

Self-efficacy and Avoidance Behavior from Cigarette Smoke Exposure: A Cross Sectional Study among Mothers of Under-five Year-old Children

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Abstract: A mother play important role to protect her children from any dangerous substances. This includes protecting her child from cigarette smoke exposure that contribute to the series of health problem. Self-efficacy of a mother allows her to take a particular action needed in the difficult situation, one of which is avoidance behavior of cigarette smoke exposure around her and her children. The aim of this study was to explore the relationship between self-efficacy with avoidance behavior of cigarette smoke exposure among mothers with toddlers. This was a cross sectional study of 73 mothers with toddlers who live in a house together with active smoker, it selected using purposive sampling. Spearman rank analysis were perform to explore the relationship between variables. Results off the 73 mothers, 90.4% had a high self-efficacy and 82.2% had high levels of avoidance behavior. Spearman rank test showed sig. (2-tailed) value of 0.005. Correlation Coefficient obtained was 0.324, it means that there were a positive relationship between self-efficacy and avoidance behavior, with the strength of the relationship is in the moderate level. The more higher the level of self-efficacy is accordance with the level of avoidance behavior of cigarette smoke exposure.

1 INTRODUCTION

Exposure to the environmental tobacco smoke (ETS) in a household causes many health problems for the member of family as the second hand smoker (SHS) (Gavarkovs *et al.*, 2018). As a source of pollution in the indoor home environment, it contributes to the several health problems, such as respiratory infections, ischemic heart disease, lung cancer, and asthma. It is predicted that more than 600,000 deaths per year worldwide are caused by SHS which is more than 1% of all deaths. Women and children are mostly affected by exposure to SHS (WHO, 2014). The data from *United Nations Children's Fund* (UNICEF) in 2015, showed that 5,9 millions children under 5 years old has been die and 15% of it or around 920.000 children were died because of pneumonia, otherwise stated that more than 2.500 of children under five years old who die everyday because of pneumonia that can be caused by environmental tobacco smoke exposure (Karami and Kadarisman, 2017).

Environmental tobacco smoke (ETS) is a complex and reactive blend between the main smoke exhaled

by smokers and the smoke emitted from the burning tobacco and then this reacts with the surrounding air. This blend contains over 4700 chemicals including hazardous amines, carbonyls, hydrocarbons or metals among others. SHS exposure can cause several illnesses in nonsmokers including ischaemic heart diseases in adults and lower respiratory infections and asthma in adults and children, among other adverse health effects (Torres *et al.*, 2018).

A mother is both naturally and culturally plays important role to take care the health of their children. It includes protecting her self and children from any hazardous exposure, such as cigarette or tobacco smoke exposure. A study showed that a mother who did not take any action to avoid the cigarette or tobacco smoke exposure were significantly contribute to the health problem of the children, for example like bronchitis and asthma (Yilmazel, 2014). Therefore, it is required *self-efficacy* especially for a mother in facing every difficult situation, because the function of self-efficacy is to ensure that she can solve every problem and the more higher self efficacy, so the more belief that she can be able to complete every challenge (Hidayat, 2011). The research conducted

by (Golestan and Abdullah, 2015) showed that self-efficacy has a moderating effect on the relationship between smoking behavior, pressure by peers and also family members who smoke.

Parents have an obligation to keep family members especially children, from the dangers of exposure to cigarette smoke. Parents should provide a smoke-free environment for themselves and family members to avoid exposure to cigarette smoke. Families who have family members who smoke are considered difficult to avoid exposure to cigarette smoke because of the interaction between each other at all times (Perdana, Dhewangga Adi, Waspada, 2015). Behavior to avoid exposure of cigarette smoke is very important to do in preventing the negative effects of it. Families who do not take precautions to avoid exposure to cigarette smoke are very vulnerable to a series of health problems from cigarette smoke exposure (Lin *et al.*, 2010).

