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Tobacco Use Disorder, Depression and Cognitive Function to Insomnia In Indonesia: An Analysis of The 2014 Indonesian Family Life Survey Data

Gangguan Merokok, Depresi dan Fungsi Kognitif Terhadap Insomnia di Indonesia: Analisis Data Indonesia Family Life Survey 2014

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ABSTRACT

The purpose of this study was to determine the relationship between tobacco use disorder, depression, cognitive function with insomnia in Indonesia: analysis of Indonesian family life survey 2014 data. This study used quantitative methods. This study uses documentation techniques as a data collection instrument, cross sectional data in 2014 which is data from the Indonesia Family Life Survey-5 (ILFS-5). The population in this study was 1965 early adults with male/female characteristics aged 18-40 years with sleep disorders and poor sleep quality. This study used the simple random sampling method as a sampling technique, so from the total population of 1965, 1642 early adults were used as samples. Data analysis of this study used multiple linear regression analysis. The conclusions in this study are: (1) smoking disorder does not have a significant relationship with insomnia in early adulthood with a value of r = -0.011 (p>0.05). (2) there is a positive and significant relationship between depression variables and insomnia with a value of r = 0.400 (p <0.05). (3) there is a negative and significant relationship between cognitive function variables with insomnia r = -0.051 (p<0.05). (4) tobacco use disorder, depression and cognitive function simultaneously or together with insomnia in early adulthood (p<0.05). This study shows the relationship between depression and cognitive function can have practical implications for the need to pay attention to activities that trigger depression and keep from unhealthy lifestyles such as smoking, consuming alcohol, and consuming excessive amounts of caffeine can affect sleep patterns. Especially for female subjects who have higher levels of depression than men.

ABSTRACT

Tujuan penelitian ini a untuk mengetahui hubungan antara gangguan merokok, depresi, fungsi kognitif dengan insomnia di Indonesia: analisis data indonesia family life survey 2014. Penelitian ini menggunakan metode kuantitatif. Penelitian ini menggunakan teknik dokumentasi sebagai instrumen pengumpulan data, data cross sectional pada tahun 2014 yang merupakan data dari Indonesia Family Life Survey-5 (ILFS-5). Jumlah populasi dalam penelitian ini sebanyak 1965 orang dewasa awal dengan ciri-ciri laki-laki/perempuan berusia 18-40 tahun dengan gangguan tidur dan kualitas tidur yang buruk. Penelitian ini menggunakan metode simple random sampling sebagai teknik pengambilan sampel, maka dari jumlah populasi 1965 yang digunkan sebagai sampel sebanyak

1642 orang dewasa awal. Analisis data penelitian ini menggunakan analisis regresi linier berganda. Kesimpulan pada penelitian ini adalah: (1) gangguan merokok tidak memiliki hubungan yang signifikan dengan insomnia pada usia dewasa awal dengan nilai r = -0.011 (p>0.05). (2) terdapat hubungan yang positif dan signifikan antara variabel depresi dengan insomnia dengan nilai r = 0.400 (p<0.05). (3) terdapat hubungan negatif dan signifikan antara variabel fungsi kognitif dengan insomnia r = -0.051 (p<0.05). (4) gangguan merokok, depresi dan fungsi kognitif secara simultan atau bersama-sama dengan insomnia pada dewasa awal (p<0.05). Penelitian ini menunjukkan hubungan antara depresi dan fungsi kognitif dapat memiliki implikasi praktis mperlu diperhatikan aktivitas-aktivitas yang memicu depresi dan menjaga dari pola hidup yang tidak sehat seperti merokok, mengonsumsi alkohol, dan mengonsumsi kafein dalam jumlah yang berlebihan dapat memengaruhi pola tidur. Terutama bagi subjek perempuan yang memiliki tingkat depresi lebih tinggi daripada laki-laki.

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Insomnia has its roots in Latin, which consists of the two words "in" which means "without" or "not", and "somnus" which means "sleep". Occasional insomnia that occurs sporadically, especially when a person is stressed, is not considered abnormal. Unnatural behavior occurs when a person experiences persistent insomnia, which is described by difficulty getting to sleep or maintaining sleep (Habsara, Ibrahim, Putranto, Suryandi, et al., 2021). According to Nevid et al. (2018), insomnia is a sleep disorder characterized by dissatisfaction with the quality or quantity of sleep and complaints of difficulty initiating or maintaining sleep. These sleep complaints cause clinically significant impairment in occupational, social, or other important areas of functioning.

Insomnia can occur both in the context of a mental disorder or other medical condition or independently in the absence of an underlying condition (American Psychiatric Association, 2013). Insomnia is a condition characterized by difficulty sleeping or staying awake, which can be caused by biological, psychological, or social factors (Habsara, Ibrahim, Putranto, Risnawaty, et al., 2021). According to Fachlefi & Rambe (2021), insomnia occurs when a person's inability to sleep or sleep is inadequate. Most people experience this sleep disorder, making it the most common sleep disorder and having a significant public health impact (Peltzer & Pengpid, 2019).

