



Description of Dental and Oral Hygiene and Extrinsic Dental Stain Among E-Cigarette Smokers in the Vaper Community in Tasikmalaya City

Rahmi Sugiharti^{a,1*}, Yayah Sopianah^a, Rena Setiana Primawati^a, Emma Kamelia^a

^a Department of Dental Health, Poltekkes Kemenkes Tasikmalaya, Tasikmalaya, Indonesia.

¹ rahmisugiharti1@gmail.com*

* Corresponding Author

ARTICLE INFORMATION	ABSTRACT
<p><i>History article:</i> <i>Received: December 9, 2022</i> <i>Revised: May 12, 2023</i> <i>Published: May 31, 2023</i></p>	<p>Smoking behavior can have a negative effect on health. It not only causes a systemic effect, but can also cause pathological conditions in the oral cavity. The World Health Organization is pursuing a strategy by replacing the use of conventional cigarettes with electric cigarettes, because they do not contain tar and carbon monoxide compounds, although some evidence says that vaping or e-cigarettes have not been proven safe. This study aims to determine the description of dental and oral hygiene and extrinsic dental stain among e-cigarette smokers in the vaper community in Tasikmalaya City. This was a descriptive study which presents a complete description of the problem under study. The study samples involved 43 respondents. The study used the assessment instruments of OHIS Green and Vermillion index and the extrinsic stain index according to Shaw and Murray. 43 respondents were willing to be examined for the mouth condition. The results of the study showed that 58% of respondents had moderate dental and oral hygiene status. 61% of respondents had moderate level of extrinsic dental stain. It can be concluded that the Vaper community in Tasikmalaya City had a moderate status of oral hygiene and extrinsic dental stain. It is recommended that future researchers can observe a comparison of oral and dental hygiene between conventional smokers and e-cigarette smokers so that it is expected to increase public knowledge about the impact of cigarettes and e-cigarettes on dental hygiene and stain.</p>
<p>Keywords: Dental and Oral Hygiene Dental Extrinsic Stain E-Cigarette</p>	

INTRODUCTION

Oral hygiene is very important in dental and oral health. Many dental and oral health problems occur due to lack of awareness in maintaining dental and oral hygiene such as toothbrushes that are rarely replaced, never checking dental and oral health to the dentist, not cleaning the tongue when brushing teeth, rarely brushing teeth at night, and dental health problems can also occur in someone who has a smoking habit. .talks about the fact that it has been found that smoking behavior can negatively affect health (Tandiari, Hidayat, & Christian, 2016).

According to the World Health Organization (WHO) there were 1.3 billion smokers in the world and the number of deaths caused by consuming cigarettes reached 4.9 million people each year. Indonesia occupied the third highest number of smokers in the world after China and India. There were 49.8 million male smokers in Indonesia (Gaga, Joko, & Erlisa, 2017).

Having a smoking habit not only have systemic effects, but can also cause pathological conditions in the oral cavity. Teeth and gingiva in the oral cavity are parts that can be damaged by smoking. Tar suction that enters the oral cavity as solid vapor, will change shape into blackish brown precipitate on the surface of the teeth after it is cold, so that it can cause adhesions or plaque on the teeth (Andriyani, 2017). The longer one smoke, the more dental stains are formed because the duration of consuming cigarettes greatly influenced the formation of stains on teeth (Aurellia, 2019). Electric cigarettes are a method of nicotine replacement treatment (NRT) using electricity as power provided by batteries, the NRT method uses a medium to provide nicotine content to smokers without the burning of tobacco which is very detrimental. Conventional cigarettes are packaged processed tobacco products, which are produced from the *Nicotiana tabacum* plant which contains nicotine and tar with or without additives in the cigarette (Sitepu, 2019).

Basic Health Research data for 2018 found that the percentage of smokers over 15 years was 33.8%. The overall percentage of male smokers was 62.9% while the total percentage of female smokers was 4.8%. In Indonesia, the province of West Java is one of the provinces that has the second largest number of smokers with a percentage of 35.78% (Ministry of Health of the Republic of Indonesia, 2018).

Along with the increasing percentage of smokers, especially in teens, many calls to stop smoking have been carried out. Tasikmalaya is one of the cities in West Java province with a percentage of 35.64% of the teenage population with the habit of smoking cigarettes. The Hexohm community is one of the e-cigarette smoking communities in Tasikmalaya which has members with an average age of teenagers to young adults which had poor criteria at the time of the initial survey regarding the dental and oral hygiene index and had moderate criteria for extrinsic stain index. Therefore, it is necessary to determine the description of dental and oral hygiene and extrinsic dental stain in such community.

