anti-smoking media campaign called "Tak Nak" in targeting at children, youth, women as well as smokers and the non-smokers. School education and advice from health professionals about dangers of smoking are also being done in Malaysia. Aim of this study was to evaluate the effectiveness of anti-smoking messages (Media campaign and education) among adolescents, adult smokers and adult non-smokers in Malaysia.

Data came from a prospective longitudinal cohort survey conducted among Malaysian adolescents (n=1008), adult smokers (n=2004) and adult non-smokers (n=1555). Respondents were asked about exposure to anti-smoking messages via various sources including "Tak Nak" campaign, frequency of noticing anti-smoking messages, knowledge of health effects of smoking, beliefs about the health risks of smoking, smoking susceptibility, social desirability of smoking, planning to quit, behavior and

demographic information. Data were analyzed using chi-square tests and logistic regression models.

Findings from our study revealed that television is the most effective media to disseminate anti-smoking messages in a wide-range of adult smokers, non-smokers and adolescents in Malaysia (>81%). Overall, the results suggest that Malaysia's anti-smoking media campaign (*Tak Nak*) has resulted in a high level of public awareness (>87%) and knowledge about health effects of smoking in all three study groups.

However, with the high level of awareness about campaign and knowledge about harmful effects of smoking, anti-smoking media messages influence adult non-smokers' behaviour (Adj.OR=1.22; 95% CI=1.06-1.40, p=0.009) and thoughts about the harm of smoking because of anti-smoking media messages encourage adult smokers to plan to quit (OR=2.21; 95% CI=1.15-4.27, p=0.021). Anti-smoking school education protects female adolescents from susceptibility to smoking (Adj.OR=28; 95% CI=0.15-0.55, p=0.001)

Therefore, the government need to strengthen other tobacco policies to support smokers to quit and protect adolescents from taking up smoking. These strategies may include expanding smoke free zones, provide cessation services, and raise tobacco taxation and cigarette price. School anti-smoking education should be revised focusing both male and female students. These findings provide evidence to support continuous funding of anti-smoking media campaigns.

# CHAPTER 1

# INTRODUCTION AND LITERATURE REVIEW

## 1.1. THE TOBACCO ISSUE

There are more than 4000 different chemicals components in tobacco smoke. More than 40 of the chemicals in tobacco are known to cause cancer (Mackay & Erikson, 2002). Nicotine is the drug in the tobacco that makes smoking a powerful addiction. Experts rank nicotine ahead of alcohol, cocaine, and heroin with regard to the severity of dependence resulting from its use (U.S Department of Health and Human Services, 1994, Girma *et al.*, 2010). Tobacco dependence is also recognised as a disease in the World Health Organization's International Classification of Diseases (ICD-10) and American Psychiatric Association's Diagnostic and Statistical Manual (DSM-IV) (Prabhat & Frank Chaloupka, 1999, Health Canada, 2002).

Tobacco use is responsible for the global death of several millions of people around the world annually. This is caused by thousands of hazardous chemicals and toxic compounds identified and isolated from tobacco (Haustein, 2003). Today tobacco issue has been raised as the main concern of the health professionals, scientists, politicians, and public for health, social and economical reasons (Fathelrahman, 2010). Therefore, nowadays tobacco consumption is considered as the most urgent agenda for public health and disease control agencies (Jha *et al.*, 2006). This has influenced the formulation of the first health-related international treaty by World Health Organization (WHO) known as the Framework Convention on Tobacco Control (FCTC).

### 1.1.1. Tobacco related morbidity and mortality

Tobacco is the only product that is available to produce harmful effects to every organ and system in human body (Haustein, 2003, Vineis *et al.*, 2004, Mackay *et al.*, 2006). Tobacco use is the leading cause of preventable death in the world, resulting in approximately five million deaths per annum (WHO, 2008). By the year 2020, worldwide tobacco related deaths are estimated to reach 10 million every year, two third of which will be in developing countries (Mackay *et al.*, 2006). Smoking initiation in both Western and Asian countries typically occurs during youth and younger adulthood, and early initiation is associated with a greater dependency and higher mortality from smoking related disease (U.S Department of Health and Human Services, 1994, Warren, 2002, Parkinson *et al.*, 2009). Annually about one-quarter of Malaysian deaths (almost 10000) are attributed to smoking related diseases. This exceed the number of road accident deaths in Malaysia during the year 2004 (Clearinghouse for tobacco control, 2005).

