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Implementation of Cigarette Excise Policy against Cigarette Consumption Reduction among Adolescent in Kuningan, Indonesia

Implementasi Kebijakan Cukai Rokok terhadap Penurunan Konsumsi Rokok pada Remaja di Kuningan, Indonesia

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Abstract

Indonesia has the highest prevalence of smoking (50.68%) compared to other ASEAN countries. On January 1st, 2017, the Indonesian government raised cigarette excise taxes. The purpose of this study was to analysis the impact of cigarette excise increase on cigarette consumption among adolescents aged 17 to 25 years. The study design used cross-sectional survey. A total of 153 adolescents were recruited in this study through simple random sampling technique. Questionnaires and observation papers were used in this study. A face-to-face interview was conducted to fulfill the data collection through home visit for each respondent. The data were obtained during May – June 2017. This study used paired t test analysis. The number of cigarettes consumed by adolescent decreased significantly by two cigarettes per day after the increase in cigarette excise tax. There is a significant difference of the average cigarettes price based on the brand after the implementation of cigarette excise tax increase, the difference of cigarette price is IDR 200 per stick of cigarettes after excise tax increase. Increased cigarette excise taxes may affect the increasing of cigarette prices. Threfore, it could reduce the number of cigarette consumption.

Keyword : Adolescent, cigarette, excise, price, tobacco

Abstrak

Indonesia memiliki prevalensi merokok tertinggi (50,68%) dibandingkan negara-negara ASEAN lainnya. Pada tanggal 1 Januari 2017, pemerintah Indonesia menaikkan pajak cukai rokok. Tujuan dari penelitian ini adalah untuk menganalisis dampak kenaikan cukai rokok terhadap konsumsi rokok pada remaja usia 17 sampai 25 tahun. Desain penelitian menggunakan survei potong lintang. Sampel pada penelitian ini adalah 153 remaja yang dipilih melalui teknik *random sampling*. Instrumen pada penelitian ini adalah kuesioner dan lembar observasi. Wawancara tatap muka dilakukan untuk memenuhi pengumpulan data melalui kunjungan ke rumah masing-masing responden. Data diperoleh pada bulan Mei - Juni 2017. Penelitian ini menggunakan analisis uji t berpasangan. Terdapat perbedaan rata-rata yang siginifikan jumlah rokok yang dikonsumsi dan harga rokok per batang antara sebelum dan setelah kenaikan cukai rokok. Jumlah rokok yang dikonsumsi remaja menurun dua batang rokok per hari setelah adanya kenaikan cukai rokok. Rata-rata harga rokok meningkat sebanyak Rp 200.00 per batang setelah kenaikan cukai rokok. Kenaikan cukai rokok dapat memengaruhi kenaikan harga rokok. Dengan demikian hal tersebut dapat mengurangi jumlah konsumsi rokok.

Kata kunci : Remaja, rokok, pajak cukai, harga, tembakau

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Introduction

Tobacco use is one of the leading global health risks for human mortality worldwide (9%). Health risks from smoking also responses for generating the other risks related to chronic diseases.[1] Indonesia has the highest smoking prevalence (50.68%) compared to others ASEAN's countries.[2] According to National Basic Health Research, it is estimated, the prevalence of tobacco smoking increased from 34.2 % in 2007 to 36.3 % in 2013.[3-5] The prevalence of smokers in adolescents (aged 15-19) years has increased from 0.7% in 2007 to 11.2% in 2013, as well as among age of 20-24 years increased from 17.3% in 2007 to 27.2% in 2013. The average age of people early smoking in Indonesia is at 17.6 years. Meanwhile, the average number of cigarettes smoked is about 12.8 cigarettes per day.[3-5]

Due to its negative impact on health, cigarettes as tobacco products should be limited or inhibited consumption. Tobacco control policy is an excellent investment in the health of a country's population. However, Indonesia is the only country in the Southeast Asia Region that has not signed the World Health Organization (WHO) Framework Convention on Tobacco Control (FCTC).[6,7] Moreover, it is not introduced a wide range of tobacco control policies.[8] One of the efforts to control cigarette consumption by the government is by issuing a cigarette excise policy.