Avoidance behavior from exposure to cigarette smoke in the family is considered to be still in a low level, this is confirmed by research conducted by (Lin *et al.*, 2010) only found 6.2% which shows the behavior of avoiding cigarette smoke exposure. Avoidance behavior is a stimulus for avoidance that is associated with unpleasant experiences to maintain security (Pittig *et al.*, 2014). Research conducted by (Xu *et al.*, 2017) explained that prevention measures against cigarette smoke exposure by women vary greatly. Some women more often to avoid and open the window when the smoker is a friend or stranger, and less often when the smoker is a mother or husband. This study aims to determine the relationship between self-efficacy and avoidance behavior among mothers with toddlers to prevent the effects of cigarette smoke exposure.

2 METHODS

This study used a correlative descriptive non-experimental research design with a cross sectional approach. The population used in this study was 218 mothers of under five years old children in Summersari Village, Lowokwaru District, Malang City. Purposive sampling technique was used in this study with the sample criteria: Mothers who has under five years old children and lived at home with family members who are active smokers, and there were 73 respondents who met the criteria. The self-efficacy instrument was created by (Schwarzer and Fuchs, 2016) which consisted of 10 questions on a Likert scale. This model consists of positive (favorable) and negative (unfavorable) statements.

Reliability on the General Self-Efficacy questionnaire is between 0.76 and 0.90. The validity of The General Self-Efficacy Scale correlates with emotions, optimism, work, and satisfaction. Negative coefficients were found for depression, stress, health complaints, fatigue, and anxiety (Schwarzer and Fuchs, 2016; Choudhury, Gopalan and Thukral, 2017). In this study researcher modified the general self questionnaire -efficacy, so that it can be adjusted to passive smokers. Validity test results obtained 7 statements declared valid. First-efficacy categorized into the category of low = <17.5 and high category = ≥ 17.5 .

Avoidance behavior scale from cigarette smoke exposure used in this study was developed by Martinelli in (Lin *et al.*, 2010). This scale includes 19 items that assess respondents' efforts to prevent exposure to cigarette smoke. The sub-scale is in the form of a 4-point Likert scale (1 = always true; 2 = usually true, 3 = usually incorrect; and 4 = almost never true). Higher results will indicate avoidance behavior from exposure to high cigarette smoke. The Cronbach's Alpha coefficient on this scale is 0.82. This study uses a questionnaire that has been translated and validated by (Gharaibeh *et al.*, 2011), but in this study the researcher modified the questionnaire into 9 statements. The researcher used a 3-point Likert subscale (1 = never, 2 = sometimes, 3 = always). Avoidance behavior is stated to be low if the result is <18 and high if the result is ≥ 18 . Both of self-efficacy and also avoidance behavior from cigarette smoke exposure instruments, have met the standard of validity and reliability test.

Moreover, bivariate analysis in this study aims to determine the relationship between self-efficacy and avoidance behavior of cigarette smoke exposure in mothers with children under five, using the Spearman Rank (Rho) correlation test used to measure the level or close relationship between the two variables with an ordinal scale.

3 RESULTS AND DISCUSSION

The majority of 73 enrolled subjects were classified into middle adulthood which number is 48 respondents or 65,8 %. Furthermore, the highest percentage of subjects with an education level of senior high school was 59%. Out of all 73 women in this study, 57,29 % of their husbands smoked. The characteristics of respondents were shown in table 1.

The result of univariate data analysis shown that the majority of respondents who showed a high level

of self-efficacy was 66 of 73 or 90,4%, as described in the following table 2:

Next, for the more detail information about the self-efficacy questionnaire, it can be looked through the table 3. Majority of Respondents self-efficacy revealed that mother has belief in the dimension of generality, this is as stated in the first statement which is: *"If someone prevents me from avoiding exposure to cigarette smoke, then I will try to find ways to get rid of these obstacles"* (Table 3).

