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# Smoking Media Literacy and Smoking Behavior among Adolescents in Indonesia: a Research Proposal

Ranti Kemala Nastasia

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## ABSTRACT

### SMOKING MEDIA LITERACY AND SMOKING BEHAVIOR AMONG ADOLESCENTS IN INDONESIA: A RESEARCH PROPOSAL

by

RANTI KEMALA NASTASIA

April 14, 2016

Smoking is one of the biggest risk factors and public health concerns in both developed and developing countries. The chemicals from cigarette smoke are harmful to almost all organs of the body of both adults and youth. According to the Global Youth Tobacco Survey 2014 data, 20.3% of all students aged 13-15 (36.2% of boys and 4.3% of girls) currently use tobacco in all forms. Studies demonstrate that higher media literacy has been associated with lower smoking among youth, but there is currently no research around that topic in Indonesia. The research will aim to determine whether smoking media literacy is associated with current smoking and susceptibility to smoking in the sample of youth in DKI Jakarta, Indonesia. This proposed research will ask a sample of secondary school students in DKI Jakarta to complete a survey that includes 16-item SML scale, items assessing current smoking and susceptibility to future smoking. A total of 86,354 participants is expected in this study. The researchers will use logistic regression to determine associations between smoking media literacy and the two outcome measures. The product of this capstone project will be in a form of a research proposal, which will be submitted to funding agencies in order to serve as a pioneer for researches on similar topic in Indonesia.

SMOKING MEDIA LITERACY AND SMOKING BEHAVIOR AMONG  
ADOLESCENTS IN INDONESIA: A RESEARCH PROPOSAL

by

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MD, SRIWIJAYA UNIVERSITY, INDONESIA

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in Partial Fulfillment of the Requirements for the Degree

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APPROVAL PAGE

SMOKING MEDIA LITERACY AND SMOKING BEHAVIOR AMONG  
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### Author's Statement Page

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Ranti Kemala Nastasia

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## **CHAPTER I**

### **INTRODUCTION**

Smoking is one of the biggest risk factors and public health concerns in both developed and developing countries (WHO, 2015). Smoking is responsible for more than 20 million deaths in the US since 1964 according to the 2014 Surgeon General's report (USDHHS, 2014). Approximately one-third of all coronary heart disease deaths and more than half of all lung cancer deaths are caused by smoking (USDHHS, 2014). Smoking is also associated with chronic respiratory diseases and digestive diseases (Eriksen, Mackay, & Ross, 2012).

Smoking impacts the health of human body regardless of age (USDHHS, 2010). The chemicals from cigarette smoke are harmful to almost all organs of the body of both adults and youth (USDHHS, 2012). A longer duration of the exposure to smoking affects more damage to the body, causing a great concern to people who have been smoking since adolescence (USDHHS, 2012). Young people who smoke are at risk of addiction to nicotine, respiratory and cardiovascular systems damage (USDHHS, 2014). Adolescents who smoke also suffered asthma, allergy symptoms, and immediate adverse health consequences such as shortness of breath (Foster et al, 2007), which can affect their athletic performance and other physical activities. Furthermore, addiction to nicotine can have permanent effects on brain development since the adolescent brain has not yet fully developed (Steinberg, 2007).

Indonesia produces approximately 360 billion cigarettes annually (Euromonitor, 2014), ranking Indonesia as one of the biggest producers and exporters of cigarettes worldwide. Cigarette consumption has been vast as well in Indonesia. Indonesians are the



fourth largest consumer of cigarettes in the world, after the Chinese, Russians, and Americans (Euromonitor, 2014). Indonesia has a vast population numbering over 240 million people and more than half of all Indonesian men smoke cigarettes while only 2 percent of women smoke (WHO, 2015).

Smoking prevalence among youth is also increasing in Indonesia. Global Youth Tobacco Survey (GYTS) is a surveillance activity developed by the World Health Organization (WHO) and the Centers for Disease Control and Prevention (CDC) to monitor tobacco use (smoke and smokeless) among youth aged 13-15 years. Based on their 2014 data, more than 20% of Indonesian students (36.2% of boys and 4.3% of girls) are current tobacco users in any form (WHO, 2015), which is much higher than the 7.7% of American middle school (8.8% of boys and 6.6% of girls) in the same year (CDC, 2015). Furthermore, 43.2% of Indonesian students tried their first cigarettes when they were 12 to 13 years old.

It is inevitable that cigarette marketing in Indonesia is aggressive and inventive since the tobacco companies spend billions of dollars each year to market their products (Federal Trade Commission, 2005). The tobacco industries are politically and financially influential in Indonesia because they are one of the primary sources of government revenue (Nichter et al., 2009). Accordingly, there is no specific ban or law on smoking marketing and advertising. Also, mass media that encourages youth to smoke can be seen almost everywhere, such as smoking characters in the movies, on TV, and on the Internet. Tobacco industries contribute to this phenomenon by developing massive marketing approaches to attract youth to smoke and become permanent smokers (WHO, 2008). More or less 3 in 5 Indonesia students (58.2%) reported that they saw someone

consuming cigarette on television, videos or movies in the past 30 days (WHO, 2015). Moreover, more than 9 in 10 students saw advertisements for cigarettes on billboards and more than 8 in 10 students saw advertisements for cigarettes in newspapers or magazines within the past month (Aditama et al., 2008).

Studies provide strong evidence that exposure to pro-tobacco mass media messages has the potential effect to increase smoking susceptibility (Fulmer et al., 2015; Sargent, Gibson, & Heatherton, 2009) and reduce quit attempts (Ling & Glantz, 2004; Pollay & Dewhirst, 2002) among adolescents. Furthermore, research shows that viewing smoking in movies increases youth smoking initiation more than other types of tobacco marketing (Charlesworth & Glantz, 2005; Dal Cin, Stoolmiller, & Sargent, 2013; Dalton et al., 2003; Morgenstern et al., 2013; Sargent et al., 2002; Titus-Ernstoff, Dalton, Adachi-Mejia, Longacre, & Beach, 2008). Ultimately, these pro-tobacco media messages use comprehensive marketing strategies to depict smoking as an acceptable and glamorous behavior and work at both social and environmental settings to change youth tobacco-related beliefs, intentions, and actions (NCI, 2008).

