Indonesia

THE HEAVEN FOR CIGARETTE COMPANIES AND THE HELL FOR THE PEOPLE

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FOGARTY

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Preface

Indonesia is undergoing significant epidemiological transition in which more than half of deaths are now caused by non-communicable diseases. Cardiovascular diseases and cancer are among the main cause of deaths and bankcrupcy of Indonesian due to expensive medical treatment both in public and in private hospitals. In Indonesia, recently more than half of about 240 million people have no adequate health insurance. Unfortunately, even in public hospitals the Indonesian people have to pay out of pocket on fee for services basis. The charges of public hospitals may be more expensive than the charges of some other private hospitals. The hospital charges (public or private) may reach more than 100 times of monthly salaries or income of lower and upper middle classes. In Indonesia, there is no price control to limit hospital charges, both for public and private hospitals, as in some other countries such as Malaysia and Hong Kong in which private hospitals have certain limits to charge patients. More than 120 million people may go bankrupt if one of a family member suffers from serious diseases. In addition, Indonesia has the highest Maternal Mortality Rate in ASEAN, due to poor health services.

The prevalence of smoking in Indonesia reach alarming and close to epidemic. More than 70 million adults in Indonesia smoke regularly and more than 90% of them smoke in their houses where children around. Often, parents ask their children to buy cigarette in neighboring kiosks, an early learning for children to smoke. in total, Indonesia consumes 235 billion of sticks of cigarette a year, about 1,000 sticks per person, including baby and frail elderly. In 2011, the government is enjoying about US$ 7 billion income from tobacco excise while the government allocates only about US$ 3 billion for the Ministry of Health.

Indonesia has not accessed/ratified the Framework Convention on Tobacco Control (FCTC). While leaders of more than 90% of countries all over the World signed FCTC, the Indonesian President visited a cigarette company in his home town, signaling that producing and selling cigarette in Indonesia is welcome. The Indonesian regulation of tobacco control is very weak. The cigarette companies freely performing advertising through various media and events, even near

schools, to influence children. Several cigarette companies are negotiating with the Ministry of Education to "support for better education", a way to invest to be perceived as the good guys. Recently, the Ministry of Industry hosted a launching of the so called 'divine cigarette"; they claimed that it is not nicotine that is harmful by a cigarette. Nicotine can be completely burned and by using a special filter no harmful of cigarette found. But, those studies are almost nowhere to be found in scientific journals. When Indonesia passed the Health Law in 2009, an article stating that tobacco is addictive and the government should regulate addictive substance was 'missing" just when the Parliament sent the Law to the President. Fortunately, tobacco control activists found out and the scandal is prevented.

In the mean time, tobacco control activists have very weak resources and the number of people who support them to control tobacco uses, especially among young generations. If the smoking behavior continue to expand with aggressive smoking campign with very weak political committment to control, Indonesia will suffer from serious health care problems in the future. Therefore, it is appropriate to say that "Indonesia is the heaven for tobacco industries and the hell for the people"; the title used in this book.

This book is printed as collection or proceeding of some Indonesian delegates, organized by the School of Public Health, Universitas Indonesia to the 15th World Confrence on Tobacco or Health (WCTOH), March 20-24 2012 in Singapore. The authors expect that by publishing various academic and policy papers in this conference, attention by the public in the region and from the international communities to overcome a thick wall of tobacco control in Indonesia will stronger. With that, it is expected that the future generations of Indonesia will be protected from future disaster generated from health risks of smoking cigarettes and kreteks.

The authors gratefully thanks to the Fogarty International Center of the National Institute of Health, Maryland, the USA for the grant to conduct various studies and to publish this proceeding. Special thanks is also delivered to Prof Teh-Wei Hu for his sincere and strong committment to build strong research group on tobacco economics and tobacco control in Indonesia.

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Editor

Introduction: The Politics of Tobacco Control in Indonesia

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Introduction

Based on National Socioeconomic Survey (NSES, 1995, 2001, 2004) and National Health Survey (NHS 2007, 2010), smoking prevalence of male at age 15+ years have been increased from 53.4% (1995), to 65.9% (2010). The smoking prevalence in female remains at low category, but its smoking prevalence increases from 1.7% in 1995 to 4.2% in 2010) (Ahsan, A, et al).[1] The increase of smoking prevalence will also result in a greater economic impact to cure tobacco related diseases. The impacts are not only on the direct costs due to nursing or treatment costs, but also on the indirect costs including opportunity lost cost due to the premature death.

The high smoking prevalence and the huge of Indonesian population position Indonesia the third biggest male smokers after China and India. The cigarette consumption in Indonesia during the year of 2008 according to Tobacco Altas (2009)[2], the number of male smokers in Indonesia was more than 53 million males. In 2012, it is estimated to be about 70 million people smoke regularly in Indonesia. While the number of female smokers in Indonesia rank on the 17th biggest in the

world reaching almost 4 million persons. Thereby Indonesian position is in the 5th rank following China, USA, Rusia, and Japan consuming more than 23o billion sticks of cigarettes in 2007. According to the Ministry of Finance in Indonesia the cigarette production was promoted to increase from 216.8 billion sticks in 2006) to 249.1 billion sticks in 2010.

The Richest Indonesians are Cigarette Tycons

In the last five years, Forbes magazine annually announce the richests persons in the world and in each countries. In Indonesia, among the top ten richest persons there have been always cigarette tycons. In many years, there were more than three top ten richests who were getting their wealth from selling cigarettes. In contrasts, those the 60 percent poorests Indonesia have been the significant contributors for the tycoons. Those poorests Indonesia spend more money for cigarettes than for health and education combined. They have been trapped and addicted so that they have problems quiting from smoking.

To create good image, the cigarette tycons now establishing foundations to support education, sport, and arts as well as performing many social activities such as planting million of threes to create image that they are 'the good guys". Many Indonesians, and also officials, are proud of those activities without aware that in the end, it is the poor who contribute to them.

When anti smoking activists conducted various events, discussions, promotions, seminars, etc., those industries are belived to be behind the movement of actions against anti-smoking. Activists are labelled as the enemies of tobacco farmers and employees of tobacco industries. In fact is that the number of tobacco farmers so far are less than a million people, less than one percent of labor forces in Indonesia. Employments in cigarette industries absorb even lower number

of labor forces, estimated of no more than half a million people, both in large and small industries.

The tycoons actually aware and prepare that one day, business of cigarette will be difficult. They are smart people and they have been in almost all develop countries. Therefore, they are preparing to diversify their cigarette assets to build mega malls, mega offices, or mega real estates. Some of them diversify investment directly, some tohers such as Sampoerna sold the company to Phillip Morris to reinvest in other businesses. But, thy keep the Sampoerna name, creating link of the business to the previous cigarette name.

The Battle Ground: The Political Economy

The first Indonesian regulation on tobacco control was the Governement Regulation (GR number 81/1999) stipulated that cigarette advertisomg is permitted on only printed media and outdoor. In addition, the regulation requires to print written warning on the packs. The regulation also limit the the tar and nicotin content. This was the strictest regulation issued by the President Habibie. Unfortunately, Habibie was in power only for one and half year after Suharto stepped down. During Abdurahman Wahid became President the regulation was amended (GR number 38/2000) that allows the cigarette indutries to adevertise their product on television from 21.30 until 05.00. In addition, the promotion on printed media and out doors remain open. The amendment came out after the Nahdatul Ulama Muktamar (conference), the President Party, held in Kediri, the home of the largest cigarette company in Indonesia. The media reported luxurious event sponsored by cigarette industries. After the amendement, the cigarette industries began to promote aggressively throughout TV programs in trying young generations to smoke. Although the advertising can only start after 21.30 hours, many students are still wacthing TV at that time. In addition, many sport and

music events are sponsored by cigarette industries. Coverage of the event, often spot the cigarette billboards, backdrops, or posters that show cigarette names or logos.

Although, the regulation provided with sanction, the law enforcements have been weak. On the revised regulation (GR number 19/ 2003) the government designate free smoking areas such as at public places, health facilities, educational facilities, working places, and public transportation. This regulation does not restrict the cigarette industries to influence young generations to smpke. The health activists and officials of the Ministry of Health kept fighting to have tougher control over tobacco use by including a regulaion on Health Act number 36/2009. In the Act, it is stated that tobacco is addictive and the government has to regulate the use of addictive substances. The acticle was brought to Constitutional Court claiming that tobacco is not addictive. Last year, the Constitutional Court rule out the judicial review and confirming that tobacco is addictive. Activists are strugleing to include graphic warning on cigarette packs while industries are opposing it. Until now (more than three years after the Act was passed) the revised regulation (RPP) has not been successfull signed by the President due to oppositions from various sectors within the government presumably and the cigarette industries.

In 2010, the Indonesian Council on Islamic Religion (Majlis Ulama) issued a *Fatwa*– interpreation of Islamic law--that Smoking is 'haram" or prohibited by the Islamic law. A year later, Muhammdiyah, the second larget Muslim Organization also declared that smoking is haram. However, Nahdatul Ulama—the largest Muslim Organization with which the late President Abdurahman Wahid was the prominent leader—rejected the Fatwa. It is reported that the many members of Nahdatul Ulama have some business in cigarette industries, mostly small businesses and they used to smoke in the *pesantren,* the traditional Islamic school of in Java. So, it is all about money.

The Heaven for Industries and the Hell for the People

The industry, visioning the huge market and getting some support from the Government continue to expand the market while trying to divest their cigarette income to other industries for future business when control of smoking become stricter. The previous Minister Finance clearly said "the priority of this cabinet is economic growth. Health concern of cigarettes will be consider after 2015". So, the government is protecting the cigarette industries. Several studies and the pictures below may provide readers with a better understang on how the cigarette industries have a freedom to promote their names and products. Many of them establish foundation to provide fellowships to students, using their company names that have some influence to familiarize students with the name of cigarettes or the company making the cigarettes. In early 2012, some of them are approaching the Ministry of Education to "support quality improvements in education" using a foundation named the same with the cigarette companies. Naively, people in the Ministry of Education and or in other Ministry percive that initiative as brilliants.

On the other hand, all over the developed world smoking is prohibited everywhere, even in the park, not to mentioned in airplanes. Studies uncovered hundreds of billions of dollars lost due to smoking. In developed countries where big portions of health care costs have to be borned by the public fund, the governement has a better view on how to cut health care costs by banning smoking. But, in Indonesia, about 70% of the population still has to pay some hospital care out of their pocket. About a million people a year who suffer from cancer potentially can go bankrupt due to expensive treatments, even in the public hospitals. in many occasions, public hospitals are more expensive than private hospitals. Yet, people have no choice. They have to undertake treatment, although many of them have to sell their assets and went bankcurpt. A

study by Ruby (2007)[3] found that 83% of households that had at least one family members needing inpatient care went bankrupt. The costs of cancer treatment of serious cardio-vascular diseases in public or private hospitals in Indonesia can reach more than 100 times of the family montly income. Yet, more than 50% of the population (more than 120 million) people lack of adequate health insurance.

The total health expenditures in Indonesia in the last four decades had never reached above three percent of the GDP. The Governmenent expenditures to the Ministry of Health in the last thirty years had never been above three percents of the total government expenditures. In 2011, the MoH budget is only about 1.9% of the total government expenditures. In this regard, people can easily see that the government of Indonesia has not done enough to protect the people from catastrophic health expenditures. It is not surprising that the MDG target on reducing Maternal Mortality in Indonesia will not be achieved. The MMR in Indonesia remain above 200 per 100,000 live births, the highest in ASEAN. Accordingly, the total health expenditures and the proportion of the government expenditures on health to the total government budget has been the lowest in the region for over threee decades.

It is then, appropriate to say "Indonesia is the heaven for tobacco industries and the hell for the people". This is the title that is used for this proceeding of some Indonesian papers presented at the 15th World Conference on Tobacco Or Health in Singapore.

Some Ilustrations on Tobacco Control

A Gigantic Billboard of a Cigarette Brand about 100 m x 15 m on the Jakarta Bandung Freeway. The Heaven for the Cigarette Industries

A Kiosk near school designed and sponsored by a cigarette industry. This kind of kiosts as weel as police stations can be found in many places in Indonesia, sponsored by

cigartte companies. The mode of advertising that may no where to be found in civilized societies

In April 2006, President Susilo Bambang Yudoyono and the First Lady visiting a cigarette company in his hometown when other country leaders signed FCTC. Although in some occasions the First Lady advocating and saying supports for tobacco control, this visit could signal to the Industries to go ahead with your business. Indonesia has not assessed (ratified) FCTC, by 2012.

Smoking with or around children is a common practice in Indonesia, risking millions of children. Yet, the government has not yet undertake a progressive measures to prevent from future non-communicable diseases that will dry out health resources.

Hong Kong has a strict regulation of cigarette packs, requiring strong warning that smoking kills people. This strong control on cigarette sales protects the people from harmful effect of smoking and protect the country from spending unnecessary costs to treat tobacco related diseases.

A non-smoking sign in Victoria Park, Hong Kong. Even in Public Parks smoking is prohibited due to many children are playing around. This sign uses Indonesian language as well, because there are many Indonesian workers in Hong Kong.

In contract, in Idnonesia pro tobacco control activists are consider the enemy of tobacco formers and cigarette employess. Photo of huge posters announcing 10 enemies of tobacco farmers and employees of cigarette industries. Among others, Endang Sedyaningsih (the Minister of Health), Abdillah Ahsan (Universitas Indonesia), Tulus Abadi (Consumers Advocate), and Fauzi Bowo (the Governor of Jakarta). Many believe that such huge poster as supported by cigarette industries. Those persons are wellknown to advocate tobacco control, not banning tobacco industries.

A Twisted Cigarette Pack designed by Anti Smoking Activists-sayaing "matilobro = death you brother". A cheap way and the last resort to fight smoking by the weak Tobacco Control Activisits. The government is on the other side of tobacco control actions.

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What Happens to Consumers? Evidence from Excise Tax Increase in Indonesia 2010

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Abstract

Background: *Indonesia is known as one of the World's largest consumers of tobacco. Raising taxes, and thus prices, is the most effective way to reduce tobacco use. This study evaluates the effect of the excise tax increase in Indonesia January 2010. The exices increases sparked some protests from small cigarette industries and tobacco farmers due to the effect on cigaretee retail prices and on lowering consumption of cigarettes.*

Methods: *Telephone survey that involved 289 cell phone users [who were smokers] in Jakarta and direct interview with 515 household smokers from three provinces [East Java, Central Java, and West Nusa Tenggara] on cigarette prices and consumptions in 2009 [before] and 2010 [after tax increase].*

Results: *The excise tax increase significantly increased cigarette prices and reduced cigarette consumption. However, a significant decrease in the consumption only occurred in the low-income group. The study found consistent results of reduction of cigarette consumption after the excise increase in Janurary 2010. However, the increase of excise which was still very low, affected only the lower income groups to reduce smoking. Although this findings are good for policy of tobacco control, the reduction was still not quite large. Those in upper income tend to maintain their consumption due to relative affordable prices of cigarettes. The reduction of consumption also occured in East Java where before the excise increase the level of consumption, in term of the number of stickes consumed already the higests. In addition, those living in East Java and in lower income groups switch their cigarette brand to lower prices of cigarettes.*

Conclusions and Recommendations: *This study found that excise increase, although, it is still too low, reduced consumption of cigarette in Indonesia, as true also elswhere. Further excise increase may significantly reduce more consumption, keeping the government revenue while it supresses the number of sticks smoke. Therefore, the government should continye with*

more progressive to control of cigarette smoking by increasing excise to the maximum allowed by the current law.

Introduction

Indonesia is one of the largest consumers of tobacco in the world. While ranked the fourth by population, Indonesia ranked the third by the number of smokers—ahead of the US. This indicated that the prevalence of smokers in Indonesia was [and certainly is] high. In fact, the Survey of Socioeconomics (Susenas) showed that the prevalence was not only high but also steadily rising, from 27% in 1995 to 31.5% (2001) and 34.4% (2004). In 2007, the prevalence slightly decreased to 34.2% and, in 2010, rose to 34.7%. The 2007 and 2010 data were from the Basic Health Research (Riskesdas).

Among smokers, the proportion of people start smoking at young ages (≤ 19 years old) was rising. In 1995, the proportion of people started smoking at the age of 15−19 years was 54.5% and increased to 58.9% in 2001 and to 63.7% in 2004. The proportion of people started smoking at younger ages, 10−14 years old and 5−10 years old, also sharply rose.

In Indonesia, the tobacco industry is poorly regulated and the industry's interests are well represented in government. Legislation on banning tobacco advertising and marketing is lacking, consequently major multinational tobacco companies are free to employ marketing tactics prohibited elsewhere. Tobacco company sponsorship of events targeting youth and young adults is a common practice. Regulations requiring health warning on cigarette packaging are weak. Laws that establish smoke-free places are also weak and very rarely enforced.

In fact, Indonesia is one of a very few countries that are non-signatories and do not ratify, accept, approve nor formally confirm the WHO Framework Convention on Tobacco Control [FCTC].[2] Developed in 2003, in response to the globalization of

the tobacco epidemic, the WHO FCTC is an evidence-based treaty that reaffirms the right of all people to the highest standard of health. The tobacco control key policies in the WHO FCTC are based on both supply and demand reduction strategies. The demand reduction provisions contain two main approaches: Price and tax measures and non-price measures.

Raising taxes, and thus prices, is the most effective way to reduce tobacco use.[1] it helps convincing the current users to quit, deters the ex-users from starting again, and discourages young people from starting the use and thus avoid addiction. A study in Indonesia using aggregate time series data (1970 to 2001) found that a 10% real price increase on tobacco products would reduce consumption by 3.4%, and a 10% real income increase would raise consumption by 4.7%.[4]

In 2009, Indonesia passed the Law No.39/2007 on Excise that regulates tobacco excise to reach maximum of 57% of the retail prices. To obey eith this law, the Ministry of Finance increased excise on the products of the highest market share (> 70%) known as machine-made *kreteks* (clove and tobacco cigarettes) to 49% maximum—well below the WHO recommended excise of at least 67% of the retail prices. The excise on hand-made *kreteks* (about 20% in market share) was even lower, at maximum only 18% (Barber).

Although many antismoking activists were not happy on that excise increase, the increase was expected to influence consumption of cigarettes among Indonesia. Evaluation of such excise increase, whatever small, could lead to further policy recommendations. This study thus evaluate the excise increase by surveying households on cigarette consumptions six months after the exice took effect.

Objective

This study evaluates the impact of excise increases on the level of changes of expenditures on cigarettes and consumption of cigarettes.

Methods

Two types of surveys were conducted in July 2010. A telephone surveys were conducted in Jakarta, based on subscribers of Telkomsel, a cellphone operators that has more than 100 million subscribers in Indonesia. Samples were drawn based on targetted sample size of 300. Systematic random sample was performed using the list of number of cellphone given by the provider for the greater Jakarta area. A number of trained students from Universitas Indonesia were assigned to call the number. When a number was no longer valid, due to many prepaid numbers, then the following number was called until the sample size was met. The telephone survey was conducted in July 2010, about six months after the excise was increased. A questionnaire was developed to take demographic, proxy economic, expenditures for cigarettes, types of cigarettes consumed, and the number of sticks consumed daily. At the end of telephone survey period, 289 respondents were interviewed.

The second survey was household survey conducted at the same time with the survey on tobacco farmers in three most productive tobacco leaves in Indonesia (East Java, Central Java, and West Nusa Tenggara). The total number of households visited was 675 houses.

In each survey, the respondents' income and other info regarding their smoking activities (length of smoking, number of sticks/day consumed before and after the excise increase, expenditure for a pack of cigarettes before and after the excise increase, type of cigarettes bought before and after the excise increase) were assessed.

Results

In general, the data suggest that there were some differences in responses between telephone survey and direct interview. The latter shows more significant results. This may be due to bias of the data collection methods.

The respondents of telephone survey (Jakarta) may consume more expensive cigarettes than the respondents of direct interview as shown by the higher averaged cigarette prices bought before and after excise increase. While the respondents from Jakarta tend to buy the same brand of cigarettes, the respondents of highest income group from the three other provinces switched to cheaper cigarettes brand after the excise increase (Table 1). Nevertheless, overall respondents in Jakarta on average reduced their cigarette consumption by 8.7% and respondents from other provinces reduced their cigarette expenditure by 5.8%.