The results showed that the majority of respondents had a high level of self-efficacy. The majority of respondents used in this study are in the middle adulthood age category and most of them have senior high school education. Self-efficacy can be influenced by several things, such as sociodemographic (sex, age, location), life experience and academic experience (de Fátima Goulão, 2014; Alwisol, 2016; Ajayi and Olamijuwon, 2019). In addition, Bandura's theory of self-efficacy asserts that self-efficacy is developed through personal experience, social learning and social persuasion (Bandura *et al.*, 1996; Schwarzer and Fuchs, 2016). Thomas Armstrong, Ph.D., an award-winning educator and expert on human development, argued that the middle adulthood is the contemplation phase, which someone in this period will take a break from worldly responsibilities to reflect the deeper meaning of their lives, the better to forge ahead with new understanding, as a consequence she / he becomes better and more mature in taking a stand. Moreover, during this period individuals will evaluate life experiences and redefine themselves in their roles and values (Anas, 2013). In addition, a study conducted by (de Fátima Goulão, 2014) using adult respondents, showed the results that the average respondent had high self-efficacy, as well as showing a significant relationship between self-efficacy and academic achievement.

Respondents with high self-efficacy will be sure to be able to do something that has the potential to be able to change events around their environment, and will be more likely to take an action (Bandura *et al.*, 1996; Feist and Feist, 2010). Self-efficacy of mothers with toddlers who live at home with active smokers can influence the attitudes and behavior of mothers. This is supported by (Bandura *et al.*, 1996; Kurose, 2013) who explains that individuals with high self-efficacy tend to set higher goals and achieve challenging opportunities, while those who have low levels of self-efficacy, seeing things become difficult , and tend to do the opposite.

In addition to its role in goal setting and opportunity selection, self-efficacy continues to

influence the behavior of individuals who are actively pursuing their goals. Self-efficacy influences behavior with resilience which leads to greater ability and perseverance in facing challenges. Simply put, self-efficacy is contained in a process that connects human motivation, behavior, and performance (Kurose, 2013).

Table 4 above describes the majority of respondents had high level of avoidance behavior of cigarette smoke exposure, it was 60 of 73 or 82,2%. Furthermore, it can be seen in the table 5 that the majority of mothers implement avoidance behavior by making attempts to minimize exposure when they are in a situation that is not possible to withdraw from cigarette smoke exposure as stated in the statement 7, that is : *"if my husband or my family smokes around me and my child then they don't want to stop smoking, then I will turn on the fan or open the window so that exposure to cigarette smoke can be reduced"*.

The results of the study reports that the majority of respondents have a high level of avoidance behavior from exposure to cigarette smoke. Respondents in this study are mothers who have children under five years old. The majority of respondents age in this study are middle adulthood category. Another additional information from the study is that all respondents live in the same house with smoker, where the majority of smokers are husbands.

A person's age can affect their behavior, in this case it is related to avoidance behavior from exposure to cigarette smoke. As explained above that the mature age will strengthen one's behavior, especially to maintain their health (Armstrong.T, 2019). The status of family members as the highest active smokers is a husband is a phenomenon that often occurs in families, as research (Gharaibeh *et al.*, 2011), which stated that more than half of the participants (55%) reported living with a husband who smoked. More than one third (367%) of respondents' husbands smoke in the house, and as many as 24.9% of the study respondents report that other family members also smoke at home. In total, almost two-thirds (59.6%) of subjects reported that their husband or other family members smoked in the house. Traditionally, the husband is the head of the family and holds the highest authority in the family, so it is not easy for a wife to make strict rules about prohibiting smoking at home. For this reason avoidance behavior is one of the most frequent attempts by women whose partners are smokers. Private homes are the enclosed area where people mostly spend the daily time, and only voluntary rules are possible, have become a main source of exposure

to SHS among children and nonsmoking adults (Zheng *et al.*, 2014), and will have a negative impact on health if the mother does not do limiting or practicing avoidance behavior (Lin *et al.*, 2010).

Other results from this study found that the majority of mothers implement efforts to minimize exposure when unable to withdraw from exposure to cigarette smoke. This result is supported by research conducted by (Zheng *et al.*, 2014) that the most common step to reduce exposure to cigarette smoke is to make a smoke-free policy in the house and take actions such as opening a window so that cigarette smoke can be reduced and not settled in the room.