Doctors recommend that adolescents and adults get 7-8 hours of sleep each day to maintain good health (Asiah et al., 2022; Habsara, Ibrahim, Putranto, Risnawaty, et al., 2021). As we get older, the function of the Suprachiasmatic Nucleus (SCN) can decrease, which can have an impact on a person's sleep patterns. Older people may feel sleepy more quickly due to less exposure to light and physical and social activity. They can also have difficulty maintaining sleep and find it difficult to go back to sleep after waking up (Habsara, Ibrahim, Putranto, Risnawaty, et al., 2021). Factors such as light, physical activity, and social activity can influence SCN function. In early adulthood, physical and cognitive development function optimally, but bad habits such as smoking, drinking alcohol, and consuming caffeine abnormally can affect sleep patterns and cause symptoms of insomnia (Hapsari & Kurniawan, 2019).

Too much activity can also cause stress for the individual and result in poor sleep quality.

Ideally, sleep is an important basic need for humans; in fact, many people today experience insomnia. According to Peltzer & Pengpid (2019), around 25% of adults globally are dissatisfied with their sleep, 10-15% report insomnia symptoms, and 6–10% meet the criteria for insomnia disorder in Southeast Asia, including Indonesia. In the United States, by 2022, up to 30% of adults will experience short-term insomnia, while approximately 10% will have long-term insomnia, and nearly 40% will report incidental naps. About 5% report falling asleep while driving (The Recovery Village, 2022). According to the Sleep Foundation (2022), short-term insomnia can eventually lead to chronic insomnia, which affects about 10% of adults in the US. Havens et al. (2017) reported the prevalence of insomnia in several countries, such as the Netherlands (5.4%), Japan (10.0%), Australia (10.5%), the UK (11.0%), the US (13.4%), Germany (14.6%), France (21.7%), South Korea (23.5%), China (24.0%), and Brazil (30.5%).

Insomnia in Indonesia has a prevalence rate of 10% of the total population, or around 28 million people (JawaPos.com, 2018) . Insomnia has a prevalence of around 67% in Indonesia, where 55.8% of insomnia cases are categorized as mild insomnia and 23.3% experience moderate insomnia (Fernando & Hidayat, 2020). Insomnia, or sleep difficulties, has a prevalence of around 10% in Indonesia, which means around 28 million out of a total of 238 million Indonesians experience this sleep disorder. This number is recorded in statistical data, but there are still many cases of insomnia that have not been identified (Sincihu et al., 2018).

Not a few individuals who experience insomnia in early adulthood. This is reinforced by the results of a study showing that 50.8% of an adult sample experienced insomnia (Tharida et al., 2020). This research shows that 69.1% of students who are early adults experience insomnia (Andiarna et al., 2020). Research using IFLS data also validates adulthood's experience of insomnia. The results show that 33.3% experience insomnia below the threshold, and 11.0% have clinically significant insomnia symptoms (Peltzer & Pengpid, 2019).

Table 1IFLS Sleep Disorder Data Distribution

	Sleep Disorders					
Age	1:Never	2: Rarely	3: Sometimes	4:Often	5: Always	Total
1: Teenagers	1110	458	236	200	53	2057
2: Early Mature	8532	1903	3506	1587	414	15942
3: Middle Adult	4475	1784	1031	796	218	8304
4: Late Adults	1715	692	391	313	70	3181
Total	15832	4837	5164	2896	755	29484

Sleep disturbance data in the IFLS data can be observed in Table 1. It was recorded that as many as 755 people from their teens to late adults suffered from sleep disturbances, and 2.896 others reported frequent sleep disturbances. Overall, the population aged from adolescents to late adults who had experienced sleep disturbances was 46.30%. The population that experienced the most sleep disturbances were early adults, as much as 46.48% compared to other age populations.

Insomnia can result from psychological, social, and biological factors (Habsara, Ibrahim, Putranto, Risnawaty, et al., 2021). Biological factors include homeostatic processes and automatic mechanisms carried out by living things to maintain consistent conditions and allow the body to function properly. The second biological factor is circadian. The internal and natural process that regulates everyone's physiological habits, including the sleep-wake cycle. The third biological factor is medical conditions; sleep disturbances are often one of the signs of an infection or medical disorder. The fourth biological factor is drugs. Many prescription and over-the-counter drugs can change sleep patterns. The fifth biological factor is age. When entering old age, there is a decrease in exposure to light and physical and social activity, which causes people to go to sleep faster but also wake up faster, making it difficult to go back to sleep.

There are three psychological factors; the first, according to psychoanalysis, is the presence of traumatic experiences that have been experienced. The second psychological factor of behavior is conditioning, which occurs when a person is in bed for a long time even though he is not yet sleepy and activities that do not induce sleep occur, for example, playing a smartphone. So that every time someone gets into bed, he will condition that the bed is a place for playing smartphones and the desire to sleep becomes nonexistent. The third psychological factor, cognitively, is cognitive dysfunction regarding sleep (Habsara, Ibrahim, Putranto, Risnawaty, et al., 2021).

