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Impact of Cigarette Access and Pocket Money on Adolescent Smoking in Rural and Urban Padang City

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Access to Cigarettes;
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ABSTRACT

Introduction: Referring to the results of the Indonesian Health Survey, it was reported that the largest group of smokers were adolescents aged 15-19 years (56.5%) in 2023. There was an increase in the percentage of novice smokers in Padang City in 2024 which reached 49%. So it is necessary to carry out appropriate handling. One of them is by conducting this study to determine the effect of cigarette access and pocket money on adolescent smoking behaviour in urban and rural areas.
Method: This quantitative study involved a comparative cross-sectional design conducted in Padang City. Involving adolescents aged 16-19 years in rural and urban areas of Padang City conducted accross April-June 2024. A total of 106 adolescents enrolled as samples and data were collected through filling out questionnaires. Ethical approval was obtained from the research ethics committee team of the Faculty of Public Health, Andalas University, and approval was given by issuing a permit letter.
Results: The primary outcome of the study suggest that ease of access to smoking has a strong influence in determining the difference of adolescent smoking behaviour in rural and urban areas Sig= 0.002 ($p<0.005$). Rural areas also produce more smokers than urban areas (67.9%) with a significant relationship to adolescent smoking behaviour ($p= 0.002$).
Conclusion: In conclusion, our study contributes to the prevention of adolescent smoking behavior that parents and communities can implement and suggests policies that can restrict it within the scope of the social environment. Future studies should address differences in adolescent smoking behavior based on the involvement of health workers. And using the mixed method so that the data produced can be more representative which ultimately advances knowledge in the field of international health.

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INTRODUCTION

Smoking behavior is one of many health risk behaviors that can cause various diseases to death (1). It has been found that 90% of people with lung cancer are caused by smoking, chronic obstructive pulmonary disease (PPOK) and even heart attacks, more than 25% are caused by the same (2). Based on the World Health Organization (WHO) report in 2020, Indonesia is currently ranked 3rd with the highest number of smokers in the world. The impact is that there are around 225,700 people in Indonesia who suffer from tobacco-related diseases or even die every year (3). The 2023 Indonesian Health Survey data also showed that the largest group of smokers were adolescents aged 15-19 years (56.5%) (4). In addition, the percentage of smoking in the population aged ≥15 years continues to increase from 28.26% in 2012 then increased to 28.69% in 2023 (5). Not much different from Padang City, which currently has a percentage of novice smokers aged 15-19 years reaching 49% (6). This indicates that the smoking rate is still high among adolescents. Moreover, the dependence effect produced by nicotine can threaten adolescents because it causes insomnia, excessive anxiety, restlessness and difficulty concentrating in adolescents (7). This will certainly have an impact on the future of adolescents. Therefore, efforts to prevent smoking behaviour are needed to reduce the number of smokers from increasing.

The challenges in reducing the number of adolescent smokers are many, one of which is the social environment factor in the ease of getting cigarettes. This is related to the increase in shopping locations and online purchasing systems. In rural areas, the presence of minimarkets, supermarkets and even e-commerce will make it easier to get cigarettes. In a study by Jensen, Jl et al (2022) in the United States, it was found that 71.3% of respondents had purchased cigarettes online, both in the form of conventional cigarettes and e-cigarettes for reasons of cheaper, discounts, bulk purchases, and avoiding taxes (8). Not to forget rural areas, also have small stalls in the neighbourhood that offer cigarettes for free, which will make it easier for adolescents to buy cigarettes without any restrictions.

Ease of access to cigarettes is supported by adequate pocket money (9). The pocket money that adolescents receive every day is one of the supporting facilities to get cigarettes if not managed properly. Adolescents with high pocket money are considered to have more opportunities to access cigarettes, coupled with the current retail system that will make it easier for adolescents to smoke. Research in Gambia and Ghana shows a link between the affordability of cigarettes and the high number of adolescent smokers. It is said that increasing the price of cigarettes by just 1% can effectively prevent children from trying cigarettes (10,11).

