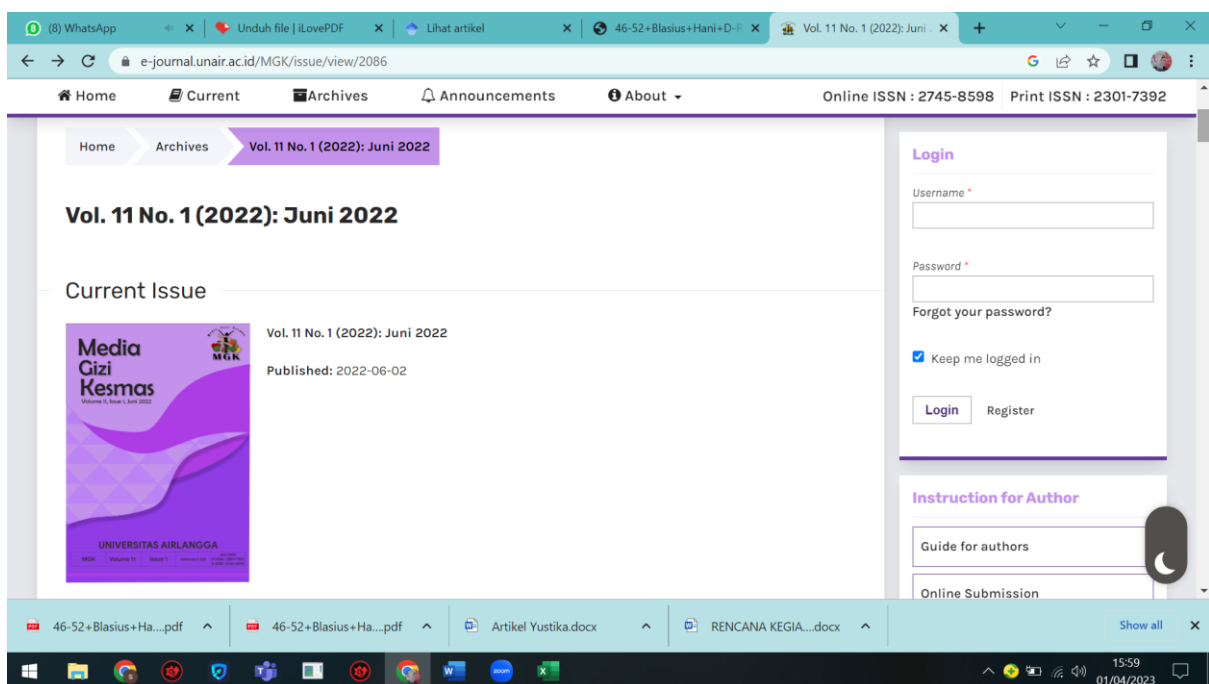
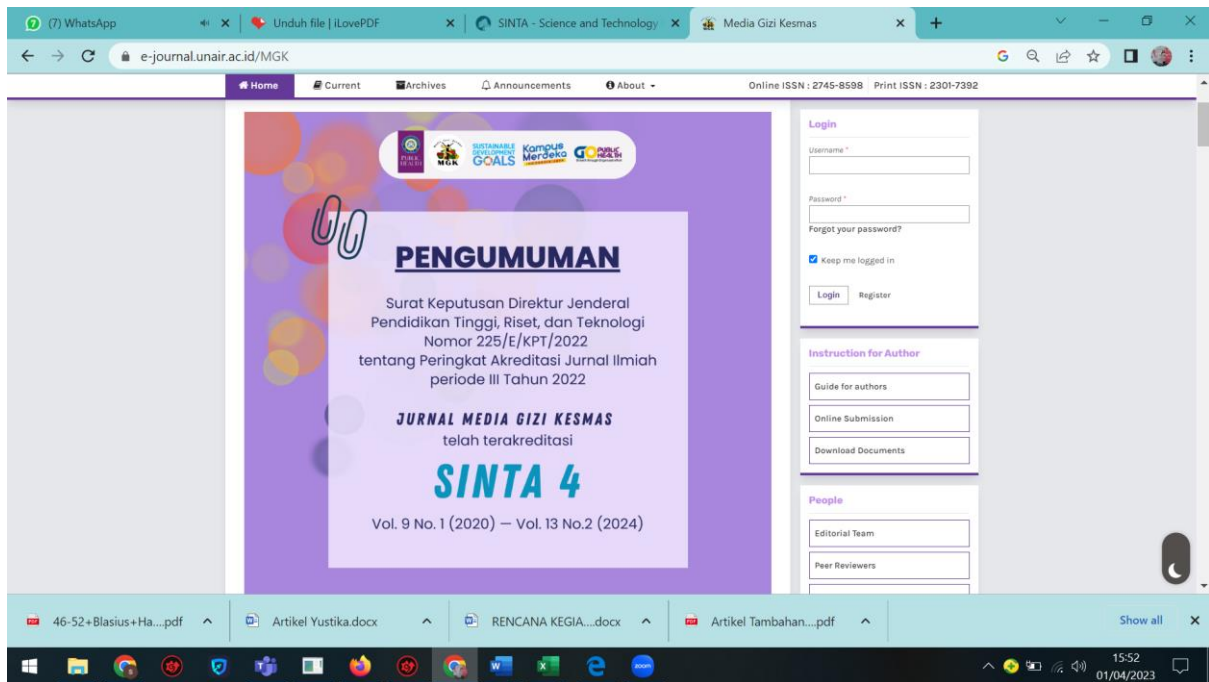


