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Early Childhood Health-Protective Behavior Against Environmental Tobacco Smoke Exposure in Households

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Abstract

Children who live in agricultural, coastal, and industrial areas are at risk of experiencing diseases due to their exposure to environmental tobacco smoke because a lot of smokers live in these areas. The objective of this study is to determine the differences in health-protective behavior of parents who have children in the geographical residence. The study used a quantitative approach, cross-sectional design, and purposive sampling. There are 175 parents with children under five years who live in coastal, agricultural, and industrial areas in Semarang, Central Java, Indonesia. Data collection was performed using a questionnaire. The dependent variable was the health-protective behavior of parents with children against exposure to cigarette smoke, while the independent variable was the geographical residence. The one-way ANOVA test was used to measure differences in the health-protective behavior of parents living in these areas. The results showed that there was no difference in the parental health-protective behavior in an agricultural, coastal, and industrial region ($p=0.091$, $p>0.05$). In conclusion, the respondents exhibit health-protective behavior that dies not fully control exposure to environmental tobacco smoke.

INTRODUCTION

Environmental tobacco smoke is when family members or visitors at home expose children to smoke. Findings have shown that it varies, from 27.6% in Africa, 34.3% in South East Asia, 50.6% in the West Pacific, and above 77.8% in Europe (Faber et al., 2019, Hwang et al., 2012). Several studies reported that parents who smoke at home correlate significantly with nicotine levels in urine, hair, blood, and saliva on their children (Wilson et al., 2016; Desouky et al., 2016, Christie et al., 2012, Moon et al., 2018). The Behavioral Risk Factor Surveillance System 2000 collects data from 20 countries and showed that 20–40% of homes in the United States contribute to tobacco exposure for nonsmokers (Kuhn et al., 2019).

In Indonesia, children living in agricultural, coastal, and industrial areas are easily exposed to environmental tobacco smoke, because it is the largest smoker in the region. The 2013 findings by the Ministry of Research and Development Agency stated that the highest number of smokers in the employment status were fishermen, farmers, and laborers. They live in the coastal, agricultural, and industrial areas. The results of the Basic Health Research showed that the prevalence of smokers in the home when with house members in the province of Central Java increased to 85%. It can be estimated that eight smokers died because of active smokers and one passive smoker. From the calculation of this ra-

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tio, at least 25,000 deaths in Indonesia occurred due to tobacco smoke from other people (Indonesian Health Ministry, 2013).

There are several diseases caused by tobacco smoke that can be experienced by children. Studies revealed that children as passive smokers can experience acute respiratory diseases such as asthma, pneumonia, bronchitis, middle ear problems, coughing, and shortness of breath (Gupta et al., 2002, Faber et al., 2019, Comhair et al., 2011) and damage child brain function (Yolton et al., 2005). This is because the ability of children to breathe faster and deeper than adults, the immune system has not well developed and immature metabolism so that it is sensitive to such exposure (Hwang et al., 2012).

Thus, the role of parents is obliged to develop protective behavior on children's health at the households. This is because households are the basis for the formation of healthy behavior. Healthy behavior is an activity that is directed to protect and improve health (He et al., 2016). Health research results show that 40% of diseases are a result of human behavior (Yin et al., 2013). Health protective behavior towards environmental tobacco smoke includes directly or indirectly. Direct exposure to second-hand smoke is tobacco smoke that is directly inhaled by people around smokers. Besides, exposure to indirect tobacco smoke (Third Hand Smoke) is tobacco smoke that remains on the surface and in the dust for a long time after smoking activity, reacts with oxidants and other compounds to form secondary pollutants, and is re-emitted as a gas and/or resuspension. These particles are dangerous and return to the air so they can be inhaled (Isniyati & Affandi, 2018). This contamination is absorbed deeper into materials such as hair, clothing, carpets, furniture, and walls (Drehmer et al., 2017).

There are many factors of health-protective behavior namely risk perceptions, knowledge, and passive smoking (Rosen & Kostjukovsky, 2015) safety, social security, education, food security, income, ecological environment, sustainable resources, social justice (Ping et al., 2018) and personality (Kern & Friedman, 2011). Income level differences have an association with health and mortality. The tendency of low- income level groups to adopt unhealthy behaviors than high-income level groups. Income level disparities in health behavior involve more than freely chosen lifestyles (Pampel et al., 2010). Most observational studies find that education is positively associated with health. Education is a larger predictor of mortality today than in the past. However, education has been hypothesized to increase one's ability to cope with negative shocks and uncertainty. Education is associated with better mental health and higher rates of health-protective behaviors. The study found that people with low education with low or no income tend to have lower life satisfaction and higher potential for smoking and drinking daily. However, this negative effect was essentially smaller in those with higher education (Cutler et al., 2015).