Solutions to this problem could be reducing the pro-tobacco media exposure to adolescents. However, this approach is not always possible and feasible. Therefore, one strategy available to public health professionals in Indonesia would be to promote media literacy. Media literacy is defined as the ability to access, analyze, and evaluate media messages (CDC, 1998) and a willingness to implement these abilities hypothetically to benefit health (Strasburger, Jordan, & Donnerstein, 2010). The purpose of media literacy is to decrease the impact of those pro-tobacco media messages by educating people to identify critically how daily encountered media messages actually try to influence them

negatively (CDC, 2011). Media literacy helps people critically assess how the mass media normalize, glamorize, and create role models for unhealthy lifestyles and behaviors, such as smoking.

Smoking media literacy, therefore, represents a promising framework for the development of innovative tobacco prevention programs directed toward youth. Media literacy has been shown to be both feasible and teachable, making it attractive as an intervention (Primack, Gold, Land, & Fine, 2006). Furthermore, the Theory of Reasoned Action (TRA) states that an individual's behavior is determined by behavioral intention as a result of underlying attitudes and subjective norms (Ajzen & Fishbein, 1980). This model may be particularly relevant for media literacy programs because of the potential to reduce the impact of mass media messages on attitudes and subjective norms (Primack et al., 2006). Numerous studies indicate that higher media literacy has been associated with lower smoking among youth (Bergsma & Carney, 2008; Kupersmidt, Scull, & Austin, 2010; Primack et al., 2006; Salgado et al., 2012).

There is, however, limited information and publicly available research on this topic in Indonesia. Therefore, this study will be conducted to investigate an association between smoking media literacy and cigarette use among Indonesian youth as a contribution to Indonesia health policy to decrease smoking prevalence among adolescents. The findings are also expected to provide the future research with reliable evidence to develop an intervention using a media literacy education component. Thus, the study will attempt to address these questions:

1. Is smoking media literacy associated with current smoking in the sample of youth in Indonesia?

2. Is smoking media literacy associated with smoking susceptibility among those who never smoked in the sample of youth in Indonesia?

To provide structured arguments to answer the above questions, this paper will be divided into four chapters with different highlights and functions. This article begins with an introduction in which general knowledge regarding the available data will be explained. This first chapter also serves as a signposting of all the next chapters, which contain the elaborate arguments and findings. The second chapter will provide literature reviews, which are the basis of the arguments. The second chapter asserts the theory used in this paper, the Theory of Reasoned Action. The implementation of this theory, along with the methodology, will be provided in chapter three. Ultimately, chapter four will state the implication of the study.

## **CHAPTER II**

### **LITERATURE REVIEW**

#### **Tobacco Use in Indonesia**

Indonesia is the biggest archipelagic country in the world that comprises 17,508 islands (CIA, 2016) and has hundreds of ethnic groups and local languages or dialects (Aditama, 2002). With 1,904,569 square kilometers of total land area and another 93,000 square kilometers of inland seas comprising the total area of the country, Indonesia is almost three times the size of Texas (CIA, 2016). Indonesia is the fifth most populous nation in the world after China, India, European Union, and the United States with 255,993,674 million people in 2015; 25.82% of the population is under 15 years of age (CIA, 2016). Java is the most populous island in the world because half of the total population of Indonesia resides on this island (Calder, 2007).

Cigarette production in Indonesia has increased from 35 billion to 220 billion sticks from 1960-2005 (Achadi, Soerojo, & Barber, 2005). The most popular cigarette in Indonesia is clove-blended cigarette, called kretek cigarette. Kretek cigarettes characteristically are a combination of tobacco, cloves, and other additives (Nichter et al., 2009). The name kretek is derived from the crackling sound when the tobacco-clove mixture is burned. Since 1980, Indonesia produces kretek more than white cigarettes (Achadi et al., 2005).

Tobacco and cigarette production is one of the biggest industries in the country, therefore, the Indonesian population is constantly exposed to cigarettes in one form or another. The result makes Indonesians as one of the largest group of tobacco users in the world (Aditama, 2006). The country is currently ranked fourth in tobacco smoking

worldwide (Euromonitor, 2014) with around 225,000,000 billion cigarette sticks used annually by the general population in 2008 (WHO, 2012). In 2011, the Indonesian male population ranked as the third highest in the number of smokers worldwide; the female population ranked as the third highest in the number of smokers worldwide; the female population ranked 17th in the world. Roughly 67% men and 4% women of Indonesia's adult population smoke cigarettes (Mackay, Ritthiphakdee, & Reddy, 2013). Although the margin is thin, rural people have a higher prevalence of smoking than those in the urban population. Statistics found that the rural population smokes more frequently everyday (30.8%) than the urban population does (25.9%).

As the statistics show, smoking prevalence is the highest among male adults. A more concerning statistic shows that the initiation of cigarette smokers is relatively early in the country, with over a quarter of boys in both urban and rural area beginning smoking at the age of 13-15 years old. The youth population is at risk of initiating and becoming long-term smokers (Richardson et al., 2014) because the smoking initiation phase usually happens during late childhood and young adolescence (Krainuwat, 2005).

In 2014, the National Institute of Health Research and Development conducted the Global Youth Tobacco Surveillance (GYTS), under a supervision of the Indonesian Ministry of Health. Indonesian students in grades 7-9 were set as the target population and a total of 5,986 students completed the survey. Most of the students were in the age group of 13-15. Data collected from this survey showed that 20.3% of all participants were current smokers in both cigarette and non-cigarette forms (WHO, 2015).

The number of "ever smokers" in Indonesia is also high. An ever smoker is defined as someone who had tried smoking at least once in their lives, although they never consider themselves as smokers since they never actively smoke cigarettes even for

a brief time (USHDS, 2012). According to a survey, which included 1,490 students ages 13 and 17 years old from 50 high schools in Jakarta, 47% of the population had tried smoking at least once (WHO, 2000). A more concerning finding shows that among the ever smokers, 19% tried smoking before the age of 10.