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**Surabaya, November 30, 2021**  
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## Hubungan Dukungan Sosial dan Perilaku Merokok Vape pada Remaja Usia SMA di Surabaya

### *The Relationship between Social Support and Vaping Behavior of Senior High Age Adolescents in Surabaya*

Blasius Hasni D.\*<sup>1</sup>, Sri Widati<sup>1</sup>

#### ABSTRAK

**Latar Belakang:** Merokok memiliki dampak negatif bagi kesehatan pada semua usia, termasuk remaja. Dengan kemajuan teknologi, rokok memiliki variasi baru yang disebut rokok elektrik (*vape*). Namun, Badan Pengawas Obat dan Makanan dari Amerika (FDA) mulai melarang penggunaan rokok elektrik karena didalamnya mengandung *tobacco specific nitrosamines* (TSNA) yang bersifat toksik dan *diethylene glycol* (DEG) yang dikenal sebagai karsinogen yang terdapat pada tembakau. Namun, rokok elektrik di Indonesia saat ini menjadi sebuah tren dengan peminat yang semakin banyak.

**Tujuan:** Tujuan dari penelitian ini adalah untuk mengetahui hubungan dari dukungan sosial terhadap perilaku merokok / *vaping* pada remaja usia SMA di Surabaya.

**Metode:** Penelitian ini merupakan penelitian kuantitatif dengan jenis analitik observasional dan desain *cross sectional*. Jumlah responden dalam penelitian ini sebanyak 145 responden yang diperoleh dari teknik *snowball sampling*. Variabel bebas adalah dukungan sosial yang terdiri dari dukungan instrumental, dukungan informasi, dukungan emosional, dan dukungan penghargaan. Variabel terikatnya adalah perilaku merokok/*vaping*.

**Hasil:** Hubungan antar variabel diukur menggunakan uji *Pearson Chi-Square*. Hasil analisis menunjukkan terdapat hubungan antara dukungan instrumental ( $p=0,000$ ), dukungan informasi ( $p=0,019$ ), dukungan emosional ( $p=0,000$ ), dan dukungan penghargaan ( $p=0,000$ ) terhadap perilaku merokok / *vaping* pada remaja usia SMA di Surabaya.

**Kesimpulan:** Terdapat hubungan antara dukungan sosial dan perilaku merokok/*vaping* pada remaja usia SMA di Surabaya. Dukungan sosial menjadi penting karena dapat membuat remaja berperilaku merokok. Diharapkan dari lingkungan keluarga khususnya orang tua dapat memberikan pemahaman kepada remaja tentang dampak perilaku merokok dan untuk para remaja dapat lebih selektif lagi memilih teman untuk bergaul dan lebih berani untuk menolak ajakan teman untuk berperilaku merokok.

**Kata kunci:** Dukungan sosial, perilaku merokok, rokok elektrik, remaja usia SMA

#### ABSTRACT

**Background:** Smoking has a negative impact on health in people of all ages, especially adolescents. With technological advancements, cigarettes have taken on a new form: e-cigarettes. The US Food and Drug Administration (FDA) has begun to prohibit the use of e-cigarettes because they contain hazardous and carcinogenic tobacco specific nitrosamines and diethylene glycol (DEG). However, e-cigarettes are becoming increasingly popular in Indonesia, with an increasing number of users.