Based on the description above, this study's objective is to determine the level of health-protective behavior in parents of young children and whether there are differences in health-protective behaviors of parents with children under five years in coastal, industrial and agricultural areas and whether education levels and income levels influence the health-protective behavior of the parents with children under five years.

METHODS

The variables in this study are health-protective behavior, geographical residence, education level, and income level. This study used a quantitative approach. The population in this study was 271 parents of young children attending school in several kindergartens in coastal, agricultural and industrial areas in Semarang, Central Java Indonesia. The coastal areas in this study are the Tambak Lorok district, the agricultural area is the Gunung Pati district, the industrial area is the Mijen district. The sampling method used was the purposive sampling technique. The inclusion criteria in this study were parents with children under five years old. The exclusion criteria in this study were parents with children under five years old who did not live in coastal areas, agriculture, and industrial area. In this study, 175 respondents obtained 62% of fathers and 38% mothers. There were 62 respondents in industrial areas, 62 in agricultural areas, and 62 in coastal areas.

The instrument in this study was a self-administered questionnaire consisting of 28 question items that had been tested for validity and reliability, covering three aspects related to health-protective behavior by parents to children: health care, avoidance behavior at risk, avoidance of harmful substances. Empiric validity and internal reliability were the types in this study. A self-administered questionnaire was designed on a 5-point Likert scale to collect the data that is never, rarely, sometimes, often, and always. Data were analyzed using the median statistical test to measure the level of health-protective behavior of parents with children under five years, the one

Table 1. Respondents characteristics

Characteristics	n	Percentage
Education Level		
Low	46	26%
Middle to High	129	74%
Income Level		
Middle Low	80	46%
Middle High	95	54%
Geographical Residence		
Coastal	51	30%
Agriculture	62	35%
Industrial	62	35%

Note Low education: Junior High School and below. Middle to High: Senior High School and above. Income level based on Regional Minimum Wages at Semarang. Middle Low: Less than IDR 2.500.000. Middle High: More than IDR 2.500.000.

way ANOVA to determine differences in health-protective behavior in coastal areas, agriculture, and the industry as well as an Independent Sample Test to determine the relationship of education levels and income to health-protective behaviors in parents.

RESULTS AND DISCUSSIONS

The highest education level of respondents is middle to high as many as 129 (74%). Besides, the highest income level of respondents, namely middle and high as many as 95 (54%) (see on Table 1).

Based on the median value, the health-protective behavior of early childhood parents, a median score was obtained, with the result that 90 (51%) respondents behaved good, 85 (49%) respondents still behave poorly.

The results of the analysis test with the Independent Sample Test shows that the level of education does not significantly affect health-protective behavior with a p-value of 0.132 (p> 0.05) and the level of income did not significantly affect the health-protective behavior with a p-value of 0.632 (p> 0.05) (see on Table 2).

Note The data analyzed by the Independent Sample Test. Statistically significant p≤0.05

Besides, the results of the analysis test with One Way ANOVA shows that there are no differences in health-protective behavior in the parents at each region with a p-value of 0.091 (p> 0.05) (see on Table 3).

The house is the main source of exposure to tobacco smoke in children. Early childhood who live with smokers spends the most time at home. Therefore it tends to be more vulnerable than older age to these environmental health threats (Dai & Chan, 2020). Health risks in children are associated with exposure to tobacco smoke (Kairouz et al., 2015). Several studies showed that there is a correlation between smoking exposure in children with adult smokers, both parents, other family members, and visitors who smoke at home (Dai & Chan, 2020, Wilson et al., 2016, Matt, 2018).

