THE CORRELATION BETWEEN KNOWLEDGE AND PERCEPTION OF YOUTH USERS OF VAPE TOWARDS VAPING BEHAVIOR IN BANGIL DISTRICT

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ABSTRACT

The use of e-cigarettes year by year increases among adolescents. The increase correlates with their lack of knowledge about e-cigarettes and the perception that e-cigarettes are safer than conventional cigarettes. This research aims to analyze the relationship between the level of knowledge and perception of e-cigarettes to vaping behavior in adolescents in Bangil, Pasuruan. This study was analytic observational with a cross-sectional approach conducted from September until October 2019. The subjects in this study were 76 respondents selected by the purposive sampling method. The respondents were recruited from 3 cafes in Bangil by distributing questionnaires to those who met the inclusion criteria. The independent variables are the respondent's knowledge level and perception about e-cigarettes, while the dependent variable is vaping behavior. The data has been analyzed with Spearman's rho. From the analysis, there was a correlation between level of knowledge and vaping behavior with p=0.019 (p<0.05) and 0.269 correlation coefficient. Also, a correlation between perception and vaping behavior with p=0.000 (p<0.05) and 0.420 correlation coefficient. There was a correlation between knowledge level and perception of e-cigarettes to vaping behavior among adolescent users.

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INTRODUCTION

Electric cigarette, known as vape or vapor, is a kind of cigarette that uses electricity from battery power to provide nicotine in the form of vapor or better known as the electronic nicotine delivery system (ENDS). The E-cigarette was originally produced as NRT (Nicotine Replacement Therapy), which is an alternative therapy for conventional cigarette addicts.[1] Now, there is a change in the function of e-cigarettes, people use them without having a previous history of conventional smoking. The Centers for Disease Control and Prevention (CDC), Food and Drug Administration (FDA), and Georgia State University stated that the number of adolescents who had never smoked conventional cigarettes but used e-cigarettes tripled during 2011-2013.[2]

Meanwhile, the use of e-cigarettes among middle and high school students in the United States increased 7 times during 2011-2016.[3]

E-cigarette uses liquids containing nicotine with a mixture of propylene glycol (PG), vegetable glycerin, flavor enhancers, and other chemical substances.[4] Effects of nicotine can cause neuro teratogenic and neurotoxic effects on adolescent's brain development.[5] In addition, nicotine can also reduce focus and cognitive impairment, causing mood disorders in adolescents which results in long-term changes in emotional response, particularly increased anxiety and fear. PG aerosols produced from e-cigarettes can irritate the eyes and respiratory problems for users and non-users.[6] Incomplete evaporation of propylene glycol and glycerin produces carcinogenic formaldehyde. The flavorings contained are reported to cause cytotoxic effects.[7] Other substances such as carcinogenic nitrosamines are also found in e-cigarettes where the nitrosamine content is higher than in conventional cigarettes.[8]

There is still no data showing the number of e-cigarette users in Indonesia, especially in the regions. However, adolescents who vape are more likely to smoke conventional cigarettes in the future than those who do not.[9] This may lead to increased use of conventional cigarettes in the future. In July 2018, the government legalized e-cigarettes so that users feel safe to use e-cigarettes. The government legalizes e-cigarettes by setting quite expensive excise fees. The imposition of excise fees is a way for the government to monitor the use of e-cigarettes in Indonesia. However, this legality is questionable because e-cigarettes do not meet safety standards.[10] Because of the unclear safety regulations of existing dangers, the use of e-cigarettes is increasingly widespread in Indonesia. Lack of information about e-cigarettes can affect the level of knowledge and perception which causes e-cigarettes to be widely used, especially by teenagers. Therefore, this study aims to identify the level of knowledge and perceptions of vaping behavior specifically e-cigarette users in Bangil district.

MATERIALS AND METHODS

This study used an observational analytic method with a cross-sectional design. The population sampled were all adolescent vape users in Bangil using the purposive sampling method. The inclusion criteria were adolescents aged 18-24 years active user of e-cigarette. The total sample was 76 respondents, obtained between September-October 2019 and were taken in 3 cafes in Bangil, they are Vape 456, Coklat Banget, and Sekawan. Researchers create a team that helps in collecting respondent data through questionnaires that have been tested for validity and reliability. Each respondent accompanied by one person (researcher or team) to prevent from committing fraud in filling the questionnaire. The questionnaire was filled in according to the order and was filled in by the respondents themselves. Researchers and the team only readout information for consent and informed consent. The independent variable was the respondent's level of knowledge and the respondent's perceptions about e-cigarettes, while the dependent variable was the respondent's vaping behavior. The data obtained described by being categorized as good, enough, and less of knowledge. Perception is categorized as positive and negative while vaping behavior is categorized into good and bad behavior. To find the correlation, each variable did not use an assessment based on category but instead

used the respondent's full score with the Spearman's Rho test statistical data analysis. P<0.05 indicates a significant relationship and the correlation coefficient value is identified to determine the strength of the relationship and the direction of the relationship. The positive direction of the relationship shows that the higher the independent variable is, the higher the dependent variable will be.