It is predicted that urban areas give adolescents greater access to smoking due to the ubiquity of cigarette diluents and the high pocket money given by parents. However, this is not always a determinant, because different findings were found in a study by Nguyen et all (2023) that those who spent the most money to buy cigarettes were not those with high incomes, but people who had low incomes (12). Combined with data collected from BPS, it was found that there was an increasing trend in the number of smokers aged ≤ 18 in rural areas in 2021 from 4.15% to 4.34% in 2023 (13). The habits of rural adolescents who spend more time hanging out with friends with smoking activities as a symbol of their association. Plus in rural areas, there is a no smoking policy in public places, so there are differences between urban and rural areas in the level of access to cigarettes. Therefore, it is necessary to investigate how the social environment such as easy access to cigarettes affects adolescent smoking behaviour in urban and rural areas. In this case, parents, society, policies and culture that apply in each region will play an important role in determining adolescent behaviour, so this study will focus on prevention efforts that can be done by people around adolescents. Therefore, it can be concluded that the study aims to determine the differences in ease of access to cigarettes and pocket money in influencing smoking behaviour in adolescents in urban and rural areas. Hopefully, this research can be used as literature to determine the most effective strategies to overcome smoking behaviour in adolescents.

METHOD

Research Type

This study used a quantitative approach with a cross-sectional comparative design. Sampling was involving 106 adolescents in Padang City. Data were collected directly from April to June 2024.

Population and Sample/Informants

The study population included adolescents aged 16–19 years living in Padang City, West Sumatra, Indonesia. The sampling technique used was a simple random sampling method. From a total population of 24.727 adolescents, using the Lemeshow one proportion, the results of the sample calculation used in this study were 106 adolescents. The sample was selected based on inclusion and exclusion criteria. The inclusion criteria are active students of grades X and XI at SMAN 4 Padang and SMAN 14 Padang who are present during the research and willing to be research respondents by signing the informed consent. However, they would be excluded if they participated in activities that could not be disturbed during data collection (including exams, competitions, etc.). The adolescents involved in this study were representatives from two high schools in urban and rural areas with the highest smoking rates, as determined by health screening results from the local health center. SMAN 4 is located in Lubuk Begalung, an urban area; SMAN 14 in Lubuk Kilangan represents a rural area.

Research Location

This research was conducted in urban and rural areas in Padang City.

Instrumentation or Tools

This study used a questionnaire that had been tested for validity and reliability with 30 selected adolescent before, so that the instrument is suitable for use to see the difference in ease of access to cigarettes. Validity test using Pearson product moment with r count > 0.374. As well as the reliability test using Cronbach's alpha with a value of > 0.6. The questionnaire proof to be valid and reliable. It consists of several questions that interpret the variables to be asked. The independent variables in this study are ease of access to cigarettes and pocket money. The dependent variable is adolescent smoking behavior.

Data Collection Procedure

Data collection was conducted from April to June 2024 in two high schools in urban and rural areas in Padang City. Respondents were given a consent form and instructions on how to complete the questionnaire.

Data Analysis

Data were analysed in several stages through SPSS. Among them were univariate analysis to examine the frequency distribution, bivariate analysis through chi-square to see the relationship between variables, to see the differences in the two groups, the Mann-Whitney test was performed.

Ethical Approval

This study was approved by the Research Ethics Committee of the Faculty of Public Health, Andalas University (B/74/UN16.12.D/PT.01.00/2024). All participants, the parents or guardians of those under the age of 18, provided informed consent before participating in this study. Confidentiality of all participants was strictly maintained throughout the research process.

RESULTS

The results showed that in urban areas, there were more teenagers aged 16 years (47.2%) while in the majority areas, they were 17 years old (49.1%). More than half of teenagers in urban areas were female (56.6%) compared to rural areas where most were male (71.7%). In the direction of parental education, both regions have the same number of highly educated fathers. However, in terms of mother's education, urban areas have more higher education than urban areas (90.6%). The occupation of parents can be divided into government and private sectors, and it is found that in both regions, both fathers and mothers are predominantly working as non-civil servants. The income of parents has a slight difference, more urban areas are in the income of 1.8 mio -3 mio (37.7%), while urban areas almost half have an income of less than 1.8 MIO (45.3%). As for the family smoking, urban areas have a slightly higher proportion of fathers and siblings who smoke (58.5%) compared to urban areas (50.9%). The data is presented in the following table:

Table 1. The characteristics of social demography of adolescents

Respondents' Characteristics	Urban		Rural	
	Frequency *(f)*	Percentage (%)	Frequency *(f)*	Percentage (%)
Age				
15	6	11.3	2	3.8
16	25	47.2	24	45.3
17	19	35.8	26	49.1
18	3	5.7	1	1.9
Gender				
Male	23	43.4	38	71.7
Female	30	56.6	15	28.3
Father's Education				
Lower	12	22,6	11	20,8
Height	41	77,4	42	79,2
Mother's Education				
Lower	5	9,4	14	26,4
Height	48	90,6	39	73,6
Father's Occupation				
Non-Civil Servants	51	96,2	51	96,2
Civil Servants	2	3,8	2	3,8
Mother's Occupation				
Non-Civil Servants	49	92,5	50	94,3
Civil Servants	4	7,5	3	5,7
Parent's Income				
Rp. < 1.800.000	15	28,3	24	45,3
Rp. 1.800.00 3.000.000	20	37,7	12	22,6
Rp. 3.000.000-4.800.000	6	11,3	10	18,9
Rp. ≥ 4.800.000	12	22,6	7	13,2
Family Smoking				
Father's	7	13,2	9	17,0
Father and siblings	27	50,9	31	58,5
None	19	35,8	13	24,5

Meanwhile, in the test of the relationship between variables, it was found that there was a relationship between ease of access to cigarettes and the smoking behavior of adolescents in rural areas with a value (p-value = 0.002) which is presented in the following table:

Table 2. The Relationship Between Variables on Smoking Behavior in Adolescents in Urban and Rural Areas of Padang City in 2024

Variable	Smoking Behavior						POR 95% Cl	*P*-Value
	Smoking		No smoking		Total			
	f	%	*f*	%	*f*	%		
Urban								
Access To Cigarettes								
Easy	23	4.8	19	45.2	42	100	3,012 (0.835-10.869)	0.068
Difficult	2	18.2	9	81.1	11	100		
Pocket Money								
High	15	50	15	50	30	100	1,150	0.846
Low	10	43.5	13	56.5	23	100		

							(0.436-2.069)	
Rural								
Access To Cigarettes								
Easy	24	88.9	3	11.1	7	100	1,926	0.002
Difficult	12	46.2	14	53.8	26	100	(1,245-2,979)	
Pocket Money								
High	16	64	9	36	25	100	0.896	0.777
Low	20	71.5	8	28.6	28	100	(0.615-1.305)	

From the results of the test of differences between regions, it is known that ease of access to cigarettes has a difference in the smoking behavior of adolescents in Padang City with Sig = 0.002 (<0.05).

Table 3. Relationship Test That Has A Difference

Variable	Nilai *Mean Rank*		*Asym. Sig* (2 Tailed)	Result
	A (urban)	B (rural)		
Access to Cigarettes	46,00	61,00	0,002	There is a difference
Pocket Money	51,00	56,00	0,333	No Difference

DISCUSSION

Interpretation of Key Findings

Based on the results of the study, it was found that adolescent smoking behavior was more carried out by adolescents who were in rural areas than urban areas. This is similar to the findings of Sooyong and Selya (2023) who found that 2018 reached the highest point of the difference in the prevalence of active smokers which reached 13.5% (urban 20.9% and rural 34.4%) (14). In addition to differences in residence that make it easier for adolescents to smoke, there is another factor, namely the ease of accessing cigarettes (15). Ease of access to cigarettes is defined as the availability of a place to get cigarettes around the neighbourhood or home. In urban areas, there was no relationship between ease of access to cigarettes and adolescent smoking behavior, while in rural areas there was a relationship. However, different things were found in the research of Putri and Retno (2020) which stated that there was no relationship between easy access to cigarettes and adolescent smoking behavior (16). According to Lawrence Green's behavioral theory, the factor of easy access to cigarettes is included in the category of enabling factors that contribute to the formation of adolescent smoking behavior. Easy access to cigarettes is related to the number of traders who sell cigarettes to teenagers for their profit (17). Research by Muslim et al (2022) says the factor of easy access to cigarettes is the strongest factor influencing smoking behavior with a 4,071 risk of smoking (18).