This phenomenon demonstrates the urgency of the problem Indonesia is facing regarding the large and increasing smoking prevalence among youth. The health effects caused by smoking are more significant compared to effects from other risk factors such as alcohol, drug use, hypertension, or obesity (Nurwidya et al., 2014). Large numbers of cigarette smokers lead to more frequent cases of premature mortality from diseases related to tobacco use (Martini & Sulistyowati, 2005). An increase in the prevalence of non-communicable diseases has been shown in the last five years as the result of the high number of regular smokers in Indonesia (Achadi et al., 2005).

Previous researchers have been able to prove a pattern showing that addiction to nicotine leads to greater risk of cardiovascular and respiratory diseases, including stroke, coronary heart disease, and lung cancer (WHO, 2012). Several studies have been conducted in Jakarta to examine the association between smoking and lung cancer. One study revealed that smokers are eight times more likely to get lung cancer compared to non-smokers (Djutaharta & Surya, 2003). Meanwhile, those who had smoked for more than 40 years are relatively nine times more likely to get lung cancer (Aditama, 2002). In addition, lung cancer patients die 1-2 years after diagnosis (Situmeang, 2001). Moreover, most Indonesian people prefer consuming kretek cigarettes (Ministry of Health, 2004). Kretek cigarettes have a higher tar and nicotine content compared to white cigarettes (Achadi et al., 2005). They also have eugenol content that was claimed as a possible

human carcinogen (Guidotti, 1989). The study also has indicated an association between eugenol and acute, chronic, and behavioral health impacts when inhaled (Guidotti, 1989).

The high prevalence of smoking in the general population in Indonesia also contributes to the high total of medical expenditure in long-term morbidities (chronic pulmonary disease, coronary heart disease, cancers, and perinatal disorders) caused by cigarette smoking, which was IDR 1.85 trillion in 2010 (WHO, 2012). It was estimated that Indonesia has to spend a total of IDR 0.26 trillion for expenditure per patient per visit on ambulatory cases (WHO, 2012). Also, the total deaths caused by tobacco reaches 12.7% of all deaths in the country annually, which can be categorized as high compared to the other countries with high prevalence of smoking among its general population (WHO, 2012).

### **Tobacco Control Policies in Indonesia**

The tobacco industry is the second largest employer after the governmental institutions (Prasetyo & Bajraghosa, 2007). The industry employs roughly 11 million workers. The Indonesian government receives a tremendous amount of revenue from the tobacco industry (Nichter et al., 2009). It is, in fact, the fourth largest exported commodity of the country after oil, timber, and gas (Nichter et al., 2009). Thus, tobacco companies are independent and powerful in Indonesia. Seeing the significant economic value that tobacco industries possess, the policies and regulations regarding tobacco industries and subsequently smoking are very low. On a wider frame, Indonesia is notably the only country in the Asia-Pacific region that has not authorized the World Health Organization (WHO) Framework Convention on Tobacco Control (Aditama et al., 2008). The WHO FCTC is the first WHO treaty to control tobacco consumption and



support countries that approve the development and implementation of tobacco control policies, such as banning both direct and indirect tobacco advertising banning, raising tobacco tax and price, putting warning messages on tobacco packaging, and encouraging community to create smoke-free public places and workplaces. Hence, although price and tax measures have been shown as effective tobacco control measure in most developing nations, they are still insufficient in Indonesia (Minh et al., 2005).

There are at least three factors that complicate tobacco control in Indonesia (Aditama, 2002). The first and foremost is that approximately be 12 million people are supported by tobacco-related industries in Indonesia, including tobacco and clove farmers, workers in tobacco factories, the distributors, shops and all the way down to the children street vendors (Aditama, 2002). The families of each of them are also influenced, although indirectly. Second, the cigarette industry is a major source of tax revenues for Indonesia. As a form of income that the government receives, the significance of tobacco industries in boosting tax revenues is an important consideration while making any policies in regards to smoking-control programs. Lastly, there is not yet a strong enough commitment from decision makers in the government to make strict regulations regarding smoking and the dynamics of tobacco industries.

Consequently, access to cigarette from stores or street vendors is easy for people, because there are no laws that restrict the sale of tobacco to youth (Martini & Sulistyowati, 2005). More than two-thirds of the young smokers surveyed by the GYTS said that they purchase their cigarettes from stores, and 72% said that they have never been refused when buying cigarettes despite their young age (WHO, 2015). Moreover, 13% of the respondents said they were offered cigarettes by the tobacco industry through

promotional activities at malls and entertainment centers. In big promotional events, this can include offers of free cigarettes to young people.

Amidst these loose smoking regulations, the Indonesian government passed a law to partially limit cigarette advertising on television by restricting advertising tobacco only from 9:00 PM to 7:00 AM (Martini & Sulistyowati, 2005). The regulation also requires a display of a health warning, such as the risk of having cancer, heart disease, and stillbirths among pregnant women, either in print or as an announcement after each advertisement. Unfortunately, this warning is displayed so fast that it may be hard for the audience to read or notice. In 2003, the Department of Health insisted on a comprehensive ban on tobacco advertising on any electronic media, but this was opposed by the Ministry of Communications, local governments, and private television stations (Ministry of Health, 2004). Overall, there is no specific regulation with regard to advertising on print medias, including billboards. Ultimately, the status quo shows a very limited control over pro-cigarette advertising in Indonesia.

### **Pro-tobacco Media Exposure in Indonesia**

Lack of policy in Indonesia allows tobacco advertisements to be ubiquitous in both print and electronic media. Advertising can be found anywhere including daily newspapers, tabloids, magazines and websites. In addition to mainstream media, tobacco and cigarettes are also pervasively advertised on metropolitan billboards, transportation vehicles, and through sporting events. Tobacco companies in Indonesia pay billions of dollars annually to promote their products (FTC, 2005). They state that the target of their adverts is only adult population, but studies have demonstrated that their adverts effectively target young population (DiFranza et al., 2006). By advertising in popular

youth-oriented magazines, near schools using giant billboards illustrating glamorized images of smoking, and placing tobacco products in famous movies for the youth audience, the vulnerable young population will be attracted to use their products. Through these advertising activities, tobacco industries try to mislead the target population by creating an environment in which smoking is common and socially appropriate (USDHHS, 2010). They also sponsor national soccer competitions, basketball competitions, and music events and concerts (WHO, 2008).

