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KNOWLEDGE AND ATTITUDE REGARDING ORAL CANCER AMONG DENTAL PRACTITIONERS IN BANDA ACEH: A CROSS-SECTIONAL STUDY

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ABSTRACT
Background: *Oral cancer remains a global health concern. Many cases are diagnosed at an advanced stage, which affects both treatment outcomes and prognosis.* ***Objective:*** *This study aims to assess the knowledge and attitudes of dental practitioners toward oral cancer in Banda Aceh.* ***Methods:*** *A cross-sectional study was conducted in 2023 among dentists in Banda Aceh and its surrounding areas. Data were collected using an online questionnaire, which included demographic information and questions on etiology, risk factors, signs and symptoms, oral screening, and attitudes toward oral cancer.* ***Results:*** *A total of 130 respondents participated, comprising 87.7% general practitioners and 12.3% dental specialists. More than half of the respondents demonstrated good knowledge of oral cancer etiology (61.5%) and its signs and symptoms (63.8%). However, only 52.3% had ever performed oral screening. Among those who had never conducted oral screening, 74.6% cited a lack of knowledge on how to perform it, with 16.9% specifically stating that they did not know the correct procedure. Additionally, only 40% of respondents had attended an oral cancer-related conference in the past year. A significant association was found between gender and knowledge of etiology ($p < 0.001$).* ***Conclusion:*** *To reduce the burden of oral cancer, it is essential to implement strategies that enhance dental practitioners' knowledge and attitudes toward the disease. Early detection through oral screening and participation in training programs can effectively minimize delays in diagnosis and improve patient outcomes.*

Keywords: *Attitud, Dental Practitioner, Knowledge, Oral Cancer, Squamous Cell Carcinoma*

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INTRODUCTION

In 2020, oral cancer ranked 12th globally in terms of prevalence and had a high mortality rate (Rivera C, 2015; Saraswat et al., 2020). The number of deaths due to oral cancer reached 177,757 out of a total of 377,713 cases worldwide. In Indonesia, according to the Global Cancer Observatory (Globocan), the number of oral cancer cases reached 7,780, with a mortality rate of 3,078 cases.[1] Oral squamous cell carcinoma is the most common type of oral cancer, accounting for over 90% of all cases. Oral cancer is often diagnosed at advanced stages (stages 3 and 4). A delayed diagnosis negatively impacts patients' survival rates and quality of life. Therefore, early diagnosis is crucial to reducing mortality and morbidity.[2,3]

Dentists play a crucial role as primary providers of information about oral cancer. They are often the first to encounter patients during oral health care, making it essential for them to have adequate knowledge and awareness of OSCC.[4] A study conducted at Princess Nourah University in Riyadh found that general dentists had a high level of knowledge regarding OSCC symptoms, with a prevalence of 86.9%, while specialist dentists had a prevalence of 93.5%.[5] Another study on dentists in Moldova, Belarus, and Armenia found that 83.8–98.2% of respondents identified tobacco as a risk factor for OSCC. However, the study also revealed that only 29.1–34.7% of respondents recognized low fruit and vegetable consumption as a risk factor for OSCC.[6]

In Indonesia, a study on knowledge and attitudes toward oral cancer was conducted in Jakarta in 2021. This study found that 93.5% of dentists had a low level of knowledge regarding clinical diagnostic procedures for oral cancer. In addition, the research revealed that only 26.9% of dentists had good knowledge of oral cancer risk factors.[7] Aceh is one of Indonesia's provinces where oral cancer cases continue to rise. Therefore, this study aims

to assess the knowledge and attitudes of dental practitioners regarding oral cancer. Specifically, it seeks to evaluate the knowledge of OSCC among dental practitioners in Banda Aceh.

METHODS

Study Population

Participants for this cross-sectional study were recruited from the Faculty of Dentistry, Universitas Syiah Kuala, between 2022 and 2023. This study was approved by the Research Ethics Committee of the Faculty of Dentistry, Universitas Syiah Kuala (No. 409/KE/FKG/2022). The inclusion criteria were dental practitioners and specialists who consented to participate in the study. The exclusion criterion was participants who did not complete the questionnaire.