The averages of expenditures for cigarettes were estimated by three income groups for two types of simultaneus surveys. Cigarette prices were estimated by asking respondent the amount of money spent for cigarette last month and the number of sticks they consumed in the preceeding month. The average number of 12 sticks per pack was used to calculate reported prices. The reported prices, may represent changes in cigarette brands due to higher prices of the same brand after the excise increase. As shown in Table 1, lower income groups (the households reported less than IDR 1 million a month) reported cheaper cigarette prices. Their consumption of cigarettes also reduced from the average 12.4 sticks per day in Jakarta (telephone survey) in 2009 to 11.4 sticks in 2010. Similarly, in the other three provinces, the cunsumption also decreased from the average 13.73 stickes per day to only 12.87 stickcs per day. The differences were statistically significant. However, the reduction of expenditures and cigarette consumption among higher income groups did not statistically significant.

Table 1.
Consumption and Average Expenditures of Cigarettes per pack by Income Groups

Monthly Income group	Telephone survey					Direct interview				
	N	Cigarette price/ Expenditure [IDR]		Cigarette consumption [stick/day]		N	Cigart price/ Expenditure [IDR]		Cigarette consumption [stick/day]	
		2009	2010	2009	2010		2009	2010	2009	2010
< IDR 1 M (USD 90)	55	8,176	8,850	12.4	11.4	357	5,675	5,727	13.73	12.87
IDR 1−3 M (USD 91-270)	121	8,244	9,248	13.4	11.9	109	6,522	6,602	13.37	12.64
> IDR 3 M (>USD 270)	110	9,875	10,191	14.8	14.1	147	9,595	7,639	15.62	14.78
Total	286	8,865	9,521	13.8	12.6	615	6,413	6,904	14.09	13.27

Since there are so many brand of cigarette, in this study the authors simplified the prices of cigarettes by dividing the amount of money spents and the number of packs bought by respondents montly. The study found that repprted cigarette prices were different between Jakarta and the three provinces. In general, respondents from Jakarta consumed more pricey cigarettes than their counterparts from the three other provinces. In response to the tax excise increase, all respondents reduced their cigarette consumption, i.e. by 6.7% in Jakarta and 8.7% in othr provinces, in average. As shown in Table 2, the consumption of cigarette decreased more in those whave been smoking for longaer than 10 years compared to those who smoke for less than 10 years. This phenomenon can be observed both in Jakarta and in other three provinces.

Table 2.
Consumption and Price of Cigarettes by Length of Smoking

Length of smoking	Telephone survey					Direct interview				
	N	Cigarette price [IDR]		Cigarette consumption [stick/day]		N	Cigarette price [IDR]		Cigarette consumption [stick/day]	
		2009	2010	2009	2010		2009	2010	2009	2010
< 10 years	133	9,853	9,674	11.8	10.7	357	6,848	6,648	11.58	10.98
10−20 years	101	9,462	9,483	14.2	13.5	109	6,967	6,626	13.86	13.35
> 20 years	72	8,181	9,537	15.5	14.7	147	9,912	6,068	15.97	14.59
Total	306	9,207	9,575	13.5	12.6	615	7,585	6,484	13.00	12.23

By regions, before the tax excise increase respondents from West Nusa Tenggara paid the highest price or cigarettes and they seemed to switch to the less expensive brands after the tax excise increase. Respondents from Central Jawa were also likely to switch to the less expensive brands after the tax excise increase, while respondents from Jakarta were likely more willing to pay higher price for the same tobacco products. Bought the cheapest tobacco products among the four groups, respondents from East Jawa were also likely not to switch to even less expensive cigarettes.

As shown in Table 3, consumption of cigarette both in the amount of money spent and in the number of sticks smoke reduced significantly in East Java while in other provinces the reductions were not significant. Also, from the table it can be seen that peopel in East Java tend to consume lower prices of cigarettes. This may coincide with the fact that East Java is the largest producers of cigarettes, both the large scale and the small and medium cigarette factories. However, when it is examined on the number of sticks smoked, consumption of cigarettes in East Java was still the highest compared to the cunsumption (number of sticks smoked daily) in other three provinces.

Table 3.
Consumption and Price of Cigarettes by Provinces

Province	N	Cigarette price [IDR]		Cigarette consumption [stick/day]	
		2009	2010	2009	2010
East Java	309	5,274	5,448	16.15	14.62
Central Java	170	8,660	8,258	11.12	11.07
West Nusa Tenggara	136	11,859	8,454	13.13	12.92
DKI Jakarta	286	8,865	9,521	13.80	12.60

Table 4.
Effect of Cigarettes Tax Increase on the number of cigarette cunsumed daily

	β	P value
Cigarette consumption [ln of no of stick]		
Cigarette price per stick [ln]	−0.1410	0.006
In income	3.5×10^{-8}	0.029
Length of smoking	0.0081	0.000
Year 2010	−0.483	0.281
R square		0.0435
P value		0.000

For multivariate analysis, this study used combined data to examine the impact of tobacco excise increased on the consumption of cigarettes. Table 4 shows that overall the number of sticks consumed significantly lower with beta -0.14 and length of smoking have also significant impact. The longer the people have smoked, the less the likelihood those persons smoke less sticks. Income significantly played signifiant role, especially in the lowest income groups, which is consistent with other studies which indicates that elasticity of demand for

moking is bigger in the lowe income groups. This is a reasonable expectation and good for policy development.

Conclusion and Recommendation

This study used primary data of two different surveys, telephone and direct hosuehold survey. The study found consistent results of reduction of cigarette consumption after the excise increase in Janurary 2010. However, the increase of excise which was still very low, affected only the lower income groups to reduce smoking. Although this findings are good for policy of tobacco control, the reduction was still not quite large. Those in upper income tend to maintain their consumption due to relative affordable prices of cigarettes. The reduction of consumption also occured in East Java where before the excise increase the level of consumption, in term of the number of stickes consumed already the higests. In addition, those living in East Java and in lower income groups switch their cigarette brand to lower prices of cigarettes. The findings of this study are consistent with other similar studies. Because the reduction of consumption occured in lowe income groups, only the net impact of excise revenue to the Government was actually nothing. The authors urge the government to continue to increase excise to the level that is alllowed by the Excise Act of 2007.

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The Impact of Excise Increase on Income of Tobacco Farmers

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Abstract

Introduction. *The Indonesian Ministry of Finance has increased the excise on tobacco regulation since January 1st 2010 by on average 10%. This excise increase is in line with the goal to increase cigarette excise to 57% as required by the Law of Excise Year 2007 and to reduce cigarette consumption. The policy has produced protests by the industry by as lowering income of tobacco farmers and reducing employment. However, there has been rarely enough empirical evidence on the real impact of excise increases on the income of tobacco farmers.*

Objective. *This paper aims at examining the impact of the January 2010 excise increase on the income of tobacco farmers. To prove the*

assumption, a survey has been made in three tobacco producing provinces in Indonesia.

Methods. *We interviewed 515 tobacco farmers in Central Java, East Java, and West Nusa Tenggara. The sampling was purposive random sampling. The data collection was on June 2010.*

Results. *In the analysis, we employed the Multivariate Analysis of Variance (MANOVA). The study found that farmers' real income increased significantly by 7% although this was not statistically significant with $p<0.05$. Therefore, this study rejected the hypothesis that excise increase would decrease farmers' income. However, whether further increase of excise will lead to income decrease has not been tested in this study.*

Conlclusion n recommendation. *The authors reccomend that the government must determines further increase on the cigarette excise while monitoring the farmers incomes. In contrast, the government should also have to convince farmers and the public at large that the fear cried by some parties regarding excise increase would decrease farmers' income and bring them to poverty has not been proven empirically.*

Keywords: tobacco farmers, cigarette excise, tobacco control, Indonesia.

Introduction

Smoking has been proved to be one of the risk factors for high mortality rate in developed and developing countries. The Ministry of Heatlh[1] reported that smoking is associated with death in people with ischemic disease, stroke, and chronic

obstructive pulmonary diseases. It will increase the prevalence of non-communicable diseases and it is projected that economic losses in relation to the smoking-induced diseases in Indonesia will increase in the next decade.

However, in 2007, total smoke consumption in Indonesia reached 239 billion cigarette stick, placing it on the fifth place in the world after China (2163 cigarettes), USA (357 cigarettes), Russia (331 cigarettes), and Japan (259 cigarettes). The prevalence of smoking also keep rising from 53.4% to 65.6% for male subjects and 1.7% to 5.2% for female during 1995-2007.[2] This is due to the price of cigarette in Indonesia is relatively cheap and affordable, the lowest in ASEAN.

The price of cigarette in Indonesia is much cheaper compared to its price in other countries such as Singapore, Malaysia and Thailand. According to The Asean Tobacco Control Card (2007), the price of a pack of local cigarette in Indonesia is US$ 0.38 compared to US$ 1.03 in Malaysia, US$ 1.35 Thailand and US$ 5.73 in Singapore.[3]

The low price of cigarette in Indonesia is due to the low price of excise on cigarette. The law of excise previously had limited the highest cigarette's excise to 40%, but the excise law No 39/2007 decided that the highest excise is limited to 57%. While in Thailand, cigarette excise has reached 74%. The low excise on cigarette in Indonesia causes public pressure, national and international, to encourage the increase on cigarette excise.

In order to support the law of excise in 2007, The Ministry of Finace by Law No 181/PMK/011 Year 2009 has determined that the cigarette excise by Jan 1st, 2010 increased more than 10% (9.6%-21%) depends on the type of the tobacco compared to year 2009. This excise increase was higher than previous years; while in 2009, the average excise increase was only 7% (range 5-10%).[4] On July 2007, the increase of tobacco retail price was 7% and the increase of specific price was Rp3.0-7.0 per cigarette stick.

Despite the increase on cigarette excise, the country's revenue from cigarette continues to increase from IDR 13.77

Trillion on 2000 to IDR 55.4 Trillion on 2009. Cigarette production also increased from 220.1 billion cigarette sticks (2005) to 242.4 billion (2009). According to data from the Department of Finance in 2011, in 2010, cigarette production increased to 248.4 billion cigarettes and excise revenue from tobacco was also projected to increase to IDR 55.9 trillion in 2010.

Objective

The main objective of the study was to explore the impact of excise increase on production and income of tobacco farmers. The specific objectives were (1) to identify the change of average size of farmers' land for tobacco plantation; (2) to recognize the change of average tobacco production; (3) to assess the extent of decrease or increase in farmers' revenue.

Methods

The primary data collected were social economic condition, the size of tobacco plantation, ownership of tobacco plantation, production, revenue/income, plant diversification, morbidity and smoking behavior of tobacco farmers. Data collections were performed through direct interview by visiting selected house. The sample selection within a district was systematic random sampling. Analytic units were the households of tobacco plantation/farmers or rented lands and the respondents were head of the family or adult members of the family (age >18 years old) with a good knowledge of tobacco farming. The study was conducted in three provinces which have the largest tobacco farming and covered four municipalities. The three provinces were selected for the most productive tobacco leaves in Indonesia which is the Central Java (municipality of Temanggung), East Java (Pamekasan and Jember) and West

Nusa Tenggara--NTB (East Lombok). The proportion of tobacco plantation area in East Java was 47.5%, NTB was 26.0% and Central Java was 18.0% of all tobacco plantation areas in Indonesia, i.e. 164,851 hectares (2007)[5]

The municipalities were selected purposively by the consideration of the biggest tobacco plantation area, except for East Java, which was was splitted to North and South East Java. Selection of a village and houses within a village for a sample was drawn by stratified random sampling. The survey collected data on tobacco tobacco production, cigarette consumption, and the amount of money spent for cigarettes amont the household producing tobacco leaves.

Respondents were selected starting from the level of villages, urban and rural, to neighborhood level. The total number of samples were 515 households. Data analysis was performed by descriptive statistics and by Multivariate Analysis of Variance (MANOVA) as has been performed by Hair et al (1998).[6] Manova is performed simultaneously to examine the difference of two or more variables with independent variable. Dependent variables were the area of tobacco plantation, production of tobacco (kg per hectar), and revenue in IDR (Indonesian Rupiah) per year.

Results

Descriptive Statistics

Characteristics of tobacco farmers' households (TFH). The age of head of the household of tobacco farmers' ranged between 20-80 years old with the average age was 46.7 years old, and 97.1% head of the family were men. Most of them have low education level, 64.5% graduated only from elementary school and 20.3% at least had high-school education. Their main occupations were in cattling area (65.8%) and worker of public service and workers in stores/market (19.9%). About 43.2% TFH have other income, other than from tobacco farming.

The average of total income earned by TFH per month was IDR 2,383,662.00 (265 US$), with 36.1% had income less than IDR 1 million/month (111 US$), 41.4% had income between IDR 1-3 million (111-333 US$), and 22.5% had income of >= IDR 3 million.

Smoking behavior of TFH. Cigarette smoker's household is defined as at least one adult member of the family had smoking habit. In 2009, the smoking prevalence of smoker's household was 72.7% and in 2010 it slightly increased to 73.4%. Total average of cigarette consumed was 17 cigarettes /day for both years. However, the proportion of cigarette smokers with light consumption (1-10 cigarettes) increased 2.7 percent to 21.6% in 2010; while those with moderate consumption (11-20 cigarettes/day) decreased 2.1 percent to 29.5% in 2010. There was no change in the proportion of high smokers (>20 cigarettes/day) which remained 22.5%. The average amount of money spent for cigarette per day increased 11.9% from IDR 5,764.- (0.64 US$) to IDR 6,450 (0.72 US$) per household per day

Farmers perception on tobacco excise. The survey hypothesized that an increase of tobacco excise will cause protest by farmers perceiving that the excise will add financial burdens to the them. Surprisingly, the survey found that most of the farmers (79.3%) were not aware about the excise increase. When smokers' households were further asked about previous excise increase in 2008, only 15.8% farmers claimed that the increased caused their tobacco production decreased. More than a third of farmers (39.9%) were sure that in the future tobacco production will be better or at least the same compared to previous year. Only 19.2% farmers said that they will grow more tobacco plants. After the explanation of excise increased, 40.5% farmers worried that there will be another excise increase.

Table 1
Farmers Knowledge/Perception about Tobacco Excise and Their Tobacco Leaves Production (% of Total Sample) in Three Provinces in Indonesia, 2010.

Respondent Answer	Know of Excise increase	Production 2008-2009, increased	Increased of tobacco price, 2009-2010	Worried about excise increase	Sure next year is better	Will grow more tobacco in 2011
Yes	20.7	16.5	29.9	40.5	33.6	19.2
No	79.3	15.8	21.0	22.9	27.8	56.6
Same		38.1	10.5	-	6.3	24.2
No idea		29.5	38.6	36.6	32.3	
Total	100.0	100.0	100.0	100.0	100.0	100.0
N	381	139.0	381.0	380.0	381.0	380.0

Tobacco plantation business. The average of tobacco plantation area managed by a household in 2008 was 0.81 ha and in 2009 was 0.82 ha, but in 2010, it significantly decreased to 0.75 ha ($p<0.01$). The type of tobacco plants varied from 100% Virginia in NTB, while in Central Java 99.1% mixed tobacco, and in East Java 65.0% native/local tobacco. The prices of tobacco varied from high price in Central Java (US$ 6.1 per kg), lower price in East Java at US$ 2.9/kg and moderat prices in NTB at US$ 3.3 per kg in 2009[1].

Tobacco Production. The average of tobacco production in two provinces (Central Java and West Java) increased from 65.2 kg/month (2008) to 89.6 kg/month (2009) and 97 kg/month (2010) per household. Statistical test (pair-t test) showed that changes in production in these two provinces in 2010 was significantly different to the production in 2008

[1] Estimation: 1US$=IDR 9000

($p<0.01$) and in 2009 ($p=0.0005$). Changes in production in 2008 and 2009 was also statistically different ($p<0.05$). The households reported that they suffered from tobacco production decrease, mostly stated that the reason of the decrease was bad weather for tobacco plantation (87.7%) and only some of them (1.6%) stated that this was due to the excise policy.

Financing for growing tobacco. The source of households financing mostly was self-financing (57.9%). Other source of financing was loan from a bank (10.4%), buyers 7.8%, Cooperation service (6.3%) and tobacco company (1.7%). The amount of financing on other financial sources category was the highest (IDR 37.0 million or US$ 4,100), followed by bank financing (IDR 18.7 million or US$ 2,079), tobacco company (IDR 16.7 million or US$ 1,853) and self financing (IDR 13.7 million or US$ 1,525).

Revenue. Revenue of the households was calculated from tobacco selling prices with a constant index price of 2007=100 for Central Java and East Java. The average of revenue per household per month increased from IDR 1,576,870 in 2008 to IDR 1,692,072 in 2009 and to IDR 2,717,685 in 2010. A pair–t test showed the difference in 2008-2009 revenue was significant ($p <0.05$) and the revenue difference of 2009-2010 was significant at $p <0.01$.

Plant Diversification. More than half of the farmers (57.8%) did plant diversification with 1-2 types of plants, 3.1% with more than 3 plants and 39% farmers did not do plant diversification. Rice was mostly planted by household (45.3%) to diversify with tobacco followed by corn (20.1%).

Table 2
Distribution of parameter in Multivariate Analysis of Variance (MANOVA) of tobacco survey, June 2010

Dependent variables	Independent Variables	B	P value	Partial eta square
Area (ln)	Intercept	-0.2825	0.000	0.118
	Year=2010	-0.3255	0.000	0.050
	Year=2009	-0.0040	0.918	0.000
	Year=2008	-		
Production (ln)	Intercept	1.6967	0.000	0.809
	Year=2010	0.1262	0.020	0.007
	Year=2009	0.0038	0.927	0.000
	Year=2008	-		
Revenue (ln)	Intercept	6.0153	-	0.972
	Year=2010	0.1240	0.067	0.004
	Year=2009	0.0556	0.284	0.001
	Year=2008	-		

Note: MANOVA revenue nominal price.

In MANOVA analysis, authors used the year 2008 as the reference year. The table above shows that tobacco plantation areas significantly decreased by 5% in 2010 ($P<0.01$) while average production in 2010 increased by 0.07% ($p<0.05$). Moreover, the households revenue increased only in 2010, but it was statistically not significant.

Discussion

The result of this study showed that there were a decrease of tobacco plantation area before (2008-2009) or after (2009-2010) excise increase, which was statistically significant. The decrease of tobacco plantation area is not necessarily caused by excise increase, as national data showed that the trend of tobacco plantation area reduction has begun since 2003 (source: Ministry of Agriculture, 2009). This study also showed that the household decreased their area of tobacco plantations in 2008/2009 was due no profit earned (26%), the plantation areas were bought by others (21%), and because they were interested in planting other commodities (13%).

The study found that the average production in two provinces continues to increase. Such increase may be caused by the increase in plantation productivity. National data (Ministry of Agriculture, 2010) stated that the average productivity of tobacco plantation at the national level per hectare increased from 0.76 metric ton during 1996-1999, to 0.79 metric ton during 2000-2004 and to 1.01 metric ton during the year 2005-2009. In 2010, the average production in NTB could not be predicted due to bad weather. A study conducted by Abdillah, et al (2008)[7] also stated that tobacco plants are very fragile to weather changes, especially rainfall. Weather was the most dominant factor which affects production and quality of tobacco. However, farmers keep growing tobacco was because of their habit of growing tobacco plants whithout noticing weather forecast.

The excise increase on tobacco in 2010 which ranges between 9.6%-21% seemed still unable to decrease the demand on cigarette or decrease cigarette production. Studies in several countries showed that the effects of 10% excise increase in poor countries will decrease cigarette consumption by 3.5% and in wealthy countries by 2.2%.[8] Previous studies by Beyer and Yurekli (2000)[9], Adioetomo, et al (2005)[10], and Djutaharta, et al

(2005)[11] reported that 10% increase of excise would decrease cigarette consumption by 0.9%-3.0%.

An increase of households' income would increase their consumption on cigarette. Guindon, et al (2003)[12] used affordability index by dividing the price of tobacco with gross domestic revenue per capita to assess the affordability of cigarette's price. The affordability index in Indonesia was on the category of affordable (1980-2000). Later, an analysis by Barber, et al (2008)[13] with data from 2001-2005 showed that tobacco's excise increase did not reduce the ability of households in Indonesia to buy cigarette. Data from Central Statistic Bureau (BPS, 2010)[14] showed that the average of gross domestic income per capita increased 3.1% per year during 2006-2009, from US$ 1,662.5 to US$ 2,590.1. Therefore, tobacco's excise increase did not affect demand on cigarette and cigarette production in Indonesia. The cigarette production index developed by BPS[15] continued to increase from 116 (2000=100) to 193 (2009) and increased to 202 in 2010. Therefore, the demand of tobacco leaves was estimated increased during the study period which showed also increasing production by the household surveyed.