RESULTS

This study found there was a significant relationship between the level of respondent's knowledge and respondent's perceptions toward vaping behavior with a significance level of <0.05. It was also suggested that the correlation coefficient indicating the strength of the relationship was comparatively weak (0.269) and moderate (0.420) with a prospect of positive direction.

Table 1. Frequency Distribution of Demographic Characteristics and General Data of Respondents

Variable	Frequency (n)	Percentage (%)
Age (Mean ± SD)	21.20±1.92	
Gender		
Male	76	100%
Female	0	0%
Usage Status		
Move from conventional cigarettes	29	38.2%
Direct using e-cigarette	14	18.4%
Dual user	33	43.4%
Duration (Years)		
6	1	1.3%
5	2	2.6%
4	3	3.9%
3	17	22.4%
2	13	17.1%
1	13	17.1%
<1	22	28.9%

Source: Primer data

Table 2. Variable Frequency Distribution

Variable	Frequency (n)	Percentage (%)
Knowledge level		
Good	16	21.1%
Enough	20	26.3%
Less	40	52.6%
Perception		
Positive	35	46.1%
Negative	41	53.9%
Vaping behavior		
Good	39	51.3%
Bad	37	48.7%

Source: Primer data

Table 3. Results of Spearman's Rho analysis

Spearman's Rho test	*P value*	R
Knowledge value – Vaping behavior	0.019*	0.269
Perception – Vaping behavior	0.000*	0.420

P<0.05 indicates the significance of the relationship; R (correlation coefficient)

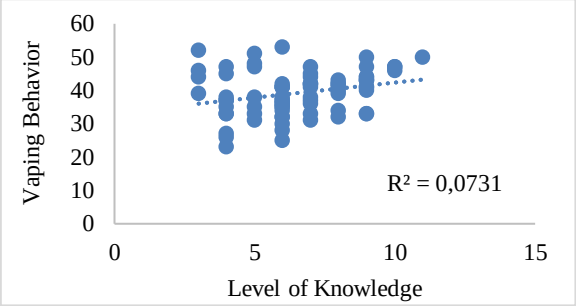

Figure 1. Knowledge Value Scatter Diagram of Vaping Behavior

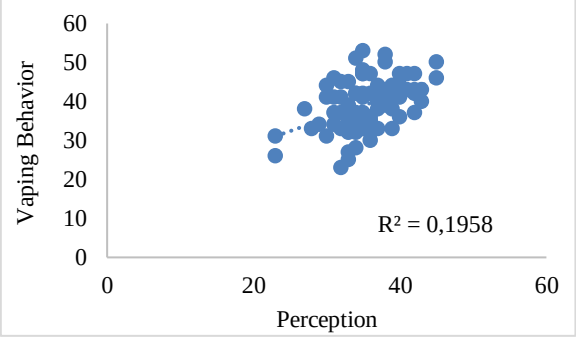

Figure 2. Perception Value Scatter Diagram of Vaping Behavior

DISCUSSION

The characteristics of the respondents in this study included age, gender, usage status, and length of time using e-cigarettes. The age range of respondents sampled in this research belongs to those of late adolescence (18-24 years of age) based on the Association of Maternal and Child Health Programs (2019).

It is assumed that people belonging in the age range have a more mature understanding of their actions and are aware of their medical condition. Vaporizers taking part in this study were mostly aged 20 with a total of 18 respondents (23.7%) with a mean and standard deviation of 21.20 ± 1.92. In this study, the total number of respondents was all 76 men. There was a significant relationship between gender and e-cigarette use in Indonesia, where males were found to be the most probable gender to use the e-cigarette.[11]

From the usage status, there were 14 (18.4%) respondents who used e-cigarettes without a history of using conventional cigarettes. The use of e-cigarettes without a history of conventional smoking is a function of misuse of e-cigarettes as NRT or an alternative to quitting conventional smoking. Furthermore, there were 29 respondents (38.2%) who used e-cigarettes because they switched from tobacco cigarettes and most of the respondents were dual users 33 (43.4%) who used e-cigarettes without quitting tobacco cigarettes. From the data obtained, of all dual users, 60.6% used e-cigarettes because they wanted to stop and reduced the use of conventional cigarettes. However, stopping and reduce the use of conventional cigarettes requires a gradual process.[12] The ratio of nicotine content in conventional cigarettes is higher than in e-cigarettes, making conventional cigarette users who want to reduce or stop smoking are not satisfied enough if they only use e-cigarettes. So most of them use both. In fact, dual users without reducing the use of conventional cigarettes will increase the risk of harm, and even though it is used also with a reduction in the use of conventional cigarettes does not prove to have many health benefits. E-cigarettes do not reduce the cause of death, the incidence of cardiovascular disease, and even cancer. However, e-cigarettes can reduce the risk of lung cancer.[13]