Questionnaire

The questions used were modified from a previous study. The questionnaire consisted of items related to etiology and risk factors (11 questions), signs and symptoms (10 questions), oral screening (5 questions), and awareness (5 questions). The questionnaire underwent validity and reliability testing in a pilot study involving 31 respondents, yielding a Cronbach's alpha of 0.786. In the knowledge section, respondents were asked to choose "true," "false," or "do not know." Each correct answer was scored 1, while incorrect or "do not know" responses were scored 0. The total score was then converted into percentages and categorized as follows: good knowledge level (>75%), moderate (57–74%), and poor (<57%). For the awareness section, respondents were asked about routine oral screening. The questionnaire was administered electronically via Google Forms and distributed to dentists through the dentist association group. It remained open for four weeks.

Statistical Analysis

Statistical analyses were performed using SPSS software version 23.0. Descriptive statistics were calculated, and bivariate analyses were conducted. The relationships between knowledge and demographic characteristics were analyzed using the Mann-Whitney test, with a significance level of 0.05 for all analyses.

RESULTS

The total number of respondents was 130, with 23.8% being men and 76.2% women. General dentists comprised 87.7% of the participants, while 12.3% were dental specialists. Most respondents worked in private clinics (53.8%), while 46.2% worked in general hospitals. The majority had 6–10 years of experience as dentists (59.2%) (Table 1).

Table 1. Demographic Respondents (N=130)

Characteristic	N (%)
Age	
25-29 years old	33(25.4%)
30-39 years old	81 (62.3%)
40-49 years old	9 (6.9%)
50-59 years old	7 (5.4%)
Sex	
Male	31 (23.8%)
Female	99 (76.2%)
Educational Level	
General practitioner	114(87.7%)
Dental specialist	16(12.3%)
Work Place	
Private clinic	70 (53.8%)
General Hospital	60 (46.2%)
Practice Experience	
< 6 years	33 (25.4%)
6-10 years	77 (59.2%)
>10 years	20 (15.4%)

- Knowledge Regarding Oral Cancer

Table 2. Knowledge of Oral Cancer (N=130)

Knowledge	Responses	
	Correct n (%)	Incorrect n (%)
Etiology and Predisposing Factors		
Alcohol	118 (90.8)	12 (9.2)
Smoking and tobacco use	122 (93.8)	8 (6.2)
Betel nut chewing	112 (86.2)	18 (13.8)
Human Papilloma Virus	110 (84.6)	20 (15.4)
UV light	103 (79.2)	27 (20.8)
Cancer history in the family	119 (91.5)	11 (8.5)
Oral sex	110 (84.6)	20 (15.4)
Low consume vegetables	115 (88.5)	15 (11.5)
Poor oral hygiene	100 (76.9)	30 (23.1)
Geriatric patients	93 (71.5)	37 (28.5)
Sign and Symptoms		
Red and white plaque	121 (93.1)	9 (6.9)
Ulceration with induration	125 (96.2)	5 (3.8)
Difficulty in eating	103 (79.2)	27 (20.8)
Persistent oral ulcer	128 (98.5)	2 (1.5)
Bleeding in mouth	51 (39.2)	79 (60.8)
Swelling with ulceration	19 (14.6)	111 (85.4)
Weight loss	124 (95.4)	6 (4.6)
Recurrent oral aphthous	113 (86.9)	17 (13.1)
Oral Screening		
Fixed lymph node	76 (58.5)	54 (41.6)
Early detection reduces mortality	129 (99.2)	1 (0.8)
Oral screening reduces mortality	126 (96.9)	4 (3.1)
Toluidine blue for screening	86 (66.2)	44 (33.8)
Brush biopsy for screening	99 (76.2)	31 (23.8)

- Attitude Toward Performing Oral Screening to Detect Suspicious Condition

Table 3. Attitude toward oral screening (N=130)