**Objectives:** To investigate the relationship between social support on smoking/vaping behaviors of senior high age adolescents in Surabaya.

**Methods:** This is a quantitative study with a cross-sectional and observational analytic design. The total number of respondents in this study was 145, as determined by the snowball sampling method. The independent variable is social support. Social support consists of instrumental support, informational support, emotional support, and appraisal support. The behavior of smoking/vaping is the dependent variable.

**Results:** The relationship among variables was measured by using Pearson Chi-Square Test. The result shows that there is a relationship of instrumental support ( $p=0.000$ ), informational support (0.019), emotional support ( $p=0.000$ ), and appraisal support ( $p=0.000$ ) on smoking / vaping behavior in senior high age adolescents.

**Conclusions:** There is a relationship between social support and smoking / vaping behavior of high school age adolescents in Surabaya. Social support is important since it can influence the adolescents smoking behavior. It is hoped the family such as parents can provide a better understanding of the effect of smoking on health and for adolescents should be more selective with whom they hang out with and have the courage to refuse a friend's invitation to smoke.

**Keywords:** social support, smoking behavior, electric cigarettes, senior high age adolescents

---

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## INTRODUCTION

In Indonesia, smoking has become a habit. This habit is prevalent in both the lower and upper economic classes. For some people, smoking has become more than a habit; it has become a necessity and a way of life that must be followed on a daily basis (Meiyetriani, 2012). Smoking is a dangerous habit as being harmful not only to smokers but also to those who inhale cigarette smoke from smokers, known as passive smoking. Smoking is prevalent in the community, affecting everyone from children to teenagers to adults. For smokers, smoking can cause a variety of diseases such as high blood pressure and heart disorders caused by the influence of chemical substances contained in cigarettes such as nicotine and tar (Tristanti, 2016). According to a WHO report, there are 1.2 billion smokers in the world, with 800 million of them living in developing nations. In low-income countries, the prevalence of smokers is higher (Kemenkes RI, 2015).

According to Riskesdas (2013), the smoking behavior of the Indonesian population aged 15 and over has increased from 27 % in 1995 to 34.2 % in 2007 and finally to 36.3 % in 2013 with a prevalence of 64.9% men and 2.1 percent women. In Indonesia, the average number of cigarettes smoked per day by people aged  $\geq 10$  is 12.3 cigarettes (one pack).

Cigarettes have a new variety, due to the growth number of tobacco smokers and the development of the era, as well as the advancement of technology. Not only because of the taste and shape, but also because of the way it is burned, and is now known as vape. Vaping is gaining popularity as an alternative to smoking. Unlike traditional cigarettes, vape is a type of an e-cigarette with batteryoperated device that allows the user to breathe in nicotine through a vapour. They are sometimes referred to as Electronic Nicotine Delivery Systems (ENDS) (European Lung Foundation, 2020).

The first concept of an e-cigarette was patented in 1965 by Herbert A Gilbert. Later, the aerosol high-frequency e-cigarette was patented in China by Mr. Hon Lik and Ruyan Technology; it entered the market in 2003 and was patented internationally in 2007 (Bhatnagar *et al.*, 2014). An e-cigarette is made up of three major components: a battery, a metal heater (atomizer), and a cartridge containing a liquid chemical substance (BPOM, 2015).

The use of e-cigarettes has been promoted as a useful smoking cessation tool and an alternative nicotine delivery device that contains no combustion byproducts (Marcham and Springston, 2019). The nicotine solution contained in vape was assumed to be safe for health because it only contained water, propylene glycol, taste enhancers, tobacco fragrance, and other compounds that did not contain tar or other hazardous substances normally found in tobacco cigarettes (Trtchounian, Williams and Talbot, 2010).

However, the U.S. Food and Drug Administration (FDA) has begun to prohibit the use of e-cigarettes because it is known that e-cigarettes consist of hazardous tobacco specific nitrosamines (TSNA) and diethylene glycol (DEG) (Palazzolo, 2013), which are known carcinogens in tobacco and tobacco smoke (Trtchounian, Williams and Talbot, 2010). E-cigarette smoke induces edema and reduces the activity of alveolar macrophages in the lungs, according to studies. These cells are involved in attaching dust, bacteria, and allergy triggers (Scott *et al.*, 2018).

