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MEDAN DENTIST'S KNOWLEDGE LEVEL ABOUT ORAL SQUAMOUS CELL CARCINOMA ASSOCIATED HUMAN PAPILLOMAVIRUS

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KEYWORDS

dentist, human papillomavirus, oral squamous cell carcinoma, knowledge level

ABSTRACT

Introduction: *Oral Squamous Cell carcinomas (OSCC) are still common, and one of the causes is the human papillomavirus (HPV). OSCC-associated HPV is often detected at an advanced stage due to the low knowledge of dentists about early detection. A good level of knowledge among dentists will help reduce the incidence of OSCC-associated HPV cases. This study aims to determine the level of knowledge of general dentists in Medan City regarding the role of HPV in OSCC, clinical aspects, prognosis, preventive measures for OSCC-associated HPV, and the availability of HPV vaccines in Indonesia.* ***Method:*** *This research is a descriptive study with a cross-sectional approach; the number of respondents is 99 general dentists in Medan City. The data was collected using an online questionnaire. Data analysis was carried out descriptively and calculated in terms of frequency and percentage through SPSS.* ***Result:*** *The results showed that among the 99 respondents, the level of knowledge about the role of HPV in OSCC was good (98%). The level of knowledge regarding the clinical aspects of OSCC-associated HPV is good (64.6%). The level of knowledge regarding the prognosis of OSCC-associated HPV is adequate (70.7%). The level of knowledge regarding OSCC-associated HPV preventive action is good (79.8%). The level of knowledge regarding the availability of the HPV vaccine in Indonesia is good (67.7%).* ***Conclusion:*** *Based on the results of the study, the level of knowledge of general dentists in Medan City about Oral Squamous Cell Carcinoma (OSCC) related to Human Papillomavirus (HPV) is good (66.7%).*

INTRODUCTION

Oral Squamous Cell Carcinoma (OSCC) is a case of oral malignancy that is still common. One of the risk factors is the human *papillomavirus* (HPV). HPV plays a role in 90–95% of cases of OSCC. HPV-related OSCC cases are often detected at an advanced stage. This case was affected by the low knowledge level of dentists about early detection.[1,2] Dentists are expected to have a knowledge level that reaches the analysis stage in order to be able to carry out early detection of OSCC correctly. HPV-related OSCC cases are often associated with sexual activity.[3,4] Oral sex activity and the number of partners for more than one person play a role in increasing the incidence of HPV-related OSCC.[5]

Based on epidemiological studies, it is known that HPV-related OSCC cases are quite high

in several Asian countries.[6] A total of 70.6% of OSCC cases were HPV-associated in Karnataka, India. Meanwhile, in Indonesia, 11 out of 15 OSCC patients in Central Java were detected as positive for HPV. Saini's research in Malaysia in 2011 found that 51.4% of HPV-associated OSCCs were positive. A study by Indri et al. in Samosir in 2017 found one case of oral cancer with positive HPV. In Aykut et al.'s 2013 research, it was found that the majority of HPV-related OSCC cases (91.7%) were only detected by dentists when they had entered an advanced stage.[7] If the dentists have good knowledge, then this case can be detected at an early stage. Early detection will help reduce morbidity and mortality in patients.[1,3,4]

The research by Nasser et al. in Saudi Arabia in 2020 regarding the level of dentists' knowledge of OSCC related to HPV mostly lacks knowledge. It is known that 51.5% of the total research respondents stated that HPV had no role in OSCC cases.[8] In the study by Shelly et al. in Malaysia in 2017, it was also stated that dentists lacked knowledge about OSCC related to HPV.[4] Based on the preliminary survey that has been carried out, out of 15 respondents, it was found that only 3 knew about OSCC related to HPV.