Dental and oral hygiene is a condition where the teeth are free from plaque and tartar. Plaque and tartar will always be formed on the surface of the teeth (Sirat, Dwiastuti, Dharmawati, & Purnamadewi, 2020). The content of cigarettes which are made from a combination of harmful chemicals can also cause extrinsic dental stain. The formation of dental stain can affect aesthetics which further have a significant psychological impact, especially when it is formed on anterior teeth (Dondokambey, Pangemanan, & Khoman, 2021). In terms of dental and oral health, both conventional cigarettes and electric cigarettes (e-cigarettes) cannot be separated from the negative impact on dental and oral health. Although electric cigarettes are one of the efforts

established by the World Health Organization to persuade active smokers to quit smoking, some evidence revealed that vaping or e-cigarettes had not been proven safe (Oroh, Suling, & Zuliari, 2018). Dental and oral problems can have a serious impact on general health. Dental and mouth problems can be caused by internal and external factors (Skripsa, Unique, & Hermawati, 2021). This study aims to describe dental and oral hygiene and extrinsic dental stain among e-cigarette smokers in the vaper community in Tasikmalaya City.

METHOD

This was a descriptive study, which aims to observe a phenomenon or event in more detail (Sodik & Siyoto, 2015). (Sodik & Siyoto, 2015). The survey method was applied among members of the hexohm community in Tasikmalaya City, which is located on Jl. Dr Sukardjo no. 27, Tawang Sari, Tawang District, Tasikmalaya City. The population involved 75 members who were selected using a purposive sampling technique that was adjusted to the inclusion and exclusion criteria that had determined which obtained a sample size of 43 people. The variables to be observed in this study were oral and dental hygiene and extrinsic dental stain. The data collection instruments used here were OHI-S Green and Vermillion check sheets and Shaw and Murray extrinsic stain check sheets. The data obtained were analyzed descriptively.

RESULTS AND DISCUSSION

Table 1. Frequency Distribution of Dental and Oral Hygiene Index

OHIS Criteria	Frequency (N)	Percentage (%)
Good	3	7 %
Moderate	25	58 %
Poor	15	35 %
Total	43	100 %

Table 1 shows the results of the frequency distribution by dental and oral hygiene index among e-cigarette smokers among the Vaper community in Tasikmalaya City in three criteria, namely good, moderate and poor. Based on the result, it was obtained that moderate criteria had the highest score by 25 respondents (58%), followed by poor criteria by 15 respondents (35%), and good criteria by 3 3 respondents (7%).

Table 2. Results of dental stain index data collection among e-cigarette smokers.

Extrinsic Stain Criteria	Frequency (N)	Percentage (%)
Very Good	0	0%
Good	7	16%
Moderate	26	61%
Poor	10	23 %
Very Poor	0	0%
Total	43	100 %

Table 2 presents the results of the frequency distribution by the extrinsic stain index among e-cigarette smokers in the Vaper community in Tasikmalaya City in five criteria, namely very good, good, moderate, bad, very bad. It was revealed that most of respondents were in the moderate category by 26 respondents (61%), followed by bad criteria by 10 respondents (23%), and good criteria by 7 respondents (16%).

DISCUSSION

Dental and oral hygiene is a condition that indicates the condition of oral cavity that is free of dirt, such as debris and calculus. Plaque and tartar will always be formed in a person's oral cavity if he or she ignores oral hygiene (Zulfikri, & Huda, 2017). Electric cigarettes or e-cigarettes can cause several disorders in the oral cavity, such as changes in dental aesthetics due to staining, oral melanosis, xerostomia, and periodontitis. The staining process on the teeth can also occur due to the process of heating the liquid in the tube which then produces steam

like smoke which contains various chemicals that can affect the aesthetics of the teeth (Maharani, Wahyuni, & Hanum, 2021).

There were 43 respondents in this study who were dominated by male respondents by 81.4% of the total number of respondents. Furthermore, the majority of respondents were teenager aged about 20 years. Such finding is reasonable since adolescence has a greater curiosity to try new things. Such finding is in line with a study conducted by (Nada Adhima El Hasna et al., 2017) which found that most electric smokers were teenagers aged 17-25 years. The data in the current study were assessed using the dental and oral hygiene index (OHIS) from Green and Vermillion and the extrinsic staining index according to Shaw and Murray (Krisma, 2019).