Table 6 describes the results of crosstabulation between self-efficacy and avoidance behavior from exposure to cigarette smoke. From this table, it can be seen that there are 66 respondents or 90.4% who have high self-efficacy, from that number 54 (74%) of respondents have high avoidance behavior from cigarette smoke exposure and only 7 (9.6%) respondents who have low self-efficacy, and there is 1 respondent (1.4%) who has low self efficacy as well as avoidance behavior from cigarette smoke exposure which is also low. In general, this shows that the majority of respondents in this study had high levels of self-efficacy and high avoidance behavior from exposure to cigarette smoke.

Next, by using the Spearman Rank test, it conducted an analysis of the relationship between self-efficacy and avoidance behavior from cigarette smoke exposure among mothers of under five years old children in the Sumbersari village of Malang City, the results are presented in table 7 below:

Based on table 7, it is known that Spearman's rho correlation test results obtained p value = 0.005, this is less than alpha (0.05), then H0 is rejected and H1 is accepted, this means that there is a relationship between self-efficacy and avoidance behavior of cigarette smoke exposure among mothers. The correlation coefficient (0.324) shows the level of relationship between the variables of self-efficacy and avoidance behavior from exposure to cigarette smoke among mothers of under five years old children is included in the category of sufficient correlation. High self-efficacy will increase avoidance behavior of cigarette smoke exposure. It can be concluded that there is a significant relationship between self-efficacy and avoidance behavior of cigarette smoke exposure among mothers of under five years old children.

The Spearman Rank test results obtained a P-value of 0.005, then H1 is accepted and H0 is rejected. The results of this study can be concluded that there is a relationship between self-efficacy and avoidance

behavior to prevent cigarette smoke exposure among mothers who have children under five years old and the test results of correlation strength was 0.324, it indicate that the strength of the relationship between self-efficacy and avoidance behavior to prevent cigarette smoke exposure is moderate.

Table 1: Characteristics of Respondents.

No	Characteristics	F	(%)
1	Age (Years)		
	- 20–35 (Early Adulthood)	25	34,2 %
	- 36 - 65 (Middle Adulthood)	73	48 65,8 %
	- > 65	0	
2	Level of Education		
	- Elementary School	1	1,4%
	- Junior High School	73	15 20,5%
	- Senior High School	43	59%
	- Diploma	5	6,8%
3	Bachelor Degree	9	12,3%
	Total Number and The Relationship the member family who are smoker :		
	Son	1	1,04%
	Father	16	16,7%
	Father in law	96	3 3,1%
	Brother in law	9	9,4%
	Grand Father	3	3,1%
	Nephew	1	1,04%
Brother	8	8,33%	
4	Husband	55	57,29%
	Duration (year) to be smoker		
	No explanation/ forget	27	28,1%
	1-10	96	31 32,3%
	11-20	28	29,2%
21-30	7	7,3%	
>30	3	3,1%	

Table 2: *Self-Efficacy* of Mother who has under Five Years old Children.

<i>Self-Efficacy</i>		Number of Respondent
High	Low	
90,4%	9,6%	100%
66	7	73

Test results that have been done can be concluded that the higher the self-efficacy, so the avoidance behavior of cigarette smoke exposure will be higher. This result is supported by (Friedman and Schustack, 2008), that self-efficacy can determine whether someone will show a certain behavior, how the strength of an individual to be able to survive when facing difficulties or even failures, and

how success or failure in a particular task or problem affects individual behavior in the future.

Table 3: Frequency of Self-Efficacy Questionnaire.

