How to Cite:
Herawati, L., Latif, N. H., Sudaryanto, S., Ganefati, S. P., & Rubaya, A. K. (2022). Tobacco presence on the children's playgrounds during COVID-19 pandemic. *International Journal of Health Sciences*, *6*(S8), 5754–5763. https://doi.org/10.53730/ijhs.v6nS8.13586

Tobacco presence on the children's playgrounds during COVID-19 pandemic

Lucky Herawati
Poltekkes Kemenkes Yogyakarta, Jln. Tatabumi 3 Banyuraden Gamping Sleman
Corresponding author email: Lucky08081953@gmail.com

Nur Hidayat Latif
Poltekkes Kemenkes Yogyakarta, Jln. Tatabumi 3 Banyuraden Gamping Sleman

Sigid Sudaryanto
Poltekkes Kemenkes Yogyakarta, Jln. Tatabumi 3 Banyuraden Gamping Sleman

Sri Pudji Ganefati
Poltekkes Kemenkes Yogyakarta, Jln. Tatabumi 3 Banyuraden Gamping Sleman

Agus Karmayana Rubaya
Poltekkes Kemenkes Yogyakarta, Jln. Tatabumi 3 Banyuraden Gamping Sleman

***Abstract*---**The goals of the smoke-free area policy is to protect children's playground visitors from the bad effects of smoking behavior, either directly or indirectly. However, until now information has not been obtained on the level of exposure to cigarette smoke and the factors that influence it in the children's play area in Sleman Regency after 9 years of the policy. Descriptive research was conducted in April 2021 in 21 observation areas to meet the information needs. There were 4 variables and 13 indicators that were measured, using the method of direct observation in the field and interviews with park managers. The data obtained were analyzed descriptively and Spearman rank correlation analysis with a significant level of 0.05 and discussed using the Precede-Proceed Model. The results show that the level of exposure to cigarette smoke in the children's play area in Sleman Regency is high. There are no facilities in the children's playground area that allow visitors to smoke. Control efforts carried out by the manager on the smoking behavior of visitors are classified as weak. There is a correlation between the weak control efforts and the high level of exposure to cigarette smoke in the playground area (Coefficient of Contingency 0.568, p value <0.05). The conclusion is that exposure to cigarette smoke in the children's play area is high and the effort to control the smoking behavior of visitors is low. It is necessary to increase efforts

to control the smoking behavior of visitors so that visitors are avoided from the bad consequences of smoking behavior, especially in children.

Keywords---cigarette smoke, children's playground, COVID-19 pandemic.

Introduction

A healthy environment is an environment that is free from elements that cause health problems, including polluted air. A healthy environment includes, among others, recreational areas, as well as public places and facilities (1). Cigarette smoke that is burned and inhaled and then released by active smokers contributes to air pollution. Cigarette smoke contains more than 4,000 chemicals. More than 50 of them cause cancer. Due to the use of tobacco products, it not only affects the death of smokers but also has an impact on non-smokers (second hand smokers). The number of deaths from tobacco use in smokers is more than 8 million and in non-smokers more than 1.2 million annually (2).

The Regional Government of Sleman Regency has outlined the Non-Smoking Area Policy in the Regent's regulation number 42 of 2012 (3) which is a derivative of the Joint Regulation of the Minister of Health and the Minister of Home Affairs Number 188/Menkes/Pb/I/2011 Number 7 of 2011 concerning Guidelines for the Implementation of Non-Smoking Areas (4). Non-Smoking Area is an area that is declared prohibited for smoking or producing, selling, advertising, and/or promoting tobacco products. The purpose of Non-smoking area is to provide effective protection for the community from the dangers of cigarette smoke and to provide a clean and healthy environment. In other words, the purpose of Non-smoking area is to protect the public from the harmful effects of smoking, either directly or indirectly. This policy has been implemented since 2019 in various public facilities including children's play areas.