Nichter et al. (2009) conducted an investigation to explore main cultural themes in cigarette advertisements in Indonesia that have been utilized by tobacco companies to sell their products. They found that most cigarette advertisements target the masculinity. This usually implies a combination of a strong man with a clear sense of identity and his loyalty to his cigarette. Smoking advertisements describe groups of young men hanging out and having fun, and portray smoking not only as socially casual for young men but also part of the enjoyment of being young and establishing one's masculine identity (Nichter et al., 2009). Other cigarette advertisements represent tobacco use in a positive manner that facilitates young men to explore their personality and inspire them to chase their dreams. These adverts use an illustration of youth obsessed with the vision of becoming a movie star, film director, singer, or musician to convince young audiences to forget their stressors and follow their desires (Nichter et al., 2009).

With the high level of pervasiveness of tobacco advertising in Indonesia, students are frequently exposed to these advertisements. Data indicate that more than 9 in 10 students have seen cigarettes being advertised on billboards within the past month (Aditama et al., 2008). Regarding advertisements in print media, 8 in every 10 students

reported having seen cigarettes advertisements in newspapers or magazines (Aditama et al., 2008). It is reported that approximately 58.2% of Indonesian youth saw someone using tobacco in movies or during commercial breaks on television (Achadi et al., 2005). These massive commercial advertisement exposures of smoking may influence smoking behavior in Indonesia, particularly in the adolescent population. Moreover, the nature of adolescents is that they are still in pursuit of their self-identity; tobacco companies see adolescents as an important market target to maintain company profits.

Studies have demonstrated substantial evidence between exposure to certain mass media messages and smoking in adolescents. Firstly, exposure to pro-tobacco mass media messages has been linked to increasing smoking susceptibility among adolescents (Fulmer et al., 2015; Pierce et al., 1998; J. D. Sargent et al., 2009). Secondly, pro-tobacco media exposure has also an effect to reduce quit attempts (Ling & Glantz, 2004; Pollay & Dewhirst, 2002). Thirdly, pro-tobacco marketing maintains or increases use among current smoker (Upadhyaya, Drobles, & Thomas, 2004). Fourthly, pro-tobacco imagery encouraged a former smoker to relapse (Ling & Glantz, 2004) by inducing tobacco craving (Ferguson & Shiffman, 2008). Lastly, research findings show that viewing smoking in movies increases youth smoking initiation than other types of tobacco marketing (Charlesworth & Glantz, 2005; Dal Cin et al., 2013; Dalton et al., 2003; Morgenstern et al., 2013; James D Sargent et al., 2002; Titus-Ernstoff et al., 2008). Ultimately, these pro-tobacco media messages use carefully calculated marketing strategies that work at multilevel settings to change youth tobacco-related beliefs, intentions, and actions (NCI, 2008) by depicting smoking as an acceptable, customary,

and popular behavior as well as undermining the warnings about smoking's health impacts (USDHHS, 1989).

### **Smoking Media Literacy as an Intervention**

Media literacy skill is defined as the ability to access, analyze, and evaluate media messages (CDC, 1998) and a willingness to implement these abilities hypothetically to benefit health (Strasburger et al., 2010). The purpose of media literacy for smoking control is to decrease the impact of pro-tobacco media messages by educating people to identify how media messages they encounter daily actually try to influence them negatively (CDC, 2011). Recognizing media and its persuasive effects on attitudes and behavior, media literacy helps youth critically understand, assess, and evaluate how the mass media normalizes, glamorizes, and creates role models for unhealthy lifestyles and behaviors, such as smoking, thereby enabling them to actively process media messages rather than passively remain message targets (Buckingham, 2003; Hobbs & Frost, 2003).

One of the health behavior theories, the Theory of Reasoned Action (TRA), has been applied in numerous studies to investigate or explain smoking behavior in adolescents (Berg, Jonsson, & Conner, 2000; Bursey & Craig, 2000). TRA also has been used to predict adolescent smoking (Ajzen & Fishbein, 1980; Unger et al., 2001; Faucher & Carter, 2001). This theory states that an individual's behavior is determined by behavioral intention as a result of a person's belief toward adopting certain behavior (attitudes) and a person's perceptions of what is considered normative and acceptable to others whose opinions they care about regarding the behavior (subjective norms) (DiClemente, Salazar, & Crosby, 2013). This model may be particularly relevant for media literacy programs because of their potential to change an individual's attitudes and

subjective norms toward pro-smoking media messages (Primack et al., 2006). Another explanation is that media literacy can sensitize youth to the manipulative and often implicit messages that confer pro-smoking attitudes and subjective norms (Primack, Fine, Yang, Wickett, & Zickmund, 2009). Furthermore, media literacy intervention may lessen a young person's belief in the validity of these implied effects of smoking (Ajzen & Fishbein, 1980).

Media literacy may moderate the impact that media messages on cigarette use present, and hypothetically have an effect on attitudes and normative beliefs related to smoking, which could affect actual smoking behavior (Salgado et al., 2012). In accordance with this statement, better critical thinking skill and ability on processing media messages may minimize the pro-smoking media messages impact on young people's belief (Kupersmidt et al., 2010) since their perceptions about tobacco may still be persuadable as they enter a phase of enhanced decision-making ability and may be specifically vulnerable to choose unhealthy behavior (Bier et al., 2011). Likewise, improving adolescents' smoking normative beliefs may lead them to make a healthy and responsible decision (Primack, Switzer, & Dalton, 2007). Also, studies have demonstrated that media literacy has potential effects in decreasing risky behaviors including alcohol use and eating disorders (Wade, Davidson, O'Dea, 2003).

Several studies in the US have indicated that school-based smoking prevention programs are effective (Tahlil, Coveney, Woodman, & Ward, 2013). School-based smoking prevention programs may reduce initiation and intentions to smoke at least in the short term based on systematic reviews and meta-analyses of published articles between 1985 and 2006 (Dobbins et al., 2008). Other researchers also supported this

finding by reporting that the program raised adolescents' negative attitude toward smoking and social self-efficacy, and decreased the students' smoking intention (Lotrean et al., 2010). School-based smoking prevention programs also improved perceived exposure to anti-smoking education program and had a positive impact on participants' smoking knowledge, attitude, and behaviors (Berman et al., 2011)

In spite of the promising results regarding reduction in cigarette smoking, school-based smoking prevention programs have not worked in the long-term (Wiehe et al. 2005; Peterson et al., 2000). Studies in the US found that traditional school-based smoking prevention programs have not been effective in changing smoking behaviors (Peterson et al., 2000). In 2014, Primack et al. conducted a study comparing a standard anti-smoking curriculum and a media literacy curriculum in preventing tobacco use among 9th-grade students in the US. They concluded that a school-based media literacy curriculum had significantly improved students smoking media literacy and perceptions of the actual prevalence of smoking compared to the traditional school-based anti-smoking curriculum. One explanation as to why these programs may not have been successful is that they underestimated the power of media on shaping adolescent behavior.