In terms of the length of time using e-cigarettes, of the 76 respondents the highest use was less than one year by 22 respondents (28.9%) and only 1 respondent (1.3%) with the longest use, starting from 2013 or approximately 6 years. This signifies that the use of e-cigarettes is increasing from year to year. According to the 2016 National Health Indicator Survey, the prevalence of e-cigarette use jumped to 10.9% from 2015 to 2016. Moreover, in July 2018, the government legalized e-cigarettes so that users felt that its use was safe. The government legalized e-cigarettes by imposing expensive excise fees to control its use in Indonesia. However, the safety of e-cigarettes remains unclear as e-cigarettes have been failed to meet safety standards.[10]

As many as 40 respondents (52.1%) showed that they had inadequate knowledge about e-cigarettes. The low level of knowledge about e-cigarettes is due to the lack of information about e-cigarettes in Indonesia, as well as the lack of socialization by health agencies regarding the content and impact of e-cigarettes. The low level of knowledge can also be attributed to the demographics of this research's location that is Bangil District which is a non-urban area in which factors relating to people's knowledge are not optimal. These factors include education, information/mass media, socio-culture and economy, environment, experience, and age.[14]

This study also shows that most respondents had wrong or negative perceptions about e-cigarettes indicated by 41 respondents

(53.9%). The average user has negative perceptions such as supporting the use of cigarettes.[15] Individual perceptions do not come naturally but go through several processes and factors that influence each person's perception. Perception is a process of receiving information and messages as a stimulus to be processed in the brain of each individual.[16] Thus, the lack of information regarding the content contained in liquid and the safety of using cigarettes will render respondent's perceptions inappropriate for cigarettes.[15] The effort that can be done is to make regulations regarding warning labels on all tobacco products including cigarettes to clarify existing perceptions regarding that.[17]

Many users perceive e-cigarettes are safer than their conventional counterparts. However, until now the safety of e-cigarettes is still contentiously debated, whether it can reduce nicotine use because it is safer or increase the danger. In 2019, the CDC reported an outbreak of e-cigarette, or vaping, product use-associated lung injury (EVALI) in 50 US states.[18] The clinical manifestations are symptoms of the respiratory system such as coughing, shortness of breath, and chest pain.[18] Other symptoms are from the gastrointestinal system such as nausea, vomiting, abdominal pain or diarrhea, and other nonspecific symptoms, like fever, weight loss, and weakness. As many as 82% of EVALI cases were caused by tetrahydrocannabinol (THC) -containing products and 57% due to the nicotine contained.[19] However, it does not rule out the possibility of other chemical substances also affecting the occurrence of this outbreak. In a study conducted by Leyden et al (2019), patients with EVALI cases found 91% abnormalities on chest radiographs and 100% on CT scans. The data above show that e-cigarettes are not as safe as the majority believe them to be.[20]

The factors that influence a person's vaping behavior are determined by knowledge, attitudes, beliefs or perceptions, traditions, and any other internal factors that an individual demonstrates.[12] Based on the results of the study, 39 of the 76 respondents (51.3%) had good vaping behavior and the rest are the opposite. The cause of using e-cigarettes in adolescents is due to trial and error behavior.[21] Another cause that affects vaping behavior is the rejection of e-cigarette's danger for health, as well as the existence of peer groups and family members who use them.

The correlation results based on the statistical test of Spearman's Rho show that there is a relationship between knowledge and vaping behavior, but the correlation is weak. Good knowledge will be a protective factor for a person from heavy use of e-cigarettes (bad behavior).[12]

The results of statistical analysis using Spearman's Rho showed that there was a moderate relationship between perception and vaping behavior. The results of the analysis with diagram scatter obtained a coefficient of determination of 0.1958, which means that the perception contributes to vaping behavior was 19.6%. This is different from knowledge which only affects behavior by 7%. Beliefs/perceptions have a greater contribution to a person's behavior and change in behavior than the level of knowledge.[22]

E-cigarettes are no longer recommended by the FDA as NRT, due to the fact that e-

cigarettes also have dangers for their users. According to the National Institute of Health, a way that may be effective is to carry out treatment through counseling with behavioral support.[4] The results of the study show that the average teenager who uses e-cigarettes is still lacking knowledge and has a wrong perception about e-cigarettes. Lack of information is one of the contributing factors, therefore overcoming this problem requires government efforts to provide regulations on e-cigarettes, such as labeling hazard warnings and providing education or socialization to the wider community about e-cigarettes. Because e-cigarettes can become a health problem in the future if not properly overcome at this time.

CONCLUSION

There is a significant relationship with a weak positive correlation coefficient between the knowledge of e-cigarettes on vaping behavior and there is also a significant relationship with a moderate positive correlation coefficient between the perception of vaping behavior among adolescent users in Bangil District. It can be found that there were still many misuses in the function of e-cigarettes as NRT in adolescents such as using them without a previous history of conventional smoking. Not all dual users used e-cigarettes to quit or reduce the use of conventional cigarettes, this bad behavior can be a risk factor for increased health problems.

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