Until now there is no information on the level of exposure to cigarette smoke and the factors that influence it in the children's play area in Sleman Regency. This descriptive research was conducted to provide information about it. There are several studies on the implementation of a smoke-free policy in public places, including at the train station (5) (6) and at the playground (7). However, these studies were carried out by direct measurement of dust particles in the air around the research site. Such research requires a fairly rigorous laboratory examination. Until now there have not been many studies of exposure to cigarette smoke in children's playgrounds that measure quickly and simply. This descriptive research was conducted to answer the problems in Sleman Regency and to complement the existing similar research. The assumption developed in this study is that the level of exposure to cigarette smoke in the children's playground area is low because the No-Smoking area policy has been implemented for 9 years. In addition, there is a relationship between the level of exposure to cigarette smoke and several other factors.

Method

This descriptive survey research was carried out in 8 children's playground areas in Sleman Regency, Yogyakarta Special Region on April 5-20, 2020. The 8 playground areas do not charge an entrance fee for visitors. Operational funds come from the local government. There are 4 variables with 13 indicators measured in the 21 observation areas (Table 1). The four variables are indications of exposure to cigarette smoke, facilitation of visitor smoking behavior, efforts to control visitors who smoke, and cooperation with cigarette manufacturing companies.

Variable indication of exposure to cigarette smoke was measured using 4 indicators, namely the presence of individuals who smoke, the presence of cigarette butts, the presence of cigarette ash, and the presence of cigarette packs. The data scale is nominal and a score is given. If an indication is found, it is given a value of 1 and if there is no indication it is given a value of 2. The total minimum and maximum values are 4 and 8. The values obtained are grouped into 2 categories, namely the high exposure category (scores 4-5) and the low exposure category (scores 6-8).

The facilitation variable for visitor smoking behavior was measured using 4 indicators, namely the activity of making cigarettes around the playground, cigarette advertisements, without the "Smokeless Area" sign, without a special place for smoking. The data scale is nominal and a score is given. If there is an indication it is given a value of 1 and if there is no indication it is given a value of 2. The total minimum and maximum values are 4 and 8. The values obtained are grouped into 2 categories, namely the high category (scores 4-5) and the low category (scores 6-8).

The variable of efforts to control visitors who smoke is measured using 4 indicators, namely the presence of special officers monitoring the implementation of the smoke-free area program, verbal warning by officers if there are violators of the smoke-free area program in the park area, monitoring the implementation of the smoke-free area program every day, and evaluation periodically. The data scale is nominal and a score is given. If there is an indication it is given a value of 2 and if there is no indication it is given a value of 1. The total minimum and maximum values are 4 and 8. The values obtained are grouped into 2 categories, namely the low control category (scores 4-5) and the high control category (scores 6- 8).

The variable of cooperation with cigarette manufacturing companies is measured using 1 indicator, namely the existence of cooperation with cigarette manufacturing companies. The data scale is nominal and a score is given. If there is no cooperation, it is given a value of 1 and if there is cooperation, it is given a value of 2.

Result

Characteristics of the Playground Area

An overview of the children's playground area which includes the area, number of playing facilities, number of visitors per day during the Pandemic and sources of development funds can be seen in Table 1 below.

Table 1. Characteristics of the Playground Area in April 2021

Playground area codes	Observation area	area (M^2)	number of playing facilities	number of visitors per day	Start operating
KD	3	20.000	23	20	2020
CB	3	30.000	14	10	2019
SR	3	30.000	20	20	2018
S	2	200	15	8	2019
D	3	30.000	43	20	2005
ES	3	20.000	12	25	2020
BN	3	45.000	13	20	2017
P	2	200	13	12	2015
Total	21				
Average visitors per day				16	

There are 3 areas that have the largest area, namely CB, SR. Play area D has the most playing facilities. The average visitor during the Covid-19 pandemic was 16 people/day.

Variable exposure to cigarette smoke and other variables

Exposure to cigarette smoke in 19 observation areas (90.5%) obtained a score of 4-5 or high category. This is indicated by the indicators found that visitors smoked in almost all observation areas (90.5%), cigarette butts were found in all observation areas (100%), cigarette ash was found in almost all observation areas (90.5%), and found packs of cigarettes in most of the observation areas (81%). Facilitation for visitors who smoke in 19 observation areas (90.5%) obtained a score of 6-8 or low category. This is indicated by the indicator of the absence of cigarette-making activities in almost all observation areas (90.5%), no advertising/promotion of cigarettes in all observation areas (100%), no special places for smokers in all observation areas (100%), and there is no "Smokeless Area" warning sign in all observation areas (100%).

