The relationship of smoking duration, sleep disorders, and nutritional status of Indonesian adult men: data analysis of the 2014 Indonesian Family Life Survey

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Abstract

Background: In Indonesia, the prevalence of smoking is increasing from year to year and can cause various health problems, such as sleep disorders and affect a person's nutritional status. So, in this study, the relationship between smoking duration, sleep disturbances, and nutritional status in men aged 26–45 years will be investigated using secondary data from the 2014 Indonesia Family Live Survey (IFLS).

Methods: The 2014 secondary data from the fifth waves of the IFLS were used for analysis. All 5,379 data of men aged 26–45 years who provided anthropometric, smoking duration, and sleep disorders were included in the study. The Chi-Square test was used to examine the relationship between smoking duration, sleep disorders, and nutritional status in men aged 26 – 45 years. Furthermore, the Multinomial Logistics Regression test is carried out to determine the variables that have the strongest influence.

Results: Based on the results of statistical tests conducted, it was found that the majority of respondents had a smoking duration of 11-20 years, of which 27.2% of respondents did not experience sleep disorders and 25.4% had sleep disorders. The nutritional status of respondents with a smoking duration of 11-20 years is normal as many as 35% of respondents and at least 0.5% of respondents have underweight nutritional status with smoking duration <5 years. Furthermore, the test results of the relationship between smoking duration and sleep disturbances obtained p-value = 0.03 and the relationship between smoking duration and nutritional status obtained p-value <0.01.

Conclusion: Smoking duration was associated with sleep disorder and overweight nutritional status in men aged 26 – 45 years. ***(Health Science Journal of Indonesia 2021;12(2):111-6)***

Keywords: smoking duration, sleep disorder, nutritional status, tobacco use, sleeping sickness

Abstrak

Latar belakang: *Di Indonesia, prevalensi merokok semakin meningkat dari tahun ke tahun dan dapat menyebabkan berbagai permasalahan kesehatan, seperti gangguan tidur serta mempengaruhi status gizi seseorang. Sehingga pada penelitian ini akan diteliti hubungan antara durasi merokok, gangguan tidur, dan status gizi pada pria berusia 26–45 tahun menggunakan data sekunder dari Indonesia Family Live Survey (IFLS) tahun 2014.*

Metode: *Analisis dari data sekunder gelombang kelima IFLS tahun 2014. Semua 5.379 data pria berusia 26–45 tahun yang memiliki kelengkapan data antropometri, kebiasaan merokok, dan gangguan tidur diikutkan dalam penelitian. Uji Chi-Square digunakan untuk menguji hubungan antara durasi merokok, gangguan tidur, dan status gizi pada pria berusia 26 – 45 tahun. Selanjutnya uji Regresi Logistik Multinomial dilakukan untuk mengetahui variabel yang memiliki pengaruh paling kuat.*

Hasil: *Berdasarkan hasil dari uji statistik yang dilakukan, didapatkan bahwa mayoritas responden memiliki durasi merokok selama 11-20 tahun, dimana sebanyak 27.2% responden tidak mengalami gangguan tidur dan 25.4% mengalami gangguan tidur. Status gizi paling banyak yang dimiliki oleh responden dengan durasi merokok selama 11-20 tahun adalah normal sebanyak 35% responden dan yang paling sedikit sebanyak 0.5% responden memiliki status gizi underweight dengan durasi merokok <5 tahun. Selanjutnya hasil uji hubungan antara durasi merokok dengan gangguan tidur didapatkan nilai p-value=0.03 dan hubungan antara durasi merokok dengan status gizi didapatkan nilai p-value<0.01.*

Kesimpulan: *Durasi merokok berhubungan dengan gangguan tidur dan status gizi overweight pada laki-laki usia 26 – 45 tahun.* ***(Health Science Journal of Indonesia 2021;12(2):111-6)***