Guindon, et al (2003)[16] conducted simulation using data from several countries, with assumption of strong cigarette control predicted that the decrease of cigarette consumption will take place in 20 years. Guindon predicted that tobacco farmers are not sensitive to excise increase because excise is just one of the determinant of profitability of tobacco farming and manufacturing.

Evidence from China indicated that the decrease of area for tobacco cultivation by 43% during the year of 1997 and 1999 was due to the decrease of the number of farmers who had contracts with government and it was not due to excise increase. Farmers switched tobacco plant with other type of plant. The switching process was reported quick and easy.

The excise increase to control cigarette consumption was done by many countries such as China and USA. A study

conducted by Hu & Mao. 2002[17] in China demonstrated that excise tax increase by 25% will decrease tobacco demand by 2.8% of total tobacco value in 1997, or reduce the area under tobacco by 49,000 hectares nationwide. However, a reduction of tobacco plantation area did not mean that the lands were idle because farmers grew other plants, including 17 crops like tea and sunflowers. The capital return from these crops may not be as high as from tobacco, but would offset to some extent the lost revenue from tobacco. Therefore, the area decrease due to excise increase do not hold a pessimistic view of the future of tobacco farmers because the overall monetary benefits far exceed the negative impact on the cigarette industry and tobacco farmers .

The result of this study is different from other studies on the effect of excise decrease on the lower demand on tobacco from farmers. The excise increase in Indonesia so far had no effect on decrease on tobacco leaves, may be because cigarette prices are still very affordable. The hypothesis or fear of decreasing farmers' revenue or income has not been proven by this study. However, industries always say that tobacco control will jeopardize income of farmers. The government should find evidence and should not worry too much on the increase tobacco excise. Further showed that households experiencing income decrease were mostly (87.7%) due to bad weather not due to excise increase.

Only 26% respondents stated that the reason of reduction of their tobacco plantation area was no profit, while the rest stated other reasons. A study by Keyser & Juita (2005)[18] demonstrated that in Central Java showed that chili, potatoes, *nilam*, and oranges produced similar (or better) net profits than tobacco plants. Traditional rotation crops like rice, peanut, corn, and vegetables (carrots and garlic) only produced small income.

Corn and rice, according to a study by LP3ES (2008)[19], are more profitable compared to tobacco because the costs of tobacco plantation is more expensive. On average, profit gained from growing tobacco per ha in a year was IDR 694,664. While

profit for growing rice and corn was IDR 3,772,366 and IDR 1,814,266, (more than triple) respectively. A study by Panchamukhi (2000) in India found three reasons farmers did not plant tobacco: irrigation was not provided (36.9%), high cost cultivation (25.7%) and labor problem (10.8%). A study in North Carolina United States showed that the income reduction and a program of tobacco plantation quota enhanced the farmers to switch to other plants (Beach, et. Al 2008)[20]. Farmers in southeastern US demonstrated that 50% farmers learned to plant other alternative plant than tobacco and were interested in trying to cultivate other plant to increase income. Most of farmers support excise increase on tobacco if they are provided with financial help to diversify plants. Several problems in plant diversification are the lack of experience of young tobacco farmers in planting other crops.[21]

Tobacco growers my suffer from diseases related with growing tobacco leaves. The health impacts should be calculated to correct income from tobacco farming. Gehlbacha, et al (1975)[22] reported Green-tobacco sickness with symptoms include nausea, vomiting, dizziness, and prostration. The symptoms are self-limited and of short duration but recurs frequently in susceptible workers. Absorption of nicotine from tobacco leaf is the likely cause of the tobacco sickness among farmers. This study also found that farmers reported symptoms similar to the green-tobacco sickness. The majority of respondets 67.0% reported having pain of the whole body and 50.3% reported headache. Other symptoms reported were excessive sweating (25.9%), nausea/vomiting/stomachache (24.6%), sleeping problems (20.9%), loss of appetite (19.1%), itchy/skin problem (18.6%), short of breath (11.5%) and other symptoms such as palpitation, pallor on certain areas of skin and excessive drooling, each was found in less than 10%.

The symptom of body pain was complained by farmers during the maintenance period (50.4%), planting period (21%) and during harvest period (17.2%). Headache was complained

during maintenance period (47.4%), harvest period (14%) and drying period (12%).

Conclusion and Recommendation

To understand the impact of increase tobacco excise as has been proven in other countries and to find evidence of the klaim by the industries that tabacco farmers are suffering, this study was conducted. A survey to 515 households of farmers in three most productive tobacco in Indonesia found that so far, the farmers had not been adversely affected by the excise increased. The study found that farmers' real income increased by 7% although this was not statistically significant with $p<0.05$. Therefore, this study rejectd the hypothesis that excise increase harm farmers' income. However, further study is till necessary to what extent further increase of excise will lead to income decrease. Farmers should be thought how to diversify and find substitute for tobacco crops that yield higher income to them. This diversification should be done by the government along with increasing tobacco excise to the level that is receommended by WHO.

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The Costs Hospital Care for Patients Suffering from Tobacco Related Diseases in Indonesia 2011

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Abstract

Background: *Indonesia is the fifth biggest country by cigarettes consumption with about 235 billion sticks in 2010. The prevalence of smokers among teenagers (age 13–15 years old) continues to increase, from 12.7% (2001) to 17.3% (2004) and 18.8% (2007). In the next decade it is estimated that the country will face a huge economic burden to overcome diseases attributable to smoking. The burden will be very hard since 73.2% of the patients still have to pay from their out-of-pocket. Catastrophic spending for health care can cause a houshold go bankcrupt. To know to what*

extent tobacco related diseases could absorb household income, this study is undetaken.

Objective: *To support tobacco control policy by estimating the cost of treatment in hospitals due to tobacco-related diseases that will eat up vast amount of finance in health care.*

Methods: *The study was conducted in six large public hospitals by taking all discharged patients with group in the June-July 2011 (block sample). Each patient or his/her family member was interviewed to collect data on socio-economic condition and smoking behavior as well as cost of treatments the patient (family) paid for three major tobacco-related diseases (Chronic Obstructive Pulmonary Diseases, respiratory tract cancer, and ischemic heart diseases). The cost of treatment included direct (hospital charges and out of pocket expenditures)*

Results: *The median of total cost of hospitalization charges (direct cost plus indirect cost) was highest in patients with respiratory diseases (IDR 6,689,730), followed by patients with cardiovascular diseases (IDR 5,920,660) and cancers (IDR 5,531,529). By smoking status, patients who smoked every day and diagnosed with respiratory diseases had the highest median cost of IDR 17,059,200, followed by ex-smokers with cardiovascular diseases (IDR 9,029,760). On the other hand, the majority of patients reported that their regular income was belom IDR 5,000,000. The distribution of median charges revealed that the burden for hospitalization in Indonesia easily create a household to go bankcrupt since all median charges were above the household income. Regarding the smoking status, the highest median cost of hospitalization belonged to patients who smoke every day and diagnosed with respiratory diseases. In general, the median of total cost of hospitalization was*

higher for patients in the exposure group than that of non-exposure group. But statistically they were not significant. This insignifianct differences is more likely due to small sampel size. The hichest charges were IDR 80 million rupiah (about USD 9,000) which much higher than the average income of Indonesia. The insignificant difference may be likely due to small sample size. For sure, the range of hospital charges indicated that the highest charges were away far above the average income of households.

Conclusions: *The study found that those who had exposed with tobacco had higher representation of the inpatient care compared to the prevalence of exposed to tobacco of the population. Since the distribution of hospital charges was not normal, we employed Kruskal-Walis test to see the medican defferences. The median and the maximum charges had a tendency of higher among those who had tobacco exposures. However, the differences were not significant. The authors argue that the insignificant differences were due to small sample size. The authors recommend to conduct similar tests with higher number of samples.*

Introduction

Indonesia is the largest consumer of cigarette in the world after China (1,697 billion sticks), the US (463 billion sticks), Russia (375 billion sticks), and Japan (299 billion sticks). In Asia, with cigarettes consumption of about 235 billion sticks in 2010, Indonesia is the third largest.[1] Indonesia is more worrying, from the public health point of view, with the absolute number of smokers that reach more than 70 million people. Indonesia is the fourth most populous country ranked the third, ahead of the US, in term of the number of smokers in 2008.[2]

The high prevalence of smokers in Indonesia has been particularly due to large recruitment of young people to become smokers as the average age of smokers started smoking is getting younger. The Surveys of Socioeconomics (Susenas) showed that the prevalence of smokers was rising, from 27% in 1995 to 31.5% in 2001 and to 34.4% in 2004. In 2007, the prevalence slightly decreased to 34.2%, but then increased again to 34.7% in 2010. The 2007 and 2010 data were from the Basic Health Survey [Riskesdas]. By genders, the prevalence of female smokers aged > 15 years old peaked at 5.2% in 2007 and lowered to 4.2%. In the same period, the prevalence of smokers aming the male counterpart highly increased from 53.4% in 1995 to 62.2% (2001) and 63.1% (2004), then to 65.6% (2004) and 65.9% (2010).[3]

The steadily rising prevalence of smokers followed by rocketing cigarettes consumption from 33 billion sticks in 1970 to 217 billion sticks in 2004. The rocketing cigarettes consumption, seven folds in three decades, would certainly give huge impacts to the country's economy in the future. Various studies have proven that cigarette is a significant risk factor for six of the eight leading causes of death both in developing and developed countries.[4] In Indonesia; non-bleeding stroke has become a leading cause of death, leading to 5.9% of total deaths in hospitals, followed by heart diseases (3.7%) and ischemic heart disease (2.1%). Chronic-obstructive pulmonary diseases (COPD), which is a major tobacco-related disease, is the main cause of death in the country with the prevalence of 10%, after upper respiratory tract infections (24%) and hypertension (11%).

Tobacco-smoking is not only harmful to the smokers, but also to people around them as passive smokers. A study in Indonesia found that 90% of active smokers smoked in their house when members of their family, including children, were around and, as a result, the children have significantly higher incidence of pulmonary diseases.[5] Globally, around one-third of adults are exposed regularly to second-hand tobacco smoke.[6]

In Indonesia where there is lack of regulation or enforced regulation the percentage is arguably higher.

It is estimated (Kosen, 2010) that the annual economic burden for the three major tobacco-related diseases in Indonesia is at least IDR 39.5 trillion [or US$4.03 billion] in 2011. This represents about 0.74% of the Indonesia GDP at the same year or equals to 29.83% of total health care expenditure. The vast majority of the expense went to COPD treatment [IDR 35.1 trillion or US$3.6 billion per year], and the rest are for the treatment of lung cancer (Idr 2.6 trillion) and ischemic diseases (IDR 1.68 trillion).

In Indonesia, the tobacco industry is indeed poorly regulated to protect people' health and the industry's' interests are well represented in government. With poor regulation banning tobacco advertising and marketing, major multinational tobacco companies are free to employ marketing tactics prohibited elsewhere. In fact, Indonesia is one of a very few countries that are non-signatories and do not ratify, accept, approve nor formally confirm the WHO Framework Convention on Tobacco Control (FCTC).[6]

If there is no drastic measure to control tobacco use, it is likely that Indonesia will face a huge economic burden to overcome diseases attributable to smoking. Since 51.8% of the economic burden is financed by public fund. When universal coverage will be started in 2014, it is expected that the government awareness to control tobaco use would be increased.

Objective

This study aims to provide supporting information for the government to unveil tobacco control policy by estimating the cost of treatment for inpatient due to tobacco-related diseases in Indonesia.

Methods

Population, sample, and Data

The population of this study is costs of patients having three major diseases related to tobacco use. Data on hospitalization cost (direct cost) were collected from hospital billing system. Iindirect cost were collected from direct interview with individual inpatient or his/her family member, when the patient was discharged from hospital.

The research sample was the entire hospilatized patients, both males and females aged >35 years old, diagnosed to suffer the eight main tobacco-related diseases, who were discharged during the seven day-surveys at the seven selected hospitals. The patients with ages of >35 years old were selected to anticipate the fact found from earlier study that tobacco-related diseases are only significant on people who have been smoking for 20 years or more and the smokers in Indonesia generally start smoking at the age of 15. The aerlier study also found that block sample could represent cases during the year.

The primary data collected comprise of:

No.	Type of data	Variables
Direct cost		
1.	General characteristics of patient:	Name of the hospital, medical record number, name of the patient, age, gender, marital status, education, profession/job, monthly earnings (including salary), hospitalization cost, and insurer.
2.	Smoking habit:	Smoking/not smoking, number of cigarettes smoked daily, smoking in his/her house when members of the family are around (number of smokers in the family).
3.	Illness(es)	Main diagnosis based (ICD code), co-morbidity / complication based (ICD code), admission date & discharged date.
4.	Hospitalization cost	Class / room charges, medical & medical supply costs (in detail with individual item prices), laboratory/radiology tests, physician fees (surgery, visits, consulting), nurse fees, management fees, service charges in rooms other than room charges, cost for ambulance usage (yes/no)
Indirect cost		
5.	Opportunity cost	Number of the patient's aides during hospitalization, number of days accompanying patients in the hospital, average daily cost to accompanying patient (transportation to/from the hospital, cost of meals) Opportunity costs suffered by the patient or patients aides (loss of income, benefit or salary cut, lost of precious opportunities like education, training, etc.)
	Cost for other than the hospital	Extra cost paid by the patient before the last hospitalization, drugs/ medical supplies other than from the hospital, consulting fee to experts other than from the hospital, complementary tests other than from the hospital, transportation of the patient to the hospital, payments made by the patient/family to ones who accompany the patient. .

Results And Discussion

This report only analyzed data from costs of inpatient care of Tobacco-Related Diseases (TRD) at six (out of 7) hospitals because there are some problem in the data from one hospital. From the six hospitals, there were 118 inpatient cases discharge during a week of survey, 472 outpatients and 296 inpatients care discharged within a month from the survey. This study limit only to charges of the patients discharged during the week of the survey.

From total patients 9118) included in the study, 49.2% were non-smokers, arguably comparable with the 2010 Riskesdas data which showed that 59.9% of the population of Indonesia was non-smokers. However, this study found that 31.4% of the patients were ex-smokers—much higher proprotion than the 2010 Riskesdas data of 5%. Furthermore, among patients who were active smokers, 16.9% smoked every day. These suggested that the inpatients of TRDs had higher proportion of smokers and non smokers or never exposed. This data may suggest that indeed, smoking has corrlation with higher incidence of diseases. Among the ex-smokers, the majority were patients of age 65 to 74 years old. By gender, the majority (43.7%) of male patients diagnosed was ex-smokers and the vast majority (95.5%) of female patients diagnosed was non-smokers.

Table 1.
Patients' characteristic by age group n (%), 2011

Characteristics	Current smokers		Non- smokers		Total
	Every day	Occasional	Ex-smokers	Never smoking	
Age group					
35 − 44	5 (31.3)	1 (6.3)	3 (18.8)	7 (43.8)	16 (13.6)
45 − 54	6 (22.2)	1 (3.7)	9 (33.3)	11 (40.7)	27 (22.9)
55 − 64	4 (10.3)	0 (0.0)	11 (28.2)	24 (61.5)	39 (33.1)
65 ++	5 (15.4)	1 (3.8)	14 (42.3)	16 (38.5)	36 (30.5)

By frequency of hospitalization in the last one year, patients diagnosed with cardiovascular diseases have been hospitalized once with the same diagnosis regardless of the age group, gender and exposure to cigarette smoke. However, patients diagnosed with cancer had more frequent admitance to the hospital wih the median hospitalization was three times, except for patients belonged to the age group $\geq$ 55 years old and female patients of whom only once.

To examine the correlation of health care costs with smoking, since the number of observation is small, we categorized respondent into two large groups which exposed and non exposed to tobacco. Those who are smokers at the time of survey, former smokers, and have quited smoking are categorized have positive exposore with tobacco. Toherswise, it is no exposeure. Regarding patients who are never smoking (49.2%), among them 41.4% has been exposed to cigarettes smoke in their house where at least 1−2 of their family members smoking in the house. For positive exposure with cardiovascular diseases, the number of patients $\geq$ 55 years old were almost twice as many as those of age < 55 years old. However, percentage diffrene was not significant between the

age groups for male and female patients. For negative exposure patients diagnosed with cardiovascular diseases, female patient were two times of that of the male patients.

For patients diagnosed with cancer, the proportion was higher in the age group of < 55 years old (about 1.5 time) than in the age group of ≥ 55 years old. This may be due to poor survival of cancer patients. For patients' belonged to positive exposure, the percentage of male patients diagnosed with cancers was not significantly different between the age groups, so did the percentage of female patients diagnosed with cancers. However, for patients in the negative exposure group the percentage of female patients diagnosed with cancers age ≥ 55 years old significantly higher than those of < 55 years old. Overall, the percentages of male patients diagnosed by both cardiovascular diseases and cancers were two times of the percentages of their female counterparts.

Table 2
Patients characteristic by exposure to cigarette smoke, diagnosis, gender and age group

Diagnosis and Age Group	Exposed						Non Exposed					
	Male		Female		Total		Male		Female		Total	
	N	%	n	%	n	%	N	%	n	%	n	%
Cardiovascular diseases												
< 55 years	33	70.2	14	29.8	47	37.0	7	38.9	11	61.1	18	29.0
≥ 55 years	57	71.3	23	28.8	80	63.0	14	31.8	30	68.2	44	71.0
Cancers												
< 55 years	23	82.1	5	17.9	28	59.6	5	83.3	1	16.7	6	66.7
≥ 55 years	16	84.2	3	15.8	19	40.4	1	33.3	2	66.7	3	33.3

The patients with education of high school or higher were about twice more than of their counterpart with education less than middle school. However, the patients who were real non-smokers (never smoking) were about the same in number by education. Among patients interviewed, 61.5% did not have any job (anymore). They might have been retired since the majority of the patients were belonged to the age group of ≥ 55 years old. More than half of those unemployed were never smoke. By income distribution, the majority of patients had income of below IDR 5 million (USD 600) per month. Only about 30% of the patients had income above IDR 5 million. This would be difficult for most patients because the hospital charges may be much higher than their montly income.

Table 3
Distribution of Patients by Diagnosis Group

Diagnosis group	Current smokers		Non- smokers		Total
	Every day	Occasionally	Ex-smokers	Never smoking	
Cardiovascular diseases	19 (21.3)	3 (3.4)	20 (22.5)	47 (52.8)	89 (75.4)
Respiratory diseases	1 (14.3)	0 (0.0)	4 (57.1)	2 (28.6)	7 (5.9)
Cancers	0 (0.0)	0 (0.0)	13 (59.1)	9 (40.9)	22 (18.6)

The vast majority of patients (75.4%) were diagnosed with cardiovascular diseases, mostly stroke (61.8%), followed by ischemic heart disease (30.3%) and atherosclerosis (7.9%). Among the ex-smoker patients, cancers (larynx, trachea, bronchus, lung) were the most prevalent (59.1%), followed closely by respiratory diseases (CPOD, asthma, pneumonia), 57.1%.

Table 4
The Distribution of Median Cost of Hospitalization (IDR 000) by Diagonsis, Age, and Exposure to Cigarettes

Diagnosis/Age Group	Exposed			No Exposed			P*
	Males	Females	**Total**	Males	Females	**Total**	
Cardiovascular diseases							0.609
< 55 years old	4,524	2,445	**3,727**	4,051	2,697	**4,000**	
≥ 55 years old	4,688	5,155	**4,876**	2,857	6,224	**4,500**	
Cancers							0.221
< 55 years old	5,605	15,000	**6,000**	5,215	1,527	**4,700**	
≥ 55 years old	3,176	1,267	**2,645**	11,771	1,415	**1,545**	

* Kruskall-Wallis test

The distribution of hospital charges were skewed to the right as are true every where. To analyze such data, we presented in quartile distribution as it is more appropriate statistically. The median of total cost of hospitalization charges (direct cost plus indirect cost) was highest in patients with respiratory diseases (IDR 6,689,730), followed by patients with cardiovascular diseases (IDR 5,920,660) and cancers (IDR 5,531,529). By smoking status, patients who smoked every day and diagnosed with respiratory diseases had the highest median cost of IDR 17,059,200, followed by ex-smokers with cardiovascular diseases (IDR 9,029,760). On the other hand, the majority of patients reported that their regular income was belom IDR 5,000,000. The distribution of median charges revealed that the burden for hospitalization in Indonesia easily create a household to go bankcrupt since all median charges were above the household income.