Control efforts for visitors who smoke in 15 observation areas (71.4%) get a score of 4-5 or low category. This is indicated by the indicator that there are no special officers implementing the smoke-free area program in most of the observation areas (61.7%), no warnings for visitors who smoke in all observation areas (100%), no monitoring of the implementation of the smoke-free area program every day in all observation areas (100%), and there is no periodic evaluation of the implementation of the smoke-free area program in all observation areas (100%).

Cooperation with tobacco companies is intended to determine whether there is an agreement between the two parties to agree not to install banners promoting products and other activities in the playground area funded by the tobacco company. The results showed that all the playground areas had cooperation with cigarette companies (100%). More details can be seen in Table 2.

Table 2. Variable exposure to cigarette smoke and other variables

Variabel		Frequancy	%
Exposure to cigarette smoke in the children's play area			
	High (score 4-5)	19	90.5
	Low (score 6-8)	2	9.5
	Number of observation areas	21	100
Fasilitation for visitor who smoke			
	High (score 4-5)	2	9.5
	Low (score 6-8)	19	90.5
	Number of observation areas	21	100
Control for visitor who smoke			
	High (score 6-8)	6	28.6
	Low (score 4-5)	15	71.4
	Number of observation areas	21	100
Cooperation between managers and cigarette companies			
	Yes	21	100
	No	0	0
	Number of observation areas	21	100

Correlation between variables

There is an assumption that there is a correlation between level of facilitation for visitors who smoke and indications of exposure to cigarettes. The results indicate that there is no correlation between level of facilitation for visitors who smoke in the play area and indications of cigarette exposure (pv>0.05). There is an assumption that there is a correlation between level of efforts to control visitors' smoking behavior with indicators of the presence of cigarette packs found in the playground area. The results show that there is a significant correlation between the two (p value 0.018) (Table 3).

Table 3. Correlation between the level of facilitation of visitors' smoking behavior and the level of control of visitors who smoke with the indicators of exposure to cigarettes in the children's playground area

Variabel/ indicator	The presence of visitor who smoke		The presence of cigarette butts		The presence of cigarette ash		The presence of cigarette pack	
	Coef Cont	P value[b]	Coef Cont	P value[b]	Coef Cont	P value[b]	Coef Cont	P value[b]
Facilitation for the visitor who smoke	0.105	0.630	.[a]	.[a]	0.105	0.630	0.155	0.471

Effort to control visitor who smoke	0.247	0.715	.[a]	.[a]	0.214	0.800	0.568	**0.018***

.[a] = cannot be counted because of the constant presence of cigarette butts
.[b]= Chi-square;; *= Significant

It is assumed that there is a correlation between the presence of visitors who smoke and the presence of ash and cigarette packs. The results showed that there was a significant correlation between the presence of visitors who smoked and the presence of ash and cigarette packs (p values 0.040 and 0.002). In other words, cigarette ash and cigarette packs found in the play area came from visitors who smoked, although around the children's play area there was no cigarette maker/seller activity (Table 4).

Table 4. The correlation between the presence of visitors who smoke and the presence of cigarette butts, ash and cigarette packs

Indicator	The presence of cigarette butts		The presence of cigarette ash		The presence of cigarette pack	
	Coef Cont	P value[b]	Coef Cont	P value[b]	Coef Cont	P value[b]
Visitors who smoke	.[a]	.[a]	0.408	0.040*	0.556	0.002*

[a] = cannot be counted because of the constant presence of cigarette butts
.[b]= Chi-square;; *= Significant

Discussion

Precede-Proceed Model (Figure 1)

Indications of exposure to cigarette smoke in 19 observation areas (90.5%) are in the high category. Exposure to cigarette smoke is an indication of unhealthy behavior from visitors. These behavioral problems can be determined by various factors (8)(9).