No	Questionnaire Statements	Mean	Rank
1	If someone prevents me from avoiding cigarette smoke, then I will try to find a way to get rid of these obstacles	3.2603	1
2	I have no difficulty in carrying out my goal to avoid exposure to cigarette smoke	2.8493	7
3	I always know how to avoid unexpected exposure to cigarette smoke, such as by asking smokers not to smoke or by staying away from smokers	3.1233	3
4	I have a way to overcome the incidence of cigarette smoke exposure, such as refusing to enter the environment where there is cigarette smoke, controlling and minimizing cigarette smoke exposure	3.2192	2
5	I can avoid exposure to cigarette smoke well because I always rely on the ability that I have	3.0959	5
6	I can handle cigarette smoke incidents such as by avoiding, turning on fans, asking smokers to stop smoking when facing unexpected cigarette smoke events that occur unexpectedly.	3.0274	6
7	I am ready to handle the incident of cigarette smoke exposure	3.1233	4

Table 4: Avoidance Behavior of Cigarette Smoke Exposure.

Category	Avoidance Behavior of Cigarette Smoke Exposure	(%)	Total
High	60	82,2%	(100%)
Low	13	17,8%	

High avoidance behavior will have a positive impact on mothers and toddlers, because it can reduce the chance of exposure to cigarette smoke which causes health problems especially in vulnerable children. In practicing avoidance behavior, a mother needs a strong belief that is self efficacy. Mothers with toddlers who have high self-efficacy will take the actions needed to maintain the health of themselves and their children. This is in line with research which states that the factors related to higher second-hand smoke avoidance behavior were higher self-efficacy (Lee, Ahn and Lee, 2018).

Table 4: Frequency Avoidance Behavior of Cigarette Smoke Exposure Questionnaire.

No	Questionnaire Statements	Mean	Rank
1	When I see someone who is smoking, I will keep my distance to ensure that my child and I are not exposed to cigarette smoke	2.5890	3
2	If my child and I are gathering with family members or other people, then someone starts smoking, then my child and I will keep a distance or move away from that place	2.6164	2
3	When my child and I are in public places like restaurants, offices, or clinics, I will leave if I don't get a seat in the non-smoking section	2.4110	4
4	I do not allow family members / other people to smoke when they are carrying my child	2.2192	7
5	When I travel together with my child using public transportation, then I will ask the driver not to smoke for a while	1.9041	9
6	I do not allow my husband or other people to smoke while riding a motorcycle or other means of transportation when there is my child in the vehicle	2.3973	6
7	If my husband or other family members are smoking around me and my child, then they don't want to stop smoking, then I will turn on the fan or open the window so that exposure to cigarette smoke can be reduced	2.6986	1
8	When I and other family members are exposed to cigarette smoke, then I will wash the clothes that me and my family member wear to eliminate the smell of cigarette smoke even though the clothes are clean	1.9452	8
9	When my child and I travel by motorcycle or public transportation, I will use a nose covering or ask for a seat that is free of cigarette smoke and open the window if someone starts smoking	2.4110	5

Table 5: Crosstabulation Self-Efficacy and Avoidance Behavior of Cigarette Smoke Exposure.

		Avoidance Behavior of Cigarette Smoke Exposure		Total
		Low	High	
Self-Efficacy	Low	1 (1,4%)	6 (8,2%)	7 (9,6%)
	High	12 (16,4%)	54 (74%)	66 (90,4%)
Total		13 (17,8%)	60 (82,2%)	73 (100%)

Table 6: Correlation between Self-Efficacy and Avoidance Behavior of Cigarette Smoke Exposure Among Mothers of Under Five Years Old Children.

		Correlation	Self-Efficacy	Avoidance Behavior
Spearman's rho	Self-Efficacy	Correlation	1.000	.324**
	Avoidance Behavior from Cigarette Smoke Exposure	Coefficient Sig. (2-tailed) N	73	.005 73
		Correlation	.324**	1.000
		Coefficient Sig. (2-tailed) N	.005 73	73

** Correlation is significant at the 0.01 level (2-tailed)

4 CONCLUSIONS

The majority respondents have a high level of self-efficacy and also high avoidance behavior from cigarette smoke exposure. There is a significant relationship between self-efficacy and avoidance behavior from cigarette smoke exposure. The higher self-efficacy among mothers who have under-five-years-old children, the higher the behavior to avoid exposure to cigarette smoke.

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