Epidemiologic studies strongly support the assertion that cigarette smoking in both men and women increases the incidence of myocardial infarction and fatal coronary artery disease (Black, 1995, Ambrose & Barua, 2004). Even low-tar cigarettes and smokeless tobacco have been shown to increase the risk of cardiovascular events in comparison to non-smokers (Negri *et al.*, 1993, Bolinder *et al.*, 1994, Ambrose & Barua, 2004). Furthermore, passive smoking (environmental tobacco exposure) with a smoke exposure about one-hundredth that of active cigarette smoking is associated with approximately a 30% increase in risk of coronary artery disease, compared with

an 80% increase in active smokers (Glantz & Parmley, 1991, Law *et al.*, 1997, Ambrose & Barua, 2004).

Non-smokers also can be harmed by exposure to smokers or smoking area (Bernert *et al.*, 2009). Second hand smoke (SHS) is the third leading cause of preventable death in the United States (US), killing 53,000 non-smokers in the US each year. For every eight smokers the tobacco industry kills, it takes one non-smoker with them (Glantz & Parmley, 1991, Taylor *et al.*, 1992). Therefore, it is important to understand the issue of tobacco smoking, which is not only going to harm smokers but, also non-smokers. Second-hand smoke is as damaging to a foetus as if the mother was inhaling the smoke directly from a cigarette (Grant, 2005). SHS is a major source of particulate matter (PM) pollution - a risk factor for pulmonary disease, asthma, and lung cancer and that three cigarettes smouldering in a room emits up to 10-fold more PM pollution than an eco-diesel engine. A study concluded that high levels of PM exposure from SHS may account for frequent episodes of short term respiratory damage in non-smokers (Invernizzi *et al.*, 2004). Second-hand smoke exposure during childhood has been associated with an increased risk of spinal pain, such as neck pain and back pain in adult life. Researchers suggest this may be due to the negative effects of smoke exposure during childhood on the developing spine (Eriksen, 2004). It is understood that tobacco use is the global issue to be addressed in order to help smokers to quit, protect adolescents and non-smokers from taking up smoking in the future.

### 1.1.2. Tobacco use around the world

Trend of tobacco behaviours vary in different regions of the world (Corrao *et al.*, 2000).There are many different patterns of smoking exist in many lower income countries where smoking rates are high, often but not always, with higher rates among males compared with female (Jha & Chaloupka, 2000, Abdullah & Husten, 2004). The prevalence of smoking continues to decline in many Western markets, but many Asian markets continue to grow (Shafey *et al.*, 2003). At present, approximately 500 million of the world's 1.3 billion smokers live in Asia (Mackay & Erikson, 2002).Tobacco use among Asian countries is characterized by significant gender differences. In the Western countries, smoking rate among males are slightly higher than females, but smoking rate among Asian males typically approach or exceed 50% whereas fewer than 5% of Asian women smoke (Mackay & Erikson, 2002, Shafey *et al.*, 2003). The presence of multinational tobacco companies in Asia is increasing and Asian women are targets of well-funded marketing campaign that link smoking with Western ideals of thinness and glamour (Mackay & Amos, 2003).Therefore, there is growing concern that tobacco use among Asian women will follow the trajectories observed in Western societies over the past 50 years and increase to levels similar to those of males (Mackay & Amos, 2003).

Increases in smoking among Asian women are likely to appear first among the adolescent population. Smoking initiation in both Western and Asian countries typically occurs during adolescent and young adulthood, and early initiation is associated with a greater dependence and higher mortality from smoking-related

diseases (U.S Department of Health and Human Services, 1994, Warren, 2002). The average age of smoking initiation is 12.7 years, and by the end of high school 42% of all students reported being current smokers (Morello *et al.*, 2001). Approximately, 80% of tobacco users initiate use before they are 18, and an estimated 6.4 million children younger than 18 who are living today will die prematurely as adults because they began to smoke during adolescence (Marshall *et al.*, 2006). Therefore, it is very important to protect adolescents and younger adults from initiation of smoking.