METHODS

This research is descriptive with a cross-sectional approach to determine the level of knowledge of general dentists in Medan City regarding Oral Squamous Cell Carcinoma (OSCC) related to *Human papillomavirus* (HPV). The location of this research is a health institution and the private practice of general dentists in Medan City. The population of this study was general dentists in Medan City—as many as 99 people. Data were collected through an online-based questionnaire that would be filled out directly by the research respondents. The questionnaire consists of eight questions, as follows: (1) Can OSCC be caused by HPV?; (2) Is OSCC related to HPV more common in young men than in women?; (3) Is the posterior part of the tongue/oropharynx the most common location for OSCC cases related to HPV?; (4) Does the initial stage of OSCC related to HPV often show symptoms?; (5) Does OSCC related to HPV (HPV-Positive) have a worse prognosis than OSCC (HPV-Negative)?; (6) Can OSCC cases related to HPV be prevented through HPV vaccination?; (7) Is it true that the HPV vaccine as a preventive for OSCC related to HPV cannot be applied to both men and women?; (8) Is HPV vaccination as a preventive for OSCC related to HPV available in Indonesia. These questions were categorized into 4 categories, including the role of HPV in OSCC cases (q. 1), clinical aspects of HPV-related OSCC (q. 2-4), the prognosis of HPV-related OSCC (q. 5–6), preventive measures for HPV-related OSCC (q. 6-7), and the availability of the HPV vaccine in Indonesia (q. 8). If the respondent answers 76–100% correctly from all the

questions, then the assessment is in a good category. If the correct answer score is 56-75%, then it goes into the sufficient category. If the respondent's answer is only <56%, then it falls into the lss category.

RESULTS

Of 99 respondents, 60,6% was 24-30 years old, 33,3% was 31-40 years old, 2% was 41-50% years old, and 4% was 51-60 years old. The percentage of respondents with work experiences <5 years was 57,7%, 2-10 years was 24,2%, >10 years was 14,1%, and >20 years was 4% (Table 1).

Table 1. Characteristics of respondents

Characteristics of respondents	n	%
Age (Years)		
24-30	60	60,6%
31-40	33	33.3%
41-50	2	2,0%
51-60	4	4,0%
Work Experience (Years)		
<5	57	57,7%
5-10	24	24,2%
>10	14	14,1%
>20	4	4%

The results showed that the level of knowledge of the respondents regarding the role of Human papillomavirus (HPV) against Oral Squamous Cell Carcinoma (OSCC) with 1 question category was a good level of knowledge, which totaled 97 people (97.9%), while respondents with a sufficient level of knowledge did not exist (0 0.0%), and respondents with a low level of knowledge totally 2 people (2.0%) (Table 2).

Table 2. Knowledge level regarding the role of Human papillomavirus (HPV) in Oral Squamous Cell Carcinoma (OSCC)

Knowledge Level	Frequency (n)	Percentage (%)
Good	97	98%
Sufficient	0	0,0%
Low	2	2,0%
Total	99	100%

The results showed that the level of knowledge of the respondents regarding the clinical aspects of Oral Squamous Cell Carcinoma (OSCC) associated with Human papillomavirus (HPV) with 3 categories of questions, namely the level of good knowledge, was 64 people (64.6%), while respondents with sufficient knowledge were 33 people. (33.3%), and respondents with less knowledge were 2 people (2.0%) (Table 3).

Table 3. Knowledge Level regarding the clinical aspects of Oral Squamous Cell Carcinoma (OSCC)) associated *to Human papillomavirus* (HPV)

Knowledge Level	Frequency (n)	Percentage (%)
Good	64	64,6%
Sufficient	33	33,3%
Low	2	2,0%
Total	99	100%

The results showed that the level of knowledge of respondents regarding the prognosis of Oral Squamous Cell Carcinoma (OSCC) associated with *Human papillomavirus* (HPV) with 1 category of questions was a good level of knowledge, namely 20 people (20.2%), while respondents with a sufficient level of knowledge were 70 people (70.7%), and respondents with less knowledge level amounted to 9 people (9%) (Table 4).

Table 4. Knowledge Level regarding the prognosis of Oral Squamous Cell Carcinoma (OSCC) associated *to Human papillomavirus* (HPV)

Knowledge Level	Frequency (n)	Percentage (%)
Good	20	20,2%
Sufficient	70	70,7%
Low	9	9,1%
Total	99	100%

The results showed that the level of knowledge of the respondents regarding the preventive action of Oral Squamous Cell Carcinoma (OSCC) associated with the *Human papillomavirus* (HPV) with 2 categories of questions was a good level of knowledge, which was 79 people (79.8%), while respondents with sufficient knowledge levels were 13 people. (13,1%), and respondents with a low level of knowledge were 7 people (7,1%) (Table 5).