The frequency distribution of the dental and oral hygiene index in table 1 showed that the highest number was found for the moderate criteria (58%). Such finding is reasonable since there are several factors that can affect the dental and oral hygiene index such as knowledge, physiological factors including tooth position, tooth shape, awareness actions in maintaining healthy teeth and the process of mastication. Such finding is in line with a study conducted by Oroh et al., (2018) which revealed that there was no significant relationship between the frequency of using electric cigarettes and the status of dental and oral hygiene. Nicotine compounds contained in cigarettes play a greater role in initiating periodontal disease because nicotine can be absorbed by the oral mucosa through the bloodstream and gum attachment to teeth and roots (Siregar, 2018). The index of good dental and oral hygiene among e-cigarette smokers can be influenced by various factors, namely education, information, age, and individual attitude in maintaining dental and oral health (Anwar, 2019).

Extrinsic staining is a discoloration of the tooth enamel caused by the staining process. Assessment of extrinsic dental stains in this study used the extrinsic stain index of Shaw and Murray (1977) (Krisma et al., 2019).

The result of examination regarding extrinsic staining index based on Shaw and Murray (1977) among e-cigarette smokers in the Vaper community in Tasikmalaya City showed that most of respondents were in the moderate category by 26 respondents (61%). Such finding is quite understandable because stain is not only influenced by the period and frequency of smoking using electric cigarettes, but also it depends on dental plaque which contains bacteria that can attach color pigments to the tooth surface. The impact of electric cigarette vapor on the oral cavity is more directed towards soft tissue damage. In fact, electric cigarette vapor does not leave stains or plaque on the tooth surface (Holliday & Stubbs, 2015). The total particulate matter from heated tobacco product aerosols is lower than the total particulate matter produced from burned tobacco products. Thus, it was revealed that there was no relationship between nicotine and tooth discoloration (Haiduc et al., 2020). Side effects of electric cigarette vapor on the oral cavity include xerostomia, ulcers on the palatal, buccal mucosa, and inflammation of the gingiva (Sherry, 2017).

CONCLUSION

Based on the results of the study, it can be concluded that the vaper community in Tasikmalaya City had a moderate status of oral hygiene and extrinsic dental stains. It is recommended that future researchers can observe a comparison of oral and dental hygiene between conventional smokers and e-cigarette smokers so that it is expected to increase public knowledge about the impact of cigarettes and e-cigarettes on dental hygiene and stains.

REFERENCES

- Andriyani, D. (2017). Hubungan Merokok Dengan Kebersihan Gigi dan Mulut Siswa SMK di Bandar Lampung. *Jurnal Keperawatan*, *XIII*(1), 83–89.
- Anwar, A. I. (2019). Hubungan perilaku dalam menjaga kesehatan gigi dan mulut dengan karies gigi pada siswa - siswi sekolah dasar di Desa Sanrobone , Kecamatan Sanrobone , Kabupaten Takalar. *Makassar Dent J*, *8*(3), 125–130.
- Aurellia, V. (2019). *Gambaran terbentuknya stain (noda) gigi pada masyarakat perokok RT.43 Sukabang 1 Palembang*.