Noise, uncomfortable temperatures (high or low), and altitude are all examples of social factors that can increase the risk of developing insomnia (American Psychiatric Association, 2013). Hapsari & Kurniawan (2019) also stated that early adulthood is a time when cognitive and physical functions reach their peak, allowing individuals to experience many new experiences and activities. Unhealthy lifestyles such as smoking, drinking alcohol, and consuming excessive amounts of caffeine can affect sleep patterns. The more activities performed by early adult individuals, the higher their risk of experiencing stress and depression, which in turn can affect sleep quality and cause symptoms of insomnia.

Smoking disorders in DSM V are defined as problems in the use of cigarettes that result in clinically significant impairment or difficulty and occur within 12 consecutive months (American Psychiatric Association, 2013). In addition to psychological problems, smoking disorders can also cause other physical and medical problems. Long-term use by active smokers causes cancers such as cancer of the esophagus, pancreas, larynx, cervix, bladder, and stomach. Carcinogenic physical ailments found in cigarettes when they are burned and smoked can cause various other medical problems. Medical problems that can be caused by smoking behavior include complications during pregnancy in pregnant women, periodontitis, heart problems, and sudden infant death syndrome. This statement is in line with the insomnia factor above (Habsara, Ibrahim, Putranto, Risnawaty, et al., 2021).

The prevalence of smokers in Indonesia aged 15 years and over who smoke every day is 28.2%.. The nicotine addiction produced by smoking can force smokers to continue smoking, which can cause a variety of adverse effects on the body, including insomnia. (Junaidi & Amrullah, 2020) Research that legitimizes the number of cigarettes consumed shows an effect on insomnia. The results found that 42.5% of respondents consumed moderate cigarettes (11–20 cigarettes), and 46.3% of respondents experienced mild insomnia. These findings indicate that there is a relationship between the number of cigarettes consumed and the incidence of insomnia in Kaima Village, Kauditan

District, with a correlation value of 0.243 (Purnawinadi & Baureh, 2019). The results of the research on the intensity of smoking and insomnia showed that 85.7% of heavy smokers experienced insomnia (Tharida et al., 2020).

Insomnia can be caused by depression as one of the factors. Depressive disorder is a form of mood disorder where it is clear that individual behavior is more dominated by feelings of depression (Oltmanns & Emery, 2018). The more activities that individuals face in early adulthood, the greater their risk of experiencing stress and depression, which can cause sleep patterns to become irregular and reduce sleep quality, as well as cause symptoms of insomnia (Hapsari & Kurniawan, 2019). Early adulthood is also a period of transition from adolescence to adulthood where the individual experiences psychological problems in the form of panic, anxiety, and feelings of helplessness due to the changes in responsibilities that occur (Santrock, 2013).

The results of the study describe a relationship between the level of depression and the incidence of insomnia, with a correlation value of 0.000. The majority of respondents (55.3%) experienced moderate levels of depression, and the majority of respondents (53.2%) experienced moderate levels of insomnia (Hatmanti & Muzdalifah, 2019). The results showed that the majority of respondents experienced mild depression of as much as 73.3% and transient insomnia of as much as 70%. The results of the study stated that there was a correlation between depression and insomnia (ρ) of 0.384 with a p-value of 0.036 (Nofus & Sutanta, 2018).

Cognitive function is also a factor that affects insomnia. Clinical manifestations of insomnia include difficulty remembering, paying attention, or concentrating at school or at work (Habsara et al., 2021; Nevid et al., 2018). Cognitive function is the ability to do things or concepts systematically, calculate, analyze, identify equations, make decisions, communicate, interact socially, and solve simple problems (AA Wulandari et al., 2019). There are several studies that show cognitive function is related to insomnia. The results of this study found that the incidence of insomnia in respondents was relatively high, reaching 69.2%, and as many as 50% of respondents also experienced a decrease in cognitive function. The decline in cognitive function is significant with a p-value of 0.003, which is lower than alpha (α), which is set at 0.05 (T. Wulandari & Trimawati, 2022a). The results showed that there was a significant relationship between cognitive function and sleep quality, with a p-value of 0.000, which is less than $\alpha = 0.05$ (Paramadiva et al., 2022).

According to Habsara et al. (2021), insomnia is a person's inability to sleep or maintain sleep and can be caused by biological, psychological, and social factors. Early adulthood is a time when cognitive and physical functions reach their peak, allowing individuals to experience many new experiences and activities. Unhealthy lifestyles such as smoking, drinking alcohol, and consuming excessive amounts of caffeine can affect sleep patterns. The more activities performed by early adult individuals, the higher their risk of experiencing stress and depression, which in turn can affect sleep quality and cause symptoms of insomnia. The above phenomenon made researchers interested in discussing in depth "Smoking Disorders, Depression, and Cognitive Functions in Insomnia in Indonesia: Data Analysis of the 2014 Indonesia Family Life Survey". The purpose of this study was to determine the relationship between smoking disorders, depression, cognitive function, and insomnia in early adulthood in Indonesia. There is no literature that explicitly and in detail measures the relationship between smoking disorders, depression, cognitive function, and insomnia in early adulthood, especially in Indonesia. Thus, researchers believe there is novelty in this study.

Method

In this study, the simple random sampling method was used as a probability sampling method. A sampling method known as probability sampling gives each population an equal chance of being included in the sample. A sampling method called simple random sampling is used randomly, regardless of population strata (Sugiyono, 2017).