The highest median cost belonged to patients with cardiovascular diseases (IDR 4,876,168), while patients with

respiratory diseases had median hospital charges of about half of that of patients with cardiovascular diseases (IDR 2,452,396). Regarding the smoking status, the highest median cost of hospitalization belonged to patients who smoke every day and diagnosed with respiratory diseases. In general, the median of total cost of hospitalization was higher for patients in the exposure group than that of non-exposure group. But statistically they were not significant. This insignifianct differences is more likely due to small sampel size. When the data collection completed for 12 hospitals, the results could be different. Larger difference of the median cost was found between patients with cancers and patients with cardiovascular diseases.

The 2010 Riskesdas data showed that the prevalence of ex-smokers tended to increase with the age with the highest prevalence on the age group of > 75 years old (14%). The 2010 Riskesdas data also showed that the prevalence of ex-smokers was six times higher in males (9.4%) than in females (1.5%).

Table 5
Distribution of Hospital Charges (IDR 000) by Diseases and Exposure to Cigarettes

Dianosis	Exposed		Non-exposed		Total		p**
	Range	Median	Range	Median	Range	Median	
Cardiovascular diseases	1.5–80,289	**4,238**	69–74,399	**4,000**	1.5–80,289	4,127	0.7800
Cancer	600–62,284	**4,717**	16–41,666	**3,122**	16–62,284	4,567	
Total	1.5–80,289	**4,257**	16–74,399	**4,000**	1.5–80,289	4,229	

**Kruskal-Wallis test
*42 data on cost are missing

The above table describe the distribution of hospital charges by diagnosis groups and exposure to tobacco. Although using Kruskal-Wallis test the differences were not statistically signifiant, the distribution shows tendency for higher hospital charges to those exposed with tobacco/cigarettes. The insignificant difference may be likely due to small sample size. For sure, the range of hospital charges indicated that the highest charges were away far above the average income of households. The hichest charges were IDR 80 million rupiah (about USD 9,000) which much higher than the average income of Indonesia. It was about three time more the average income per capita of the country, which is also bias to the very high income because the Gini index has been around 34 in the last 40 years.

Conclusion and Recommendation

This study has been undertaken to explore the differences of hospital charges among those who had expose

with tobacco and those who were not exposed. The data were primarily collected from six hospital discharges by interviewing the patients or adult family members of the patients in public hospitals. The sample selection was a block sample in which all patients with TRDs discharges in one week in the month of June-July 2011 were sampled. Charges in private hospitals may be much higher. The study found that those who had exposed with tobacco had higher representation of the inpatient care compared to the prevalence of exposed to tobacco of the population. Since the distribution of hospital charges was not normal, we employed Kruskal-Walis test to see the medican defferences. The median and the maximum charges had a tendency of higher among those who had tobacco exposures. However, the differences were not significant. The authors argue that the insignificant differences were due to small sample size. The authors recommend to conduct similar tests with higher number of samples.

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Healthcare Cost of Tobacco Related Diseases in Indonesia, 2011

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Abstract

Objectives: *Indonesia is the world's third largest cigarettes consumer after China and India. Annually, Indonesians consume about 230 billion sticks of cigarettes. The objective of this study is to assess the healthcare cost of smoking in Indonesia for adults aged 35 years old and older.*

Methods: *A prevalence-based attributable risk approach was used to estimate healthcare cost of smoking by the type of healthcare services (inpatient care and outpatient visits) and the category of diseases (cancers, cardiovascular diseases, and respiratory tract diseases). The burden of excessive healthcare cost should be borne by the public due to smoking-related diseases was also estimated. The data analyzed were from the 2007 National Health Survey (NHS or Riskesdas) and the 2007 National Socioeconomic Survey (NSES or Susenas), on 358,477*

individuals aged 35 + years. Current information on healthcare cost was collected through a case-study survey in seven public hospitals in five provinces, conducted in 2011.

Results: *The results of the present study show that direct medical costs for Indonesia in 2011 was estimated IDR 3.766 Trillion (US$ 418 Million) in 2011. The direct medical cot losts in Indonesian SAE represented only 0.0527% of GDP in 2011. When assuming the indirect cost is about four times of the direct cost, then the total tobacco related diseases lost would be 0.21% of GDP in 2011. The 0.0527% was small but is still reasonable because health care utilization or accesses to health services in Indonesia has been low compared to the access and utilization of health care in other countris.The low losses of medical costs in Indonesia was arguably also due to lower costs of treatment in public hospitals which include the coverage for the poor.*

Conclusion: *The study found that Indonesia was loosing IDR 3.76 Trillion in medical treatments only from the tobacco-related diseases. This amount represent 0.057% of GDP, much smaller than that of treatment losts to TRDs in China. The author recommend that the losts from TRD can be reduce by expanding efforts to control tobacco use primarily by increasing excise tax to, at least, rearch 57% of the retail prices as allowed by the current excise law.*

Introduction

In Indonesia, deaths due to cancers were 188,100 cases or the seventh highest among 192 countries, while deaths due to cardiovascular diseases were even higher at 468,700 cases (the sixth highest), and due to respiratory tract diseases were

109,700 cases (the fourth highest), in 2002 (WHO, 2004)[1]. The proportion of death due to cardiovascular diseases was 31.9%, followed by those due to respiratory tract diseases (8.95%) and due to cancers (5.7%). The death due to cardiovascular diseases was indeed highly increased as shown by its proportion that rose from 9.7% (1986)[2] to 31.9% (NHS 2007), ranked the third among the leading causes of death in the Country.

There is no safe level for cigarettes consumption. A study by Bjartveit, K & A. Tverdal in Norway (2002)[3], shows that cigarettes consumption of 1−4 sticks daily causes smoking-related diseases (primarily cardiac diseases and lung cancer) up to 1.57 times for males and 1.47 times for females. The 1−4 sticks daily smoking also increases risk of death due to cardiovascular diseases by 2.74 times for males and 2.94 times for females, due to all kind of cancers by 1.08 times for males and 1.15 times for females, and due to lung cancer by 2.79 times for males and 5.03 times for females.

In Indonesia, data from the National Socioeconomic Survey (NSES 1995, 2001, and 2004) and the National Health Survey (NHS 2007 and 2010) showed that the prevalence of smokers among males at age 15+ years old increased from 53.4% (1995) to 65.9% (2010). The prevalence of smokers among females, although remained low, but steadily rose from 1.7% (1995) to 4.2% (2010) (Ahsan *et al*, 2011)[4]. The increased prevalence of smokers will certainly result in a greater economic impact in the future. The impacts are not only due to rising direct costs on the treatment of smoking-related diseases but also caused by skyrocketing indirect costs, including opportunity lost resulted from premature deaths.

The high prevalence of smokers coupled with the large population has positioned Indonesia as the world's third largest consumer of tobacco by the number of smokers after China and India. It was estimated that in 2008 the Country's male smokers numbered about 53,392,709 (Tobacco Atlas, 2009)[5]. Meanwhile, the number of female smokers was about 3,848,035, ranked the 17th or positioned between the

Philippines and Argentina. Overall, the Country's cigarettes consumption ranked the 5th after China, the US, Russia, and Japan. In 2007, the Country's cigarettes consumption was 239 billion sticks or increased by 57 billion sticks (31%) compared to that of 2001. Since 2007, the cigarettes consumption has continuously increasing for, according to the Ministry of Finance, the Country's cigarettes production highly grew from 216.8 billion sticks (2006) to 249.1 billion sticks (2010). The 2007 NHS data show that the prevalence of male smokers who started smoking at the age of 25 years increased to 73.3% in 2007 (TCSC & IAKMI, 2009)[6].

The high prevalence of smokers in Indonesia is among others due to low cigarettes' prices. The average cigarette price in the Country is US$1.24, cheaper than in Thailand that is US$1.34 and in Malaysia (US$1.80). The low cigarettes' prices are closely related to the low cigarettes excise taxes which in turn indicates the government's low commitment in tobacco control (Tobacco Atlas, 2009). In fact, Indonesia is the only ASEAN country which has not assessed or ratified the WHO FCTC, an agreement among countries in the world to protect present and future generations from the devastating consequences of tobacco consumption.

The tobacco companies often claim that the tobacco tax is the most important source of revenue for Indonesia. In fact, the Country's government revenue from tobacco tax in 2011 was only IDR58.06 trillion or a mere 5.36% of total internal revenues (Nota Keuangan, 2011). In contrast, many studies found that the losts due to tobacco use are much higher, in form of lowering prosperity, loss of wealth and productivity caused by smoking-related diseases and premature deaths. According to the Tobacco Atlas (2009), total economic costs due to tobacco uses reduce national wealth from 0.25% (China) to 3.6% (Poland). A study on the economic of tobacco in Indonesia by Kosen (2009)[7] reported that, in 2008, total cost for the treatment of smoking-related diseases amounted to

IDR18.55 trillion (IDR15.44 trillion for inpatient care and IRD 3.11 trillion for outpatient visits).

Indirect costs due to tobacco-related diseases--TRD (transportation, absence of work, premature deaths) would be even greater than the direct costs. A study by Yang *et al* (2008) in China found that the proportion of direct medical cost was 21.5%, while the indirect cost absored 78.5%, of the total cost.

Objective

This study aims at providing information of direct medical costs paid for inpatients and outpatient for the treatment of smoking-related diseases to provide evidence base policy in controlling tobacco use.

Methods

Data

The data used in this study were secondary data derived from the 2007 National Health Survey (NHS or Riskesdas) and the 2007 National Socioeconomic Survey (NSES or Susenas). The two datasets provides a national estimate of the number of cases of smoking related diseases. To use current costs, this study is enriched with a survey of hospital charges to obtain primary data collected in 2011 from six large hospitals in five provinces. The 2007 NHS used the same samples as the 2007 NSES which was conducted earlier to ensure national representativeness of samples. The total samples consist of more than one million individuals of all ages.

The NHS data are rich in information on the prevalences of diseases (diagnosed based on the ICD X code), risk behaviors (including smoking), access and utilization of health facilities, health status, and healthcare expenditures.

Unfortunately, the health care expenditures collected by the NHS was health care costs in the last five years for inpatients and for last medical visit for outpatients. So, the NHS and NSES data are good for incidence and prevalences of diseases, while the costs of health care were not good. The NSES data are needed to get information on the prevalence of smoking, the proportions of inpatient and outpatient, as well as the frequency of inpatients. Meanwhile, the hospital charge survey provides information on the average costs of recent charges paid for inpatients and outpatients. Information on the costs paid for inpatients was not only collected from the discharging patients through direct interviews, but also from the medical record of inpatients who had been hospitalized within the last three months.

Cost data

The average costs used in this study were direct costs paid for inpatients and outpatients care. The direct costs on inpatient includes hospitalization bills (medical and medical supplies, laboratory tests, other diagnostic procedures, physician fees, nurse fees, room charges, administration fee, and other charges) and ambulance charges. The direct costs on outpatients comprise of registration/miscellaneous fees, physician fees, laboratory or radiology tests, and medicines and medical supplies.

Samples include in the study were individuals aged 35 years or above, considering that the impacts of the smoking-related diseases begin to emerge after 20 years of smoking and the average age of started smoking has been 15 years. With this inclusion, the number of samples having TRDs from the merged two cells (NHS and NSES) of data was 353,585, comprised of 171,047 males and 181.538 females.

Disease Categories

Based on the main diagnosis, the TRDs were categorized into three groups: (i) individuals diagnosed with

cancers, (ii) individuals diagnosed with no cancer, but had cardiovascular diseases, (iii) individuals diagnosed with no cancer and cardiovascular diseases, but had respiratory tract diseases. Accordingly, the three groups are respectively called the cancer group, the cardiovascular disease group, and respiratory tract disease group. Included in the cancer group were individuals diagnosed with cancer of the larynx, trachea, bronchus, and lung (ICD Code of C 32−34) as well as lips, oral and pharynx cancers (C 00−14). In the cardiovascular disease group include individuals diagnosed with cardiac ischemia (I 20−25), atherosclerosis (I 70) and stroke (I 60−69). While in the respiratory disease group there were individuals diagnosed with chronic-obstructed pulmonary disease –COPD (J 40−44 & 46), asthma (J 45) and pneumonia (J 12−18).

Cost of Smoking Estimation

Both the NHS and the NSES did not specifically link which disease is associated with inpatients or outpatients, nor did it differentiate cost paid for inpatients or outpatients. Therefore, to estimate the cost of TRDs, a modified method of Sung *et al* (2006) was used with the following approach.

$$SAE_{dg} = THE_{dg} \times SAF_{dg} \qquad \text{(Eq. 1)}$$

SAF (smoking attributable fraction) is the proportion of samples suffering from smoking related diseases as in the equation of:

$$SAF_{dg} = (PN_g + PS_g * RR_{dg} - 1) / (PN_g + PS_g * RR_{dg}) \qquad \text{(Eq. 2)}$$

THE_{dg} is total direct health expenditure on smoking-related diseases for inpatient and outpatient with diseases d and gender g.

$THE_{dg} = (PH_{dg} \times QH_{dg} + PV_{dg} \times QV_{dg} \times 12) \times (DISEASER_{dg} \times POP_g)$ (Eq. 3)

$QH_{dg} = HP_{dg} \times FH_{dg}$ (Eq. 4)

$QV_{dg} = VP_{dg} \times FV_{dg}$ (Eq. 5)

Where:

- $DISEASER_{dg}$ = prevalence rate of disease *d* among samples for gender g
- PH_{dg} = average expenditure per hospitalization for treating all TRDs for inpatients with disease *d* for gender g
- QH_{dg} = average number of inpatient hospitalized in the past 12 months for treating all TRDs for patients with disease *d* for gender g
- PV_{dg} = average expenditure per outpatient visit for treating all TRDs among patients with disease *d* for gender g
- QV_{dg} = average number of outpatient visits in the past month for treating all TRDs among patients with disease *d* for gender g
- POP_g = population with gender g in 2011
- HP_{dg} = proportion of inpatients with disease *d* for gender g.
- VP_{dg} = proportion of outpatients with disease *d* for gender g
- FH_{dg} = frequency of inpatient hospitalized with disease *d* for gender g in the past 12 months.
- FP_{dg} = frequency of outpatients who had been hospitalized with disease *d* for gender g in the past one month.

$SAF_{dg} = (PN_{dg} + PS_{dg}*RR_{dg} - 1) / (PN_{dg} + PS_{dg}*RR_{dg})$ (Eq. 2)

- PN_{dg} = the prevalence of smokers (current and former smokers) for gender g

PS_{dg} = the prevalence of nonsmokers for gender g

We defined the prevalence of diseases using mutually exclusive categories when we employed this approach, because some patients might had multiple diseases within the NHS to avoid double counting. The diseases were therefore grouped as follows:

Patients with cancer

Patients with no cancer, but had cardiovascular diseases.

Patients with no cancer and no cardiovascular diseases, but had respiratory tract diseases.

Results

Prevalence of Smokers

According to the 2007 NHS data, the prevalence of smokers among the age of 15+ years was 34.2% for both genders. For males it was 65.6% and for female it was 5.2% (TCSC. 2009). For the age group of 35+ years, the prevalence in 2007 was higher.

By merging the 2007 NHS and 2007 NSES data, this study found that the prevalence of current and former smokers was 41.97% (77.16% for males and 8.63% for females). For male smokers, the prevalence of current smoker was 67.81% and former smoker was 9.35%. Meanwhile, for female smokers, the prevalence of current smoker was 7.63% and former smoker was 1.10%. Past smoking habit might cause current diseases and the smokers ceased to smoke after getting sick. To estimate the diseases attributable to smoking, the prevalence of former smokers must be taken into account. The prevalence of smokers among aged 35+ years in Indonesia was quite high compared to those of other countries.

Number of Patients with Smoking-Related Diseases

Among the total male samples (171.626 individuals aged 35+ years in 2007), this study found that 19.38% were suffering from TRDs with cardiovascular diseases as the highest (10.72%), followed by respiratory tract diseases (8.11%) and cancers (0.54%). Meanwhile, among the total female samples (182.520 individuals) the study found 23.9% were suffering from smoking-related diseases also with cardiovascular diseases as the highest (15.5%), followed by respiratory tract diseases (7.2%) and cancers (1.1%).

Extrapolating the population aged 35+ years from the 2005 Inter-Census Population Survey (*Survei Penduduk Antar Sensus*, SUPAS, 2005), the 2010 Population Census data, the sample population in 2011 was estimated to be 89,274,375 (or about 37.1% of the total Indonesian population of 240.821.099). The estimate number of people age 35+ comprised of 44.273.501 males and 45.000.874 females. Assuming that the prevalence rates and the distribution of disease categories in 2011 were the same with that of 2007, the number of people (aged 35+ years) suffering from the three groups of disease by gender is as shown in Table 1.

Table 1
Estimate of the Total Number of People Suffering from TRDs, in 2011

Disease Group	Number of people	
	Males	Females
Respiratory tract diseases	3,592,128	3,259,432
Cardiovascular diseases	4,747,015	6,995,945
Cancers	241,082	483,941
Respiratory tract diseases/ cardiovascular diseases/cancers	8,580,225	10,738,867
No disease/other diseases	35,693,276	34,262,007
Total sample population	44,273,501	45,000,874

Note: Authors estimation

The prevalence of male smokers is higher than that of female smokers, but the number of people aged 35+ years old suffering from the TRDs was higher for female smokers than that for male smokers, i.e. 8,580,225 and 10,738,867, respectively. Exposure of cigarettes smoke on females makes them passive smokers, giving them tremendous risk to TRDs. Data derived from the 2007 NSES reported by TCSC (2010) show that among families with at least one person smoking, 68.7% of their active smokers smoke in their house when members of their family are around. Consequently, 44−56% of females aged 35+ years became passive smokers.

Relative Risk and Smoking-Attributable Fraction (SAF)

Currently, Indonesia has no data on relative risk (RR) of exposure of tobacco to the TRDs of three disease categories.

To estimate the SAF, we therefore used the RR data from China that has similar characteristics. A study by Gu, Kelly, Wu., *et al* (2009) suggested that RR for respiratory diseases on male population is 1.14, implying that the risk of male (current and former) smokers to suffer from respiratory diseases is 1.14 times that of male non-smokers. The RR for respiratory diseases on female population is slightly higher, 1.43. Table 2 shows that the highest RR for cancers both on male and female populations is 1.55 and 1.62, respectively. A study by Jun-Yao, Campbell and Jun-Shi, *et al* (1998)[8] also found similar RR on people aged 35−69 years, i.e. 1.51 (males) and 1.37 (females) for cancers, 1.31 (males) and 1.61 (females) for respiratory tract diseases, 1.15 (males) and 1.01 (females) for cardiovascular diseases.

Table 2
Disease-Specific Relative Risk (RR) of Mortality and Smoking-Attributable Fraction (SAF) for Adults Aged 35+ in Indonesia, by disease groups and gender (2007)

Disease Group	RR*		SAF (%)**	
	Males	Females	Males	Females
Respiratory tract diseases	1.14	1.30	9.75	3.58
Cardiovascular diseases	1.17	1.17	11.60	1.78
Cancers	1.55	1.62	29.79	5.08

Source:

* *Gu DF, Kelly TN, Wu XG, et al. Mortality attributable to smoking in China. N Engl J Med 2009;360:150e9.*

** *SAFdg = (PNg + PSg*RRdrg − 1) / (PNg + PSg*RRdg)*

Where PN and PS denote the prevalence rate of non-smokers and smokers, respectively; RR denotes the RR of mortality for smokers compared to non-smokers; the subscript d is for disease category and g is for gender.

The SF of male population is higher than that of female population, because the prevalence of male smokers is also higher. The biggest SAF is for cancers, i.e. 29.79% for males and 5.08% for females. This is evidence that smoking is indeed a key risk factor for cancers.

Table 3
The Average Expenditure Per Inpatient Care and Per Outpatient Visit among Adults Aged 35+ years in Indonesia Hospital by disease groups and gender (2011)

Disease Group	Average expenditure per inpatient care, IDR		Average expenditure per outpatient visit, IDR	
	Males	Females	Males	Females
Respiratory tract diseases	4,260,083	3,264,759	187,139	215,567
Cardiovascular diseases	16,483,643	7,933,008	335,004	264,502
Cancers	14,113,619	13,005,192	1,122,032	902,167
Respiratory tract diseases/ cardiovascular diseases/cancers	14,164,169	7,978,889	406,328	327,393

Source: Hospital survey 2011
Exchange rate: USD1 = IDR 9,000

In the survey of six public hospitals, 590 outpatients (366 males and 224 females) who had been hospitalized for TRDs were interviewed. This study found that the mean charge for hospitalization (inpatients) was IDR 11,815,860 (USD 1,313) with the mean charges for male inpatients approximately twice as high as that for female inpatients --IDR 14,164,169

(USD 1,574) for males and IDR 7,978,889 (USD 886) for females.