Questions	Response n(%)
● Did you do oral screening to detect oral cancer?	
Yes	
No	97 (74.6%)
● Explain why you did not do oral screening	33 (25.4%)
Do not know	
No need to do	22(16.9%)
Do oral screening	20 (15.4%)
● What to do when you detect a suspected malignant lesion?	88 (67.7%)
Refer to specialist	
Do oral examination carefully	
● When was the last time attend an oral cancer conference	122 (93.8%)
Never attended	8 (6.2%)
1 year ago	
For the past 2 years	
More than 2 years ago	34 (26.2%)
	52 (40%)
	19 (14.6%)
	25 (19.2%)

Table 4. Comparison between demographic characteristics toward knowledge of oral cancer

Characteristic	Etiology Risk Factors	Sign Symptoms	Oral Screening	Total Knowledge	P value
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	
Sex					
Male	2.29 (0.8)	2.38 (0.8)	2.22 (0.8)	2.32 (0.5)	
Female	2.62 (0.5)	2.58 (0.6)	2.44 (0.6)	2.68 (0.5)	0.001*
Age					
25-29 years old	2.42 (0.7)	2.54 (0.6)	2.18 (0.8)	2.57 (0.6)	
30-39 years old	2.58 (0.6)	2.53 (0.7)	2.45 (0.7)	2.58 (0.5)	0.16
40-49 years old	2.55 (0.5)	2.88 (0.3)	2.77 (0.4)	2.77 (0.4)	
50-59 years old	2.86 (0.4)	2.14 (0.9)	2.71 (0.5)	2.71 (0.5)	
Educational level					
General Practitioner	2.53 (0.6)	2.52 (0.7)	2.37 (0.7)	2.58 (0.5)	0.228
Dental Specialist	2.69 (0.6)	2.68 (0.6)	2.50 (0.7)	2.75 (0.4)	
Workplace					
Private clinic	2.48 (0.6)	2.51 (0.7)	2.31 (0.7)	2.57 (0.5)	
General Hospital	2.62 (0.6)	2.57 (0.7)	2.48 (0.6)	2.63 (0.2)	0.470
Practice experience					
< 6 years	2.45 (0.6)	2.57 (0.6)	2.18 (0.8)	2.61 (0.5)	0.18
6-10 years	2.55 (0.6)	2.53 (0.7)	2.40 (0.7)	2.58 (0.5)	
>10 years	2.54 (0.6)	2.50 (0.8)	2.70 (0.5)	2.65 (0.5)	

*Mann-Whitney

DISCUSSION

Oral Squamous Cell Carcinoma (OSCC) is the most common type of oral cancer, and early diagnosis is a crucial factor in successful treatment and preventing metastasis. With early detection and advances in treatment, the 5-year survival rate of patients has increased to over 50%.[8] However, most oral cancers are difficult to diagnose in the early stages. Therefore, dental health care professionals play a crucial role in the prevention and early detection of Oral Squamous Cell Carcinoma (OSCC). Knowledge and understanding of the etiology, risk factors, clinical features, and screening methods among dental practitioners are essential for early detection and reducing the mortality and morbidity of OSCC cases.[9]

A family history of cancer may be a risk factor for OSCC. A study by Fantozzi et al. (2021) found that having one or more siblings with a history of cancer increases the risk of OSCC. Additionally, alcohol and tobacco use play a significant role in the etiology of OSCC. Alcohol increases the permeability of the oral mucosa and can interact with other carcinogens, further elevating the risk. Mass media advertisements and campaigns about the dangers of smoking serve as key sources of information for research subjects. The findings in this study are higher compared to those of Rawal et al. (2018), in which 53% of subjects identified smoking as a risk factor and 23% recognized smokeless tobacco as a major risk factor.[10,11]

Another etiological factor of OSCC is betel nut chewing. Most respondents identified betel nut as a risk factor for Oral Squamous Cell Carcinoma (OSCC). Similarly, a study by Jboor et al. (2019) in Qatar found that 74.5% of respondents recognized betel nut as a risk factor.[12]