Cigarette smoking is the main form of tobacco use in Malaysia. Findings from several surveys suggest that adolescent smoking may be on the rise in Malaysia (Parkinson *et al.*, 2009). In Malaysia, about 5 million persons representing various demographic groups and of different socioeconomic backgrounds smoke cigarette (Clearinghouse for tobacco control, 2005, Fathelrahman, 2010). The 2003 Global Youth Tobacco Survey of 13-15 year old in Malaysia reported the prevalence of 19.9% current smoking, with 35.5% of males and 4.3% of females (Global Youth Tobacco Survey (GYTS), 2003, The Third National Health and Morbidity Survey (NHMS III), 2006). The Third National Health and Morbidity Survey (2006) reported that among teenagers age between 13 and 18 years old, 15% indicated that they have tried smoking and another 8% confessed to being regular smokers. And boys started smoking earlier (12.8 years) than girls (14.3 years) in Malaysia. However, this lower smoking prevalence among Malaysian adolescents is inconsistent with number of local studies, conducted between 2000 and 2008. That demonstrated prevalence of adolescent current smokers varies from 14-37% (Zulkifli

*et al.*, 2001, Naing *et al.*, 2004, Lee *et al.*, 2005, Afiah *et al.*, 2006, Lim *et al.*, 2006, Lim *et al.*, 2010, Tohid. *et al.*, 2011). Approximately, 21.5% of adult's population or three million are smokers in Malaysia (The Third National Health and Morbidity Survey (NHMS III), 2006). According to the WHO report in 2009, if this current trends continue, by 2030 tobacco use could cause 8 million deaths annually (WHO 2009). In Malaysia, 21.5% of the non-smokers are exposed to tobacco smoke (SHS) and smoking related diseases had caused 35% of the death in Government hospitals in 2006 (The Third National Health and Morbidity Survey (NHMS III), 2006). A recent study by Parkinson *et al.,* concluded that female adolescents are less likely to hold positive aesthetic and social acceptability beliefs about smoking compared to their male counterparts (Parkinson *et al.*, 2009). Their research findings also highlight the importance of research on youth smoking in Asia region, the trend of youth smoking shifts in the tobacco epidemic in Asia, particularly concerning changes in smoking prevalence among females. Recent research in Malaysia and Thailand highlighted the importance of research into youth smoking in Asia, particularly with regard to changes in smoking prevalence among females (Parkinson *et al.*, 2009).

## 1.2. TOBACCO CONTROL

Research findings have proven the beneficial impact of tobacco control activities in curbing the epidemic of tobacco use and its subsequent health consequences (Abedian *et al.*, 1998, Levy *et al.*, 2004, WHO, 2004, Fathelrahman, 2010). Those activities are mainly tobacco control policies or educational efforts and awareness.

WHO FCTC is the first treaty negotiated under the auspices of the WHO. The WHO FCTC is an evidence-based treaty that reaffirms the right of all people to the highest standard of health. In June 2003 the WHO launched its Framework Convention on Tobacco Control (WHO, 2004, WHO, 2005). The FCTC was signed by 167 of 192 WHO member countries and came into action in February 2005 (Mackay *et al.*, 2006). The WHO FCTC was developed in response to the globalization of the tobacco epidemic. The core demand reduction provisions in the WHO FCTC are contained in articles 6-14 and the core supply reduction provisions are contained in articles 15-17:

Article 6: Price and tax measures to reduce the demand for tobacco, and

Article 7: Non-price measures to reduce the demand for tobacco

Article 8: Protection from exposure to tobacco smoke

Article 9: Regulation of the contents of tobacco products

Article10: Regulation of tobacco product disclosures

Article 11: Packaging and labelling of tobacco products

Article 12: Education, communication, training, and public awareness

Article 13: Tobacco advertising, promotion, and sponsorship

Article 14: Demand reduction measures concerning tobacco dependence and cessation

Article 15: Illicit trade in tobacco products

Article 16: Sales to and by minors

Article 17: Provision of support for economically viable alternative activities

In this thesis work, we have focussed on evaluation of education, communication and public awareness policy (article 12).