The survey shows that the average charges on inpatients (excluding one day-care) for cancers was IDR 11,815,860 (USD1,313), with the minimum of IDR 230,045 (USD 26) and the maximum of IDR 141,634,948 (USD 15,737). By the disease groups, the average charges on inpatient were IDR 13,790,691 (USD 1,532) for cancers, IDR 13,067,974 (USD 1,452) for cardiovascular diseases, and IDR 3,839,835 (USD 427) for respiratory diseases. The highest average hospitalization cost for males was for cardiovascular diseases, while for females it was is for cancers.

The average cost per visit for outpatients was IDR 410,927 (USD 46), with the minimum of IDR 3,000 (USD 0,30) and the maximum of IDR 13,145,000 (USD 1,461) for cancers. By the disease groups, the highest average cost per visit for outpatients was IDR1.063.401 (USD 118) for cancer, IDR 308.161 (USD 34) for cardiovascular diseases, and IDR 200.061 (USD 22) for respiratory diseases, respectively. Both for males and females outpatients, the highest average cost per visit was for the treatment of cancers.

Table 4
The Proportion of Inpatients and Outpatients Visits by Disease Group, NHS 2007

	Inpatients			Outpatients		
	Male	Female	M+F	Male	Female	M+F
Respiratory diseases	3.4	2.7	3.1	24.8	21.6	23.2
Cardiovascular diseases	5.5	4.0	4.6	27.7	24.3	25.6
Cancers	9.7	10.5	10.2	27.9	24.4	25.5
Respiratory/cardiovascular/cancer	4.7	3.9	4.3	26.5	23.5	24.8
Individuals with no diseases or other diseases	2.0	1.93	1.97	15.8	14.5	15.1
All adults (aged 35+) with no disease or other disease	2.5	2.4	2.47	17.9	16.6	17.2

The proportion of outpatients visit aged 35+ years suffering from smoking-related diseases a year before the survey carried out was 24.8% or 1.7 times of those with no smoking-related disease. The propotion of outpatients suffering from cancers or cardiovascular diseases was 1.7 times of that with no smoking-related disease, while the proportion of outpatients suffering from respiratory diseases was 1.5 times of that with no smoking-related disease. By gender, the proportion of male outpatients suffering from smoking-related diseases was 1.1 times of that of female outpatients suffering from the same diseases.

The inpatients of the TRDs during a year before survey was 4.24% or 2.2 times of those not suffering the tobacco related diseases. The percentage of cancer inpatient was 5.2 times, that of cardiovascular inpatient was 2.3 times and that of respiratory inpatient was 1.6 times of other disease inpatients. In all disease groups, the male percentage was higher than that of females. The percentage of inpatients according to the disease group and gender listed in Table 4.

Among all patient surveyed, the proportion of inpatients above 35 years old suffering cancer is the highest, then for cardiovascular inpatient and the lowest is for respiratory diseases in 2011. The frequency of inpatients suffering cardiovascular and respiratory is higher for male and that of cancer diseases is higher for female. While for outpatients above 35 years old in 2007, the highest frequency is also for cancer disease then for cardiovascular diseases and respiratory diseases. The Frequency of male outpatients is higher than for female (see Table 5).

Table 5
The Frequency of Inpatients and Outpatient per Year from Combined Source

	Inpatients per year**)		# Outpatient visit per year*)	
	Frequency			
	Male	Female	Male	Female
Respiratory diseases	3.4	2.7	24.8	21.6
Cardiovascular diseases	5.5	4.0	27.7	24.3
Cancer	9.7	10.5	27.9	24.4

Source:
*) Estimation from merged NHS data * NSES 2007
**) Hospital survey 2011

Using Table 4 and Table 5 we can estimte the outpatient rate was 5.8 for above 35 years old suffering tobacco related disease in 2007. It is meant that the average number of outpatient visit for those suffering from TRD was 5.8 times per year. The number outpatient visit rate for cancer disease was the highest, then cardiovascular disease and the lowest was respiratory diseases.

Table 6
The Estimation of Outpatient and Inpatients Rate according to gender and Disease Group

Disease group	Outpatient rate 2007			Inpatient rate, 2011		
	Male	Female	M+F	Male	Female	M+F
Cancer	6.92	6.03	6.32	0.127	0.247	0.250
Cardiovascular diseases	6.69	5.65	6.06	0.084	0.049	0.058
respiratory diseases	5.74	4.85	5.31	0.085	0.044	0.048
Cancer/CVDs/respi)	6.30	5.42	5.80	0.077	0.057	0.067

Outpatient rate (2007) = proportion of outpatients by diseases x frequency of outpatients per month (NHS) among out-patients population by disease x 12
*Inpatient rate (2011) = proportion of inpatients by diseases in 2007 * frequency of inpatients among inpatients population by disease in 2011*

The outpatient and inpatient rate in Indonesia is lower than that of China. From Table 6 and 7, it could be predicted that the difference of the inpatient rate in China and in Indonesia was about 1-9 times and the outpatient rate was about 4-5 times. For example, the male inpatient rate in China for cancer patient was 1,5 times, for cardiovascular patient were 4,4 times and for respiratory patient were 9,1 times compared to those of in Indonesia.

The pattern of the inpatient and outpatient rate for Indonesia has a similarity of that of China, that is for cancer disease was the highest rate, then for cardiovascular diseases and the lowest rate was for respiratory disease. The difference in between exists for the pattern of outpatient rate of circulatory disease in Indonesia was the second rank but in China was the third rank.

Table 7
The Inpatient and Outpatient Rate, China, 1998

Sex	Group of diseases	Number of hospitalizations days per person/year	Average number of outpatient visits per year
Female	Cancer	1.17021	27.66
	Cardiovascular	0.21253	23.93
	Respiratory	0.08479	26.07
Male	Cancer	1.14925	34.54
	Cardiovascular	0.37430	24.12
	Respiratory	0.12648	26.09

Table 8
The Total Economic Losses form Inpatient and Outpatient Expenditure per Year, 2011 (IDR Billion)

	Total inpatients expenditure per year for adult aged 35+		Total outpatients expenditure per year for adult aged 35+		Total
	Male	Female	male	Female	M+F
Respiratory	1.294	472	3.857	3.410	9.034
Cardiovascular	6.551	2.694	10.639	10.448	30.333
Cancer	430	1.553	1.871	2.631	6.487
All	8.276	4.720	16.367	16.490	45.854

The total expenditure for the three diseases in 2011 before considering the tobacco impact reaches 45.85 trillion (Table 9). This study results in a much higher expenditures than the predicted amount for Indonesia in 2008 of IDR 15.4 trillion of health expenditure spent for the tobacco related diseases.

Table 9
Smoking-attributable direct health care expenditure (SAE)* in Indonesia in 2011, by disease and gender (IDR Billion)

Diseases	Inpatient	Outpatient	Total
Male			
Respiratory diseases	126	376	502
Cardiovascular diseases	759	1.233	1.993
Cancer	128	557	685
Total SAE Male	1.014	2.167	3.181
Female			
Respiratory diseases	16	121	138
Cardiovascular diseases	47	185	233
Cancer	78	133	212
Total SAE Female	143	441	585
Male+Female			
Respiratory diseases	143	498	641
Cardiovascular diseases	807	1.419	2.227
Cancer	207	691	898
Total SAE M+F	1.157	2.608	3.766

US$ 1= IDR 9,000

The total SAE amount of 3.77 trillion IDR (US$ 418.53 million) comprises of 30.74% for inpatients and 69.26% for outpatients. When compared to the study in China (2001), it was substantially similar distribution to that of 26.8% and 73.2%. Then when viewed from the disease types, the highest SAE were for cardiovascular disease group (59.13%), followed by cancer group (23.85%) and respiratory group (17.02%). According to gender, SAE for male was 84.46%, much higher than for female (15.54%) due to high smoking prevalence among males.

Discussion

The results of the present study show that direct medical costs for Indonesia in 2011 was estimated IDR 3.766 Trillion (US$ 418 Million) in 2011 or less than that of China which reached US$ 6,201 Million in 2008 (Yang, et al. 2011). The higher number of smokers in China caused higher total costs spent for TRDs. The number of population age 35+ in China in 2008 was 724.2 million or approximately 8 times more than the same age group of Indonesia population in 2011 (89.3 million).

The direct medical cot losts in Indonesian SAE represented only 0.0527% of GDP in 2011. When assuming the indirect cost is about four times of the direct cost, then the total tobacco related diseases lost would be 0.21% of GDP in 2011. A recent study in China found the direct and indirect costs cost of smoking (mortality + morbidity productivity loss) represented 0.7% of the GDP in 2008 (Yang, Sung, Mao, Hu & Rao (2011).[9] The direct cost of smoking accounted for 21.5% of total cost of smoking. Therefore, total direct cost of smoking represented 0.15% (=0.7% * 0.215) of GDP. The 0.0527% is kind of smaller than 0.15% but is still reasonable because health care utilization or accesses to health services in Indonesia are lower than those in China.

However the number cases of tobacco related diseases for female was more than that of for male, but the SAE for males was higher than that of for females. Therefore efforts to lower SAE could be done by reducing the smoking prevalence. The total Indonesia SAE reaches 60.32% of the health program for the poor. In fact that smoking prevalence among the poor has been higher than that of the richest. Susenas 2007 showed that the smoking prevalence in the poorest quintile was 35.8% and in the richest quintile was 31.5% (TCSS, 2010). If the smoking is not controlled, then the free health care for the poor will be meaningless.

The low total direct cost on GDP shows that the share of SAE in Indonesia was still too low. The probable causes are as follow:

1. First: The inpatient rate in Indonesia was still low due to low insurance coverage. The Riskesdas 2007 indicated that the source of payment for inpatient expenditure was still dominated (71.0%) from out of pocket. Then from, successively, insurance *Askes/Jamsostek* (15.6%), *Askeskin/SKTM* (14.3%), and other health funds (2.9%).
2. Second: The outpatient rate in Indonesia was also relatively low. Data 2007 showed that the 17% of people who had a serious health symptom did not seek health care.
3. Third: The smoking prevalence for males or females in Indonesia only covered smokers or ever smoking persons. In the meantime, the TCSC (2010)[10] reporeted that the number of passive smokers in Indonesia has been very big approximately reached 91 million persons in 2007.
4. Fourth: Survey of health cost in hospitals for inpatient or outpatient cost was still under estimate because the survey was conducted in public hospitals while the corresponding costs in private hospitals are normally much more expensive. According *Balitbangkes* (2008)[11], only a half inpatient care was performed in public hospitals.

The cigarettes prices and tax rates in Indonesia are still too low or substantially similar to China, and far lower compared to other countries. Tobacco Altas (2009) reported the tax rates on the retail cigarettes prices in Indonesia was only 37%, while in Singapore it was 73.76%, in Thailand was 69.5%, in Malaysia is 49%, in Vietnam and Laos each was 45% of the retail prices. The domestic retail cigarettes prices per pack in Indonesia was only US$ 1.24, but in Singapore it ws US$ 6.71, in Thailand it was US$ 1.34, in Malaysia it was US$ 1.86, in Vietnam was US$ 0.7 and in Laos was US$ 0.46. The most effective strategy to reduce the tobacco consumption

according to the World Bank (1999)[12] is to raise the cigarette prices by raising its taxes. By raising the cigarette price of 10% in Indonesia will each lower the cigarette consumption for long period to 5.0%, 3.5%, 6.1% and 4.3% (De Beyer and Yurekli[13], Djutaharta, et al.,[14] and Adioetomo, et al.[15] According to Bird (1999) it reduced the consumption for short period to 5.9%. Further it will raise the tax income, according to de Beyer & Yurekly (2000) up to 8%, Adioetomo, et al (2005) up to 6.7% and Djutaharta, et al (2005) up to 9.0%. The Excise Act No. 39 year 2007 allows the maximum excise in Indonesia to 57%. Furthermore when the tax is raised up to 57%, then according to Barber, et al (2008)[16] the number of smokers will reduce by 2.4 million people. Raising tobacco excise will eventually lower the cost spent for health care. According to World Bank (2008),[17] non-communicable diseases can be prevented through many ways; one of them is to reduce smoking activities.

Conclusion and Recommendation

The study to examine the economic losts due to direct and indirect medical costs has been conducted in Indonesia. Due to limited large scale data, this study used three different data sets to find estimate of the number of smokers, the number of patients with tobacco-related diseases, and the average costs of treatments as well as the indirect costs. To find the frequency of inpatients and outpatients care, this study used a combine data of the National Health Survey and the National Socioeconomic survey which have respondent of more than one million people. The surveys were designed to be representative to the district level, therefore, using the data from the two surveys would ensure representativeness of the data. Unfortunately, data for smoking atributable factors were not available in Indonesia. For this study, the smoking attributable factors from Chine is used. Then, to find the average direct and indirect costs of treatments, this study

utilized a special survey using a block sample of one week inpatient and outpatient in seven public hospitals. The study found that Indonesia was loosing IDR 3.76 Trillion in medical treatments only from the tobacco-related diseases. This amount represent 0.057% of GDP, much smaller than that of treatment losts to TRDs in China. The low losses of medical costs in Indonesia was arguably due to lower costs of treatment in public hospitals which include the coverage for the poor and poorer access to medical treatment compare to the condition in China. However, the author recommend that the losts from TRD can be reduce by expanding efforts to control tobacco use primarily by increasing excise tax to, at least, rearch 57% of the retail prices as allowed by the current excise law.

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Violations of Cigarettes Advertising and Initiation of Smoking Among Youths in Indonesia

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Abstract

Introduction. *The proportion of teenagers who start smoking at early teen, 10-14 years in Indonesia continues to increase significantly. In 1995, 8.9% smokers start at age 10-14, by 2004 the proportion increased to 11.5%. At the same period, tobacco companies have been aggressively targeted the smoking advertising to children and adolescents to increase novice smokers (new). By 2006 Indonesia consumed 218.73 billion sticks. The Government Regulation number 19 /2003 has not been effective to protect children cigarettes. A surveillance on cigarette advertisings in 2006 found that 53.93% printed advertisings, 68.26% of TVs' ads, and 44.92% of outdoor media (billboards and banners) violated the law without a proper sanctions. In 2007, a survey by the National Commission for Child Protection demonstrated that cigarette advertisings deliberately aim at children and youth. In 2007, there were 2,846 TV programs on 13 TV stations sponsored cigarette industries, 1.350 youth activities (music, sports, movies, art, educational, and scholarships) funded by*

the industries. The impact of uncontrolled cigarette promotions were increasing prevalence of teen smokers(10-14years). A National survey in 2007 showed 10.69% teens smoked and in 2010, 17.5% teens smoked. In addition, on average there was 1.7% (range 0.3% - 5.1%) of children age 5-9 years who start smoking. The active advertisings were in line with the strategic production targets, approved by the government, to produce 250 billion sticks in 2012 and 260 billion sticks in 2015. The GYTS survey 2009 found that 11.5% students in grade 7-9 in Sumatra, Madura, and Java islands who never smoked before stated that they were more likely to initiate smoking in the coming year. The data suggest that Indonesia is facing very serious problems in tobacco control for health. Thorough studies to support advocacies are urgently necessary

Methods: *data analyses by this study are taken from the GYTS survey of 2009. Multivariate logistic regressions were performed to examine the impact of five independent variables (Q.41-Q.45) about experiences of teenagers who frequently saw cigarette advertisings on the trial of smoking among teens (Q.1).*

Results: *Four of 5 independent variables (Q.41-44) correlate significantly with teens try smoking 1 or 2 cigarettes a day (p: 0.000). Teens trial on smoking also associated with seeing actors smoking on TV, movie or videos (p = 0.027) and often see large billboards (p = 0.019). In addition, teens like to collect souvenirs consisting logo or brand of cigarettes (p = 0.000). Possessing or collecting goods containing a cigarette logo associated with plan to smoke in the coming year (p = 0.000). On the youth plan to smoke in the next 5 years, the following variables are highly correlated with behavior on*

collecting goods bearing a cigarette logo (p = 0.000) and often seing a large billboard of cigarette advertising (p = 0,030).

Conclusion and Recommendation. *This study found that children and youths were the easy target for the cigarette industries to influence them to smoke. Youths also like to collect logo or souvenir that link their idole and their myths. Knowing of those conditions, cigarette industries utilizing the youth behavior to seduce them to smoke. Although Indonesia has some regulations in limiting exposures of smoking to youths, in practices industries violated those laws. This finding support recommendation and strong advocacy to strengthen tobacco control in Indonesia, despite the very tough conditions due to the very large sum of money involved in the government revenues.*

Introduction

By being in a transition of epidemiology Indonesia is undergoing transition of the cause deaths which was dominated by infectious diseases into the dominant causes of deaths from non-infectious diseases such as lung diseases, heart disease, stroke, cancer, etc. Most non-infectious diseases have strongly correlated with cigarette consumption. The prevalence of smoking among youths is increasing worldwide, especially in several countries that had been surveyed by the Global Youth Tobacco Survey (GYTS). The female smokers grew faster (60%) than that of males. Approximately 25% of adolescent smokers starts smoking at the age of under 10 years old. The future global impact of cigarette consumtion will kill 250 thousand adolescents and chlidren anually.[1] The global share of diseases caused by this addiction was 70% in developing countries which are growing faster than any developed country.[1,5]

The starting age to smoke in Indonesia is getting younger due to heavy exposures of smoking campign and lack of antismoking measures. Various surveys indicated that the proportion of smokers who start smoking at age 10 - 14 years old increased from 8.9% to 17.5% from 1995 to 2007. For male adolescent it drastically increased from 13.1% to 37.3% for the same period. Nationwide, the prevalence of smokers who strat smoking at age of 5-9 years reached 1.7% (with the ranges of 0.3% - 5.1%). All of those epidemic of smoking in Indonesia is unavoidable caused by aggressive promotion of cigarette industries through various media with the primary targets are teenagers and adolescents. Based on data from the Ministry of Industry, in 2006 the cigarette production reached 218.73 billion sticks and in 2011 the production jumped to more than 240 billion stickes. The enforcement of tobacco advertising as regulated by the Government Regulation number 19 of 2003 have been not effective. The cigarette advertisements are found everywhere in printed, electronic, sponsor police stations, sponsored kiosks near schools, televions, entertainment-sponsored by cigarette industries, sport-sponsored, and even fellowships to students sponsored by cigarette industries. Based on monitoring data of advertisements conducted by the Food and Drug Administratio (BPOM) of Indonesia, in 2006 there wre 53.93% violations on printed media, 68.26% violations on electronic media and 44.92% violations on external media (billboards, banners, and other out door campigns).[1] According to *Komnas Perlindungan Anak* (the National Commission of Children Protection), cigarette advertisements and promotions are targetted on purpose to children and adolescents. Howaever, the Commision failed to convince the Constitutional Court that such advertising violates the Constititutional Rights of Children. The request for banning such advertising was turned down in the Judicial Review and the Industry won the legal fight. A survey in 2007 on 13 television channels in Indonesia found that there were 2,846 television programs sponosred cigarette industries. In addition, there were 1,350

adolescent activities funded by cigarette industries covering music shows, sports, movies, education and religious activities as well as shcolarships for students.

Those agressive campign ignore the fact that currenly in 2006 Indonesia lost 4,625,640 years lost due to premature deaths caused by diseases related tobacco. Those lost of premature deaths among youths was 14.49% of the total loss from premature deaths in the 2006.[9] The deaths on this age group will be enourmous if it is viewed from the economic perspectives due to loses from long duration productive years. Yet, the Ministry of Industry set a target to increase cigarette production to 250 billion sticks in 2012 and to 260 billion sticks in 2015. Indeed the primary target are adolescents/youths.[5]

In 1998, WHO and the Centre of Disease Control On Smoking Harmfullness/CDC OSH in Atlanta, USA, iniatited the GYTS to provide useful base line data for WHO Member countries. The method, instrument and analysis of the survey can be raplicated worldwide. The GYTS is a suvey conducting at schools to assess cigarette consumption by teenagers from age 13 to 15 years old and several other relevant variables for intervention programs. This survey has begun since 1999, and untill 2007 there the survey have been conducted in 160 countries. The GYTS data collection had been carried out in Indonesia in 2009 over twenty junior high schools (grades 7, 8 and 9), involving privat and government schools in 16 regencies/cities in Java and Madura islands and over 20 schools in 14 regencies/cities in Sumatra and Nias islands.