The term sample refers to a small portion of the population that has been selected by researchers based on predetermined characteristics and numbers (Sugiyono, 2017). The total population in this study was 1965 early adults with these characteristics: males and females aged 18–40 years with sleep disturbance and poor sleep quality. This study used the simple random sampling method as a sampling technique, so from a total population of 1965, 1642 early adults were used as a sample.

This study uses a quantitative approach with correlational methods. The quantitative approach is a research approach using numbers and data obtained from certain population samples, and then the data is analyzed using statistical techniques to test the hypotheses that have been determined by the researcher (Sugiyono, 2017). Correlational quantitative research is a type of research that measures two or more variables (Creswell & Creswell, 2018). This correlational method was carried out to determine the correlation between the variables of smoking disorder, depression, cognitive function, and insomnia.

This study uses documentation techniques as data collection instruments and cross-sectional data for 2014, which are data from the Indonesia Life Family Life Survey-5 (ILFS-5). Data obtained from the Household Book (HH) in 2014 from IFLS-5 The selection of HH is based on the variable components related to the research topic. After the relevant variables are collected, they are filtered and used to create the dependent and independent variables.

The Indonesian Family Life Survey (IFLS) is the data used in this study, which is a survey conducted by Research And Development (RAND Corporation). IFLS focuses on the socioeconomic and health conditions of 80.000 individuals and 10,000 households living in 13 provinces in Indonesia (Strauss et al., 2016). The RAND Corporation is a research organization that develops solutions to address public policy challenges to help improve the safety, health, and well-being of people worldwide (Matheny, 2023a).

The data used in this study came from the publication of the 2014 Indonesian Family Life Survey-5 (IFLS-5) survey institute, which is secondary data. IFLS-5 is a follow-up survey from the previous survey, which was first conducted in 1993. This survey aims to collect health and socioeconomic information from the Indonesian population. IFLS-5 has an advantage over previous surveys because it uses a Computer-Assisted Personal Interview (CAPI) system that is more modern and effective in data collection. In addition, this survey was also equipped with a voice recorder to ensure well-controlled data quality (Matheny, 2023b).

IFLS-5 data conducted research by taking a total sample of 15.900 households with family members of around 50.000 individuals. The population used in this study is classified as a finite population because the number and characteristics of early mature individuals in the IFLS-5 data are known accurately (Matheny, 2023b).

Multiple linear regression analysis is an analysis tool for forecasting the value of the influence of two or more independent variables on the dependent variable to prove whether or not there is a functional relationship between two or more independent variables and one dependent variable (Sugiyono, 2017). Data analysis in this study used multiple linear regression analysis. Before conducting data analysis, data preprocessing was carried out by changing ordinal data into intervals using the method of successive intervals to meet the most important requirements in the multiple linear regression test (Ningsih & Dukalang, 2019).

Table 2. Description of Research Variables

Questionnaire Topic	Variable	Definition
dependent variable		
Sleep	Insomnia	Symptoms of insomnia as measured by difficulty maintaining sleep and symptoms of insomnia are available in the TDR Section Book 3B IFLS 5
Independent Variable		
Smoking habit	Smoking disorder	Symptoms of smoking disorders as measured by smoking habits and symptoms of smoking disorders are available in Section KM Book 3B IFLS 5
Psychological Health	Depression	Depressive symptoms measured based on the 10-item Center for Epidemiologic Studies-Depression Scale Revised (CES-DR-10) available in Section KP Book 3B IFLS 5
Cognitive Ability	Cognitive Function	Cognitive function is measured using Raven's Progressive Matrices available on the EK2 IFLS 5 Test

Table 2 provides a description of the research variables associated with the IFLS-5 questionnaire section. This description also includes measuring tools used by researchers to represent the research variables

Results

In this study, there were 1642 respondents who met the existing criteria. The data that has been processed is tested for data description first before the hypothesis test is carried out. The data description test was carried out to find out the translation of the number of respondents (N), minimum value (Min.), maximum value (Max.), average value (Mean), and standard deviation (Std. Deviation). Following are the details of the respondent's data explained by the presence of the following demographic data:

Table 3. Data Description

Descriptive Statistics					
	N	Minimum	Maximum	Means	std.

					Deviation
Insomnia	1642	11.00	39.00	19.3465	15.83961
Smoking Disorder (X1)	1642	4.00	49.00	20.3502	15.84253
Depression (X2)	1642	10.00	33.00	18.8837	4.57817
Cognitive Function (X3)	1642	0.00	13.00	7.6242	2.71690
Valid N (listwise)	1642				

Based on the respondent data that has been presented, the research focus variable, namely Insomnia, shows a minimum score of 11 and a maximum score of 39, with a mean or average of 24.8 and a standard deviation rate of 4.8. The Smoking Disorder variable shows a minimum number of 5, a maximum score of 50, a mean or average of 20.03, and a standard deviation of 16.7. On the variable Depression, show numbers with a minimum of 10 and a maximum of 33, with a mean or average of 18.9 and a standard deviation rate of 4.5. The cognitive function variables show a minimum of 0 with a maximum number of 13, a mean or average of 7.26, and a standard deviation rate of 2.7.