Kata kunci: *durasi merokok, gangguan tidur, status gizi, penggunaan tembakau, penyakit tidur*

Smoking habit is very dangerous for health because cigarettes contain many chemicals that are harmful to the body such as nicotine, tar, and carbon monoxide.[1,2] Smoking is a lifestyle that is considered attractive by the people of Indonesia. Indonesia is the country with the largest cigarette consumption in the world, which is the fourth after China, the United States and Russia. Smokers can be found in almost all age groups, but the majority are adults.[3] Based on World Health Organization, as many as 34.8% (59.9 million) of the adult population in Indonesia currently consume tobacco cigarettes. Based on the results of Riskesdas in 2007 and 2013 cigarette consumption continued to increase for the male population aged 15 years and over, namely in 2007 by 65.6% to 66% in 2013.[3] The prevalence of smokers in Indonesia in men is always higher than women. Smoking can also cause other effects for smokers themselves, one of which is sleep disorders.[4,5]

Sleep disorders are a person's inability to obtain adequate quality and quantity of sleep.[6] Sleep disturbances can be caused by several factors, such as stress, medication side effects, poor diet, and consumption of caffeine, nicotine, and alcohol. A person who experiences sleep disturbances for a long period of time, causing a continuous lack of sleep hours, will certainly experience health problems that can reduce mental health.[2] This sleep disorder will also cause disturbances in intellectual abilities, motivation, emotional instability, and depression. The physical effects given by the occurrence of sleep disturbances can be in the form of fatigue, muscle pain, exacerbating the condition of hypertension, blurred vision, and reduced concentration.[7] There are various forms of sleep disorders, namely insomnia, hypersomnia, parasomnia, narcolepsy, and delirium. Insomnia is a sleep disorder that affects the quantity and quality of a person's sleep.

Nutritional status is influenced by direct and indirect causes. Several direct causes include food intake and the presence or absence of infectious diseases, while indirect causes include household consumption patterns and availability, lifestyle, health services, environmental, socio-economic and political conditions. One of the causes that are quite serious is a bad lifestyle. An example of a lifestyle that indirectly affects nutritional status is smoking.[8,9] Previously, similar research was conducted by Anggraeny in 2019 and Roshifanni in 2016 but the research that had been carried out only had a small number of samples and only in certain groups. This cannot be used to describe the general condition, especially regarding smoking habits and their impact on Indonesia. Therefore, the use of secondary data from IFLS was chosen because secondary data has a larger number of respondents and respondents are also taken from 13 provinces in Indonesia. Other than that, the number of respondents in more secondary data is also useful for strengthening the evidence of this study. So this study was conducted to determine the relationship between smoking duration, sleep disorders, and overweight nutritional status in men aged 26-45 years from the fifth wave of the IFLS.

METHODS

This study is involving the analysis of secondary data from the fifth wave of the IFLS. The IFLS data set consists of anonymous data available for research under the guidelines of the Research and Development (RAND) Corporation. The population of this study was men aged 26-45 years. There were 50148 participants in total. Participants who provided personal data, sleep disorders, and smoking habits were further analyzed. We excluded participants who had incomplete data on the dataset obtained from interviews using the questionnaire, we only included participants who did not have missing data. After the criteria were applied, 5.379 participants were included in this study. The participant's smoking duration will be divided into 4 categories, namely <5 years, 5-10

years, 11-20 years, and >20 years. The body mass index (in kg/m²) was classified into 3 groups (<18.5 underweight, 18.5 – 25 normal, and >25 overweight). Enumerators performed anthropometric data. All data were obtained using a questionnaire that was asked and filled indirectly by the interviewer. The data were analyzed using the Statistical Program for Social Science (IBM SPSS) and STATA version 12. STATA 12 was used to clean the existing data in the dataset and combine several datasets to collect the variables to be studied according to the respondent's code so that there was no missing respondent data. Normality test using Kolmogorov-Smirnov to see the normality of the data. Data analysis consisted of univariate and bivariate analyses. Univariate analysis was carried out to present data descriptively with the distribution table of the characteristics of the subject while bivariate analysis to analyze the influence of the dependent variable used the Chi-Square test with a significance of <0.05. And will also be followed by a multivariate test using multinomial logistic regression. This research has been approved by the Health Research Ethics Commission, Faculty of Medicine, Airlangga University with letter number number 121/EC/KEPK/FKUA/2021.