Primack et al also developed and validated a scale that measures smoking media literacy (SML scale) in adolescents (2006). They used the TRA, item modification, and factor analysis to create a psychometrically appropriate scale to measure tobacco-related media literacy in adolescents (Primack et al., 2006). They also discovered, that higher smoking media literacy level as measured by SML scale was strongly and independently associated with both reduced current smoking and reduced susceptibility to future

smoking among youth in the US (Primack, Gold, Land, et al., 2006).

Hence, smoking media literacy appears as a promising framework for the elaboration of comprehensive tobacco prevention programs for adolescents (American Academy of Pediatrics, 1999). Media literacy has been proven to be both feasible and teachable as an intervention (Hobbs & Frost, 2003). Ultimately, Bier et al. (2011) found evidences showing an impact of integrating media literacy into smoking prevention education on students' general and specific smoking media literacy. This evidence became more convincing since major health organizations such as the American Academy of Pediatrics (1999), the Centers for Disease Control and Prevention (1999), and the Office of National Drug Control Policy (2001) also recommend media literacy to prevent negative impact pro-tobacco media messages on adolescent smoking.



## **CHAPTER III**

### **METHODOLOGY**

#### **Study Design**

This proposed research will be conducted as a non-experimental research design using cross-sectional survey since a sample of population will be selected and contacted at a particular point in time. In this study, the investigator will not control, manipulate or change the predictor variable or subjects. The study relies on observation, relations, or interpretation to conclude result of the investigation. The study also will not be able to suggest a true cause-and-effect association due to its non-experimental design.

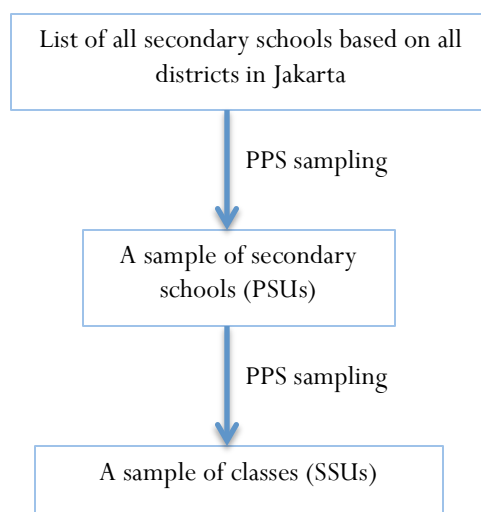
#### **Setting**

The research will be conducted in DKI Jakarta, the capital city of Indonesia. The consideration for this setting lies in several arguments. First, DKI Jakarta is the most populous provincial equivalent in Indonesia with 10,075,310 people living in the city as of 2014, making it the most representative city to conduct research which aims to illustrate overall situations in Indonesia (Dukcapil DKI Jakarta, 2015). Second, DKI Jakarta is also the most densely populated city in Indonesia with the population density of 15,000/sq km (Dukcapil DKI Jakarta, 2015). DKI Jakarta is located on the northwestern part of Java. Java itself holds 57 percent of Indonesian population, making it the most populous island in the world (Calder, 2007). DKI Jakarta, a city with the size of only 0.5 percent of the island's size, holds nearly 10 percent of its population (Dukcapil DKI Jakarta, 2015). On the last related note, DKI Jakarta's status as a capital city of Indonesia ensures accessibility and transparency to statistical figures in the city that includes statistics of schools and students that are needed to conduct this study.

## Sampling

The target population will be Indonesian male and female secondary students (7th through 9th grades). Respondents will be sampled using a probability sampling design. To obtain a nationally representative sample of Indonesian students in grades 7 – 9, the study will use a two-stage cluster sample design. In the first stage, a sample of schools as Primary Sampling Units (PSUs) will be drawn. PSUs will be selected with probability proportional to the number of students enrolled in the specified grades. In the second stage, second-stage sampling units (SSUs) will be drawn from each PSU using probability proportional to size (PPS) sampling. In other words, from every chosen school, a sample of classes will be selected with PPS sampling and all students in the chosen classes will be surveyed. According to the data (Dukcapil DKI Jakarta, 2011), there are 958 secondary schools (Appendix A, Table 1), 10,129 classes (grades 7-9) (Appendix A, Table 2), and 365,856 secondary school students (Appendix A, Table 3) in all districts in DKI Jakarta (South Jakarta, West Jakarta, Central Jakarta, East Jakarta, North Jakarta).

Figure 1. Diagram of the Two-stage Cluster Sampling



To determine the sample size, this research will use power-based sample size calculation. To perform the calculation, the study uses odds ratio from the pilot study by Primack et al. (2006). To detect an odds ratio with an assumed smoking prevalence of 0.19, with a level of significance .05 and statistical power of 80%, we will need at least 398 participants.

### **Survey Instrument**

The SML scale developed by Primack et al. (2006) will be used to measure the independent variable, media literacy. The scale postulates an integrated theoretical framework of media literacy that measures the construct of media literacy. This framework has four components: Authors and Audience (AA) domain, Messages and Meanings (MM) domain, and Representation and Reality (RR) domain (Appendix A, Table 5). AA domain refers to acknowledgement of the cigarette company as influential and manipulative of certain target markets. MM domain represents how cigarette marketing promotes products by using comprehensive strategies to induce emotional responses. RR domain corresponds to the awareness of the difference between what is represented in media and real health impacts of cigarette use.