The data analysis carried out also showed results in several categories, as shown in the following interval categories:

Table 4 Analysis of Respondent Categories

Variable	Category	Score	Frequency	Percentage
Insomnia	Low	X < 19.5	296	18.2 %
	Currently	20 < X < 29	1131	69.6 %
	Tall	29.5 < X	215	13.2 %
Smoking disorder	Low	X < 0.2	836	51.5 %
	Currently	0.23<X<33.5	537	33.1 %
	Tall	34 <X	269	16.6 %
Depression	Low	X < 14	299	18.4 %
	Currently	14.4 < X < 23	1066	65.6 %
	Tall	23.5 < X	277	17.1%
Cognitive Function	Low	X < 4.5	211	12.9%
	Currently	5 < X < 10	1173	71.4%
	Tall	10.3 < X	258	15.7%

Based on the respondent data that has been presented, the insomnia variable with a low categorization shows 296 respondents with a percentage of 18.2% of all respondents, the moderate categorization shows 1131 respondents with a percentage of 69.6%, and the high categorization shows 215 respondents with a percentage of 13.2%.. In the smoking disorder variable, the low categorization shows 836 respondents with a percentage of 51.5% of all respondents, the moderate categorization shows 537 respondents with a percentage of 33.1%, and the high categorization shows 269 respondents with a percentage of 16.6%. In the low categorization, the depression variable shows 299 respondents with a percentage of 18.4% of all respondents, the moderate categorization shows 1066 respondents with a percentage of 65.6%, and the high categorization shows 277 respondents with a percentage of 17.1%. The Cognitive Function variable with low categorization shows 211 respondents with a percentage of 12.9% of all respondents; the moderate categorization

shows 1173 respondents with a percentage of 71.4%; and the high categorization shows 258 respondents with a percentage of 15.7%.

Table 5 Crosstabulation of Gender and *Insomnia*

Gender * *Insomnia* Crosstabulation

			Insomnia			
			Low	Currently	Tall	Total
Gender	Man	Count	174	639	114	927
		%	18.8%	68.9%	12.3%	100.0%
	Woman	Count	122	492	101	715
		%	17.1%	68.8%	14.1%	100.0%
Total		Count	296	1131	215	1642
		%	18.0%	68.9%	13.1%	100.0%

In the Insomnia variable with a low categorization, it shows 174 male respondents with a percentage of 18.8% and 122 female respondents with a percentage of 17.1%; the medium categorization shows 639 male respondents with a percentage of 68.9% and 492 female respondents with a percentage of 68.9%; and the high categorization shows 114 male respondents with a percentage of 12.3% and 101 female respondents with a percentage of 14.1%.

Table 6. Cross tabulation of Gender and Smoking Disorders

Gender * Smoking Disorders Crosstabulation

			Smoking disorder			
			Low	Currently	Tall	Total
Gender	Man	Count	151	513	263	927
		%	16.3%	55.3%	28.4%	100.0%
	Woman	Count	685	24	6	715
		%	95.8%	3.4%	0.8%	100.0%
Total		Count	836	537	269	1642
		%	50.9%	32.7%	16.4%	100.0%

In the smoking disorder variable with a low categorization, it shows 151 male respondents with a percentage of 16.3% and 685 female respondents with a percentage of 95.8%; the moderate categorization shows 513 male respondents with a percentage of 55.3% and 24 female respondents with a percentage of 3.4%; and the high categorization shows 263 male respondents with a percentage of 28.4% and 6 female respondents with a percentage of 0.8%.

Table 7. Cross tabulation of Gender and Depression

Gender * Depression Crosstabulation

			Depression			
			Low	Currently	Tall	Total
Gender	Man	Count	162	628	137	927
		%	17.5%	67.7%	14.8%	100.0%
	Woman	Count	137	438	140	715
		%	19.2%	61.3%	19.6%	100.0%
Total		Count	299	1066	277	1642
		%	18.2%	64.9%	16.9%	100.0%

In the variable Depression with a low categorization, it shows 162 male respondents with a percentage of 17.5% and 137 female respondents with a percentage of 19.2%; the medium categorization shows 628 male respondents with a percentage of 67.7% and 438 female respondents with a percentage of 61.3%; and the high categorization shows 137 male respondents with a percentage of 14.8% and 140 female respondents with a percentage of 19.6%.

Table 8 Crosstabulation of Gender and Cognitive Function

Gender * Cognitive Function Crosstabulation

			Cognitive Function			
			Low	Currently	Tall	Total
Gender	Man	Count	108	671	148	927
		%	11.7%	72.4%	16.0%	100.0%
	Woman	Count	103	502	110	715
		%	14.4%	70.2%	15.4%	100.0%
Total		Count	211	1173	258	1642
		%	12.9%	71.4%	15.7%	100.0%

In the Cognitive Function variable with low categorization, it shows 108 male respondents with a percentage of 11.7% and 103 female respondents with a percentage of 14.4%; medium categorization shows 671 male respondents with a percentage of 72.4% and 502 female respondents with a percentage of 70.2%; and high categorization shows 148 male respondents with a percentage of 16.0% and 110 female respondents with a percentage of 15.4%.