In another study, it was discovered that e-cigarettes include formaldehyde, acrolein, and heavy metals. Formaldehyde is known as carcinogen, while acrolein has been found to induce nose irritation, lung lining damage, and is suspected to contribute to cardiovascular disease in smokers (Goniewicz *et al.*, 2014). Meo and his team (2018) discovered that the use of e-cigarettes significantly impairs lung function, and the pattern of lung function impairment exhibited peripheral obstructive airway involvement. The present study, although modest in its size, scope, and conclusions, offers vital findings on the potential harm of e-cigarettes. Similar to some of the



effects reported with tobacco smoking, this study identified that pulmonary function test parameters were decreased in e-cigarettes users compared to their matched control and the pattern of lung function impairment showed peripheral obstructive airway involvement.

Based on statistics from National Youth Tobacco Survey done by the US Centers for Disease Control and Prevention (CDC), which included electric smokers in middle and high school, around 2011 and 2015, 4.7 million junior and senior high school students were observed, with 25.3 % using tobacco products and 16% using e-cigarettes. During 2011 and 2015, the use of e-cigarettes increased. From 2011 to 2015, the number of high school students who used e-cigarettes increased about 1000%, from 1.5 % (in 2011) to 16% (in 2015) (Singh *et al.*, 2016).

E-cigarettes are becoming increasingly popular in Indonesia, with an increasing number of users. This indicates that it is freely accessible through online sales, which provide a wide range of designs and flavors (BPOM, 2015). According to the Riskesdas survey (2018) 10.9% of adolescents aged 10 to 18 smoked e-cigarettes (vaporizers).

Smoking behavior can be influenced by several factors. Factors from the environment (external) is one of them (Notoatmodjo, 2010). Social support is a factor that comes from the individual's social environment. From Hasna's research (2017), there are 22.3% smoking e-cigarettes in Bekasi City High School adolescents and there is a significant relationship between the availability of e-cigarettes and the support of friends on the behavior of using e-cigarettes.

Social support can be defined as a reciprocal exchange of relationships between individuals in which individuals help other individuals. Sarafino (2014) divides social support into four categories: instrumental support, informational support, emotional support, and appraisal support. According to Sodik (2018), the most important factor in smoking habits is social or social environmental factors, because a person's character can be formed by his or her surroundings, including family and friends. According to the findings of Artanti's (2017) study on students in Surabaya, 77.8 % of friends were the first to encourage them to use e-cigarettes (vape).

The aim of the study, as stated above, was to investigate the relationship between social support and smoking / vaping behavior of senior high age adolescents in Surabaya.

## METHOD

This was a quantitative study using a cross-sectional design and observational analytic approach. The population consisted of high school adolescents aged 15 to 18 in Surabaya who had access to the internet. Snowball sampling was used to collect the 145 respondents. This study was done in Surabaya from March 1 to 31, 2021.

A questionnaire was used to collect data. The questionnaires were distributed via online media (Google Forms), which were then shared with respondents via social media (line, whatsapp, or instagram). Univariate analysis was used to obtain the frequency distribution, and bivariate analysis was used to find out the relationship between the independent variables (social support) and the dependent variable (smoking / vaping behavior).

## RESULT AND DISCUSSION

### Univariate Analysis

Univariate analysis aimed to find out the information related to social support and smoking behavior on Senior High School age adolescents in Surabaya. The result of univariate analysis is as follows.

**Table 1.** Frequency Distribution of Respondents' Social Support on Smoking / Vaping Behavior

<i>Social Support</i>	<i>Category</i>	<i>Frequency</i>	<i>Percentage (%)</i>
<b>Instrumental Support</b>	High	39	26.9
	Low	106	73.1
	<b>Total</b>	<b>145</b>	<b>100</b>
<b>Informational Support</b>	High	26	17.9
	Low	119	82.1
	<b>Total</b>	<b>145</b>	<b>100</b>
<b>Emotional Support</b>	High	45	31
	Low	100	69
	<b>Total</b>	<b>145</b>	<b>100</b>
<i>Social Support</i>	<i>Category</i>	<i>Frequency</i>	<i>Percentage (%)</i>
<b>Appraisal Support</b>	High	38	26.2
	Low	107	73.8
	<b>Total</b>	<b>145</b>	<b>100</b>

Based on Table 1, the level of instrumental support for smoking/vaping behavior 145 respondents was as follows: 39 respondents (26.9%) had high instrumental support and 106 respondents (73.1%) had low instrumental support for smoking / vaping behavior.