The existence of a retail cigarette purchase system (per stick) without age restrictions allows adolescents to access cigarettes more easily. The Global Youth Tobacco Survey in 2020 found that as many as 76.6% of adolescents were free to buy cigarettes at stalls without refusal from the seller (19). The low price of cigarettes in Indonesia and the implementation of the retail system make it easier for adolescents to get them (20). Adolescent smoking behaviour is not influenced by the amount of pocket money received. The results of the study found no relationship between pocket money and adolescent smoking behaviour. Coupled with the relatively affordable price of cigarettes, with an average of IDR 2,000.00 per stick, as a result adolescents can easily access cigarettes. According to Nurhasana et al (2020), 74% of Indonesian smokers would be reduced if the price of cigarettes was IDR. 70,000 (21). However, adolescents with pocket money > Rp. 5000 alone can support adolescents to buy cigarettes even if only a few cigarettes (22). Not only that, according to Sun, J. et al (2022) adolescents get cigarettes from several accesses, including from peers, buying cigarettes per stick from traders, and commercial traders sponsoring an event (23). . Research in six countries in Southeast Asia found that the prevalence of adolescent smoking was higher among middle and lower economic communities (24).

Parents in rural areas are more likely to have low income, where with this fact, cigarettes should not be a priority in the use of pocket money. This is also corroborated by Yuniyanti et al (2022) that the characteristics of rural areas that have lower income and education make people easier to lead their opinions to be used as conventional cigarette marketing targets by the cigarette industry (25). By providing pocket money according to the needs of adolescents will limit this behaviour. Unfortunately, sometimes the amount of income and cigarette consumption is inversely proportional, the lower a person's income, the higher the intensity of cigarette purchases. Research by Hendra and Zamzami (2017) found that income expenditure on cigarettes in households in West Sumatra is very large compared to education and health, where education, region and social factors greatly influence it (26). So that a lot and a little money a person has, there will still be cigarette consumption if it is not limited. Therefore, parents play a very important role in directing adolescents to get used to saving money, and monitoring the use of pocket money in adolescents to prevent risky behaviour, including smoking behavior (27).

Cigarette supply facilities are also a concern. As described in Wang et al (2017) and Gwon et al (2017) for an effective way to suppress adolescent smoking behaviour in China, America, and Canada, is to enforce policies that prohibit the sale of cigarettes in sticks (28,29). Indonesia already has regulations regarding cigarette sanctions in government regulation Number 109 of 2012 which has established sanctions for cigarette transactions in children under the age of 18 years (30). However, this is still considered trivial, so the awareness and sensitivity of the community, especially traders who sell cigarettes, needs to be increased in order to participate in limiting access to cigarettes to adolescents.

Ease of access to cigarettes has a difference between urban and rural areas. In urban areas, access to cigarettes is easily available but not many adolescents have smoking behaviour. This is inversely proportional to conditions in rural areas where access to cigarettes is not as easy as in urban areas but more adolescents are found smoking. This difference is caused by family parenting and friendship styles in the peer environment in rural areas which are the reasons for the ease of adolescents getting cigarettes. Environmental factors are the most influential factors on adolescent smoking behavior (31).

Social and cultural norms that exist in rural areas also influence the high smoking behaviour of adolescents. Riyadi (2020) states the culture in the community where people live has a significant influence on adolescent smoking behavior (32). This is because, in a rural environment, the measure of maturity of an adolescent is if they have started smoking. Adolescents often face social pressure from peers, where smoking is considered a way to show solidarity or similarity with the group, as well as to increase self-confidence (33). According to Windahsari et al (2017), adolescents believe that smoking can increasing self-confidence and make them feel more masculine (34). Therefore, smoking is considered as something natural in a friendly environment. Event research on adolescents in Bantul district makes smoking a daily friend of adolescents (25).

This culture is reinforced by the role of adult figures, such as parents or community leaders who openly smoke, thus setting an example that reinforces the notion that smoking is normal and accepted. The influence of family members who smoke in the home will further exacerbate the likelihood of smoking. In rural areas this is more common due to the inherent cultural influence of men who are used to smoking. Fathers and siblings who smoke in the house indicate that smoking behaviour is natural to do, so adolescents will tend to follow this behaviour. According to Bandura in Hidayati (2024), human behaviour will be shaped by the experiences of others. When the surrounding environment smokes, adolescents will have the view that smoking is allowed, to the point that smoking is an accepted tradition in society (35). In environments with limited access to entertainment and activities, smoking is also perceived as a form of expression of freedom or social status. A study in China found smoking to be inseparable from the lives of rural people due to the unavailability of entertainment facilities in the countryside. So, gathering over tea and smoking is a common sight for men in China (36).