### 1.2.1. Tobacco control in Malaysia

Since 1993, Malaysia enacted the Control of Tobacco Product Regulations made under the Food Act 1983. This legislation, aimed at discouraging tobacco use through environmental modification as well as strict control on the industry, was recently amended to tighten current provisions. The new regulations of 2004 impose a complete ban on tobacco promotions, restrictions on cigarette access to minors, standardizing cigarette packaging and expansion of smoke-free areas.

Malaysia has made significant move to strengthen in tobacco control policy. Such as in February 2004, the Malaysian government launched a comprehensive national anti-smoking media campaign called “Tak Nak” (Say No). The magnitude of the “Tak Nak” campaign could be gained from a wide reaching and integrated communication approach in targeting adolescents, women as well as smokers and the non-smokers. Through this campaign accurate and effective information, regarding health hazards of smoking was disseminated. It should be subsequently discouraged

teenagers from taking up smoking. The objective of this campaign was to reduce the prevalence of smoking that would ultimately decrease the smoking related morbidity and mortality. “Tak Nak” campaign was expected to curb smoking and its initiation by changing individual behaviour through improvement in knowledge, beliefs, and attitudes towards smoking.

“Tak Nak” campaign was one of the approaches relevant to control tobacco use apart from other measures such as taxation, school health programs, smoking cessation services, community mobilization, enforcement of legislation and policies, state-wide on-ground activities, and program administration and management. All of these had been carried out prior to and concurrent with the campaign.

While capitalizing on the popularity and heightened public interest resulting from the “Tak Nak” campaign, numerous anti-smoking projects and other events have been carried out simultaneously during the course of this media campaign. These were done either by the Ministry of Health, other governmental agencies, non-governmental organizations or the private sectors.

### 1.2.2. “Tak Nak” anti-smoking media campaign

The nationwide high profile “Tak Nak” campaign was launched in February 2004 carrying a slogan “Tak Nak! Setiap sedutan membawa padah.” (Say No! Every puff you take damages your body). The slogan was used to stress the ongoing effects of

smoking. "Tak Nak" media campaign was a 5-year project with an annual cost of approximately RM 20 million and was financed by the Malaysian government.

The campaign was designed to galvanize the entire nation on a national crusade against cigarette smoking using an identified focus to communicate the enormity of the problem. Accurate information concerning health risks of smoking, disseminated through the campaign should subsequently;

1. Discourage youths from starting to smoke,
2. Discourage women from smoking,
3. Discourage smokers from continuing their smoking habit, and
4. Encourage all to persuade their friends and loved ones from initiating or cease their smoking habit.

*Tak Nak* media campaign emphasized on branding and claimed that using a very simple (but infectious) expression and a very simple (but memorable) icon, the campaign could;

1. Reach out and connect, especially with the adolescents
2. Appeal to all in an endearing way
3. Create an impact that will be immediately felt nationwide
4. Capture the imagination of the whole country
5. Educate to discourage everyone from smoking (Kin. *et al.*, 2005).

The campaign brand and icon "Tak Nak" was made widely visible to Malaysians through numerous medium. *Tak Nak* campaign adopted strategic deployment of media channels to achieve effective reach and frequency of the target prospects.

Electronic and outdoor media formed the main trust of the campaign. Printed and non-printed activities were used for extended coverage. The mass media channels used were television, newspaper, magazine, radio, cinema, billboard, school advertising panel, giant posters and community boards. Collaterals such as badge, car sticker and T-shirts were also used. The high profile launch was meant to generate news and publicity for the campaign.