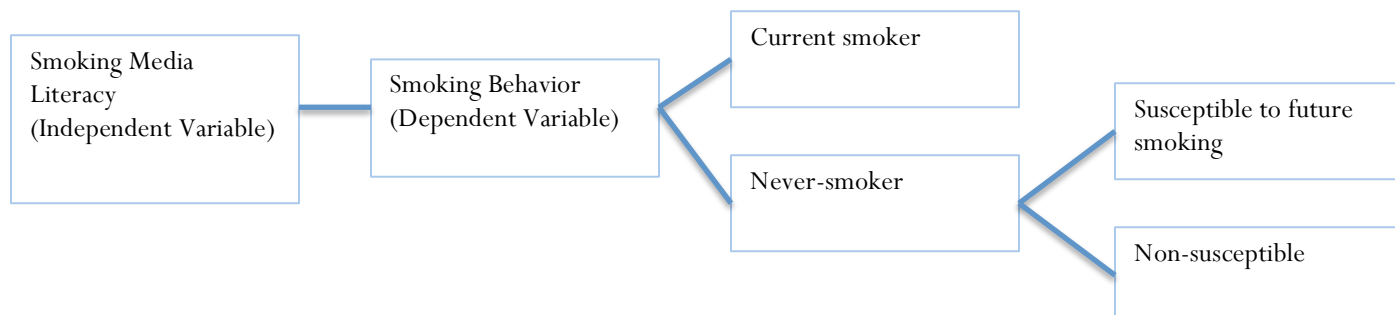
This scale is comprised of 18 items (Appendix D). The items on the survey instrument will be selected based on relevance to this population. Two items on the SML scale (“Buy-one-get-one-free deals on cigarettes are designed to get people addicted” and “When you see a buy-one-get-one-free cigarette deal, it is usually not actually a good deal in the long run) will not be used because such deals do not exist in Indonesia. Two native Indonesian speakers will translate items from English into Indonesian. The survey in Indonesian will be translated back to English to confirm equivalence of the English

and Indonesian survey versions. These 16 items will be evaluated with a four-point Likert scale that does not offer a neutral category (strongly disagree = 1, disagree = 2, agree = 3, strongly agree = 4). Based on the Primack et al. study (2009), students will be categorized as high media literacy when their average response scores  $\geq 3$ . Primack et al. (2006) stated that the SML scale that they developed is both reliable and valid; the scale has high internal consistency (Cronbach  $\alpha = 0.87$ ) and powerful content validity (Primack et al., 2006).

To assess reliability of the translated version, the internal consistency of the items will be evaluated using a commonly used psychometric tool, Cronbach's alpha coefficient. Both individual Cronbach alpha scores of each domain and overall Cronbach alpha score of the four domains of the SML scale in Indonesian will be reported and compared to the original scale in English. To assess validity of the translated version, the calculated scale scores for every item will be used to compute the Pearson correlation coefficients between the scales scores. Validity will be evaluated by examining the strength of the relationship between each pair.

The study will also measure the dependent variable, smoking behavior. Respondents will be divided as current smoker and never-smoker. Students will be categorized as a current smoker when they smoked at least one cigarette in the 30 days before the survey or a never-smoker when they never smoked cigarettes. Only those who never smoked that will be assessed as to whether they have intention to smoke in the future.

Figure 2. Diagram of Association between Independent and Dependent Variables



Susceptibility to future smoking will be assessed with a reliable and valid scale (Cronbach  $\alpha = 0.72$ ) developed by Pierce et al. (1996). The scale has three items (Appendix F). Students will be labeled as a ‘non-susceptible’ when they answer “definitely no” instead of “probably not”, “probably yes”, and “definitely yes” to all questions. The investigation will also collect demographic information from the students, including age, grade, gender, and parent’s background (formal education and employment status). Information about students’ smoking environments will also be reported (parental smoking and peer smoking).

### **Data Collection**

The study will be conducted after getting the approval from the IRB at National Institute of Health Research and Development, Ministry of Health, Indonesia. A survey permit from the Ministry of Education in Indonesia and school officials will also be obtained as well as student assent and parental consent. According to the National Institutes of Health, the means of obtaining assent from children ages above 13 is written assent from both parent (Appendix B) and child (Appendix C).

A cross-sectional survey will be performed to gather primary data from the target population using Indonesian language questionnaires (Appendix E). Prior to survey administration, the survey instrument will be pilot tested in a small, targeted sample. The purpose of pilot test is to confirm that all participants not only understand each item but also understand the questions in the same way as well as the length of time needed to finish the survey can be estimated (UWE, 2008). There are some points to check when conducting the pilot test: (1) does each question measure what it is supposed to measure?; (2) are all the words understood?; (3) do all respondents interpret the question in the same way?; (4) do respondents correctly follow directions?; (5) how long does it take to complete? (UWE, 2008).

In the survey implementation, students will be anonymous to protect their privacy. Students will also be informed that involvement in the survey is entirely voluntary. The survey instrument will be implemented in paper format. The students will answer the questionnaires forms distributed by the research staff. After the students finished filling out the survey, they should put their completed questionnaire forms in an envelope they are provided. The students will seal the envelope to keep their answers confidential and place it into the box at the front of the room. The estimated time for the duration in collecting the data is two months.

### **Analysis Plan**

The survey responses will be computed and analyzed using the statistical software program SAS (version 9.0). The study will perform descriptive analysis with Chi-square tests to compare the sample by current smoking and susceptibility to future smoking. Demographic information, student's environmental factors, the proportion of current

smokers by these characteristics, and the proportion of never-smokers who were susceptible to future smoking by these characteristics will be summarized by frequency and percentage (Appendix A, Table 5).

All analyses will be conducted to answer the null hypotheses: (1) there is no association between smoking media literacy and current smoking in the sample of youth in Indonesia; (2) there is no association between smoking media literacy and smoking susceptibility among those who never smoked in the sample of youth in Indonesia. The alternative hypotheses are: (1) there is association between smoking media literacy and current smoking in the sample of youth in Indonesia; (2) there is association between smoking media literacy and smoking susceptibility among those who never smoked in the sample of youth in Indonesia. Researchers expect to see that students with high smoking media literacy are less likely to be current smokers, and among students who never smoked those with high smoking media literacy are less likely to be susceptible to smoke in the future. To determine if the null hypothesis can be rejected, the assistance of a statistician will be sought. The study will use logistic regression to assess: (1) the bivariate and multivariate associations between SML level and current smoking (Appendix A, Table 6); (2) the bivariate and multivariate associations between SML level and susceptibility to smoking in the future among students who never smoked (Appendix A, Table 7). The models will incorporate all of the potential confounders of current smoking or susceptibility to future smoking, such as age, grade, gender, parents' background, parental smoking, and peer smoking. The study will compute 95% confidence intervals for all analyses.