Therefore, it is recognized that parents are responsible for implementing health-protective behaviors in children. Health protective behavior against the dangers of exposure to secondhand smoke is control over the risk of secondhand smoke exposure. Unfortunately, not all behaviors of parents have led to health-protective. The findings in this study indicate that the behaviors of parental health-protective for early childhood are less than 50% therefore it can be interpreted that parental behavior has not fully protected early childhood health in terms of children's health, risk avoidance behavior, and substance avoidance behavior that is dangerous. Health protective behavior that is mainly not fully implemented is the behavior of protecting children's personal health such as the behavior of parents who do not change children's clothes or bathe children after being exposed to tobacco smoke, and parents also do not change clothes or clean themselves after being exposed to tobacco smoke before interacting with the child. This inadequate behavior can be caused by a low understanding of how to pro-

Table 2. Health Protective Behavior Level Status among parents with children under five years

Characteristics	n	percentage
Health protective behavior		
- Good	90	51%
- Poor	85	49%

Table 3. The relation between variables and health-protective behavior

Variables	Health Protective Behavior		p
	n	Percentage	
Education Level			
Low	46	26%	0.132
Middle High	129	74%	
Income level			
Low	80	46%	0.632
High	95	54%	

tect health against the dangers of exposure to tobacco smoke which results in low behavior control and inadequate attitudes in the protection of children's health (Waterworth et al., 2015). This can be caused by a lack of knowledge, incomplete and confusing information received by individuals. If individuals are less exposed to information stating that there are negative consequences of tobacco smoke exposure to early childhood, individuals become less aware and encourage their motivation to change behavior by expectations (Kelly & Barker, 2016). Besides, resistance to health messages due to long-held beliefs that exposure to tobacco smoke is not harmful, perceptions that exposure to tobacco smoke is a low risk on children, and limited opportunities to obtain information contribute to the formation of health-protective behaviors (Kairouz et al., 2015, Abdel-Ghany, 2014).

Thus it can be underlined that health literacy that forms parents' health-protective behavior for children's health. Health literacy is a person's ability to obtain, process, and understands the information needed to make the right decision about his health. Health literacy is a relatively new concept that has gained significant interest during the current period. Knowledge and behavior related to health literacy become an important and significant element in the behavior of everyday health protective in the elderly (He et al., 2016).

In addition to health literacy, socio-cultural adaptation factors that cause parents to tend to be permissive to the behavior of family members or visitors who smoke at home. Sociocultural adaptation to health is a behavior shared by family members to overcome health problems based on information learned from others or personal experiences in dealing with physical and social situations. Several studies suggest that the role of interpersonal support in adapting to new behavior also plays a role in the formation of behavior (Ping et al., 2018) and social pressure from the family also contributes to weak support in protecting tobacco smoke exposure at home (Hwang et al., 2012). Negative reactions from other people such as being seen as hypocrites and the inconvenience to reprimand and negotiate which can have an impact on relationships with family members and friends, complaints of family members against restrictions on rules, lack of support from partners, dilemmas between parenting and the comfort to smoke inside a home are several factors related to the weakness of support in health-protective behavior (Shaw et al., 2012). This characteristic is common in suburban areas in Indonesia and is in line with the results of this study found that parents of young children in coastal, agricultural, and industrial areas have similarities in health-protective behavior. There are behavioral similarities in protecting early childhood health against direct (Second Hand Smoke) and indirect (Third Hand Smoke) exposure to smoke that is influenced by social support and pressure. Health protective behavior is effective if social support is high and social pressure is low. Conversely, health-protective behaviors become less effective because of low support and high social pressure. Meanwhile, controlling the spread of the dangers of exposure to tobacco smoke at home is a strategic step to avoid direct exposure (Second Hand Smoke) and indirect exposure (Third Hand Smoke) because both of these are risk factors for diseases caused by smoking in early childhood (Kuehni & Barben, 2015).

The study also found that education level

Table 4. The relation between region variable and health-protective behavior

Treatment	Sum of Squares	df	Mean Square	F	Sig
Intergroup	1255.226	2	627.613	2.425	0.091
Within-group	44512.202	172	258.792		
Total	45767.429	174			

Note The data analyzed by the One Way Anova test. Statistically significant $p \leq 0.05$

and current income level do not affect health-protective behavior among parents of early childhood. It means differences in education level and income level have a similarity of health-protective behavior, both in positive and negative health-protective behavior. It can be possible that the other factors affect health behavior such as risk perceptions, knowledge, safety, social security (Rosen & Kostjukovsky, 2015), social justice, ecological environment (socio-cultural) (Ping et al., 2018), and personality (Kern & Friedman, 2011).

CONCLUSION

Based on the findings, it can be concluded that respondents exhibit health-protective behavior that has not fully controlled environmental tobacco smoke. There is no difference in health-protective behavior towards environmental tobacco smoke in agricultural, industrial, and coastal areas in parents with young children. The level of education does not significantly affect health-protective behavior and the level of income does not significantly affect health-protective behavior. Furthermore, efforts to form a positive attitude towards the establishment of a smoke free home is by promoting health promotion of the dangers of exposure to tobacco smoke in the household management.

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