Table 9 Crosstabulation of Age and Insomnia

Age * Insomnia Crosstabulation

			Insomnia			
			Low	Currently	Tall	Total
Age	18-34	Count	221	867	174	1262
		%	17.5%	68.7%	13.8%	100.0%
	35-40	Count	75	264	41	380
		%	19.7%	69.5%	10.8%	100.0%
Total		Count	296	1131	215	1642
		%	18.0%	68.9%	13.1%	100.0%

In the insomnia variable with low categorization, it shows 221 respondents aged 18–34 years with a percentage of 17.5% and 75 respondents aged 35–40 years with a percentage of 19.7%; the medium categorization shows 867 respondents aged 18–34 years with a percentage of 698.7% and 264 respondents aged 35–40 years with a percentage of 69.5%; the high categorization shows 174 respondents aged 18–34 years with a percentage of 13.8% and 41 respondents aged 35–40 years with a percentage of 10.8%.

Table 10 Crosstabulation of Age and Smoking Disorders

Age * Smoking Disorders Crosstabulation

			Smoking disorder			
			Low	Currently	Tall	Total
Age	18-34	Count	656	413	193	1262
		%	52.0%	32.7%	15.3%	100.0%
	35-40	Count	180	124	76	380
		%	47.4%	32.6%	20.0%	100.0%
Total		Count	836	537	269	1642
		%	50.9%	32.7%	16.4%	100.0%

In the Smoking Disorder variable, the low categorization shows 656 respondents aged 18–34 years with a percentage of 52.0% and 180 respondents aged 35–40 years with a percentage of 47.4%; the moderate categorization shows 413 respondents aged 18–34 years with a percentage of 32.7% and 124 respondents aged 35–40 years with a percentage of 32.6%; and the high categorization shows 193 respondents aged 18–34 years with a percentage of 15.3% and 76 respondents aged 35–40 years with a percentage of 20.0%.

Table 11 Crosstabulation of Age and Depression

Age * Depression Crosstabulation

			Depression			
			Low	Currently	Tall	Total
Age	18-34	Count	214	824	224	1262
		%	17.0%	65.3%	17.7%	100.0%
	35-40	Count	85	242	53	380
		%	22.4%	63.7%	13.9%	100.0%
Total		Count	299	1066	277	1642
		%	18,2	64.9%	16.9%	100.0%

In the low categorization, the depression variable shows 214 respondents aged 18–34 years with a percentage of 17.0% and 85 respondents aged 35–40 years with a percentage of 22.4%; the medium categorization shows 824 respondents aged 18–34 years with a percentage of 65.3% and 242 respondents aged 35–40 years with a percentage of 63.7%; and the high categorization shows

224 respondents aged 18–34 years with a percentage of 17.7% and 53 respondents aged 35–40 years with a percentage of 13.9%.

Table 12 Crosstabulation of Age and Cognitive Function

Age * Cognitive Function Crosstabulation

			Cognitive Function			
			Low	Currently	Tall	Total
Age	18-34	Count	134	900	228	1262
		%	10.6%	71.3%	18.1%	100.0%
	35-40	Count	77	273	30	380
		%	20.3%	71.8%	7.9%	100.0%
Total		Count	211	1173	258	1642
		%	12.9%	71.4%	15.7%	100.0%

In the cognitive function variable with low categorization, it shows 134 respondents aged 18–34 years with a percentage of 10.6% and 77 respondents aged 35–40 years with a percentage of 20.3%; the moderate categorization shows 900 respondents aged 18–34 years with a percentage of 71.3% and 273 respondents aged 35–40 years with a percentage of 71.8%; the high categorization shows 228 respondents aged 18–34 years with a percentage of 18.1% and 30 respondents aged 35–40 years with a percentage of 7.9%.

Table 13. Multiple Linear Regression Pearson Correlations Test Results

correlations

		Insomnia	Smoking Disorder (X1)	Depression (X2)	Cognitive Function (X3)
Pearson Correlation	Insomnia	1,000	-0.011	0.400	-0.051
	Smoking Disorder (X1)	-0.011	1,000	-0.050	0.008
	Depression (X2)	0.400	-0.050	1,000	-0.040
	Cognitive Function (X3)	-0.051	0.008	-0.040	1,000
Sig. (1-tailed)	Insomnia		0.330	0.000	0.019
	Smoking Disorder (X1)	0.330		0.021	0.378
	Depression (X2)	0.000	0.021		0.054
	Cognitive Function (X3)	0.019	0.378	0.054	
N	Insomnia	1642	1642	1642	1642

Smoking Disorder (X1)	1642	1642	1642	1642
Depression (X2)	1642	1642	1642	1642
Cognitive Function (X3)	1642	1642	1642	1642

The relationship between each independent variable and the dependent variable can be seen by looking at the results of the Pearson correlation test in the multiple regression analysis technique. According to Muhid (2019), there is a relationship between variable X and variable Y if the significance value is <0.05. Conversely, if the significance value is > 0.05, then there is no relationship between variable X and variable Y.