Excise is one of an instrument to control cigarette consumption. Tax price increases that reduce the affordability of tobacco products are among the most effective way to reduce tobacco consumption.[9,10] As recommendation from the World Bank that total tax burden should be 66% to 80% of the retail price. As for WHO and global benchmark 70-75% of retail price is excise tax.[10,11] According to economic study, cigarette price is inversely related to cigarette demand. A 10% increase in price of cigarette would decrease overall adult consumption by approximately 4%.[10] In addition, study of dynamic simulation about excise tax raising in California found a 20% tax-induced cigarette price increase would reduce smoking prevalence from 17% to 11.6%.[12] From year 1999 to 2010, cigarette prices become more affordable as indicated by significant decline in relative income price (apply for the most popular brand), particularly in the Philippines and Indonesia compared to other countries (Cambodia, Lao DPR, Vietnam, Thailand). Since 2005, Thailand is the only country where cigarettes have gradually become less affordable.[10,13]

Several systematic reviews have found that higher cigarette prices lead to a reduction in smoking prevalence and intensity among youth and young adults.[14-16] Study in United States found that cigarette tax increase associated with a substantial reduction in smoking among youth and young adultssuch as the odds of smoking initiation decreased, the odds of past-month smoking also decreased, current smokers smoked on fewer days and smoked fewer cigarettes per day after the tax increase.[17] As for study among young adults in Columbia, found that an increase in the price of cigarettes led to transitions from daily smoking to no smoking, from moderate daily to light daily smoking, and from heavy daily smoking to moderate daily smoking.[18] Youth and the poor are more price sensitive. Evidence in the study suggests that youth and young adults are more sensitive to cigarette price and tax increases than adults.[15,17]

In Indonesia, the tobacco tax averages 37% of sales price. This is low compared to the global benchmark of 70% of sales price. The tax rate is 31% of the government retail price; the maximum allowable tax rate by Indonesian law is 57% of HJE.[9] The HJE is the "retail sales price," and represents the factory price inclusive of taxes, profit, and transaction costs.[19] Since 2009-2017, Indonesia has changed its policy on the development of tobacco excise tariff. The government of Indonesia implements the latest policy in 2017, namely the government raises excise tariffs in the range of 0% to 13.46% for each product according to manufactured. The highest excise tax rate increase of 13.46% applies to machine-packaged white cigarettes. Meanwhile, the lowest increase in excise tariffs by 0% (fixed), applies to the results of hand-made *kretek* cigarettes class IIIB. The government also set an increase in retail price of tobacco products by 12.26%.[20] Its regulation has impacted to cigarette prices. This study examined the effect of cigarette price policy changes on the number of cigarettes consumed by adolescents.

Method

The study design used a cross-sectional survey. Data of cigarette consumption among adolescents were obtained during May – June 2017. Random sampling technique was applied in this study. Adolescent were recruited from community in Baok Village, Ciwaru Subdistrict, Kuningan District, West Java Province, Indonesia. Simple random sampling was employed to select an adolescent who smoked daily or non-daily and aged 17-25 years old. A total of 153 adolescents were recruited in this study. The data were collected through face-to-face interviews and observation by home visit to each respondent. Informed consent was obtained before the questionnaire was distributed. A questionnaire consisted of characteristic of respondent, a number of cigarette consumed per day before and after excise increased, type of cigarette consumed before and after excise increased, price of cigarette per stick according to cigarette brand that consumed, reason of smoking initiation, family smoking status in home, friend smoking status in school, and friend smoking status in home's area. Furthermore, observation