The level of informational support for smoking/vaping behavior 145 respondents was as follows: 26 respondents (17.9%) had high information support and 119 respondents (82.1%) had low information support for smoking / vaping behavior.

The level of emotional support for smoking / vaping behavior 145 respondents was as follows: 45 respondents (31%) had high emotional support and 100 respondents (69%) had low emotional support for smoking/vaping behavior.

The level of appraisal support for smoking / vaping behavior 145 respondents was as follows: 38 respondents (26.2%) had high appraisal support and 107 respondents (73.8%) had low appraisal support for smoking/vaping behavior.

**Table 2.** Frequency Distribution of Respondents' Smoking / Vaping Behavior

Smoking / Vaping Behavior	Frequency	Percentage (%)
Yes	47	32.4
No	98	67.6
<b>Total</b>	<b>145</b>	<b>100</b>

According to Table 2, 47 respondents (32.4%) had smoking / vaping behavior and 98 respondents (67.6%) did not have smoking behavior out of 145 respondents.

**Table 3.** Frequency Distribution of Respondents' Smoked Cigarette Type

Smoked Cigarette Type	Frequency	Percentage (%)
E-cigarette (vape)	37	78.7
Other Cigarettes	10	21.3
<b>Total</b>	<b>47</b>	<b>100%</b>

According to Table 3, 37 respondents (78.7%) used e-cigarettes (vape), while 10 respondents (21.3%) smoked other types of cigarettes.

### Bivariate Analysis

Bivariate analysis aimed to find out the relationship of social support toward smoking behavior of senior high age adolescents in Surabaya. The result of bivariate analysis can be seen as follows.

**Table 4.** The Relationship between Social Support and Smoking / Vaping Behavior

Social Support	Category	Smoking Behavior								Pearson Chi Square (p-value)
		No		Yes (Vape)		Yes (Other Cig)		Total		
		f	%	f	%	f	%	f	%	
Instrumental Support	High	7	7.1	26	70.3	6	60	39	26.9	0.000
	Low	91	92.9	11	29.7	4	40	106	73.1	
	<b>Total</b>	<b>98</b>	<b>100</b>	<b>37</b>	<b>100</b>	<b>10</b>	<b>100</b>	<b>145</b>	<b>100</b>	
Informational Support	High	14	14.3	7	81.1	5	50	26	17.9	0.019
	Low	84	85.7	30	18.9	5	50	119	82.1	
	<b>Total</b>	<b>98</b>	<b>100</b>	<b>37</b>	<b>100</b>	<b>10</b>	<b>100</b>	<b>145</b>	<b>100</b>	
Emotional Support	High	5	5.1	34	91.9	6	60	45	31	0.000
	Low	93	94.9	3	8.1	4	40	100	69	
	<b>Total</b>	<b>98</b>	<b>100</b>	<b>37</b>	<b>100</b>	<b>10</b>	<b>100</b>	<b>145</b>	<b>100</b>	
Appraisal Support	High	0	0	33	89.2	5	50	38	26.2	0.000
	Low	98	100	4	10.8	5	50	107	73.8	
	<b>Total</b>	<b>98</b>	<b>100</b>	<b>37</b>	<b>100</b>	<b>10</b>	<b>100</b>	<b>145</b>	<b>100</b>	

In this study, the type of social support is the support provided by the respondent's social environment to smoke / vaping. Sarafino (2014) divides social support into four categories: instrumental support, informational support, emotional support, and appraisal support.

### The Relationship between Instrumental Support and Smoking / Vaping Behavior

The instrumental support of this study is the support from the respondent's social environment, both nonsmokers and fellow smokers, in the form of direct offerings (cigarettes, vape, money, or other forms) to do smoking / vaping behaviors.

According to Table 4, there were 39 respondents with high instrumental support. 32 of them smoked, consisting of 26 respondents smoked e-cigarettes (vape) and 6 respondents smoked other types of cigarettes. However, there were 7 respondents who did not smoke. This is due to their ability to refuse direct offerings in the form of cigarettes or vape to be smoked.

There were 15 respondents who smoked, including 11 vape smokers and 4 other types of cigarettes, among the 106 respondents with low instrumental support. It due to the instrumental supports from social environments the respondents get such as, parents give extra pocket money so that the respondents can buy cigarettes / vape moreover respondents get cigarettes / vape directly from their friends when they are hanging out together.