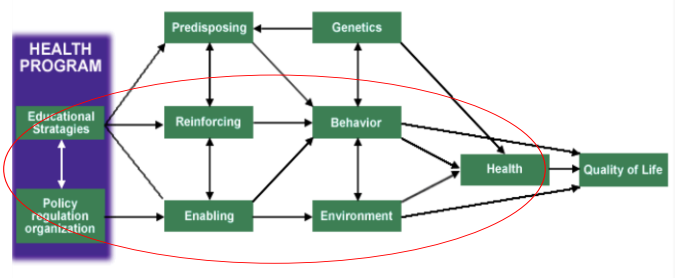

FIGURE 1. GENERIC REPRESENTATION OF THE PRECEDE-PROCEED MODEL. FROM L. GREEN AND M. KREUTER. (2005). HEALTH PROMOTION PLANNING: AN EDUCATIONAL AND ECOLOGICAL APPROACH (4

The first factor is predisposing factors. Included in the predisposing factors are knowledge, attitudes, perceptions, and values related to the impact of smoking on health. In this study, predisposing factors were not investigated. However, it can

be assumed that visitors to the playground area are people from the economic class and lower education level. They take advantage of the playground facilities as an open area because there is no entry fee for visitors (10).

The second factor is the enabling factor for smoking behavior problems. In this study found contradictory conditions. On the one hand, the area does not provide facilities for visitors to smoke. This is indicated by the absence of a special place for smokers, no cigarette-making activities around the park, no cigarette product promotion boards, but found visitors who smoke in almost all observation areas. The assumption raised is that visitors who smoke get cigarettes from outside the play area.

The third factor is reinforcing factors. Officers do not prohibit visitors who smoke and do not supervise visitors who smoke. This condition encourages visitors to smoke. It is proven that there are correlations between the lack of control carried out by the manager and the discovery of cigarette ash and cigarette packs in the play area.

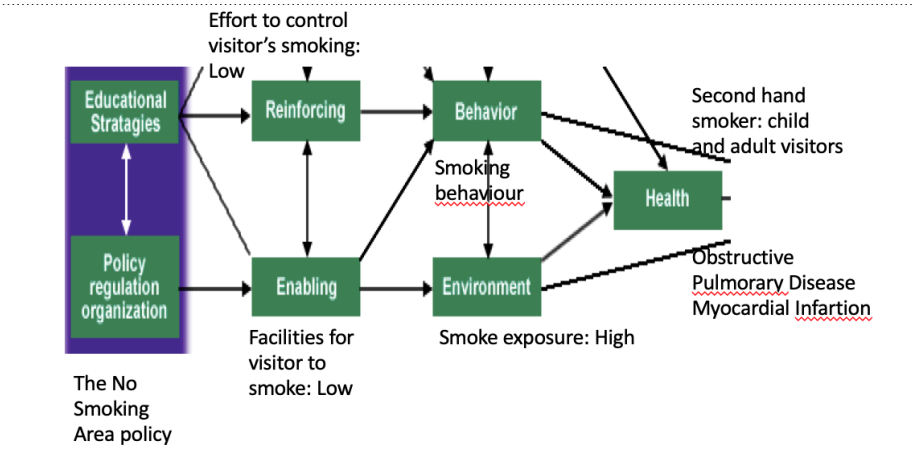

Figure 2
Conceptual framework: Application of the Precede-Proceed model on Indications of exposure to cigarettes in children's play areas (LW Green, 2006).

The smoke-free area policy has been implemented by the Sleman Regency Government, Yogyakarta Special Region for 9 years. The policy is a local government program that aims to prevent non-smoking children and parents from being exposed to secondhand smoke (11), avoiding the risk of smoking (12), reducing the risk for Cardiovascular disease, including acute myocardial infarction (13)(14)(15)(16). However, research shows that efforts to implement these policies in children's play areas have not been optimal. This is indicated by the control efforts by officers on visitors who smoke are classified as low. There are no special officers who oversee the implementation of the No-Smoking Zone, the existing officers do not reprimand visitors who smoke, and there is no periodic evaluation of the no-smoking area. The difference between the expected results and the reality on the ground reflects inconsistencies in the emphasis on smoke-free zone policies (11).