Table 1. Characteristics of Respondent

Characteristics	Category	Frequency	Percentage
Age (year)	15-19	69	45.1
	20-24	84	54.9
Education level	Primary school	9	5.9
	Junior high school	62	40.5
	Senior high school	69	45.1
	Diploma/college/university or more	13	8.5
Employment	Students	91	59.5
	Self-employee	25	16.3
	Non-government employee	37	24.2
Reason of smoking initiation	Fad	58	37.9
	Curious	59	38.6
	Invited/forced	36	23.5
Family smoking status in home	Yes	95	62.1
	No	58	37.9
Friend smoking status in school	Yes	117	76.5
	No	36	23.5
Friend smoking status in home's area	Yes	153	100
	No	0	0

Table 2. Changes Pattern of Cigarette Type Consumed

Cigarette Type Consumed	Before		After	
	n	%	n	%
Machine-made 'kretek' cigarette	117	76.5	122	79.7
Machine-made white cigarette	33	21.6	28	18.3
Hand-made 'kretek' cigarette	3	2	3	2

Table 3. Changes Pattern of Total Number of Cigarettes Consumed According to Cigarette Brand's Consumed

Cigarette Brand's Consumed	Total Number of Cigarettes Consumed		Total Change
	Before	After	
Brand 1	217	172	45
Brand 2	162	176	-14
Brand 3	43	44	-1
Brand 4	45	25	20
Brand 5	27	36	-9
Brand 6	122	87	35
Brand 7	183	147	36
Brand 8	135	109	26
Brand 9	89	59	30
Brand 10	61	32	29
Brand 11	54	45	9
Brand 12	43	28	15
Brand 13	9	0	9
Brand 14	22	17	5
Brand 15	62	59	3

was conducted to indentify the excise increase by Indonesian law in 2017. The existing regulations on Indonesian regulations No.147/PMK.010/2016, which implemented on January 1, 2017, on tobacco excise tariffs are set as indicators after cigarette excise tax increases.[21] In addition, retail price observations that apply to cigarettes per stick or per pack had been analyzed by observation and interviews to the tobacco traders. All statistical tests were analyzed by using statistical software for windows. Paired t-test analysis was used to identify the differences of total cigarette consumed before and after excise increasing. A p value < 0.05 was considered statistically significant.

Results

A total of 153 questionnaires were distributed to adolescents in the village community. The response rate was 100% and all of them completed answers. The majority of respondents (54.9%) were between age 20 and 24 years (Mean = 20.45 years; SD = 2.218). Nearly half (45.1%) of the adolescents were senior high school. The majority of adolescents' employment were student (59.1%). Approximately one-quarter (38.6%) of adolescents reported "curiosity" as a reason to cigarette initiation (Table 1). Moreover, nearly two-thirds (62.1%) of family were smoking at home. Approximately, three-quarter (76.5%) of friends were smoking at school. Furthermore, all of friends are smoking in home's area (Table 1).

In term of the changing of cigarette type consumed before and after cigarette tax increased, the majority of adolescents (76.5%) had consumed machine-made *kretek* before excise tax increased. Furthermore, after it has increased the machine-made *kretek* cigarette type percentage increased (79.7%). As for machine-made white cigarette type has decreased before and after excise tax increased from 21.56% to 18.3% (Table 2). Moreover, the pattern of total number of cigarettes consumed according to cigarette brands has been changed after implementation regulation. More than three-quarters (80%) of cigarette brands consumed have decreased in terms of the number of cigarettes consumed (Table 3). Cigarette Brand 1 had the greatest decline. Cigarette

Table 4. The Mean Difference of Cigarette Brand Prices per Stick Before and After Excise Tax Increased

Cigarette Brand Prices	Mean ± SD	Min-Max	Mean Differences ± SD	95% CI	p Value
Price before	1,12 ± 125.19	1,000-1,250	- 194.44 ± 104.27	- 211.10 - (-177.78)	0.000
Price after	1,31 ± 199.26	1,000-1,500			