RESULTS

The first test conducted in this study was to determine the distribution of the characteristics of the respondents in the study. Characteristics of respondents include age, sleep disturbances, smoking duration, and nutritional status. The following characteristics of respondents in the study are presented in Table 1.

Table 1. Characteristic of study participants

Variable	All (N= 5379)	
	Freq	**%**
Age (years)		
26-34	2641	48.9
35-45	2756	51.1
Sleeping Disorder		
No	2866	53.1
Yes	2531	46.9
Nutritional 5Status		
Underweight	599	11.1
Normal	3513	65.1
Overweight	1285	23.8
Smoking Duration (years)		
<5	254	4.7
5-10	1071	19.8
11-20	2828	52.4
>20	1244	23

Table 1 explained that in this study, the majority of participants were aged 35 – 45 years old, as many as 2756 (51.1%) and the remaining 2641 (48.9%) participants aged 25 – 35 years old. Based on the sleeping disorders, as many as 2531 (46.9%) participants have a sleeping disorder and as many as 2866 (53.1%) participants do not have a sleeping disorder. Furthermore, the nutritional status of participants in this study was as many as 599 (11.1%) were underweight, 3513 (65.1%) normal, and 1285 (23.8%) overweight. For the smoking duration, the majority of respondents had a smoking habit for 11-20 years as many as 2828 respondents, the second highest smoking duration is for >20 years with a total of 1244 respondents, 1071 respondents have a smoking duration of 5-10 years and 254 respondents <5 years have a smoking habit.

Table 2. The association between smoking duration, sleeping disorder, and nutritional status

Variable	Smoking Duration (years) n(%)				p-value
	<5	5-10	11-20	>20	
Sleeping disorder					
No	146(2.7)	559(10.4)	1463(27.2)	698(13)	0.03*
Yes	108(2)	512(9.5)	1365(25.4)	546(10.2)	
Nutritional Status					
Underweight	27(0.5)	148(2.8)	314(5.8)	110(2)	<0.01*
Normal	146(2.7)	674(12.5)	1882(35)	811(15.1)	
Overweight	81(1.5)	249(4.6)	632(11.8)	323(6)	

*The test was performed using the Chi-Square test with α=0.05

Table 3. The results of the multivariate test of the dependent variable with the independent variable

Variable	**Smoking Duration (years)**								
	5 – 10			11 – 20			>20		
	Sig	OR	95% CI	Sig	OR	95% CI	Sig	OR	95% CI
Sleeping Disorder									
No[a]									
Yes	0.139	1.232	0.935-1.625	0.08	1.262	0.973-1.636	0.668	1.062	0.808-1.395
Nutritional Status									
Underweight	0.478	1.176	0.752-1.840	0.603	0.893	0.582-1.369	0.179	0.731	0.463-1.155
Normal[a]									
Overweight	0.01	0.666	0.489-0.906	0.001	0.605	0.454-0.805	0.31	0.718	0.531-0.970

[a]Reference group

Table 2 showed that smoking duration associated with participants sleeping disorder and nutritional status. Sleeping disorder has p-value 0.03, which means that there was an effect of smoking duration on sleeping disorder. And also nutritional status has p-value <0.01 so that means smoking duration affect nutritional status.

The multivariate test was carried out with the aim of knowing which variables had the greatest influence. Based on the results in Table 3, it can be seen that the nutritional status variable is overweight that chooses a relationship with smoking duration. The duration of smoking associated with overweight nutritional status is 5 – 10 years and 11 – 20 years with p-value <0.01.