Table 5. Knowledge Level regarding the preventive action of Oral Squamous Cell Carcinoma (OSCC) associated *to Human papillomavirus* (HPV)

Knowledge Level	Frequency (n)	Percentage (%)
Good	79	79,8%
Sufficient	13	13,1%
Low	7	7,1%
Total	99	100%

The results showed that the level of knowledge of respondents regarding the availability of the HPV vaccine in Indonesia with 1 category of questions was a good level of knowledge, namely 67 people (67.7%), while respondents with an adequate level of knowledge were 15 people (15.1%), and respondents with a lack of knowledge level amounted to 17 people (17.2%) (Table 6).

Table 6. Knowledge Level regarding the availability of HPV vaccine in Indonesia

Knowledge Level	Frequency (n)	Percentage (%)
Good	67	67,7%
Sufficient	15	15,1%
Low	17	17,2%
Total	99	100%

DISCUSSION

The results obtained in this study indicate that most respondents in terms of age are 20–30 years old, namely 60 people (61%) (Table 1). The results of this study are in line with Nasser et al.'s research in 2020 (73%) and Raghad et al.'s research in 2018 (68.2%), which found that the majority of respondents were dentists aged 24–30 years.[8,9] At the age of 24–30, individuals understand better how to use digital technology because their mindset and comprehension are good; they have not experienced a decline in IQ, so they do not hinder them from filling out the questionnaire. Based on research data from the Association of Indonesian Internet Service Providers, the highest penetration of internet users is among individuals aged 25–34 years (78%), while the following ages are only a small percentage. The majority of young people have not experienced limited abilities or physical and mental decline, so it is easy to access things related to digital technology.[10]

If viewed from the perspective of length of work experience, the majority of PDGI Medan City general dentists who filled out the questionnaire had work experience under 5 years, namely 57 people (58%) (Table 1). Respondents with relatively new work experience (<5 years) tend to have high

exploratory power because they have not experienced much in obtaining knowledge sources. The results of this study are also in line with the research by Nasser et al. in 2020 (73%), and Shelly et al. in 2017 (59%), where the majority of respondents were dentists with work experience of <5 years. Someone with little work experience requires additional knowledge and new information to develop knowledge and skills at work. Looking for new information will form a new cognitive basis for increasing knowledge.[4,8,10]

The results of the study on the level of knowledge of general dentists at PDGI Medan City regarding the role of *Human papillomavirus* (HPV) against Oral Squamous Cell Carcinoma (OSCC) were good. This can be seen based on 97 people (97.9%) (Table 2) who answered correctly that HPV can play a role as one of the causes of OSCC. Dentists can answer correctly because it is influenced by the knowledge that has been obtained during the education period or through scattered references in journals, books, articles, and other literature that often discuss risk factors for OSCC. When a person has higher education, the more knowledge he has. The results of this study are in line with the research of Daley et al. (2016), in which 100% of respondents answered that HPV has a role in OSCC.[11] This can be seen through the research of Indri et al. (2018) on Samosir Island, Indonesia, where 96.4% of potentially malignant HPV-associated oral mucosal abnormalities were found in the genome of infected oral mucosal cells. This insertion leads to the disruption of several functions of tumor suppressor genes, which results in changes in the regulation of cell proliferation, apoptosis, and genetic stability that leads to oral malignancies.[12]

The results of the study on the level of knowledge of general dentists at PDGI Medan City regarding the clinical aspects of Oral Squamous Cell Carcinoma (OSCC) related to Human papillomavirus (HPV) were good. This can be seen based on the number of general dentists at PDGI Medan City reaching 64 people (64.6%) (Table 3) who answered correctly regarding the clinical aspects of HPV-related OSCC, including disease distribution, most common locations, and symptoms in the early stages. Good knowledge results are influenced by information obtained by dentists during the lecture period as well as information available in journals, books, dental seminars, and other sources of information regarding HPV-related OSCC. Information obtained by a person either through formal or non-formal education will affect a person's level of knowledge. Based on the distribution of HPV-related OSCC that often occurs in young men, the results of this study are in line with the research of Melih et al. in 2020, where 91.5% of dentists answered that OSCC HPV-related conditions are more common in young men.[13] Lifestyle conditions in young men are often uncontrolled, such as having oral sex and having more than one partner, which can be