The significance value for smoking disorder and insomnia is 0.330, as shown in the table above, and the Pearson correlation value is -0.011. The fact that smoking disorders have a negative Pearson correlation with insomnia is evidenced by the negative sign. This shows that there is no significant relationship between smoking and insomnia if the significance value is greater than 0.05. The Pearson correlation between insomnia and depression is 0.400 and has a significance level of 0.000. This shows that there is a significant relationship between insomnia and depression because the significance value is less than 0.05. With a Pearson correlation coefficient of -0.051, the relationship between insomnia and cognitive function has a significance level of 0.019. The negative sign on the Pearson correlation indicates that cognitive function has a negative relationship with insomnia. Because the significance level is less than 0.05, there is a significant relationship between insomnia and cognitive function.

Table 14 Multiple Linear Regression Simultaneous F Test Results

ANOVA [a]

Model		Sum of Squares	df	MeanSquare	F	Sig.
1	Regression	6241,876	3	2080,625	104,850	.000 [b]
	residual	32504,107	1638	19,844		
	Total	38745,983	1641			

a. Dependent Variable : Insomnia

b. Predictors: (Constant), Cognitive Function (X3), Smoking Disorder (X1), Depression (X2)

The relationship that exists between the variable Y and the three variables In the multiple regression analysis method, the F test or simultaneous test can be used to determine the relationship between the dependent variable and the three independent variables. According to Muhid (2019), variable X has a relationship with variable Y simultaneously if the significance value is <0.05 or Fcount > Ftable. Conversely, if the significance value is > 0.05 or Fcount <Ftable, then there is no relationship between variable Y and variable X simultaneously. In the table above, a calculated F value of 104.850 can be obtained with a significance level of 0.000 <0.05, which means that the regression

model obtained can later be used to predict insomnia.

Discussion

The results of the data analysis that has been carried out show that there is no significant relationship between smoking disorder variables and insomnia. This is contrary to the assumptions of researchers and the results of studies that have been used as a theoretical framework. There is no significant smoking disorder associated with insomnia due to the large number of respondents who are non-smokers. A total of 856, or 51.5% of the total respondents. This is in line with research (Ain et al., 2016; Siahaan & Malinti, 2022), which shows that there is no significant relationship between smoking and insomnia. This can occur if a person has primary insomnia, which is insomnia that is not related to a medical condition, a psychiatric disorder (e.g., major depression, anxiety, or delirium), or another sleep disorder (e.g., narcolepsy, breathing-related sleep disorder). in the form of circadian rhythm disturbances (sleep or parasomnias) or physiological changes due to substances (Mushoffa et al., 2016).

The results of the categorization of respondents showed that of the 1642 respondents, there were 836 non-smokers, 537 had moderate smoking disorders, and 269 had high smoking disorders. Individuals who have smoking disorders and insomnia do not have a relationship between the two. Siahaan & Malinti (2022), in their research, also showed that high levels of smoking had no relationship with height or insomnia. So it can be concluded that insomnia in early adulthood is lacking not because early adults are heavy smokers but because there are other factors that can influence it.

The second hypothesis in this study obtained the results that there was a significant relationship between depression and insomnia, which had a positive relationship. This is in line with research (Hatmanti & Muzdalifah, 2019; Nofus & Sutanta, 2018), which shows that there is a relationship between depression and insomnia. It can be interpreted as the result of more and more activities that individuals face in early adulthood. Causing the risk of experiencing stress and depression, which can affect sleep patterns to become irregular and reduce sleep quality, as well as cause symptoms of insomnia (Hapsari & Kurniawan, 2019).

Based on the results of the categorization of respondents, out of 1642 respondents, there were 299 who had a low level of depression, 1066 indicated a moderate level of depression, and 277 indicated a high level of depression. Oltmanns & Emery (2018) stated that depressive disorder is a form of episode of mood disorder (mood) where it is clear that individual behavior is more dominated by feelings of depression (depression). The higher the depression in an individual, the lower the SCN function, which causes high insomnia in that individual (Habsara, Ibrahim, Putranto, Suryandi, et al., 2021).

The hypothesis test obtained the result that there was a significant relationship between cognitive function variables and insomnia, which had a negative relationship. The results of this study are in line with research (Fachlefi & Rambe, 2021b; T. Wulandari & Trimawati, 2022b) that shows a negative relationship between cognitive function and insomnia. The results of the study also found that the incidence of insomnia in respondents was relatively high, reaching 69.2%, and as many as 50% of respondents also experienced decreased cognitive function (AA Wulandari et al., 2019). Clinical manifestations of insomnia include difficulty remembering, paying attention, or concentrating at school or at work (Habsara et al., 2021; Nevid et al., 2018). People with insomnia show

changes in thought patterns or cognitive distortions. People with insomnia may develop the belief that they are worthless and have difficulty concentrating, and this can exacerbate their insomnia symptoms.

According to the results of the categorization of respondents, of the 1642 respondents, there were 211 who had a low level of cognitive function, 1173 had a moderate level of cognitive function, and 258 had a high level of cognitive function. Kiely (2014) stated that cognitive function is a mental process involved in acquiring knowledge, memory, and reasoning. Clinical manifestations of insomnia include difficulty remembering, paying attention, or concentrating at school or at work (Habsara et al., 2021; Nevid et al., 2018). People with insomnia show changes in thought patterns or cognitive distortions. People with insomnia may develop the belief that they are worthless and have difficulty concentrating, and this can exacerbate their insomnia symptoms. The results showed that the incidence of insomnia in respondents was relatively high, reaching 69.2%, and as many as 50% of respondents also experienced decreased cognitive function (AA Wulandari et al., 2019).