DISCUSSIONS

Overall, findings from this study indicate an association between smoking duration, sleep disorders, and nutritional status in men aged 26-45 years. The results of this study are in line with previous research that there is a relationship between smoking and sleep disorders.[2,4,6,10,11] Smoking was one of the triggers for sleep disorders. Cigarette consumption causes the release of noradrenaline and increased nerve activity. The release of noradrenaline also affects the synthesis of melatonin in the brain, so that sleep-wake regulation is disrupted. The nicotine in cigarette smoke stimulates the body to release adrenaline which causes an increase in heart rate and blood pressure.[12] But, sleep disorders can not only be caused by smoking, many other factors can be the cause. Sleeping disorder can be caused by several factors, namely extrinsic and intrinsic factors. Extrinsic factors can be in the form of an uneasy environment when going to sleep. While the intrinsic factors include pain, itching, certain diseases that make anxiety, anxiety, depression, stress, irritability and anger that are not channeled.[13] This sleep disorder will also cause disturbances in intellectual abilities, motivation, emotional instability, and depression. The physical effects given by the occurrence of sleep disorders can be in the form of fatigue, muscle pain, worsening hypertension conditions, blurred vision, and reduced concentration.[7]

Smoking can also affect appetite. The nicotine in cigarettes can have a suppressive effect on appetite, thereby reducing appetite and reducing food intake in smokers. A decrease in appetite can have an impact on the level of food consumption which causes the food intake needs of smokers to be insufficient.[14] Of course, if this happens for a long time, it will have an impact on nutritional status and health conditions, such as the emergence of malnutrition, diabetes, hypertension, and other non-communicable diseases. In addition, nicotine can also cause insulin resistance, fat accumulation, and can increase the hormone cortisol. Smoking has a negative relationship with weight gain but has a positive relationship with belly circumference in men. Smokers found a higher waist circumference ratio than non-smokers. This is due to the anti-estrogenic effect and the increase in the hormone cortisol due to the nicotine content in cigarettes.[15] Cigarettes also have a dual effect, namely smoking can increase energy expenditure and reduce appetite, and both of these effects will disappear when smokers stop smoking. The impact of smoking will indeed be felt or seen after 10 - 20 years after use. Based on the results in table 2, it was found that the duration of smoking was related to the nutritional status of the respondents with a p-value <0.01. The nicotine content in cigarettes will cause the release of neurotransmitters such as dopamine, norepinephrine, and serotonin which can suppress appetite.[14] This is in line with research conducted by Huriyati & Amareta in 2020 where the p-value was obtained 0.001 for the relationship between smoking and energy consumption levels.

As seen in Table 2, the majority of respondents have normal nutritional status with a smoking duration of 11-20 years. This is contrary to the results of previous research. This can be due to the IFLS data collection for smoking durations, only asked whether the respondent has a smoking duration regardless of the frequency and timing of the smoking duration. So, it does not rule out that respondents who have a smoking duration are not in the frequency of heavy smoking and have recently had this habit. Cigarettes also have a dose response effect, which means that the younger a person starts smoking, the more difficult it will be to quit smoking and the greater the effect because more toxins will accumulate in the body.[16,17]

This study had several strengths. One of the strengths of this study is the number of respondents involved 5.379 people, more than other studies. In addition, IFLS 5/2014 is the latest survey conducted by IFLS so that the data presented will be representative of the condition of society to date. However, some limitations were also observed. The use of secondary data causes limitations in terms of variables and completeness of data from each respondent. So that the selection of the variables under study adjusts to the data available in IFLS 5.

In conclusion, this study using secondary data analysis from the fifth wave of the (IFLS) showed that there was a relationship between smoking duration, sleep disorders, and overweight nutritional status in men aged 26-45 years.

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