This campaign began with two light humorous series: the "Audition" and the "Home coming". These first sets of advertisements carried images of "bad teeth" and messages of how smoking affects the physical appeal of young men and women such as foul breath, trigger diseases, wrinkles the skin, causes impotence, spoils good looks and poisons the body. The humorous series were subsequently followed by the horror statement series, carrying messages and visuals of "blood clot," "cancer," "rotting lung," and "tar" appeared in newspapers, television and billboards (Kin. et al., 2005). (see Appendices 1);

1. "Cigarette smoking can cause brain damage"
2. "Cigarette smoke can cause cancer"
3. "Cigarette smoke rot the lungs"
4. " Cigarette smoke condenses in your lungs to form tar"
5. "Cigarette smoking can lead to drug addiction"
6. "Cigarette smoking can cause impotence"
7. "Cigarette smoke can affect children's Intelligence Quotient (IQ)"

8. “Cigarette smoking kills more than 4 million people a year, 8000 a day, 6 a minute and 1 every 8 seconds”
9. “Cigarette smoking can wrinkle your skin”
10. “Cigarette smoking causes bad teeth”

## 1.3. RESEARCH ON ANTI-SMOKING CAMPAIGN AND EDUCATION

Mass media have played a key role in the historical increases and decreases in tobacco use globally, and remain a powerful tool for public health advocates, as an avenue of projecting health related messages (National Cancer Institute, 2008).Some studies suggest that media not only are key sources in defining the importance and relevance of health issues, but also in shaping the public’s perceptions of who is responsible for public health problems and their solutions, thus ‘framing’ issues for the public (Iyengar *et al.*, 1982, Shuchman, 2002, Caburnay *et al.*, 2003). Anti-smoking mass media campaign has been shown to significantly reduce the progression to regular smoking among both adults and adolescents (Flynn *et al.*, 1992, Flynn *et al.*, 1994, Hu *et al.*, 1995, Worden *et al.*, 1996, Siegel, 1998, Siegel & Biener, 2000).

Past research conducted in mainly western developed countries suggests that the implementation of anti-smoking campaign and advertisement may prevent smoking uptake among adolescents (Sly *et al.*, 2001, Wakefield *et al.*, 2003a). Specifically, previous study have found that anti-smoking campaigns can have a significantly positive effect on public’s health knowledge, which in turn can reduce smoking behaviour (Hsieh *et al.*, 1996, McComas, 2006). Although there is evidence that anti-

smoking advertising can influence tobacco use, not all campaigns report these effects on receivers. There is much to be learned about the optimum amount and configuration of exposure, type of messages, and execution of messages, as well as how anti-smoking messages are mediated by the personal characteristics and social environments of the receivers.

To date, it is unclear whether anti-smoking education provided at a more personal level by authority figures like teachers in schools and doctors, nurses and pharmacists at health settings is effective as preventive measure against smoking among young people and adults living in this region of the world. Evidence on the effectiveness of school-based smoking prevention programs carried out in the western developed countries to date has rather mixed (Lantz *et al.*, 2000, Thomas & Perera, 2006, Flay, 2009). Nevertheless, in country like Malaysia where respect for authorities is paramount, particularly among young people, anti-smoking messages provided at the personal level by teachers and health professionals may have greater credibility and hence, may exert a greater influence on health-related beliefs, attitudes, knowledge, and behaviour of young people as compared to the messages provided by government mass media campaigns.

According to our knowledge and literature review, there was no previous published work on the evaluation of anti-smoking advertisements and messages among Malaysians although there was huge anti-smoking mass media campaign conducted in early 2004. Our intention is to make contribution fill this gap. The current study

sought to understand whether anti-smoking advertisement and education have a role to play in preventing smoking among youth and non-smokers and motivating smokers to quit in Malaysia.

## 1.4. CONCEPTUAL FRAMEWORK

### 1.4.1 Public communication campaign

Public education and public communication campaigns are used to improve awareness, knowledge, and understanding of an issue, in an attempt to influence individual behaviour, build support for, and contribute to policy and social changes (IARC Handbooks of Cancer Prevention Tobacco Control, 2008). Public communication campaigns can be divided into two types; individual behaviour change campaigns, and public engagement campaign (Coffman, 2002). Individual behaviour change campaigns seek to change the type of behaviours that lead to improve individual or social well-being, this campaign is also called public education campaign (Coffman, 2002). Public engagement campaigns are used to build public demand to address a particular problem through policy and social action (Coffman, 2002).