The 2009 GYTS in Indonesia found that 30.4% (CI. 26.8 – 34.2) of middle school students were smokers (country wide this equivalent to 1,303,849 students). The prevalence of males was very high reaching 57,8% while ony 6,4% of female students did so. Up to 7.7% middle school students (12.1% among male students) confessed that they were given promotional cigarettes (free of charge) by cigarette companies. The proportion of students who were planning to start smoking

next year was 11.5% (CI. 9.8 – 13.4). The GYTS data are used in this studey to examine factors that influence students to smoke or plan to smoke within five years from the survey. The analysis of GYTS is to find evidence of survey data that can explain the future risks and the discussion on the violation of cigarette advertising and to estimate the extent to which Indonesia will face serious non-communicable disease problems that are related to tobacco consumption.

Objective

To examine corrleation of various exposures of cigarette information on stundents behaviour to plan to smoke one to five years later.

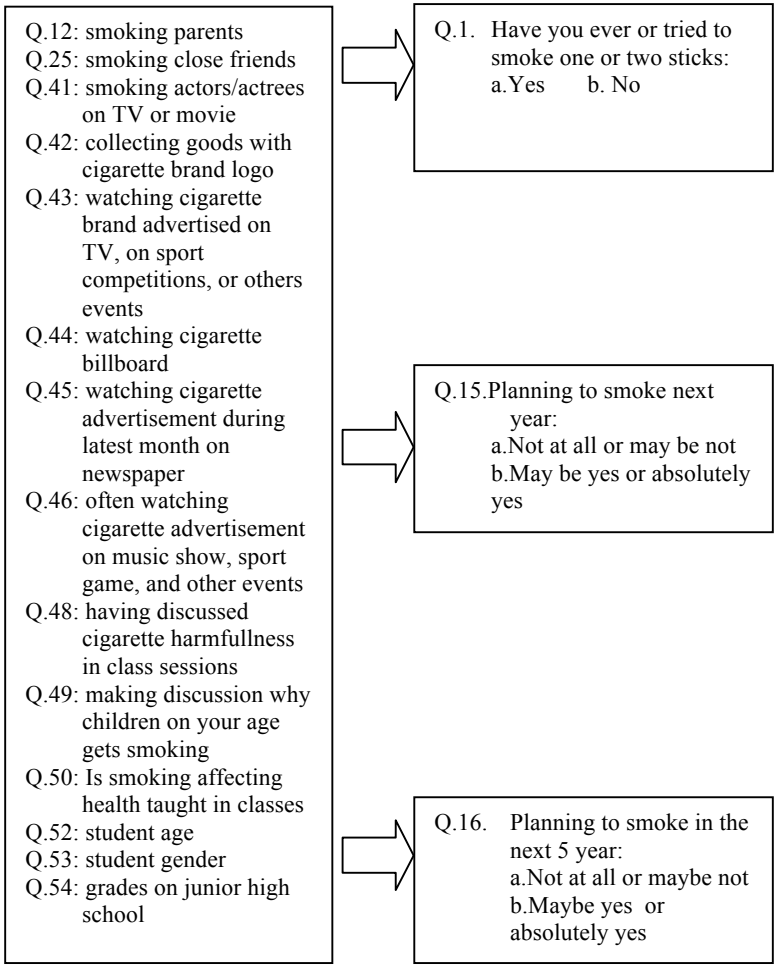
Specific Objectives

1. To assess the influnce of cigarette advertisements or promotions on the students' smoking behavior.
2. To examine the influence of closest persons on the students' smoking behavior.

Concept Framework

Among others, the GYTS asking students several exposures on cigarette information from various sources such as smoking parents or closest persons, advertising on television, out door, events, or printed materials, and giving token of various shapes or forms from cigarette companies. Those kind of exposures are very common in Indonesia almost without any limitation. Although Indonesia has a regulation on advertising cigarette on televisions at night only and not showing advertising using picture of cigarette or a person smoking, stundents often exposed with various ways that cigarette companies used to influence people to smoke. The

exposure variables (questions number 12-54 in the left box) may correlate with students' behavior to smoke in a later time (Q1, Q15 and Q16) in the questionnaire. The hypotheses tested in this study are the exposures of smoking have positive correlation with the students behavior to smoke.



Method

The GYTS was conducted in middle schools in Java and Sumate in 2009. Population of the survey were students of middle schools (grade 7, 8 and 9) in Sumatra and Java regions. Samples were drawn from 40 schools, with respond rate of 94.0%. The sample selection was stratified random sampling. The suervey covered 5,077 students. To predict total number of stundents covered by the survey, this study used weight variable. To test the hypotheses first we employed Chi Square Test. All variables correlate with the dependent variable with p <0.25 were incluced in the next anlyses using Logistic Complex Sample regression.

Results

Descriptive Statistics

Fourty middle schools were pariticipated in this survey with the total number of classes included was 142 classes and the total number of stundets responded to this survey was 5171 students. The distribution of samples by subdistricts, districts and grades are as describe in Table 1 and Table 2.

Table 1
Distribution of sample by districts, number of class, and number of students in grades 7-9 in Java Regions

No:	Subdistricts	Districts	Gr 7 (n)	Gr 8(n)	Gr 9(n)	Total class(n)
1.	Cibinong	Bogor	1(39)	1(41)	1(47)	3(127)
2.	Jasinga	Bogor	1(38)	1 (37)	1(41)	3(116)
3.	Ciawi	Bogor	1(45)	0	1(43)	2(88)
4.	Gringsing	Batang	1(39)	1(35)	1(36)	3(110)
5.	Purwadadi	Subang	2(76)	1(39)	1(39)	4(154)
6.	Cirebon	Cirebon	1(40)	1(32)	1(33)	3(105)
7.	Plered	Bantul	1(33)	1(38)	1(35)	3(106)
8.	Klaten	Klaten	1(38)	1(36)	1(39)	3(113)
9.	Yogyakarta	Yogyakarta	1(22)	0	1(25)	2(47)
10.	Kokap	Kulon Progo	2(60)	2(53)	2(44)	6(157)
11.	Kwanyar	Bangkalan	2(84)	2(73)	2(77)	6(234)
12.	Sukabumi	Sukabumi	2(54)	1(24)	1(21)	4(99)
13.	Pasundan	Garut	1(39)	1(33)	1(36)	3(108)
14.	Sukawening	Garut	1(44)	1(39)	1(42)	3(125)
15.	Bandung	Bandung	0	0	1(19)	1(19)
16.	Bekasi	Bekasi	1(29)	1(33)	0	2(62)
17.	Ps Minggu	Central Jakarta	1(40)	1(32)	0	2(72)
18.	Selopuro	Blitar	1(40)	1(37)	2(76)	4(153)
19.	Wates	Blitar	1(39)	1(33)	1(32)	3(104)
20.	Sale	Rembang	2(65)	1(35)	1(38)	4(138)
Total Sampel class (n students)			**24(864)**	**19(650)**	**21(723)**	**64(2,237)**

Table 2
Distribution of sample by districts, number of class, and number of students in grades 7-9 in Sumatra Regions

No:	Subdistricts	Districts	Gr 7 (n)	Gr 8 (n)	Gr 9(n)	Total class(n)
1.	Meraja Slebah	East Lampung	2(77)	2(66)	1(34)	5(177)
2.	Way Jepara	East Lampung	1(40)	1(40)	2(90)	4(170)
3.	Rambatan	Tanah datar	2(61)	1(26)	2(51)	5(138)
4.	Bengkalis	Bengkalis	1(33)	1(29)	1(32)	3(94)
5.	Siak	Siak	0	1(30)	0	1(30)
6.	Bangkinang	Kampar	2(72)	1(39)	1(20)	4(131)
7.	Sumber Jaya	North Lampung	1(49)	1(41)	2(89)	4(179)
8.	Lampung	Bandar Lampung	2(62)	1(31)	0	3(93)
9.	Lampung 2	Bandar Lampung	1(46)	2(81)	1(42)	4(169)
10.	Palembang	Palembang	1(52)	1(45)	0	2(97)
11.	Rambutan	Muba	1(30)	2(52)	1(23)	4(105)
12.	Tanjung Lubuk	Ogan Komering Ilir	1(32)	2(76)	1(38)	4(146)
13.	Medan	Medan	2(73)	1(38)	1(34)	4(145)
14.	Medan 2	Medan	1(24)	1(28)	1(31)	3(83)
15.	Medan 3	Medan	1(27)	1(28)	1(26)	3(81)
16.	Langkat	Langkat	2(98)	2(92)	2(91)	6(281)
17.	Hambang	Humbang Hasundutan	1(34)	1(34)	1(37)	3(105)
18.	P Batu	South Nias Island	1(44)	1(31)	1(30)	3(105)
19.	Tarutung	North Tapanuli	1(38)	1(35)	1(38)	3(111)
20.	Air Batu	Asahan	4(158)	3(113)	3(133)	10(404)
	Total sample: class (students)		**28(1,050)**	**27(955)**	**23(839)**	**78(2,844)**

Table 3
Distribution of Students Who Smoked and Planned to Smoke

Smoking behavior	Grade 7	Grade 8	Grade 9	Total
Smoking Status	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Non Smokers	28.2 (25.5 - 31)	24.5 (21.5 – 27.8)	20.0 (17.5 - 22.7)	72.6 (70 - 75.2)
Smokers	6.6 (5.3 – 8.1)	9.4 (7.4 – 12)	11.4 (9.1-14)	27.4 (24.8-30)
Total	34.7 (31.9 – 37.6)	34.0 (30.5 – 37.6)	31.3 (27.5 – 35.5)	100
Total weigthed # of Students	1,644,429	1,609,021	1,483,514	4,736,964
Planning to smoke next year				
Maybe not/absolutely not	32 (29.3 – 34.8)	29.8(26.7 – 33.2)	26.6 (23.6 – 29.8)	88.4 (86.6 – 90.0)
Yes / absolutely will try	2.7 (1.9 – 3.7)	4.0 (3.0 – 5.3)	4.8 (3.6 – 6.5)	11.6 (9.913.4)
Total	34.7 (32 – 37.5)	33.9 (30.4 – 37.6)	31.4 (27.6 – 35.5)	100
Total weigthed # of Students	1,666,192	1,625,950	1,508,313	4,800,455
Planning to smoke next 5 years				
No / absolutely not	32 (29.3 – 34.8)	29.9 (26.7 – 33.3)	26.6 (23.3 – 30.2)	88.5 (86.8 - 90)
Yes/absolutely just will taste	2.7 (2 – 3.5)	4 (3 – 5.4)	4.8 (3.6 – 6.3)	11.5 (10 – 13.2)
Total	34.7 (32 – 37.5)	33.9 (30.4 – 37.6)	31.4 (27.6 – 35.5)	100
Total weigthed # of Students	1,669,443	1,633,542	1,512,681	4,815,666

The n students was the weighted sample

The above table shows the tendency of students to try to smoke increase by increasing grades. The proportion of students planning to smoke one or five years later reach 4.8% at the 9 grade.

Analysis

Table 4
Distribution of parameters on the logistic regression on students plan to smoke

Exposure variables	B	SE	OR	95% CI	P
Watching cigarette advertising on music shows or sport games	-.370	.130	1.447	1.103 – 1.899	.010
Some closest friends smoke	-3.339	.305	6.497	3.737 – 11.295	.000
Most of/all of closest friends are smokers	-1.467	.141	28.178	14.912 – 53.245	
Males	-2.323	.186	10.211	6.931 – 15.042	.000
Grade 8	-.615	.232	1.441	1.004 – 2.067	.049
Grade 9	-.250	.189	1.850	1.140 – 3.002	

Intercept 1,964

The above table shows strong influence of close persons/friends behavior of smoking on students behavior to smoke with odds ratios of 6-28, a very strong correlation. Although not very strong, advertising postively correlate with the student intention to smoke. Male students have stronger chance (10 times) to try smoking than that of female students. The oleder the students the higher the likelihood to smoke. Students in grade 9 have about twice more likely to smoke compare to students in grade 7.

Table 5
Distribution of Students Behavior to Smoke by Gender and Friends' influence

	Female % (95%CI)	male % (95%CI)	Total % (95%CI)
No friends smoke	57.4 (51.8 – 62.7)	21.2 (16.7 – 26.5)	40.8 (36.7 – 45.1)
Some friends are smokers	37.2 (33 – 41.6)	54.1 (49.3 – 58.8)	44.9 (41.7 – 48.2)
Most of/all of friends are smokers	5,4 (.3,9 – 7,6)	24,8 (20,9 – 29,1)	14,3 (11,9 – 17,0)
Total (%)	100	100	100
Total weithed # Students	2,591,027	2,181,816	4,772,843

This study found strong influence of close friends with different impact for males and female students. The impact of smoking friends on male students is greater than that of female students. As many as 78.9% male students have close friends who smoke and 42.6% of female students close friends who were smokers.

Table 6
Distribution of Parapemers of the Impact of Exposures to Smoke on the students plan to smoke next year.

Exposure variables	B	SE	OR	95% CI	P
Watch smoking actors/actrees on TVs or movies	.460	.164	.063	.449 – .888	.011
Collecting goods with cigarette brand logo	- .875	.146	2.399	1.770 – 3.252	.000
One of the parents is a smoker	.845	.363	1.930	1.185 – 3.252	.035
Both parents are smokers	- .187	.286	2.327	1.092 – 4.958	
Some close friends are smokers	-2.476	.263	4.407	2.530 – 7.677	.000
Mostly/all close friend s are smokers	-.993	.105	11.892	6.870 – 20.585	
Male	-1.786	.207	5.968	3.878 – 9.186	.000
Grade 8	-.516	.134	1.499	.987 – 2.278	.004
Grade 9	-.111	.212	1.675	1.265 – 2.217	

Intercept .670

The above table shows that the largest impact on "planning to smoke next year" was close friends who smoke. Students whose close friends are mostly smokers have chance willing to smoke next year four times stronger compared to that of students whose close friends were not smokers. The students whose close friends were smokers have 12 times more likely to smoke next year compared to that of students whose close friends were not smokers. Male students had about six times more likely to smoke next year after watching advertising on TVs or movies. When the analysis is distingished between males and females on the response after being exposed to some cigarette advertising, male students have much greater impact than that of female students as shown in the following table. An alarming signal was that about 8.5% female students would like to smoke. This proportion is much higher than the actual status of female smokers in various surveys conducted before 2007.

Table 7
Crosstabulation of willingness to smoke next year after being expose with goods with cigarette logo by gender

Type of exposure	Female % (95% CI)	Male % (95% CI)	Total % (95% CI)
Not collecting goos	91.5 (89.6 – 93.1)	83.5 (80.6 – 86.1)	87.9 (85.7 – 89.8)
Collecting goods with cigarette brand logos	8.5 (6.9 – 10.4)	16.5 (13.9 – 19.4)	12.1 (10.2 – 14.3)
Total (%)	100	100	100
n (weighted)	2,549,537	2,105,489	4,655,026

Overall, students collecting goods with cigarette brand logos planned to smoke next year twice times stronger (OR. 2.399) than the students who did not collect goods. The avove table shows that male students collecting goods with cigarette logos have twice more likely to smoke compared to that of female students (16.5% vs 8.5%). Keep in mind for monitoring that the popullation of female students was higher than that of male students. The absolue impacts will be quite serious.

Table 8
Distribution of Parameters of Logistic Regression on the Impact to students planning to smoke then Next 5 years

Variable	B	SE	OR	95% CI	P
Collecting goods with cigarette brand logos	-.799	.188	2.223	1.501 – 3.293	.000
Often watching cigarette advertising on TV programs	.411	.121	.663	.515 – .853	.003
Often watching cigarette advertising on music shows/sport games	-.414	.143	1.512	1.123 – 2.036	.009
One of parents is smoker	-.971	.385	2.320	1.353 – 3.979	.011
Both parents are smokers	-.130	.360	2.641	1.184 – 5.892	
Some close friends are smokers	-2.525	.353	4.691	2.443 – 9.006	.000
Most of/all of close friends are smokers	-.929	.156	12.487	5.980 – 26.076	
Having explanation about smoking is harmsfull in class	-.255	.091	1.290	1.068 – 1.558	.011
Male	-1.783	.220	5.947	3.755 – 9.419	.000
Intercept	.721				

The above table shows that the students with close friends were mostly smokers had the greatest impact on the planning to smoke within the next 5 years. The impacts of exposures to the students' plan to smoke in the next five years were not much different from the impact to students planning to smoke the following year. Having friends who were mostly/all of were smokers produce 12 times more likely that the sudents would smoke in the next five years compared to those students whose close friends were not smokers.

Table 9
Proportion of Students Who Said that They Would Smoke after having discussion about Harmfullness for Health by the Students' Grade

Variable	grade 7, % (95% CI)	Grade, 8 % (95% CI)	Grade, 9% (95% CI)	Total, % (95% CI)
Discussion about smoking harmfullness in class				
Yes ever	64.1 (58.1 – 69.7)	64.1 (58.2 – 69.7)	67.0 (61.8 – 71.8)	65.0(61.4 – 68.5)
No	27.7 (22.6 – 33.4)	21.2 (17.5 – 25.4)	20.7 (17.3 – 24.6)	23.3 (21.1 – 25.6)
Do not know/forget	8.2 (6.8 – 10.0)	14.7 (10.8 – 19.7)	12.3 (9 – 16.5)	11.7 (9.6 – 14.1)
Total (%)	100	100	100	100
n (weighted)	1,641,032	1,612,676	1,499,272	4,752,980
Time of the discussion				
Never	52.8(45.9 – 59.6)	42.1(37.1 – 47.2)	32.7(29.5 – 36)	42.8(38.5 – 47.3)
Last year	33.2(27.2 – 39.8)	43(38.5 – 47.6)	47.6(43.3 – 51,9)	41(37 – 45.1)
More than one year	14(10.6- 18.4)	14.9(12.6 – 17.6)	19.8(16.6 – 23.4)	16.1(14 – 18.5)
Total (%)	100	100	100	100
n (weighted)	1,665,089	1,625,871	1,501,859	4,792,819

The above table demonstrates that that 65% of the students in Sumatra and Java during the last year have discussed about the smoking harmfullness in class. The discussion still stimulate students to try to smoke with OR of 1.29 from the previous table. Not all of students have received a session on cigarette harmfullness for health. Only 33.2% of grade 7 confessed that they had discussion the session in class. Up to 57.9% grade 8 students and 67.8% of grade 9 students reporeted that they had discussion the session in class.

Table 10
Cross Tabulation on the Reported Discussin of the Effect of Smoking on Health

Topic of Discussion	Yes, % (95% CI)	Never, % (95% CI)	Forgot, % (95% CI)	Total % (n, weighted)
Why do you smoke at your age	43.1(39.4 - 47)	46.2(42.7 – 49.8)	10.6(9.3 – 12.1)	100 (4,816,993)
Smoking impacts for health	49.2(44.7 – 53.8)	38.8(35.7 – 41.9)	12 (9.8-14.7)	100 (4,816,937)

The above table shows that less than 50% of the students had discussion on the smoking harmfullness in class, on "why do you smoke at your young age", and on the cigarette effect on helath. In curriculum for grade 8 and 9 middle school there should be a session on smoking harmfullness for health, which should include discussion about the dangerous narcotic use. Apprantly not all students had discussions or they claimed they forgot about such discussion. Meaning, even if the discussion was conducted, the students did not pay enough attention.

Discussion

This study has limitation due to cross section in nature which lead to weak causal relationship. The correlations between exposures to cigarettes of various ways to behavior of planning to smoke found in this study are consistent with theory and findings from longitudinal studies. Therefore, validity of the causal relationship can be verified by looking consistent findings using metanalysis or discussions of similar findings elsewhere.

In the mutlivariate analysis the author examine three imporatant variables (smoking students/trying to smoke, plan to smoke one or five years later). This study found four out of six independent variables significantly correlated with those three

smoking behavior among students. The four exposure information that influence student behavior are: (1) watching smoking actors/actrees on TV or movies, (2) collecting goods with cigarette brand logos, (3) watching cigarette advertisement on TV programs, and (4) watching cigarette advertisement on music shows, sport games or other events. Collecting goods with cigarette brand logos have higher tendency to push students in Sumatra and in Java islands to smoke or plan to smoke compared to those students who did not collect that goods. Results from GYTS worldwide showed that 1 out of 7 middle school students collected goods with cigarette brand logo. In the South East Region (SEAR) of the WHO office had the lowest prevelance (9%) compared to other region such as the Western Pacific Region which the prevalence of 13%.[3]

The Indonesian Regulation (Govenerment regulation number 81/5 Oktober 1999) on cigarette advertisement and promotion regulates stipulates that cigarette advertisomg is permitted on only printed media and outdoor. In addition, the regulation requires to print written warning on the packs. The regulation also limit the the tar and nicotin content. However, during Abdurahman Wahid became President the regulation was amended (GR number 38/June 2000) that allows the cigarette indutries to adevertise their product on television from 21.30 until 05.00. In addition, the promotion on printed media and out doors remain open. Since then the cigarette industries began to promote aggressively throughout TV programs to keep influence children and adolescents to get interested in trying smoking. Although the advertising can only start after 21.30 hours, many students are still wacthing TV at that time. In addition, many sport and music events are sponsored by cigarette industries. Coverage of the event, often spot the cigarette billboards, backdrops, or posters that show cigarette names or logos.