## **CHAPTER IV**

### **CONCLUSIONS**

#### **Limitations**

There are several limitations to this study, both in meta-analysis and technical aspects. Regarding meta-analysis, the use of cross-sectional data is one of the limitations of this study. Even though this study design can make it possible to show association between smoking media literacy and smoking behavior, causality relationships cannot be explained. The study will not be able to determine whether smoking media literacy influences decision making on smoking or smoking behavior influences how a person answers smoking media literacy items. Two more limitations can be found in technical aspect of the research. First, this study will use a sample that represents only one province in Indonesia and may not be representative of other islands in the country, as Indonesia is very vast and diverse. Variations in research results are expected to be found when this research is conducted in other parts of Indonesia. The second and related limitation is that while forward-backward translation of survey items can ensure the survey items are equivalent and the survey was pilot tested in the classroom to ensure the students can understand the survey items, there is still a possibility that there will be differences in interpretation by the Indonesian students.

#### **Implications**

The expected finding of this proposed study is to show the impact of smoking media literacy on smoking behavior, current smoking and susceptibility to smoking in the future, among adolescents, especially students age 13-15. There are some implications if the research finds the association between smoking media literacy and smoking behavior



among adolescents. Firstly, further study will be needed to determine the potential causality relationship between smoking media literacy and smoking behavior among adolescents. Also, additional research of smoking media literacy and smoking behavior among other age range in adolescents may be necessary. Secondly, it will be essential to conduct a future research that introduces and tests smoking media literacy intervention on adolescents. Thirdly, the expected finding will be sufficient to assess the incorporation of a media literacy curriculum as a standard component of school-based smoking prevention program. Lastly, the outcomes of this study might be relevant for the government in order to establish stronger rules to regulate the cigarette marketing and promotion.

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### Appendix A: Tables

Table 1. Total Number, Proportion, and Percentage of All Secondary Schools in Jakarta

<b>Region</b>	<b>School count</b>	<b>Proportion</b>	<b>Percentage</b>
South	189	0.198321091	19.8
West	231	0.242392445	24.2
East	244	0.256033578	25.6
North	172	0.180482686	18
Central	117	0.122770199	12.3
<b>Total</b>	<b>953</b>	<b>1</b>	<b>100</b>

Table 2. Total Number, Proportion, and Percentage of All Secondary School Classes in Jakarta

<b>Region</b>	<b>Class count</b>	<b>Proportion</b>	<b>Percentage</b>
South	2322	0.230037646	23
West	2204	0.218347533	21.8
East	2773	0.274717654	27.5
North	1557	0.15425005	15.4
Central	1238	0.122647117	12.3
<b>Total</b>	<b>10094</b>	<b>1</b>	<b>100</b>

Table 3. Total Number, Proportion, and Percentage of All Secondary School Students in Jakarta

<b>Region</b>	<b>Student count</b>	<b>Proportion</b>	<b>Percentage</b>
South	85253	0.233687667	23.4
West	74517	0.204259133	20.4
East	108701	0.297961164	29.8
North	56982	0.156193807	15.6
Central	39363	0.107898228	10.8
<b>Total</b>	<b>364816</b>	<b>1</b>	<b>100</b>

Table 4. Theoretical Model of Media Literacy

<b>Media literacy domain</b>	<b>Media literacy core concept</b>
AA: Authors and Audiences	AA1: Authors create media messages for profit and/or influence  AA2: Authors target specific audiences
MM: Messages and Meanings	MM1: Messages contain values and specific points of view  MM2: Different people interpret messages differently  MM3: Messages affect attitudes and behaviors  MM4: Multiple production techniques are used
RR: Reality and Representation	RR1: Messages filter reality  RR2: Messages omit information

Table 5. Demographic Characteristic and Students Environmental Factors of the Total Sample, Current Smokers, and Never-Smokers Susceptible to Future Smoking within the Sample

	<b>Total sample (<i>N</i>) %</b>	<b><i>N</i> and % current smokers by each variable <i>N</i> (%)</b>	<b><i>N</i> of never-smokers and % susceptible to future smoking by each variable <i>N</i> (%)</b>
<b>Demographic Characteristic</b>			
Age			
≤13			
14			
15			
Gender			
Boys			
Girls			
Parental education			
No education			
Elementary school			
High school			
More than high school			
Parental employment status			
Employed			
Welfare			
Unemployed			
Retired			
<b>Environmental Factor</b>			
Parent(s) smoke at home			
Yes			
No			
Friends who smoke			
None			
One to four friends smoke			
Five or more friends smoke			
High SML			
Low SML			

Table 6. Bivariate and Multivariate Relationships between Predictors and Current Smoking

<b>Predictor</b>	<b>OR (95% CI) for current smoking, Bivariate</b>	<b>OR (95% CI) for current smoking, multivariate</b>
Demographic Characteristic		
Age		
≤13		
14		
≥15		
Gender		
Boys		
Girls		
Parental education		
No education		
Elementary school		
High school		
More than high school		
Parental employment status		
Employed		
Welfare		
Unemployed		
Retired		
Environmental Factor		
Parent(s) smoke at home		
Yes		
No		
Friends who smoke		
None		
One to four friends smoke		
Five or more friends smoke		
SML		
High		
Low		



Table 7. Bivariate and Multivariate Relationships between Predictors and Susceptibility to Smoking

<b>Predictor</b>	<b>OR (95% CI) for susceptibility to smoking, bivariate</b>	<b>OR (95% CI) for susceptibility to smoking, multivariate</b>
Demographic Characteristic		
Age		
≤13		
14		
15		
Gender		
Boys		
Girls		
Parental education		
No education		
Elementary school		
High school		
More than high school		
Parental employment status		
Employed		
Welfare		
Unemployed		
Retired		
Two parents in household		
Yes		
No		
Environmental Factor		
Parent(s) smoke at home		
Yes		
No		
Friends who smoke		
None		
One to four friends smoke		
Five or more friends smoke		
SML		
High		
Low		

## Appendix B

### PARENTAL CONSENT FORM

**Title of Study:** Smoking Media Literacy and Smoking Behavior among Adolescents in Indonesia

**Principal Investigator:** Ranti Kemala Nastasia, MD

Your child is invited to participate in a research project. Your child's participation is entirely voluntary and you may choose that your child not participate. If you choose for your child to participate, or if you withdraw your consent and stop your child's participation in the study, your decision will involve no penalty or loss of benefits normally available for you or your child. If you have any questions about the study, please contact the principal investigator listed above.