Some of the obstacles in implementing this kind of Regional Regulation is the lack of emphasis on its implementation in the field. The results of a study in Geneva, Switzerland, after the government imposed a smoking ban in the community showed a decrease in the number of patients with respiratory disorders (17).

Second Hand Smoker (Figure 2)

The children's playground is an open place, moreover visitors are not charged an entrance fee. This condition has the potential for the presence of visitors whose education and socio-economic levels are relatively low. An exposure to cigarette smoke in the playground will have an impact on children and their parents in the second hand smoker position (10). Dust or cigarette ash found in the area will stay in the air for several hours even though some are dissolved in the air quickly. It depends on wind conditions and the number of smokers. This condition has the potential to cause Second Hand Smoker in children.

Adult second hand smoker has 1.41 times risk of getting lung cancer, 1.44 times of getting Tuberculosis, and 1.44 -1.72 times to get Obstructive Pulmonary Disease Myocardial Infaction compared to non-exposure, namely adult non-smoker. This risk will be higher if second hand smoker occurs at the age of children (11)(18). Second hand smoke at an early age increases the risk of sudden death in infants (sudden death infant death syndrome), middle ear infections, difficulty breathing, and asthma exerbations (19)(20).

The strength of this research is the implementation of the Proceed-Proceed Model from LW Green in cases of indications of exposure to cigarette smoke in the children's play area. The weakness of this study is that exposure to cigarette smoke is measured through direct observations in the field and interviews with the manager of the play area.

Acknowledgement

Thank you to the Director of Health Polytechnic, Yogyakarta Ministry of Health who has given researchers the opportunity to conduct research.

Conclusion

The level of exposure to cigarette smoke in the children's playground area in Sleman Regency, Yogyakarta Special Region is relatively high. This condition has the potential for second hand smoke to occur in visitors, especially children and parents who do not smoke. The low management effort to control the smoking behavior of visitors has a significant relationship with the high exposure to cigarette smoke in the children's play area. The regional government needs to put emphasis on implementing the smoke-free zone policy. In addition, the manager of the children's play area needs to improve control of visitors who smoke.

References

1. Bramantya Akbar, E., Purnaweni, H. and Rengga A. Implementasi Program Kawasan Tanpa Rokok di Stasiun Poncol Kota Semarang. J Public Policy