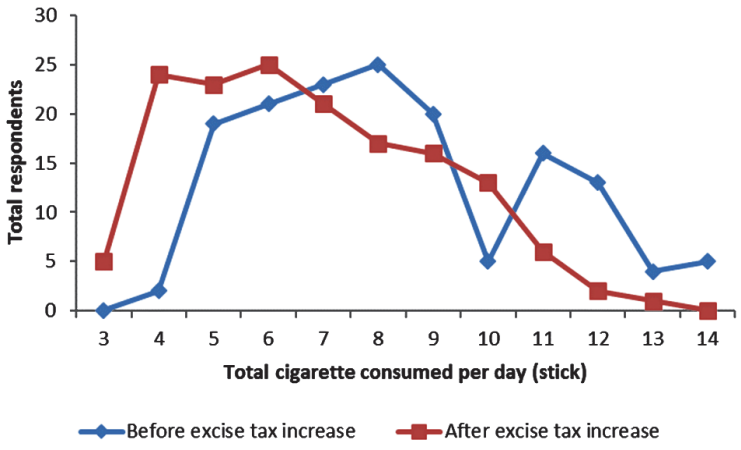

Figure 1. The Difference of Total of Cigarettes Spent in One Day by Adolescent

Table 5. The Mean Difference of Cigarette Consumption Before and After Excise Tax Increased

Category	Mean ± SD	Mean Differences ± SD	95% CI	p Value
Before increasing excise tax	8.33 ± 2.52	1.556 ± 1.02	1.39-1.72	0.000
After increasing excise tax	6.77 ± 2.27			

brand 15 had the lowest decline. Meanwhile, Cigarettes Brand 2, Brand 3, and Brand 5 have increased a little bit in term of total cigarette consumed (Table 3).

The cigarette price per stick for all brand of cigarette has been increased after excise tax increased, except three brands that are Brand 4, Brand 7 and Brand 12 due to its new brand. The highest price of cigarettes before the increase in excise tax was IDR 1,250 per stick and the lowest price was IDR 1,000 per stick. After the excise increase, the highest cigarette price was IDR 1,500 per stick, and the lowest price was IDR 1,000 per stick (Table 4). There was significant difference of cigarette brand prices between before and after cigarette excise tax increased (95% CI: 211.10-177.78, p value < 0.05). The average of cigarette brand prices before excise tax increased was lower than after excise tax increased (mean difference: 194.44, SD: 104.27) (Table 4). The difference of cigarette prices was IDR 200.

Figure 1 shows that before the increase in cigarette excise tax rates, the number of cigarettes spent each day by adolescents' smokers was 4-14 cigarettes stick. Most adolescents spent eight cigarettes per day. However, after cigarette excise tax increased, the number of cigarettes spent every day decreases to 3-13 cigarettes. Most adolescent spend six cigarettes per day. The figure shown the changing pattern of total cigarette consumption before and after excise tax increased. Based on Table 5, there was significant difference of number cigarette consumed pattern among adolescents between before and after cigarette excise tax increased (95% CI: 1.39-1.72, p value < 0.05). The average of cigarette consumption among adolescents before excise tax increased was higher than after excise tax increased, mean = 8.33; SD = 2.52 and mean = 6.77; SD = 2.273), respectively. The number of cigarettes consumed by adolescent decreased significantly by two cigarettes after the increase in cigarette excise tax.

Discussion

The major finding of this study is that there was significantly difference of number of cigarette consumed among adolescent before and after cigarette excise tax increased. Adolescent's cigarette consumption decreased after the tax increased. Daily adolescent smokers smoked on average 1.6 cigarettes (or about two cigarettes) per day less after the excise tax increase. This finding is in line with previous study finding that among youth smokers, the number of days smoked declined after the tax in-

crease, as well as fewer cigarettes were smoked per day after the tax increase. The reduction in the number of cigarettes being larger for daily smokers compared to nondaily smokers.[17] Furthermore, study in the United States found that the large state tobacco tax increases of the past 15 years were associated with significant reduction in smoking participation and frequent smoking by youths.[22] The evidence suggests that the increase in price reduces smoking participation, prevalence and consumption, as well as the level of smoking.[20,23] Based on the literature, the policy of cigarette excise increase will result to the increase of cigarette price. When the price of cigarettes rises, the people's affordability will decrease to buy. Thus, the condition may decrease the number of cigarettes consumed or the prevalence of smokers. Moreover, the production of cigarettes can decrease.[19,20]