In the fourth hypothesis test, it was found that there was a significant relationship between smoking disorders, depression, and cognitive function with insomnia. This shows that smoking, depression, and cognitive function disorders affect insomnia. Smoking disorders, depression, and cognitive dysfunction experienced by an individual can cause insomnia in him. Smoking disorders can stimulate medical conditions that are a factor in insomnia. Depression can interfere with the SCN process in regulating sleep cycles. The more people experience smoking disorders and depression, the more it will affect the quality of their sleep and cause insomnia. Cognitive function is one of the psychological factors and clinical manifestations of insomnia. People with insomnia may develop the belief that they are worthless and have difficulty concentrating, and this can exacerbate their insomnia symptoms. Furthermore, based on the coefficient of determination (R Square), the effect of smoking, depression, and cognitive functioning on insomnia is 16.15%,, where the three variables have different effective contributions. The depression variable has a greater effective contribution than the smoking disorder variable and cognitive function.

In the insomnia categorization test based on gender, it was obtained with a high categorization, showing 114 male respondents with a percentage of 12.3% and 101 female respondents with a percentage of 14.1%. This can be interpreted from the percentage level of the high insomnia category: women experience more insomnia than men. This is in line with research by Anggara and Annisa (2019), which shows that women are more prone to experiencing insomnia. Insomnia in women in this study was caused by a feeling of stress from carrying out college activities. This is in line with the results of the categorization of depression based on gender. The results of the depression assay category for women were higher than for men. Women have a high level of depression, with a percentage of 19.6%, while men have 14.8%.

In the insomnia categorization test, it was found that at the age of 18–34 years, the high category had 174 respondents with a percentage of 13.8%, and at the age of 35–40 years, there were 41 with a percentage of 10.8%. This can occur as a result of the increased activities that individuals face in early adulthood. Causing the risk of experiencing stress and depression, which can affect sleep patterns to become irregular and reduce sleep quality, as well as cause symptoms of insomnia (Hapsari & Kurniawan, 2019). This is consistent with the results of the categorization of depression, where the age group of 18–34 years has a higher percentage rate than the age group of 35–40 years. Ages 18–34 experienced depression in the high category of 17.7%,

while those aged 35–40 experienced 13.9%. These results are legitimized by research (Mushoffa et al., 2016), which shows that activities in early adulthood cause insomnia.

The implication of the results of this study is to improve education for young adults regarding smoking disorders, depression, and cognitive function. This research is considered capable of providing knowledge to early adult individuals who experience insomnia. This research is inseparable from limitations, where the research conducted only used a period less than 2014. Future studies are also expected to renew the research period.

In this section, the author's ability to elaborate on research results and position the research results in the realm of existing knowledge is the main determinant of paper quality. An indicator that can be used to see the quality of the paper in this section is the number of references from primary and recent sources in the form of leading international journals and indexed national journals used as references in discussing research results. The length of this section is 4-5 pages.

Conclusion

Based on the results of research on the relationship between smoking disorders, depression, and cognitive function with insomnia in early adulthood conducted by researchers, the following results were obtained: Smoking disorders have no significant relationship with insomnia in early adulthood. There is a positive and significant relationship between depression and insomnia. There is a negative and significant relationship between cognitive function variables and insomnia. Smoking disorders, depression, and cognitive function simultaneously or together with insomnia in early adulthood.

Suggestion

Based on the research that has been done, the researcher has several suggestions, both for the subject and for future researchers.

For research subjects in this study, there is a relationship between depression and insomnia, so it is necessary to pay attention to activities that trigger depression and avoid unhealthy lifestyles such as smoking, consuming alcohol, and consuming excessive amounts of caffeine that can affect sleep patterns. Especially for female subjects, who have a higher level of depression than men. Because women are more susceptible to depression due to hormonal changes during the menstrual cycle or during pregnancy.

The results of this study also found a negative relationship between cognitive function and insomnia. People who experience insomnia may develop the belief that they are worthless and have difficulty concentrating, and this can exacerbate their insomnia symptoms. Therefore, it is hoped that the subject will increase self-acceptance as well as self-development, especially in subjects aged 35–40 years, who have the lowest level of cognitive function compared to the age range of 18–34 years.

For Further Researchers In this study, we used 3 independent variables, which included smoking disorders, depression, and cognitive function, and 1 independent variable, namely insomnia. Researchers are only looking for the presence or absence of a relationship between smoking disorders, depression, and cognitive function with insomnia in early adulthood. Future researchers can analyze more deeply related factors such as obesity, caffeine consumption, drug consumption, medical conditions, and internet or gadget addiction. Researchers can also analyze more deeply, such as how much influence the two variables have had.

In the research conducted only

using IFLS data for 5 periods less than 2014, In future research, it is also expected to update the research period.

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