In the mean time sanction for vialation of cigarette advertising has been insignificant compared to the harmfullness impacts of cigarette. On the revised regulation (GR number 19/

March 2003) the government designate free smoking areas such as at public places, health facilities, educational facilities, working places, and public transportation. This regulation does not restrict the cigarette industries to conduct activities to keep poisoning children and youths through broadcast media, in the public building including the health facilities. The health activists and officials of the Ministry of Health managed to insert a regulaion on Health Act numer 36, Year 2009 stating that tobacco is addictives and therefore the Act provide authority to the MoH to regulate graphic warning to revise the Government Regulation. Hoever, until now (more than three years) the draft of the revised regulation (RPP) has not been successfull due to oppositions from various parties and the other sector within the government presumably supported by cigarette industries. The acticle was brought to Constitutional Court claiming that tobacco is not addictive. Last year, the Constitutional Court rule out the judicial review and confirming that tobacco is addictive.

The WHO appeals all countries to control tobacco using the principle of MPOWER (*Monitoring* tobacco consumption over communities by providing survey data, *Protect* communities from harmful smoking, *Offer* helps to communities to stop smoking, *Warn* or provide wornings on harmful tobacco, *Enforce bans* or attempt to prohibit cigarette advertising, promotion, and sponsorship, and *Raise* or increase tobacco excise). The MPOWER strongly emphasize prohibition of marketing and promoting cigarettes as a very effective tool in lowering epidemic diseases caused by smoking. The effective ban on cigarette advertising, seven medias should be banned for cigarette advertising: televisions/radios, newspapers, national and international magazines, billboards, markets and trade centres and on the internet. In addition, there six types of sponsorship need to be watched out: giving free of charge cigarettes, promotion with discount prices, growing images on communities using popular non cigarette products such as inserted on cigarette products

and embedded cigarette product names into non cigarette products, prohibition f sponsorship on various activities including TV programs and movies.[11] Warren et al (2009) reported that worldwide application of MPOWER warning can decreas the smoking prevalence by 9%.[3]

The influences of close friends and parents causing the students to smoke or try smoke are important determinants that cannot be banned by a regulation. This study shows 78.9% of male students had close friends or parents smoke. This is a serious challenges for antismoking activists in guiding their sons, daughters, relatives, and other close friends to avoid smoking near or visible to children. Teachers and school employees are also important role models for students to smoke. in this survey, 21.2% of school employees including teachers were smokers and 14.7% of chool employees including the teachers confessed they had at least one time smoking at school premises during one last year.[10.11]

From the three variables of cigarette harmfullness sessions at school (Q.48,Q.49 andQ.50), only one varible on "cigarette harmfullness discussion in class" has a significant correlation with the smoking behavior of the students. These variables had less significant roles in preventing student to smoke within one or five years after the survey.

Indu Rao (2010)[7] reminds us that there are three success teaching and studying processes that can be used in changing behavior. (1) Knowledge: the trainers/teachers must be capable of delivering the contents effectively, besides having soul of leadership, good personality worthily to be followed thar are reflected in their daily lives. (2) Environment: the trainers/teachers must have means/environtments supporting the delivery of substance to be taught. Able to use various means including using sophisticate technologies such as computer, LCD projectors, etc., in ordet to attract attention of the students. (3) The trainers/teachers must well recognize the persons to be taught and understand the best way to deliver the teaching to be easily understood by the students. In

addition, the trainers/teachers also must know what expectation of the students.

Findings from this study demonstrates that many factors need to be included in attempting to reduce the prevalence of smoking among children and youths. Because students spend most time in a class room or school, efforts to provide role models such as friends, teachers, employees, as well family or relatives will be more effective. Gender and grades are individual factors that are also important for antismoking activists to effectively promoting tobacco control strategies.

Conclusion and Recommendation

The study is trying to explore the impact of high violation of advertising regulation on the future smoking behavior of students/youths. The study use GYTS data of 2009 involving more than 5,000 students in Sumatra and Java Islands. The study found that watching cigarette advertising on TVs, music shows, sport games or competition had 1.5 morelikely to provoke smoking behavior. Having close friends smoke had six times more likely and having most or all close friends (including parents) had the highest probability of OR more than 28 that students would smoke. Gender played significant role where male has OR of 10 to smoke. Grades had also play important influence to smoke.

On the determinant of students planning to smoke next year also having friends who smoke had the biggest impact follow by males, collecting goods with cigarette brand logos, and grades-reprenting older students. There were postivie interactions between “close friends were smokers” and “gender” and “close friends were smokers” and “grades”. On the determinant of students planning to smoke 5 year later, the largest influences still friends who were smokers. The watching televisions or movies still had significant impact. Even

discussion about the harmful of cigarete could intrigue a plan to smoke.

By having high violations of current regulations and the fragility of students to exposure, especially from friends, efforts to control the use of tobacco should be strengthened via various ways as guided by the MPOWER. The new Governement Regulation to mandate the use of graphic warning is one of the effective ways to increase awarness of students about the risks of smoking in the future life. In addition, more detail discussion, social marketing, and public education to improve awareness of parents, teachers, and the community at large are important elements for successfull control over tobaco use in Indonesia.

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Effectiveness of a Health Education Intervention to Reduce High School Students to Smoke at the Age of 20 Years

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Abstract

Background and objective: *the Indonesian Household Survey of 2001 showed that Gorontalo Province has the highest prevalence of smoking and in 2004 this province had highest prevalence of angina pectoris in Indonesia. The Basic Health Survey 2007 among smokers in Gorontalo, 12.9 % began to smoke since they were 10-14 years old, this highest in Indonesia. Assessing youth intention to smoke in their future life is a useful predictor of smoking behavior.*

The objective of this study is to assess effectiveness of a health education program to reduce youth intention to smoke by age 20.

Methods. *A school-based health education program to reduce intention to smoke when they are 20 years was conducted in four high schools (two interventions and two controls) in Gorontalo city, Gorontalo province. The number of 996 students of grade 7th to 12th cohort (mean age = 14.6 years and 55 % were female) was followed over a three-months period. The baseline survey was conducted in October 2009. Selected teachers of intervention schools were trained to conduct health education using pre-constructed printed and audiovisual materials. The printed material –namely "TOP Majalah Penampilan"- was adapted and modified from "Jam the Performance Magazine" of CDC USA – published in 1994. The audiovisual material was adapted and modified from series of Australian TVs on Quit Smoking Campaign. In the intervention group, students were asked to read the printed material at home for one day, to watch the audiovisual material for about 20 minutes in the class room, and to discuss relevant "tobacco or health" issues with the trained teachers. A health promotion officer from the nearest Public Health Center was trained to conduct health promotion on relationship between smoking and hypertension and cardiovascular disease. The onsite promotion used an active role playing namely "let us measure our blood pressure and pulse" and "let us listen our heart beats". The post intervention survey was conducted in January 2010.*

Results. *At baseline, the proportion of students who thought they would smoke when they are 20 years was 13.2 % in the intervention schools and 15.8 % in the control schools. Mc Nemar's test showed no*

significant differene on decreasing proportion in intervention school (p = 0.148) and in control school (p = 0.349). When analyses was splitted between Junior and High School, in the intervention high school, there was no change of students (10.4 %) who thought they would smoke at age of 20 years. In middle schools, there was decrease of 4.9 % (from 16 % to 11.1%), but statistically insignificant (p= 0.906).

Discussion and Conclusion: *School based health education program using materials adapted and modified from other countries was not effective in Gorontalo province. There were some possible explantion of this failure such as lack of supports from the school communities, heavier interventions or marketing efforts from cigarette industries, and conflict of interest (tobacco Hamlet's Disease) suffered by government leaders/officers. Despite the failure, this experiment provides a basis for continuing creation of more innovative and comprehensive tobacco control programs for youths in Indonesia.*

Keywords: *intention to smoke; youths; high school; health education, Indonesia.*

Introduction

In the last few years, national surveys in Indonesia indicated that there has been an increase in youth smoking. The Basic Health Survey (*Riskesdas*) of 2007 showed that the prevalence of smoking among Indonesian youth age 10 – 14 years, 15- 19 years and 20 – 24 years were 2 %, 24.6 % and 35.1 % respectively.[1] The Basic Health Survey of 2010 showed the prevalence of smoking among Indonesian age 15 – 19 years and 20 – 24 were 26.7 % and 37.2 respectively.[2]

Shafey *et al* reported the percentage of male students age 13–15 who smoked cigarettes were between 16 – 29.9 % during the year 2000–2007.[3] A case of 2 years old kid started to smoke was reported in South Sumatra. Many studies reported that that the average age of start smoking has been younger in Indonesia.[4]

Ironically, the Indonesia Government still refuse to access the WHO Framework Convention on Tobacco Control (FCTC) into its national law. Not surprisingly, the cigarette industries enjoy freedom to provoke smoking to everyone, including children or youths. For example, international rock shows in Indonesia were heavily funded by cigarette sponsorships even though local and international tobacco control activists had protested.[5] Although there are 22 districts in Indonesia that have local regulations on smoke free in public places,[6] the implementation of this policy has been relatively still very weak. Indonesia has no law that prohibits sales of tobacco to minor. The worst thing is that the cigarette companies are allowed to offer free cigarette to Indonesian children and youths. The Global Youth Tobacco Survey in Medan, in the year 2004 indicated that 14.4% of students age 12-15 years were offered free cigarettes by a cigarette company.[7]

Gorontalo province is located in the North side of Sulawesi Island in the Eastern part of Indonesia. The Basic Health Survey of 2007 showed the smoking prevalence of Indonesian age ≥ 10 years in Gorontalo was 32.6 % (male 63.9%, female 3.5%) the highest in Indonesia (the national prevalence was 29.2%, male 55.7% and female 4.4%).[1,8] The same survey indicated that Gorontalo was also one among four provinces with highest prevalence (more than 11%) of cardiovascular diseases (CVDs) in Indonesia (the National prevalence was 8.1%). According this survey, the percentage of smokers who start smoking when they were 10-14 years was 12.9% was also one of the highest in Indonesia (Nationally, it was 9.6%).[1]

School smoking prevention programs, if any, have limited effects and are generally viewed as out of date and too narrow form the health education technologies. Several reviews of tobacco-specific interventions have concluded that interventions based on social reinforcement, developmental stages and social norm orientations appear to be more effective in modifying attitudes and behavior than programs that focus on more rational information.[9] Even though Indonesia have studied of smoking behavior through the Basic Health Surveys[1,2] and through Global Youth Tobacco Survey,[7] Indonesia have no study on the effectiveness of smoking prevention in schools. Assessing youth's intention to smoke is a useful predictor of smoking behavior. This study tries to answer whether a school based prevention program adapted and modified from programs in other countries can reduce the proportion of students who thought they would smoke when they are 20 years.

Method

The Study Design

A Gorontalo Youth Study part one (GYS I) was undertaken from January 2009 to January 2010. It was a combination of an experimental and qualitative study. The sample were selected purposively, non-randomized, and controlled study. The qualitative part comprised of in-depth interviews with several officers in Provincial Health Offices, City Health Officers and City Education Officeers. The informants were asked about the potential supports to the development of school anti-smoking programs.

The cohort was all students enrolled in 7th to 12th grade of four participating schools (n = 996). These schools were chosen by the Head of City Health Officer, based on information that these schools had highest smoking prevalences. By tossing a coin, the authors decided which schools became intervention schools and which one became

control schools. Two schools (one Middle School and one High School) in the West side of the city were used for pilot testing of instruments and activities of anti-smoking programs. Other two schools (one Middle School and one High School) in the North side of the city were assigned as control schools.

The Intervention Program

Training for Teachers and Health Promotion Officers

Prior to the beginning of intervention, teachers and health promotion officers from the nearest public health center were trained on tobacco uses and cigarette company strategies. The selected high school principals appointed two school liaisons (supervisors and counseling teachers) to work with the authors undertake setting dates and times for intervention activities, providing logistical supports, providing enrollment lists, and undertake measurements. The liaisons were trained by the authors on how to deliver education on tobacco or health for their students.

The Head of City Health Officer appointed two health promotion staffs from two nearest Public Health Centers (Buladu and Dungingi) to work with the authors to explain students about the relationship between smoking, heart diseases and hypertension through a simulation of "Let's hear our heart beat" and "Let's measure our blood pressure". During the training, the profiles of tobacco uses from the Basic Health Survey 2007[1,8] were presented. Adapted and modified health promotion programs from CDC and Australia were given to them.

The Intervention

The first intervention was done as soon as the base line survey was completed (October 2009). The first intervention consisted of a School Based Media Campaign which was adapted and modified from "Jam the Performance Magazine" –

published by the CDC Atlanta were utilized. The printed materials consist of explanation that smoking is not the right way to build a good physical performance as well as personality. Students ought to read those materials for one day before a discussion about the issues was conducted by the teachers. A video on harmful effects of tobacco adapted and modified by the authors from Australian Quit Smoking campaign was played in the class room and followed with a discussion between students and the teachers. The duration of video was 20 minutes and duration of discussion was 40 minutes.

On another day, the health promotion officers, using simple words, explained the students about the relationship between smoking and cardiovascular diseases, including hypertension. To attract students attention, they were trained to have their own heart beat using a statoscope and measuring their blood pressure using a digital blood pressure gauge. These students' active involvements in the learning process were adapted from "Experience Based Program" developed by Shigeta et al[10]. Shigeta named these activities as "Let's listen to our heart beat" and "Let's measure our blood pressure".

Measurements

Tobacco or Health Behavior Survey

Tobacco or Health Behavior Survey (THBS) was conducted before and after the intervention, using pre-constructed self-administered questionnaires. The primary output of THBS was intention to smoke when students reach age 20. Baseline measurements for the 7^{th} to 12^{th} graders were undertaken in October 2009 and post intervention measurements were fieled in January 2010.

Data Collection Procedures

For all measurements, students signed informed consent if they agreed to participate in the GYS I before the filled out the survey form. Surveys were administered in classrooms. All forms were numbered by a unique 6-digit number based on school grade (middle or high High School), school status (intervention or control), student's grade and student's order number in his/her class. All data were collected by GYS I staff according to standardize protocols.

Data analyses

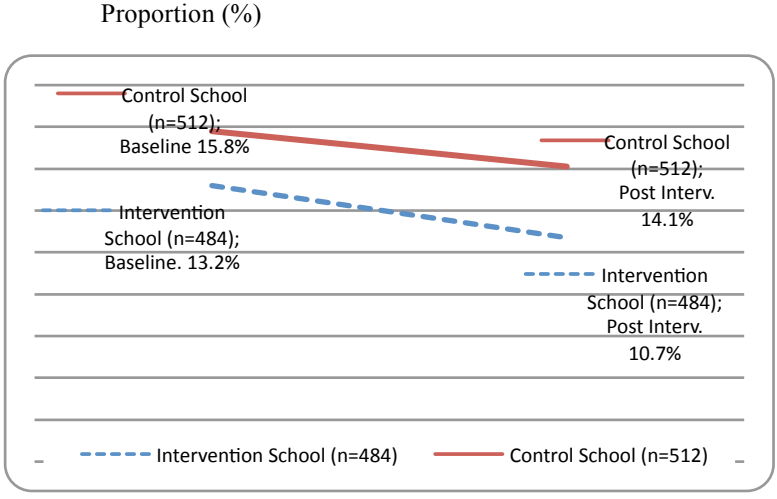
Descriptive and bivariate analyses were performed to examine hypothesis that the reduction of the proportion of the students planned to smoke when they reach age 20 was higher among intervention group. Mc Nemar's test was used to test the hypothesis.

Results

In the intervention schools, the proportion of student who would smoke at baseline was 13.2 % before the intervention and 10.7 % after the intervention. In the control groups, the proportion was 15.8 % before the intervention and 14.1 % after the intervention (Figure 1). Chi-square test shows that the difference was statistically not significance ($p = 0.281$). Chi-square test also show that the difference between intervention and control schools at post intervention was not statistically significant ($p = 0.125$). A decrease in the proportion of students who would smoke was 1.7 % (from 15.8 % at baseline to 14.1 % at post intervention) was observed in the control group was not statistically significant (Mc Nemar, $p = 0.349$). The decrease in the proportion of students would smoke in the intervention school was slightly bigger than that of control school: 2.5 % (from 13.2 % at baseline to 10.7 % at

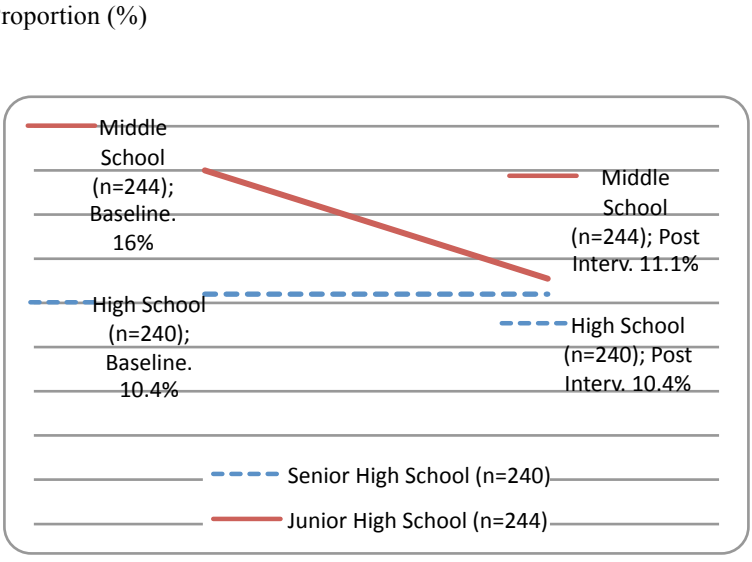
post intervention). However, the decrease was not statistically significance either (Mc Nemar, p = 0.148).

Figure 1.
Changes in the Proportion of students who would smoke at the age of 20 years between intervention and control. Gorontalo Youth Study Part One (GYS I)



When the analysis was splitted into two difference level, middle and high school, the decrease was different. In high school, the proportion was 10.4 % at baseline and 10.4 % at post intervention, no change. In Middle School, the proportion was 16 % at baseline and 11.1 % at post intervention (Figure 2). *Chi-square* test showed the difference was statistically significance at p<0.10 (p = 0.081). *Chi-square* test showed that the difference between Intervention Middle and High School at post intervention was not statistically significant either (p = 0.884). The decrease in the intervention Middle School was 4.9 % (from 16 % to 11.1 %) was not statistically significance (Mc Nemar, p = 0.148).

Figure 2.
Changes in the Proportion of Students who would smoke between Intervention Middle and High Schools at baseline and at post intervention. Gorontalo Youth Study - Part one (GYS I).



Discussion

The province of Gorontalo was chosen for this quasi experimental study because the highest risk of developing highest burden of smoking related diseases. In the year 2001, this province had the highest smoking prevalence in Indonesia[11]. In the year 2004, this province had the highest prevalence of angina pectoris.[12] Although in 2007 this province was no longer highest prevalence for both smoking and angina pectori, the province still had the highest portion (12.9%) of those smoking started at age 10-14 years.[6]

In January 2009, to complement the experiment, the authors conducted phone interviews with several leaders of the province and the city. The informants were several Gorontalo provincial and city health officers, education officers, State University Research Council, local Parliament members and Local Development Planning Agencies. The authors concluded that the program to reduce prevalence of smoking was morally supported by the respondents. However, this study was not producing a significance decrease in the proportion of students who would smoke. In the qualitative assessment, the authors found that there was inadequate support from local school communities as well as from local formal leaders. For example, smoking teachers and principal in the intervention school – especially in high school- before and during the GYS I was undertaken did not show their willingness to support the program. Before the GYS I was undertaken, some teachers in the intervention schools –especially in high school- were current smokers. The author suggested the school principals to prohibit smoking in schools. Such regulation should be applied not only to students, but also to teachers or everyone in the school areas.

Unfortunately, the suggestion was not undertaken by the school principals. The smoking teachers in Intervention High School -who were previously asked to support the prevention - kept on smoking (except one who already retired) until the GYS I was over. The principals of two intervention schools did not prohibit smoking for teachers. The school principals were not brave enough to prohibit smoking because there was no 'legal umbrella regulation' from the governments (eg. Minister of Education Regulation, or Gorontalo Provincial or City governments).