Lack of supervision of adolescents is one of the reasons for easy access to cigarettes in rural areas (37). There is a need for the government to monitor the sale and purchase of cigarettes by optimally implementing regulations, enforcing the purchase of cigarettes with conditions such as showing an identity card and not being sold to adolescents under 18 years old (38,39). Another thing that can also be done is to form a positive environment for adolescents (35). Rural adolescents are very dependent on friendship activities, so if someone in the friendship becomes an example within the school or area and is rewarded, it is expected that it will encourage other adolescents not to smoke and become an example in their friendship. Forming anti-smoking ambassadors in the school environment can help

encourage other adolescents not to smoke. Restrictions on cigarette advertising media should also be implemented, such as in Law No. 32 of 2002 which limits the broadcast of cigarette advertisements in electronic media from 9.30 pm to 5.00 am. Conducting community or school-based anti-smoking campaigns can also be done with the help of media posters, anti-smoking advertisements, and inserting messages on the long-term risks of smoking, which are expected to reduce smoking behaviour in adolescents. Adolescents need to develop the ability to defuse offers to smoke and provide other more useful skills that can make adolescents confidently refuse to smoke.

Comparison with Previous Research

The results of this study are the same as the findings of Fransiska and Firdaus (2019), who found that easy access to cigarettes affects adolescent smoking behavior (40). However, these findings contradict Putri and Retno (2020), who found that there was no relationship between ease of access to cigarettes and adolescent behavior (16). The difference may be due to adolescents' knowledge, and the availability of facilities and infrastructure that enable them to easily access cigarettes. This discrepancy highlights that living environments are the complexity of this issue and the need for further research to reconcile the conflicting evidence.

Limitations and Cautions

Although this study makes a significant contribution to understanding adolescent smoking behavior resulting from easy access to cigarettes, several limitations must be acknowledged. First, the cross-sectional design limits our ability to establish causality, which is consistent with limitations identified in previous studies. Second, this study relies on self-reported data from participants which may introduce bias because it was not explored in depth through interviews, as mentioned in the study previously. Then the number of respondents who became research samples, possibly less able to represent the entire research population because of the small number of them. Last, the geographic focus of the study at Padang City, Indonesia, may limit the generalizability of the findings to other regions with different cultural and technological landscapes. Future research should use mixed-method designs and larger, more diverse samples to address these limitations and provide deeper insights.

Recommendations for Future Research

Future research is expected to use a mixed-method research design by combining both qualitative and quantitative approaches to produce more representative data. Such as exploring more in detail the answers of respondents by conducting interviews and focus group discussions. Sample selection in the population in the study was evenly distributed in urban and rural areas, so that the data could be more representative. Additionally, exploring the factors that influence the involvement of health workers and government support in implementing smoke-free areas could provide deeper insights into preventing smoking behavior. Expanding research to include diverse cultural and demographic contexts will also contribute to the development of interventions that are more globally applicable.

CONCLUSION

This study examined the differences in adolescent smoking behavior based on the ease of accessing cigarettes and aimed to determine how cigarette access and pocket money influence smoking behavior in rural and urban areas of Padang City. The findings revealed that cigarette access had a different impact on smoking behavior in urban and rural areas, with smoking behavior being more prevalent in rural areas. These results emphasize that the environment of friends, parents, and society will determine adolescent smoking behavior because adolescents tend to imitate the behavior of their environment, so it is recommended for parents and society to be more assertive in educating adolescents behavior to avoid smoking behavior by suggesting participating in more useful activities and limiting the purchase of cigarettes freely for adolescents under 18 years. Although this study provides valuable insights into the differences in adolescent smoking behavior in urban and rural areas, several limitations need to be considered, such as involving broader environmental factors and the involvement of health workers. Future research should focus on preventing smoking behavior by involving government involvement in implementing smoke-free areas evenly in rural areas, which has the potential to increase our understanding of the effects of smoke-free areas and inform broader smoke-free area policies.

AUTHOR'S CONTRIBUTION STATEMENT

The authors jointly designed and analyzed the study based on ideas developed collectively. The lead researcher provided guidance in the research process and manuscript writing. Other team members contributed to data analysis, representation, and manuscript writing. All authors participated in reviewing and approving the final manuscript to ensure the study's suitability to adolescent smoking behavior.

CONFLICTS OF INTEREST

The authors declare that there are no conflicts of interest.

DECLARATION OF GENERATIVE AI AND AI-ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

The authors declare that AI-assisted technology, specifically Grammarly, was used solely to enhance grammar, spelling, and language clarity. No AI tools were used to generate content, analyze data, or draw conclusions. All scientific contributions are the author's original work.

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