- Dondokambey, S. D. V., Pangemanan, D. H. C., & Khoman, J. A. (2021). Pengaruh Kebiasaan Merokok terhadap Pembentukan Stain pada Gigi. *E-GiGi*, 9(2), 223. <https://doi.org/10.35790/eg.v9i2.34878>
- Gaga, R., Joko, W., & Erlisa, C. (2017). Hubungan lingkungan sosial dengan perilaku merokok pada wanita di kota Malang. *Nursing News*, 2(2), 749–760.
- Haiduc, A., Zanetti, F., Zhao, X., Schlage, W. K., Scherer, M., Pluym, N., ... Guy, P. A. (2020). Analysis of chemical deposits on tooth enamel exposed to total particulate matter from cigarette smoke and tobacco heating system 2.2 aerosol by novel GC–MS deconvolution procedures. *Journal of Chromatography B: Analytical Technologies in the Biomedical and Life Sciences*, 1152(June), 122228. <https://doi.org/10.1016/j.jchromb.2020.122228>
- Holliday, R., & Stubbs, C. (2015). The Dental Perspective on Electronic Cigarettes: the good, the bad and the ugly. <https://eprints.ncl.ac.uk>.
- Kemenkes RI. (2018). Hasil Riset Kesehatan Dasar Tahun 2018. *Kementrian Kesehatan Republik Indonesia*.
- Krisma, R. (2019). Gambaran Kebersihan Gigi dan Mulut Perokok Pada Remaja Di Kelurahan Sungai Lilin Kabupaten Musi Banyuasin [Internet]. *Repository Poltekkes Kemenkes Palembang*.
- Maharani, A., Wahyuni, S., & Hanum, N. A. (2021). Gambaran Pengetahuan Tentang Pengaruh Rokok Elektrik Terhadap Kesehatan Gigi Dan Mulut Pada Komunitas Vapor Di Kota Palembang. *Jurnal Kesehatan Gigi Dan Mulut (JKGM)*, 3(1), 44–47. <https://doi.org/10.36086/jkgm.v3i1.759>
- Nada Adhima El Hasna, F., Cahyo, K., Widagdo, L., Peminatan Promosi Kesehatan dan Ilmu Perilaku FKM UNDIP, M., Bagian Promosi Kesehatan dan Ilmu Perilaku FKM UNDIP, D., & Bagian Promosi Kesehatan dan Ilmu Perilaku, D. (2017). Faktor-Faktor Yang Berhubungan Dengan Penggunaan Rokok Elektrik Pada Perokok Pemuladi SMA Kota Bekasi. *Jurnal Kesehatan Masyarakat*, 5(3), 548–557. <https://doi.org/10.14710/JKM.V5I3.17287>
- Oroh, J. N. W., Suling, P. L., & Zuliari, K. (2018). Hubungan Penggunaan Rokok Elektrik dengan Status Kebersihan Gigi dan Mulut pada Komunitas Manado Vapers. *E-GiGi*, 6(2). <https://doi.org/10.35790/eg.6.2.2018.20456>
- Sherry, J. S. (2017). *E-cigarettes and vaping: Educational strategies for the dental professional*. Dental Academy of Continuing Education.
- Sirat, N. I., Putri Dwiastuti, S. A., Dharmawati, I. G. A. A., & Ari Purnama Dewi, I. (2021). Gambaran OHI-S Dan Perilaku Menyikat Gigi Pada Remaja Perokok Di Banjar Tengahdesa Kukuh Kecamatan Marga Kabupaten Tabanan Tahun 2017. *JURNAL KESEHATAN GIGI (Dental Health Journal)*. 7(1), 16-21. <https://doi.org/10.33992/jkg.v7i1.1117>
- Siregar, I. L. (2018). *Kebutuhan Perawatan Periodontal Pada Pasien Perokok di Instalasi Periodonsia RSGM USU*. Retrieved from <https://repositori.usu.ac.id/handle/123456789/5140>
- Sitepu, M. D. L. B. (2019). Gambaran Pengetahuan Perokok Tentang Kesehatan Gigi Dan Mulut Terhadap OHI-S Di Desa Marike Kecamatan Kutambaru [Internet]. *Repository Poltekkes Kemenkes Medan*.
- Skripsa, T. H., Unique, A. A., & Dharmawati, D. (2021). Hubungan Pengetahuan dan Tindakan Menjaga Kesehatan Gigi Mulut dengan Keluhan Subyektif Permasalahan Gigi Mulut pada Mahasiswa Kesehatan dan Non Kesehatan. *E-GiGi*, 9(1), 71–78. <https://doi.org/10.35790/eg.9.1.2021.32676>
- Sodik, M. A., & Siyoto, S. (2015). *Dasar Metodologi Penelitian The Effect of Pornography Accessity to Influence Sexual Behavior View project Publication View project*. Retrieved from <https://www.researchgate.net/publication/314093441>
- Tandiari, A., Hidayat, R., & Christian, P. (2016). *Kesehatan Gigi dan Mulut: Apa yang Sebaiknya Anda Tahu*. Retrieved from <https://opac.perpusnas.go.id/DetailOpac.aspx?id=1160346>
- Zulfikri, & Huda, Z. I. (2017). The relation between oral hygiene index and dental caries index in students of SDN 03 Pakan Kurai, Guguk Panjang, Bukittinggi. *Jurnal Kesehatan Gigi*, 4(1), 55. <https://doi.org/10.31983/jkg.v4i1.2716>