Public can campaign to legitimize or raise the importance of a social problem in the public eye as the motivation for policy action or change (Henry & Rivera, 1998). It focuses less on the individual who is performing the behaviour (i.e. the smoker, polluter, drug user), and more on the public's responsibility to do something that will create the environment needed to support that behaviour change. For this reason, it is sometimes also referred to as a public engagement campaign. Types of public

communication include paid (or "mass") media, public relations, media advocacy, and community action implemented discreetly or in combination (Coffman, 2002, Dorfman *et al.*, 2002).

### 1.4.2. Paid or mass media

Mass media is often the most expensive component of a public communication campaign, and yet may reach the greatest number of people. It can deliver the message to large audience and raise awareness, increase knowledge, create interest, engagement, concern, and stimulate conversation and action (Centers for Disease Control and Prevention, 2003). In our study, we aimed to evaluate the effectiveness of the *Tak Nak* mass media campaign that covered the whole of Malaysia through various places, such as television, radio, posters, billboards, newspapers, magazines, discos and cinema.

### 1.4.3. Theories to explain the effectiveness of a campaign

One or more theories of behaviour change enable to explain the campaign's progress throughout the health communication process (Atkin, 2001, Coffman, 2002, Randolph & Viswanath, 2004). Theories relevant to public communication campaigns include: the theory of reasoned action, social cognitive theory (SCT), the health belief model, the trans-theoretical model, consumer information processing model, organizational change theory, community organization theory, and diffusion of innovation theory (Connell & Kubisch, 1998, Atkin, 2001, Coffman, 2002, IARC Handbooks of Cancer Prevention Tobacco Control, 2008). Among these theories,

SCT is one of the most comprehensive theories that describe importance of multiple factors (personal or cognitive, behavioural and social) influencing human health behaviour (Bandura, 2004, Conner & Norman, 2005, Tohid. *et al.*, 2011).

### a. Social cognitive theory (SCT)

Social cognitive theory by Albert Bandura postulates that behaviour change results from motivation to change and the acquisition of skills and abilities (i.e. self-efficacy) to change, within a given environmental context (Bandura, 1989, Bandura, 2004). Based on a public communication campaign grounded in this theory would try to attract the target audience's attention, convey a compelling message, impart specific knowledge, and provide motivation to undertake behaviour change. An evaluation of such campaign would assess attitude, knowledge in the target population and desire to change the behaviour (i.e. preferably in conjunction with a reinforcing environmental change, such as a price increase on cigarette, or the adoption of smoke free policy).

In the recent years, there are many international studies on smoking behaviour had applied SCT as their theoretical framework (Grimshaw & Stanton, 2006, Bektas *et al.*, 2010, Tohid. *et al.*, 2011). Therefore, it suggests that SCT has become main resource for evaluation of effectiveness of anti-smoking interventions.

It is important to address here that, since the application of the models and theories have been established from previous literature, the current work was not aimed to test the previous models and theories. However, current research had adopted SCT as its framework to guide researchers in accomplishing the objectives of the research (figure 1.1).