Excise is an instrument of tobacco consumption control. The impact of price and tax measures on health and revenue depends on the structure of the market, industry and consumer responses to tax and price increases, and the implementation of the tax. Because the demand for tobacco products responds to changes in price, increasing the price and tax of tobacco products is also the most effective way to reduce tobacco-related morbidity and mortality.[19] Furthermore, the demand for cigarette is more price sensitive for the long-run than the short-run.[24]

This study found that the real price of cigarette per stick was increased due to implementation of Indonesia's cigarette excise regulation No. 147/PMK.010/2016. The average increase in excise tax on each brand of cigarettes was IDR 200 per stick. Excise affects the financial scheme consisting of the price of cigarette products per unit, sales and production volume. In tobacco companies, excise and VAT (value added tax) are included in the calculation of pricing. Where the price of cigarettes per unit acquired is reduced by the excise tax and the payable is then added with the profit the company wants to earn and the result is the Retail Price. The amount of excise duty and VAT payable depends on the size of the retail price because the excise and VAT amount is the product of the excise tax and tax with the retail price and if the selling price of the market is higher than the price indicated on the excise band, then the outstanding taxes increase in accordance with the increase in the price.[25] The evidence suggests that is a positive effect on the price per unit excise tax, this means that any increase in excise duty will increase the price per unit and any excise reduction will lower the price per unit.[26]

Moreover, the study revealed that the high percentage of cigarette type consumed before and after cigarette excise tax increased was machine-made *kretek* cigarette , 76.5% and 79.7%, respectivelly. The previous study about Indonesia tobacco taxes reported that the vast majority of smokers (88%) use *kreteks*, or tobacco-and-clove cigarettes, and a very small segment of smokers in rural areas use roll-your-own or pipe tobacco. As well as a slightly higher percentage of youth (15 to 19 years) prefer white cigarette.[19] Among type of cigarette, *kretek* is the most popular (31.5%), followed by hand-rolled (4.7%) and white cigarette (2.2%) that were consumed by Indonesian community.[7]

Based on the result, over half (59.5%) of adolescentssmoker were students. Nearly half (45.1%) of adolescent smoker were senior high school students. Although majority of them were educated background, they were smoking. It was related to other factors such as social environment influence. According to the result, family smoking at home, friend smoking at school and friend smoking at homes areas were high prevalence, 62.1%, 76.5%, and 100%, respectively. The previous study has shown that social influences have an association with the adolescent is smoking behavior.[27,28] Negative social modeling, negative social pressure, and negative home and school factor were more likely to smoking.[27] Then, smoking rule inside home was significantly associated with smoking behavior.[29] In addition, environment factor is associated with health behavior. Social cognitive theory (SCT) is evolved from Albert Bandura's social learning theory.[30,31] This theory concerned to the social environmental factors, that the personal characteristics of individual, and behavior interact and influence each other.[30]

Conclusion

The increase in cigarette prices can reduce the number of cigarette consumption among adolescents. This study obtains that the average increase in excise tax on each brand of cigarettes is IDR 200 per stick, as well as the number of cigarette consumed among adolescent was significantly different between before and after cigarette excise tax increased. The number of cigarettes consumed by adolescents decreases significantly by two cigarettes after the increase in cigarette excise tax.

Recommendation

This study recommends that the government should increase cigarettes excise tax according to the global benchmark of retail price. At least, the government should implement the maximum allowable tax rate by Indonesian law of retail price. Moreover, the government can control the growth of tobacco products production as a form of controlling the consumption of tobacco products. The important issue for future study is an investigation the elasticity of excise tax increasing to cigarette consumed. As well, additional identifying is needed to substantially reduce tobacco initiation and tobacco cessation among youth and adults.

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