sources of HPV infection. Based on the most common location of HPV-associated OSCC in the oropharynx, the results This study is in line with the study of Shelly et al. in 2017, which found that the highest percentage of respondents (44% of respondents) answered the oropharynx as the most common area for HPV-related OSCC cases.[4] Several studies in the United States have shown a marked increase in the incidence of HPV-associated OSCC in the oropharynx in recent decades, where 70–90% of HPV-associated OSCC cases are located in the oropharynx. Based on the presence or absence of symptoms in the early stages of HPV-related OSCC, this study is in line with the research of Melih et al. in 2020, in which 91.5% of respondents answered that the early stages of HPV-related OSCC were asymptomatic. The initial stage is only accompanied by tumors that are small in size and have no symptoms (asymptomatic).[13] The results of the study regarding the level of knowledge of PDGI Medan general dentists regarding the prognosis of Oral Squamous Cell Carcinoma (OSCC) related to Human Papillomavirus (HPV) are sufficient (70.7%). It can be seen based on the number of respondents who answered correctly: only 20 people (20.2%) (Table 4). The results of the study were sufficient, influenced by the lack of information obtained by the respondents, so the respondents assumed that positive cases of OSCC HPV had a worse prognosis than negative OSCC HPV. The results of this study are in line with Shelly et al.'s 2017 study, where only 39% of respondents answered that HPV-related OSCC had a better prognosis compared to negative HPV OSCC cases. In theory, HPV status in OSCC is a prognostic factor for better patient survival than HPV-negative status because p16 protein expression is used as a biomarker of HPV infection.[4]

The results of the study on the level of knowledge of general dentists at PDGI Medan City regarding preventive measures for Oral Squamous Cell Carcinoma (OSCC) related to Human papillomavirus (HPV) were good. This can be seen based on 70 people (70.7%) (Table 5) who answered correctly regarding preventive measures for OSCC related to HPV, including questions about cases of OSCC related to HPV that can be prevented through vaccination and can be applied to women as well as men. The results of this knowledge can be obtained because dentists can gain knowledge about OSCC preventive measures related to HPV through articles in the form of official information from the Indonesian Doctors Association (IDI), journals, and so on. The results of this study are in line with research conducted by Haoyue Xu et al. in 2021, where 73.7% of respondents correctly answered that the HPV vaccine can prevent HPV-related OSCC.[14] In theory, the HPV vaccine can protect against oral HPV infection. The vaccine has the same high ability to fight infection in the cervix because the strains of HPV in the cervix are the same as those in the oral cavity. Then the results of

research on the HPV vaccine can be applied to both men and women, in line with the 2020 Dallas County et al. study, in which 90.8% of respondents answered correctly. HPV infection can occur in any gender, so the HPV vaccine can be an ideal strategy to reduce cases of cancer caused by HPV.[15] The CDC's Advisory Committee on Immunization Practices (ACIP) has also recommended HPV vaccination for women and men.

The results of the research on the level of knowledge of PDGI Medan general dentists regarding the availability of the HPV vaccine in Indonesia are good. This can be seen from a total of 67 respondents (67.7%) (Table 6). The high percentage of respondents answering is because respondents can access information on the availability of the HPV vaccine in Indonesia via the internet. The availability of information will help someone increase their knowledge. The results of this study are not in line with research conducted by Nasser et al. in 2020, where only 22.5% knew about the availability of the HPV vaccine in their country, namely Saudi Arabia. This happened because the implementation of the HPV vaccination program is rare in Arab countries. Only one Arab country (the United Arab Emirates) has introduced the HPV vaccine effectively, so in other Arab countries such as Saudi Arabia, the knowledge of dentists regarding the HPV vaccine is still low. Meanwhile, the government in Indonesia has clearly explained the availability of the HPV vaccine in Peraturan Menteri Kesehatan Republik Indonesia (PERMENKES RI) No. 12 of 2017 concerning the two types of HPV vaccines available in Indonesia. Permenkes can be easily accessed by every individual via the internet.[8,16]

CONCLUSION

The general conclusion about the level of knowledge of general dentists at PDGI Medan City regarding oral squamous cell carcinoma (OSCC) associated with human *papillomavirus* (HPV) is good.

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