Other obstacles to smoking prevention in schools were found elsewhere in Gorontalo city. Gorontalo city is a relatively a small city, but the number of billboards of tobacco ads were seen in almost every corner of the city. An informant informed the authors that the city mayor was a heavy smoker

and had asked financial support from tobacco industry for his political campaign to run for governor election. Therefore, the Education Officers and Health Officers of the city had no interest to undertake smoking prevention. Another worse thing was that a large proportion of health officers in public health centers and health officers, especially male officers, were regular smokers. Gorontalo school students seemed suffering from lack of good role models for non-smoking behavior. The authors belief that those conditions created barrier to change students' behavior.

In the beginning 2011, there was a national conference of Indonesian Teacher Association in Gorontalo City and the authors applied to present the GYS I report at the conference. But the application was rejected. Tobacco industries actively supported activities of school teachers in order to undermine tobacco control in schools.

In the last few years, the National Institute of Health Research and Development, Ministry of Health of Republic of Indonesia, in collaboration with Faculty of Public Health, Universitas Indonesia, developed a new national health development program namely "*Pendampingan Daerah Bermasalah Kesehatan*". In English it means "Supports for Local Governments with serious Health Problems". Gorontalo province was considered as one of the province in that category. Unfortunately the programer did not consider tobacco control as a high health priority to be considered. Their health priority was in reducing diseases and health problems that related with MDGs such as HIV-AIDS, tuberculosis, malaria, maternal and infant mortality rate, under-nutrition in children etc. It seemed that they underestimate reports on the relationship between tobacco use and less effective tuberculosis control, the relationship between nicotine addiction among poor fathers and under-nutrition among their children. It seemed that they do not have the courage to reduce conflict of interest of Indonesian leaders with tobacco industries, an important pathway to effective tobacco control in Indonesia.

Conclusion

Indonesia is the heaven for smokers and cigarette industries. Youths are the easy preys to cultivate long-term spending on cigarette. Efforts to reduce willingness to smoke among youths were undertaken by an experimental study in the highest prevalence of smoking of Gorontalo City. The intervention materials were adapted from the similar programs in the US and Australia. The study found that smoking prevention program that was effective in other countries was not effective to reduce in Gorontalo city high. There were so many obstacles of such a program in Gorontalo city such as lack of role models, tobacco industry agressive markening, and lack of leadership from health sector. The authors recommend that tobacco epidemic control in Gorontalo should be considered as a high health priority in local health development and should be integrated in the supports program for local government with serious health problems. The new MDGs incorporate non-communicable diseases.

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Smokers' Teachers Prevent Tobacco Control Programs in Indonesian Schools

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Abstract

Introduction. *Indonesians consumed more than 225 billion sticks of cigarettes with the estimate total expenditures about two to three times more than the total health expenditures. Yet, the Indonesian government has not signed FCTC and has not implemented a national program for tobacco control. The government insists that increasing tobacco excise to only 47% (the lowest in the ASEAN) is the appropriate instrument for the present. In 2007, the prevalence of smoking among Indonesian aged 10 – 14 years, 15-19 years and 20 – 24 years were 2 %, 24.6 % and 35.1 % respectively. Youths are the most vulnerable groups for smoking due to intensive smoking campaign by the cigarette industries in Indonesia with almost no restriction. Efforts to identify roles of various communities to be used for counter campaign have been trial. It was envisage that teachers may play significant roles. The objective of the survey was to as-*

sess the behavior and consumption of tobacco among school personnel (teacher and administration staff).

Method. *In 2009, a Global School Personnel Survey (GSPS) was conducted in Indonesia. Total sample was 675 teachers working in 40 junior high schools from 5 provinces of Java island and 4 provinces of Sumatera Island. The sampling method was a multistage sampling with population was the entire middle schools in the two densely populated islands in Indonesia.*

Results. *Among the sample, there were 10.07% of teachers smoked daily, 8.89% teachers occasionally smoked, and 78.81% did not smoke at all. Among the daily smokers, 85.29% smoked daily in the school premises during the past year, while the occasionally smokers smoke in the premises 51.67% (p-value 0.000). Teachers' smoking behavior tends to influence their attitude against tobacco control in schools. Only 74.63% of daily smokers agreed with banning smoking in public places, whereas 95.00% of the occasionally smokers and 95.83% of non-smoking agreed on such banning (p-value 0.000). As much as 54.41% of daily smokers thought that teachers' smoking behavior influences youth smoking. In contrast, 67.80% of the occasionally smokers' and 83.02% of non-smoker teachers (p-value 0.000) did not believe that the teacher smoking behavior has impact on the students.*

Just 60.29% of daily smokers thought schools should have a policy on prohibiting tobacco use among school personnel on school premises, while 73.33% of the occasionally and 88.70% of non-smokers did so (p-value 0.000). Not surprisingly, 86.76% of daily smokers thought the schools should have a policy on prohibiting tobacco use in school premises. In contrast, 95.00% and 96.42% of the occasionally and non-smoker respectively thought it

should (p-value 0.002). As high as 48.53% of daily smokers thought the cigarette industries should be allowed to sponsor extra curricular activities of the school. As opposed there were only 35.00% and 26.23% among occasionally and non-smoker teachers agreed with such sponsorship (p-value 0.000). Only 45.59% of the daily smokers thought that tobacco advertising should be completely banned, whilst 50.00% of occasionally smokers and 61.02% of non-smoking teachers did so (p-value 0.02).

Conclusion. *The smoking teachers tend to deter efforts to control smoking epidemics in Indonesia. This is in line with the hesitant of public officials to control smoking in Indonesia. The authors recommend that anti-smoking activists should help smoking teachers to quit from smoking before making tobacco free schools in Indonesia.*

Introduction

The Indonesian government has not yet signed FCTC and has not implemented a national program for tobacco control. Restriction of cigarette advertisement is also not so strict in Indonesia. In neighboring countries like Singapore dan Malaysia cigarette industries have been forced to use graphic warning. But in Indonesia, it is still a discourse and no definite time of when it will be applied. The Indonesian government insists in increasing tobacco excise to only 47% (the lowest in the ASEAN countries) as the appropriate instrument for the present.

It is not surprising with the above background, Indonesia becomes the heaven for cigarette industrialist such as Philip Morris, BAT, and others in exploring the benefit from the smokers. As a consequence, Indonesia becomes the third biggest cigarette consumer in the world after China and India. In the year of 2008, Indonesia population consume cigarette on average

of 225 billion sticks per year.[1] While the selling of cigarette in America dan West Europe decreasing because of the awareness of public heath and the booming of anti-cigarette campaign; in contrast, for the year of 2025 Indonesian government set a target to increase the cigarette production to reach 260 billion sticks.[2]

With almost no restriction, youths are the most vulnerable groups for smoking due to intensive smoking campaign by the cigarette industries in Indonesia. As the result, the prevalence of youth smokers in Indonesia is high dan the number of the cigarretes smoked by the youths is high accordingly. In 2009, the prevalence of smokers in Indonesian in for youth age 10-14 years and 15-24 years were 2.0% and 24.6% respectively. The average amount of cigarrete smoked per day in the range of 10 dan 12 sticks.[3]

There is also a tendency of lowering the starting age of smoking. Data from Susenas (the National Socio-economic Survey) and Basic Health Survey (Riskesdas) 2007 show the increasing proportion of smokers who starts smoking at age 5-14 year old. From series of surveys of Susenas 1995, 2001, 2004, and *Riskesdas* 2007 the prevelances of youth who started smooking at age 5-14 were successively 9.6%, 9.9%, 14.3% dan 17.9%. Therefore, efforts to identify roles of various communities to counter the aggressive campaign by the industries have been tried. It was envisage that teachers may play a significant role.

Objective

The objective of this study is to assess the behavior of smooking among teachers in Indonesia and their attitudes on anti smoking campign in schools.

Method

In 2009, a Global School Personnel Survey (GSPS) was conducted in Indonesia. The total sample were 675 teachers

working in 40 junior high schools in five provinces of Java island and in four provinces of Sumatera island. The sampling method was a multistage sampling with the population of study was the junior high schools in the two densely populated islands in Indonesia. The main null hypothesis of this study is that there is no difference in the behavior and attitude between teachers who smoked and who did not smoke on various tobacco control programs in schools.

Results

The survey involved 675 teachers from Java and Sumatra with the demographic distribution is as described in Table 1. More than half of the respondent were age 40 or above so that they grew up before the tobacco control programs were introduced and publication of the risks of smoking was not prevalent. Therefore, it is not surprising if many of the teachers were smokers. However, when we look at the smoking prevalent, more than 80% of the teachers were not smokers. This descriptive statitistics can be interpreted that those who chose to be a teachers already had some 'good behavior", because the prevelence of smokers among the respondents was much less compare to the prevalence of smokers in the general population which was about 34%.

Of the total 675 teachers surveyed, there were 12.3% daily smokers, 9.5% occasional smokers, and 78.2% non smokers. The daily smokers tend to believe that they do not influence youths to smoke. As many as 54.41% of the daily smokers thought that teachers' smoking behavior influences youths to smoke. Additionally, 67.80% of the occasional smokers and 83.02% of non-smoking teachers believed that the teacher smoking behavior has some impacts on students (p-value 0.000).

The daily smokers tend to smoke in the school premises. During the past year, 85.29% of the daily smoker teachers smoke

daily in the school premises, while among the occasional smoker teachers only 51.67% smoke daily in the school premises (p-value 0.000). the daily smokers tend to oppose prohibition of using tobacco among school personnel in school premises. Only 60.29% of daily smokers thought that the schools should have a policy specifically prohibiting tobacco use, while among the occasional smokers and non-smokers the the proportion who support such policy were higher (73.33%) and (88.70%) cosecutively (p-value 0.000).

Table 1:
Descriptive Characteristics of Distribution fo Respondents Among Schools in Java and Sumatra, (n=675)

Variables	Percent
Region	
Java	56.7
Sumatra	43.3
Age-groups	
20 - 29	18.4
30 - 39	27.0
40 - 49	37.8
50 - 59	14.9
60+	1.9
Gender	
Female	61.9
Male	38.1
Smoking status	
Daily smokers	10.3
Occasionally smokers	9.1
Non smokers	80.6

The daily smokers tend to oppose a program of prohibiting tobacco use among students on school premises. Only 86.76% of daily smokers thought the schools should have a policy prohibiting tobacco use among students on school premises, whilst 95.00% of the occasional smokers and 96.42% of non-smokers did (p-value 0.002). The daily smokers tend to be more welcome to cigarette industries' sponsorship on school activities. Among the daily smokers 48.53% thought the cigarette industries should be allowed to sponsor extra curricula activities. As opposed, 35.00% occasional smokers and 26.23% non-smokers agreed with such sponsorship (p-value 0.000).

Teachers' smoking behavior influences their attitudes against tobacco control. The daily smokers tend to disagree with banning to smoke in public places as well as total ban of tobacco advertising. As high as 74.63% of the daily smokers teachers agreed with banning to smoke in public places. Whereas 95.00% of the occasional smokers and 95.83% of non-smokers agreed on such banning (p-value 0.000). Only 45.59% of the daily smokers thought that tobacco advertising should be completely banned, whilst 50.00% occasional smokers and 61.02% non-smokers did so (p-value 0.02). The more complete distributions of statistics can be seen in Table 2 below.

Table 2:
Distributions of Attitudes of Teachers on Various Intervention Variables in Antismoking Campign at Schools

Intervention Variables	Smoking status (% of Total)			p-value
	Daily smokers	Occasionally smokers	Non smokers	
Perception of the influence of teachers on tobacco use among students				0.000
Have influence	54.41	67.80	83.02	
No influence	45.59	32.20	16.98	
Smoke in school premises				0.000
Smoke in the school premises	85.29	51.67	0.94	
Never smoke in the school premises	14.71	48.33	99.06	
Having a rule to prohibit smoking among school personnel				0.000
Preferred	60.29	73.33	88.70	
Opposed	39.71	26.67	11.30	
Making a rule to prohibit smoking among students				0.002
Preferred	86.76	95.00	96.42	
Opposed	13.24	5.00	3.58	
Prohibit tobacco industry sponsorship				0.000
Preferred	48.53	35.00	26.23	
Opposed	51.47	65.00	73.77	
Banning cigarette smoking in public places				0.000
Agree	74.63	95.00	95.83	
Disagree	25.37	5.00	4.17	
Banning tobacco advertising completely				0.02
Agree	45.59	50.00	61.02	
Disagree	54.41	50.00	38.98	

Discussion

Indonesia is currently the last battle ground for the cigarette industries and the tobacco control use. The government, fearing lost of income from tobacco excise and from mistaken perception of employments in tobacco farming and cigarette industries. Apparently the government listens more to the industries rather than to the antismoking advocates. Just recently, the Minstry of Industry provokingly host the launching of a Divine Cigarette, a book claiming of healthy cigarette. Certaintly, the authors and the studies reported in the book have not undergone rigorous academic assessment. This is just an ilustration of a pro-smoke government policy. The new propsed government regulation of tobacco control has been not processed for the last three years. On this situation, public health professionals continue to undertake various efforts to strengthen tobacco control uses by the societies, especially by the young generation. The young generations, such as stundets in middle and high schools, have been targetted by the cigarette industries for a long-term yield of cigarette businesses. To obtain a basic data for future intervention this study is conducted.

The proportion of sample (teachers) who smoked daily in this study was 12.3% which is a relatively lower than the prevalence of smokers among teens who smoked daily (23.7%). The proportion of teachers who smoked occasionally was 9.5% which is twice of teens who smoked nationally (5.5%). Overall, the prevalence of smokers aming teachers this study is high enough of (21.8%) compared to the national prevalence of smokers in 2007 which was 29.2%.[3] Many people expect that teachers should have less tendency to smoke because of higher education level. In the national prevalence, it is included low educated people who may not aware of the risks of smoking. In Indonesia, where about 85% of the population are moslem, this high prevalence of smoking among teachers could be serious problem. The *Majlis Ulama* (the High Authority of Islamic Council) already declared (*Fatwa*) that smoking is prohibited

under the Islamic law. Yet, most of teachers already addicted to smoke from the beginning. It is difficult for them to quit from smoking.

Our hypthesis assumed that teachers behave uniformly in controlling smoking in school premises. Teachers act as a central figure to be followed by students at least at schools. Therefore, it has been long advocated that teachers should have a postive conduct (behavior) to be a role model for the students. In Java language, the word *guru* (teacher) has been linked with the acronym of **"***digu**gu** dan diti**ru***"** meaning that a teacher must have behavior that will be mimic and followed by his/her students. Therefore the smoking teachers will have difficulties to advise studenst not to smoke. In this unfavourable situation, students tend to follow their treachers on smoking. This condition is very serious for antismoking advocates. The antismoking activists should change behavior of teachers first, before they advise youth not to smoke. In the contrary, cigarette industries have been more successfull in influencing teachers and the youth to smoke.

In this study, the dilemmatic situation experienced by daily smokers indicated by their tendency toward: (a) smoking inside school premises, (b) rejecting thier behavior will be mimicked by students, (c) rejecting smoking banning in the school premises; (d) allowing cigarette industries to sponsor school activities; (e) showing permissive toward smoking behavior in public places; dan (f) rejecting banning cigarette advertisement. Since 2003, some local governments established free smoking areas such as inside public places, health facilities, working area, school premises, children playing areas, workship places dan public transportation.[4] In the year of 2009, the regulation of the free working areas is enforced by article 115 on Health Act No.36/2009.[5] Since then tens regional/district regulations were enacted to enforce the free smoking areas. Unfortunately the implementation of this enforcement is still weak.[6] Cases where teachers break the rule have been found in those districts that pro antismoking. Some mayors plan to constitute a specific prohibi-

tion for teachers to smoke in school area.[7,8] The governor of Jakarta even encourages students to strike when they found a teachers keep smoking in schools.[9]

Ideally, teachers as a central figures for youth should enforce free smoking areas at school. The non smoking teachers are very important properties to be the role models in antismoking campaign in schools. Therefore, antismoking activists have to find proactive and creative approaches to reward teachers who participate actively in antismoking campign, at least in school premises. This is a difficult task since so far, no public money allocated by the Central and local governments to combate bad smoking behaviors. Under the Indonesian excise law, local governments where tobacco farming and tobacco industries are existent receive 2% tobacco excise money. However, those local governments prohibit using the money to combate smoking. The money can be used to strengthen farmers or labors to improve their economic status. This is the odds of Indonesia, the haeven for cigarette industries.

For comparison, in Norway there is a strict rule prohibiting anyone smoking inside school premises, no exception either for teachers or for visitors.[10] Creating non-permissive environment to smoking behavior at school, for example prohibition to sell and smoke cigarette at school and its surrounding, has been proven to decrease the number of students who smoke. A study by Martini and Sulistyowati in 2005 in east Java found the similar impact.[11] The implementation of free smoking areas will protect the right of non-smokers in breathing clean air, free from harmful smokes. If the smokers want to fight their right to smoke, we sould let the smokers harm themselves. Beside, creating a free smoking area will inhibit smoking activities which slowly reduce the number of smokers and the number of cigarettes smoked. Teachers play significant roles in creating free smoking areas in schools.

Without having strict regulation on cigarette advertisement, such been practices in neighboring countries and developed countries such as in Thailand, Hong Kong, and the

United Kingdom, cigarette industries will easily bombard young communities with "very impressed and unforgettable words or actions" to provke smoking among youths that last tens of years of smoking and spending money to harm themselves. Cigarette industries in Indonesia have been successfull in developing a pseudo image of their products to as consuming their product will achieve more productive and happiness life. With their huge amount of fund, the cigarette industries may pay local and international experts from various experts to create "sophisticate advertisements" to persuade and to deceive communities about cigarette products. Therefore the government should not allow cigarette industries to performe such missconceived advertisements, including sponsorship for school activities, such as scientific competitions, sport competitions, green peace clubs, and sport acitivies. However, to date, the industries in Indonesia have been more successfull in influencing the government policies on youth, schools, and environments. Martini & Sulistyowati disclosed their finding that students do realize the harmful of smoking for their health but they underestimate the rate of its addiction.[11] This additive behavior is what the industries are looking for. Once students are trapped in smoking behavior they will be fanatic consumers for 30-50 years. Then, the industries may harvest their investment. On the other hand, the government and the national health insurance will pay huge consequences of health care costs in the future.

Conclusion

Youths are the main target for tobacco industries for long-term loyalty to their products. At the same time, anti smoking advovates also have to focus their promotion to youths or middle school students. To expect good results of antismoking in schools, this study is trying to aasses behavior and attitudes of smoking teachers on antismoking efforts in schools. The study was condected in Java and Sumatra of Indonesia. The study

found that smoking teachers tend to deter efforts to control smoking epidemics in Indonesia. This is in line with the hesitant of public officials to control smoking in Indonesia. The authors recommend that anti smoking activists should help smoking teachers to quit from smoking before establishing free tobacco schools in Indonesia.

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Indonesia consumes about 235 billion of sticks of cigarette this year, about 1,000 sticks per person, including baby and frail elderly. In 2011, the government is enjoying US$ 7 billion income from tobacco excise while the government allocated only US$ 3 billion for the Ministry of Health. On the other hand Indonesia has the highest Maternal Mortality Rate in ASEAN, due to poor health services and under funded health services. More than 120 million people may go bankrupt if one of a family member suffers from serious diseases, such as tobacco related diseases of cardio-vascular or cancer. They have to pay out of their pocket or sell their assets to pay for expensive health care. In Indonesia, even in public hospitals, people have to pay deposit to receive health care and the public hospitals charge on fee for services basis. In many occasions, charges for certain procedures are more expensive in public hospitals than in private hospitals.

Yet, Indonesia has not accessed/ratified the Framework Convention on Tobacco Control (FCTC). The Indonesian regulations tobacco controls are very weak and the enforcement is almost non existence. The cigarette companies almost freely perform advertising through various media and events, even near schools, to influence children and youths to smoke. At present, several cigarette companies are negotiating with the Ministry of Education to "support for better education", a way to twist the public to be perceived as the "good guys". Recently, the Ministry of Industry hosted a launching of the so called 'divine cigarette" in whcih they claimed that it is not nicotine that is harmful of a cigarette. Nicotine can be completely burned and by using a special filter they design the harmful of cigarette can be eliminated. But, those studies are almost nowhere to be found in scientific journals.

Therefore, it is appropriate to say that "Indonesia is the heaven for cigarette companies and the hell for the people"; the title used in this proceeding.

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