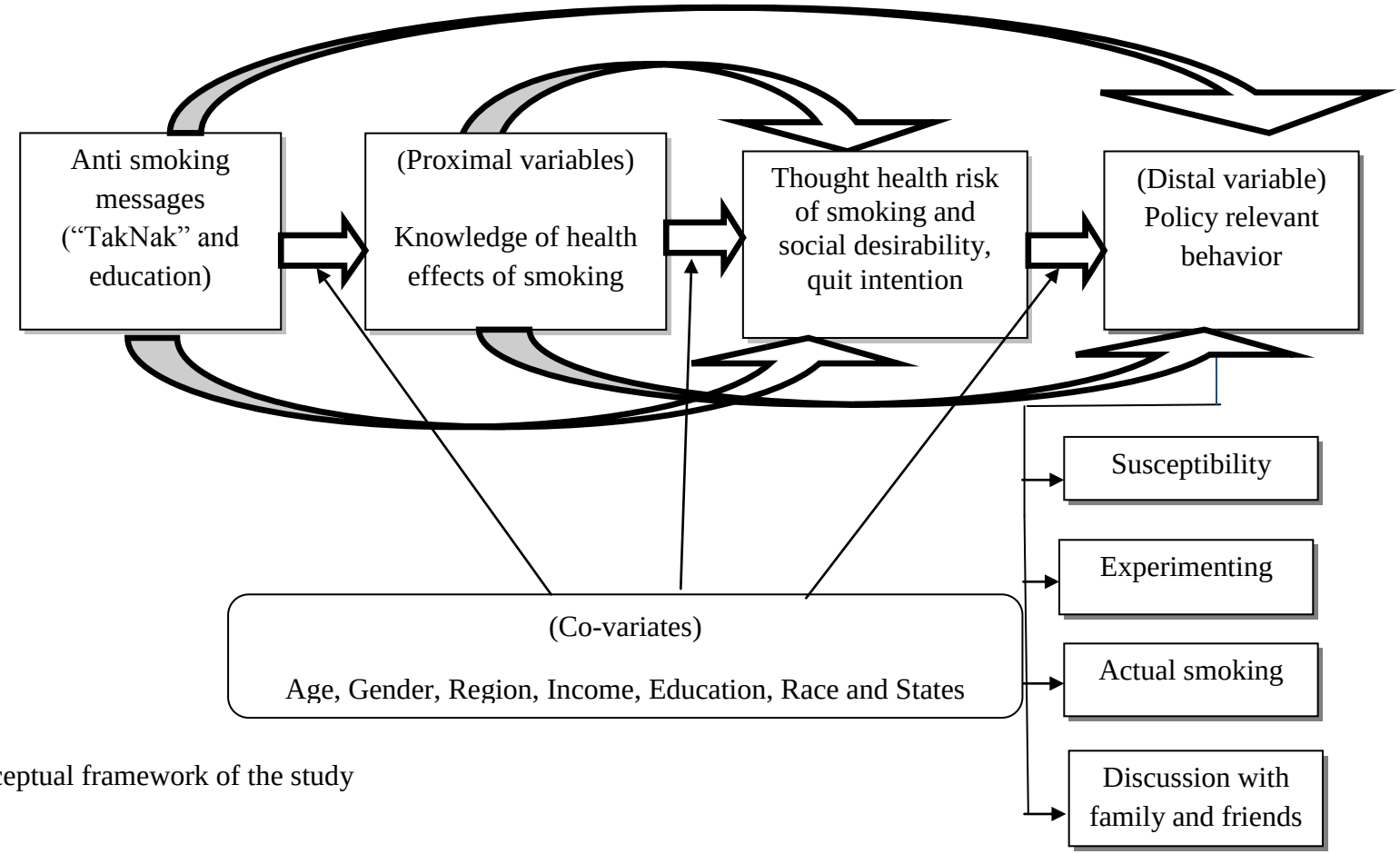


Figure 1.1. Conceptual framework of the study

## 1.5 STUDY RATIONALE AND RESEARCH QUESTIONS

### 1.5.1. Study rationale

1. Specifically, in developing countries, studies and evidence on the evaluation of anti-smoking messages (campaign or education) on adolescents, adult smokers and non-smokers are limited and most of the evidence available is from developed countries.

2. The evaluation is to determine whether the anti-smoking messages (media campaign and education) were achieving their goals.

3. To provide further evidence that will help to facilitate decision to refine on-going and future anti-smoking programs.

4. To date there was no any analytical type of evaluation study on effectiveness of anti-smoking messages being published from Malaysia.

### 1.5.2. Research questions

1. Are adolescents, adult smokers and adult non-smokers exposed to anti-smoking messages (mass media campaign and education)?

2. What are the most prominent media channels viewed by Malaysians?

3. Are Malaysians gained knowledge about health effects of smoking through anti-smoking messages?

4. Are the anti-smoking messages able to produce thoughts about perceived health risk of smoking among adolescents and adult smokers in Malaysia?

5. Are the anti-smoking messages made to think smoking socially less desirable among adult smokers and non-smokers in Malaysia?