Manag Rev. 2016;
2. BUPATI SLEMAN. PERATURAN BUPATI SLEMAN NOMOR 42 TAHUN 20122010 TENTANG KAWASAN TANPA ROKOK. Sleman, Daerah Istimewa Yogyakarta, Indonesia; 2012.
3. Christine M Porter. Revisiting Precede–Proceed: A leading model for ecological and ethical health promotion. Health Educ J. 2015;1(12).
4. Department of Health and Human Services. The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General. Atlanta,GAUS Dep Heal Hum Serv Centers Dis Control Prev Coord Cent Heal Promot Natl Cent Chronic Dis Prev Heal Promot Off Smok Heal. 2006;
5. Dwi Putro, Kartiko Bramantyo; Marom, Aufarul; Djumiarti, Titik; Subowo A. EFEKTIVITAS IMPLEMENTASI PERATURAN GUBERNUR DAERAH ISTIMEWA YOGYAKARTA NOMOR 42 TAHUN 2009 TENTANG KAWASAN DILARANG MEROKOK DI STASIUN KERETA API BESAR YOGYAKARTA. J Public Policy Manag Rev [Internet]. 2018;7(3). Available from: https://ejournal3.undip.ac.id/index.php/jppmr/article/view/21016/0
6. Elisabet Henderson, Xavier Continente, Esteve Fern´andez OT, Nuria Cort´es-Francisco, Silvano Gallus, Alessandra Lugo, Sean Semple RO, Luke Clancy, Sheila Keogan, Ario Ruprecht, Alessandro Borgini AT, Vergina, Vyzikidou, Giuseppe Gorini, Angel L´opez-Nicol´as o JBS, Gergana Geshanova, Joseph Osman, Ute Mons, Krzysztof Przewozniak JP, Ramona Brad MJL. Secondhand smoke exposure in outdoor children's playgrounds in 11 European countries. Environ Int. 2021;149.
7. Filippos T. Filippidis, Israel T. Agaku, Charis Girvalaki, Carlos Jime´ nez-Ruiz BW, Christina Gratziou CIV. Relationship of secondhand smoke exposure with sociodemographic factors and smoke-free legislation in the European Union. Eur J Public Health. 2015;26(2):344–349.
8. Francisco Carrión-Valeroa, Joan Quiles-Izquierdoc CG-M, Francisco Taberner-Alberolae, José A. Lluch-Rodrigoc, Francisco J. Chorrob F, Martín-Moreno JM. Association between a comprehensive smoking ban and hospitalization for acute myocardial infarction: An observational study in the Autonomous Community of Valencia, Spain. Rev Port Cardiol [Internet]. 2020;39(2):77–84. Available from: https://pubmed.ncbi.nlm.nih.gov/32291119/
9. Green, LW., Ottoson J. A Frame for planing ang evaluation: precede-procede evolution and application of the model. In: ans journees de sante publique. 10th ed. Montreal, Quebec; 2006.
10. Jean-Paul Humair1*, Nicolas Garin2, 3, Eric Gerstel2, 4, Sebastian Carballo2, David Carballo5 P-, Fre´de´ ric Keller5¤, Idris Guessous6 7. Acute Respiratory and Cardiovascular Admissions after a Public Smoking Ban in Geneva, Switzerland. PLoS One [Internet]. 2014;9(3). Available from: www.plosone.org2014
11. Jussi Olli Tapani Sipilä, Jarmo Mikael Gunn, Tommi Kauko, Päivi Rautava VK. Association of restaurant smoking ban and the incidence of acute myocardial infarction in Finland. Smok Tob. 2016;
12. L´opez, M.J., Arechavala, T., Continente, X., Schiaffino, A., P´erez-Ríos, M., Fern´andez E. Social inequalities in secondhand smoke exposure in children in Spain. TobInduc [Internet]. 2018;Dis. 16 (A(14). Available from: https://doi.org/10.18332/tid/85717. PMID
13. Lin H, Wang H, Wu W et al. The effects of smoke-free legislationon acute

myocardial infarction: a systematic review and meta-analysis. BMC Public Heal. 2013;13(529).
14. Menteri Hukum dan Hak Azasi Manusia Republik Indonesia. UNDANG-UNDANG REPUBLIK INDONESIA NOMOR 36 TAHUN 2009 TENTANG KESEHATAN [Internet]. Indonesia; 2009. Available from: https://infeksiemerging.kemkes.go.id/download/UU_36_2009_Kesehatan.pdf
15. Menteri Kesehatan dan Menteri Dalam Negeri Kesehatan, Menteri dan Dalam Negeri M. PERATURAN BERSAMA MENTERI KESEHATAN DAN MENTERI DALAM NEGERI NOMOR 188/MENKES/PB/I/2011 NOMOR 7 TAHUN 2011 TENTANG PEDOMAN PELAKSANAAN KAWASAN TANPA ROKOK. Indonesia; 2011.
16. Oberg, M., Jaakkola, M.S., Prüss-Üstün, A., Schweizer, C., Woodward A. Secondhand smoke: Assessing the environmental burden of disease at national and local levels. Geneva, World Heal Organ (WHO Environ Burd Dis Ser No 18). 2010;
17. Patricia M. Herman and Michele E. Walsh. Hospital Admissions for Acute Myocardial Infarction, Angina, Stroke, and Asthma After Implementation of Arizona's Comprehensive Statewide Smoking Ban. Am J Public Heal. 2011;101(3):491–496.
18. Pemda Sleman. Peraturan Bupati (PERBUP) tentang Kawasan Tanpa Rokok. BERITA DAERAH KABUPATEN SLEMAN TAHUN 2012 NOMOR 20 SERI E. 2012;
19. Society ER. UK Centre for Tobacco and Alcohol Studies. European Lung Foundation. Smokehaz.
20. WHO Western Pasific. Tobacco Free Initiative [Internet]. 2020. Available from: https://www.who.int/westernpacific/about/how-we-work/programmes/tobacco-free-initiative#:~:text=With an estimated 377.2 million,protection from second-hand smoke.