According to Hasna's (2017) study, there is a relationship between peer support and the use of electric cigarettes, increasing the probability of using electric cigarettes. Furthermore, Yulviana (2015) found that adolescents with extra pocket money to buy cigarettes are 2.33 times more likely to have a smoking behavior than adolescents with limited pocket money to buy cigarettes.

### **The Relationship between Informational Support and Smoking / Vaping Behavior**

Informational support refers to the respondent's social environment's support in the form of information or suggestions about cigarettes to have smoking / vaping behaviors.

According to Table 4, 26 respondents with high information support, 14 of them do not smoke. This is due to the fact that the information obtained by respondents from the social environment can be in the form of effects or dangers caused by smoking / vaping behavior.

From the 119 respondents with low information support, 84 had non-smoking behavior and 35 had smoking behavior, including 30 who smoked e-cigarettes (vape) and 5 who smoked other types of cigarettes. This is because respondents learn about new variants / types / flavors of cigarettes from their social environment, which makes respondents curious and causes them to smoke / vape. In the social environment, respondents obtained the most basic information from their families, particularly their parents. Information obtained from parents can be used to model how adolescents should behave. According to Tridhonanto (2014), parental parenting is a whole of parental and child interactions in which parents encourage children by changing their behavior, knowledge, and values to those considered most appropriate for parents. Adolescent behavior is greatly influenced by family parenting styles, and poor parenting styles lead to deviant behavior in their children, such as smoking. The parenting styles are given through information support to their children about the effect and dangers of smoking behavior, in order to prevent adolescents from smoking.

### **The Relationship between Emotional Support and Smoking / Vaping Behavior**

Emotional support refers to the support of the adolescent social environment, which makes it comfortable to engage in smoking/vaping behavior.

According to Table 4, out of 45 respondents with good emotional support, 5 had non-smoking behavior and 40 had smoking behavior, including 34 who smoked e-cigarettes (vape) and 6 who smoked other varieties. This is because respondents obtained high emotional support as a result of the comfort they feel when they gather with friends who were also smokers.

In terms of smoking behavior, it concerns the emotions that the individual may experience. Each person who experiencing emotional instability can trigger stress. Then there are external supports that suggest individuals to behave smoking. Emotional support makes individuals feel they have something in common with their friends in terms of smoking behavior. Respondents may have thoughts that both they and their friends smoke, so the respondents keep having smoking behavior. In addition, when the respondent has an uncomfortable feeling because he does not smoke, his friend provides emotional support so alleviate the uncomfortable feeling. This is in line with research by Sutha (2016), which states adolescents try to display behavior that becomes a status symbol of maturity. Teenagers attempt to get Emotional freedom is often accompanied by conflict. In the end, teenagers try to find freedom outside. This makes teenagers feel they have emotional freedom from outside their parents so that teenagers actually have more confidence in their friends who are in the same boat as them. One of the behaviors that arise from the sense of emotional freedom of adolescents is smoking behavior which they consider as a symbol of maturity.

### **The Relationship between Appraisal Support and Smoking / Vaping Behavior**

Appraisal support refers to the support of the adolescent social environment that encourages, approves, and has its own opinion of smoking/vaping behavior.

According to Table 4, 38 respondents with high appraisal support, all respondents smoke, including 33 smoking vape respondents and 5 other types of cigarettes. This is due to the fact that they are in a similar social

environment, so respondents feel approval from their surroundings and are eager to instill confidence in their smoking / vaping behavior.

High appraisal support is obtained by respondents because they feel more appreciated by the social environment gathered with friends who are also smokers. This study supports Habibi's (2017) finding that there is a significant relationship between adolescent self-esteem and smoking behavior. Appraisal are obtained through their social environment, and a person's self-esteem will rise if his social environment is positive. In smokers, it is the same as smoking.

## CONCLUSION

The study of 145 high school age adolescents in Surabaya concluded that there is a relationship between social support and smoking / vaping behavior of high school age adolescents in Surabaya. It is recommended that adolescents are able to find information to add insight / knowledge about the effect and dangers of smoking / vaping. While it is expected that parents can provide knowledge of the effect of smoking behavior and how to behave when offered cigarettes by others in the social environment since parents can be role models for adolescents' behavior. Furthermore, adolescents should be more selective with whom they hang out with, and there is a need for guidance from parents and teachers regarding students' association in order to avoid irregularities, particularly smoking behavior.

## ACKNOWLEDGEMENT

The author would like to thank the supervisors, examiners, and all friends and others who have supported and helped this research.

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