6. Are the anti-smoking messages made adult smokers more likely to quit smoking?

7. Are never smoked adolescents protected from susceptibility to smoking because of anti-smoking messages?

8. Are anti-smoking messages able to influence adult smokers in intention to quit smoking and change actual smoking behaviour in the long term?

9. Are anti-smoking messages able to make adult non-smokers discuss dangers of smoking among friends and family members?

## 1.6. OBJECTIVES

The specific objectives were;

1. To determine the prevalence of adolescents, and adult smokers and non-smokers exposure to various anti-smoking messages or campaigns over the study period.
2. To determine the most effective media to disseminate anti-smoking messages among Malaysian adolescents, and adult smokers and non-smokers.
3. To determine the association of reported exposure to anti-smoking messages and education with knowledge of health effects of smoking among Malaysians
4. To determine the association of reported exposure to anti-smoking messages with perceived health risk of smoking among adolescents and adult smokers

5. To determine the association of reported exposure to anti-smoking messages with susceptibility to smoking and subsequent smoking behaviour among adolescents
6. To determine the association of reported exposure to anti-smoking messages with think smoking less social desirable among adult smokers and non-smokers in Malaysia.
7. To determine the association of reported exposure to anti-smoking messages with likelihood to quit smoking and planning to quit smoking among adult smokers
8. To determine the association of reported exposure to anti-smoking messages with behaviour change among adult smokers (actual quitting) and adult non-smokers (discuss about dangers of smoking among friends and family members).
9. To explore possible moderating effect of gender.

# CHAPTER 2

# METHODS AND MEASURES

## 2.1. THE SURVEY

The reported data were from the International Tobacco Control Policy Evaluation (ITC) longitudinal cohort study. The ITC project conducts annual national-level surveys to collect information to evaluate FCTC policies and other tobacco control activities in over 20 countries around the world. In Malaysia survey, the first data collection (Wave 1) was conducted between January and March 2005, and the first follow-up survey (Wave 2) was conducted between August 2006 and March 2007. Designing of the survey and data collection were performed according to ITC survey method by experienced interviewers from Malaysian and International ITC experts. In these surveys, all the interviews were conducted face-to-face in Wave 1, but in Wave 2, mixed mode data collection method was applied (Thompson, 2008). Most of the respondents in Wave 2 (80%) were interviewed face to face, and the rests were through telephone interview.

Recruitment of participants and the sample of household were selected using a stratified multistage cluster sampling design. The primary strata consisted of six zones of Malaysia. Respondents were selected from one state in each of the six zones: Kedah, Selangor, Johor, Terengganu, Sabah and Sarawak (see Appendices 2). In each state, there was a secondary stratification into urban and rural districts. Ultimate sample allocations within the secondary strata were made proportional to their size.

The questionnaire was developed by an international team of experts on tobacco control, with different backgrounds (Thompson *et al.*, 2006). The original questionnaire was prepared in English and translated into local Malay language. The questionnaire was validated by back translation process and cognitive testing of the questionnaire was conducted with a small group of people prior to survey (see Appendices 3a to 3c).

### 2.1.1. Study design and recruited sample size

The ITC Malaysia survey involves a cohort sample of 1009 adolescents, 1560 adult non-smokers and 2004 adult smokers (Thompson *et al.*, 2006). According to Thompson *et al.,* (2006), "*the sample size was chosen to allow for the chances of detecting in nationally representative with high power. Power calculation was performed for several kinds of effects spanning the length of our conceptual framework."* At Wave 1, the sample was allocated approximately proportionally to the sizes of the strata. It was hoped to maintain Wave 1 sample sizes within the urban and rural parts of chosen states. However, in Wave 2, due to severe flooding in the state of Johor, it was impossible to carry out a full replenishment there, and some replenishment respondents were drawn from Penang, which had not been sampled from in Wave 1. Because of further difficulties in re-contacting Wave 1 respondents, the final Wave 2 sample was having low retention rate especially among adult smokers and adolescents. We experienced high attrition rate among adult smokers especially in urban areas. This could be due to mobility, busy and not interested to take part in follow-up survey if they may have no intention to quit