The purpose of this research is to determine associations between smoking media literacy and smoking behavior among adolescents. A description of the procedures is as follows: The students will answer the questionnaires forms distributed by the research staff. It will take about 20-30 minutes for your child to complete the survey.

There are no direct benefits expected as a result of your child's participation in the project, however, research like this does help to develop better understanding of smoking prevention in youth. There are no risks expected as a result of your child's participation.

Any information obtained from this study will remain confidential. Your child's responses will not be linked to his or her name or your name in any written or verbal report of this research project. The data collected will be used for educational and publication purposes and presented in summary form.

#### **SIGNATURES:**

You are making a decision about allowing your child to participate in this study. Your signature below indicates that you have read the information provided above and have decided to allow your child to participate in the study.

\_\_\_\_\_  
Printed Name of Child

\_\_\_\_\_  
Printed Name and Signature of Parent

Date

\_\_\_\_\_  
Signature of Investigator

Date

## Appendix C

### STUDENT ASSENT FORM

You are asked to help us in the project described below. Your parents or guardian have given their okay, but you get to decide if you want to be in this study or not. You may stop or quit the study at any time by telling one of us and it is okay. If you want to know more about the study, it is okay to ask questions.

**Title of Study:** Smoking Media Literacy and Smoking Behavior among Adolescents in Indonesia

**Principal Investigator:** Ranti Kemala Nastasia, MD

**Purpose:** To determine associations between smoking media literacy and smoking behavior among adolescents.

**Procedures:** You will be asked to answer the questionnaires forms distributed by the research staff. It will take about 20-30 minutes for your child to complete the survey.

There are no risks expected as a result of your participation.

If you understand what you are being asked to do and you decide to help, you are asked to sign your name below.

---

Printed Name and Signature of Adolescent

Date

---

Researcher's Signature

Date

## Appendix D

### Smoking Media Literacy Scale (B. Primack, MD, EdM)

	<b>Instructions:</b> Please choose the answer that best represents your feelings about each of the statements below.	Strongly disagree	disagree	agree	Strongly agree	
1	“Buy-one-get-one-free” deals on cigarettes are designed to get people addicted					AA1
2	Tobacco companies are very powerful, even outside of the cigarette business					AA1
3	Tobacco companies only care about making money					AA1
4	Certain cigarette brands are designed to appeal to younger people					AA2
5	Wearing a shirt with a cigarette logo on it makes you into a walking advertisement					MM1
6	Cigarette ads link smoking to natural things that humans want like love, good looks, and power					MM1
7	Two people may see the same movie or TV show and get very different ideas about it					MM2
8	Different people can see the same cigarette ad in a magazine and feel completely differently about it					MM2
9	A tobacco billboard may catch one person’s attention but not even be noticed by another person					MM2
10	People are influenced by TV and movies, whether they realize it or not					MM3
11	People are influenced by advertising					MM3
12	When people make movies and TV shows, every camera shot is very carefully planned					MM4
13	There are often hidden messages in cigarette ads					MM4
14	Most movies and TV shows that show people smoking make it look more attractive than it really is					RR1
15	Cigarette ads show green, natural, healthy scenes to make people forget about the health risks					RR1
16	When you see a “buy-one-get-one-free” cigarette deal, it’s usually not actually a good deal in the long run					RR1
17	When you see a smoking ad, it is very important to think about what was left out of the ad					RR2
18	Advertisements usually leave out a lot of important information					RR2

## Appendix E

### Indonesian Version of Smoking Media Literacy Scale

	Beri tanda (√) pada pilihan yang sesuai dengan pendapat anda tentang pernyataan-pernyataan di bawah ini	Sangat tidak setuju	Tidak setuju	Setuju	Sangat Setuju	
1	Perusahaan rokok sangat berpengaruh, bahkan diluar industri rokok					AA1
2	Perusahaan rokok hanya peduli akan uang					AA1
3	Beberapa merek rokok dirancang untuk menarik anak muda					AA2
4	Memakai baju dengan gambar rokok berarti ikut mengiklankan rokok					MM1
5	Iklan rokok biasanya menghubungkan-rokok dengan kekerenan dan kekuasaan					MM1
6	Dua orang yang menonton acara TV yang sama bisa jadi memiliki pendapat yang berbeda tentang acara tersebut					MM2
7	Pendapat masing-masing orang tentang sebuah iklan rokok di majalah bisa jadi berbeda-beda					MM2
8	Papan iklan rokok hanya menarik bagi sebagian orang					MM2
9	Dengan atau tanpa disadari, masyarakat sangat dipengaruhi oleh TV dan film					MM3
10	Masyarakat gampang terpengaruh iklan					MM3
11	Dalam pembuatan film atau acara TV, setiap pengambilan gambar sangat direncanakan					MM4
12	Dalam iklan rokok banyak terdapat pesan terselubung					MM4
13	Acara TV atau film yang memperlihatkan orang merokok terasa lebih menarik dari aslinya					RR1
14	Iklan rokok banyak menggunakan adegan sehat dan natural yang membuat masyarakat lupa akan resiko merokok					RR1
15	Ketika melihat iklan rokok, sangat penting untuk memikirkan hal-hal yang tidak dicantumkan dalam iklan					RR2
16	Banyak hal yang biasanya tidak dicantumkan dalam iklan					RR2

**Appendix F****Intentions to Smoke Cigarettes Scale (John P. Pierce, PhD)**

	<b>Instructions:</b> Please choose the answer that best represents your feelings about each statements below	Definitely yes	Probably yes	Probably no	Definitely no
1	If one of your friends offered you a cigarette, would you smoke it?				
2	At any time during the next 12 months, do you think you will smoke a cigarette?				
3	Do you think you will be smoking cigarettes five years from now?				