Regarding the question on oral sex, most respondents answered incorrectly, accounting for 71.7%. This may be due to their association of oral sex with the possibility of Human Papillomavirus (HPV) infection.[9] Regarding the question on HPV infection, most subjects agreed that HPV is a risk factor for OSCC. Similarly, a study by Hashim et al. (2018) in the United Arab Emirates found that 76.6% of respondents identified HPV as a risk factor. A high level of knowledge on this topic may be influenced by the number of journal articles discussing the relationship between OSCC and HPV infection. The study also indicated that sexual activity is a risk factor for oral cancer, particularly among individuals with multiple oral sexual partners compared to those with multiple vaginal sexual partners, in terms of the risk of HPV-associated oropharyngeal cancer.[13]

Regarding the question on oral hygiene, most respondents agreed that poor oral hygiene is a risk factor for OSCC. Poor oral hygiene can enhance the carcinogenic potential of other risk factors, such as tobacco and alcohol.[14] Regarding the question on sun exposure, most subjects agreed that prolonged direct exposure to sunlight can cause OSCC on the lips. Sun exposure is a risk factor for lip cancer due to the cumulative effect of ultraviolet (UV) damage. The results of this study are higher compared to those of Wimardhani et al. (2021) in Jakarta, which reported a prevalence of 34.8%. However, a study by Pavão Spaulonci et al. (2018) showed a higher percentage of 85.7%.[7,15]

The risk of developing Oral Squamous Cell Carcinoma (OSCC) increases with age. In this study, most subjects identified individuals aged 60 years and older as a high-risk group. Their good knowledge on this question may be attributed to the understanding that, by the age of 60 and above, the aging process leads to a decreased ability to regenerate tissues in the body.[16,17]

In the final question regarding etiology and risk factors, 66.7% of subjects disagreed that spicy food is a risk factor for Oral Squamous Cell Carcinoma (OSCC). According to research by Mosqueda-Solís et al. (2021), capsaicin and capsazepine, compounds found in chili peppers, may help prevent the development of oral epithelial dysplasia and OSCC.[18]

The results showed that, in the first question regarding the characteristics of Oral Squamous Cell Carcinoma (OSCC), all subjects identified red, white, or mixed red-and-white patches in the oral cavity as one of the characteristics of OSCC. Additionally, the study found that, in the second question, most respondents identified ulcerated lesions accompanied by induration as a clinical feature of OSCC. The results of both questions were higher than those reported by Hashim et al. (2018), in which 79.9% and 63.2% of subjects identified white and red lesions as clinical features of oral cancer.[19] Another study also found that 79.5% of subjects agreed that the presence of a mass or ulceration is a sign of oral cancer.[20]

Oral Squamous Cell Carcinoma (OSCC) can develop from precancerous lesions or conditions of the oral cavity and may also arise de novo (Rhodus et al., 2014). This study found that 72.7% of subjects identified leukoplakia as a lesion with the potential to develop into OSCC. Our findings indicate that respondents have a good understanding of leukoplakia as a precancerous lesion. [19]

Oral Squamous Cell Carcinoma (OSCC) has several clinical features, including persistent ulceration. The results for the fifth question showed that 99.0% of subjects identified non-healing mouth ulcers as a symptom of OSCC. This percentage is higher compared to a study by Hashim et al. (2018) in the United Arab Emirates, which reported that only 87.6% of subjects identified persistent ulceration as a symptom of oral cancer. For the sixth question, only 41.4% of subjects answered correctly, while 58.6% provided incorrect responses.[13]

Oral Squamous Cell Carcinoma (OSCC) in advanced stages presents with various signs, symptoms, and clinical manifestations, including spontaneous bleeding, ulceration, weight loss, and other features. In the seventh question, 75.8% of subjects identified bleeding in the oral cavity as a clinical feature of OSCC. For the eighth question regarding tissue enlargement and ulceration, 94.9% of subjects provided correct responses. A similar study conducted in the United Arab Emirates reported that 66.9% of subjects identified tissue swelling as a clinical feature of OSCC.[15] Another study found that 99.7% of subjects agreed that ulceration is a clinical manifestation of oral cancer. Furthermore, in the final question regarding weight loss, 88.9% of subjects provided correct responses.

In this study, subjects were also asked about examinations for oral cancer. In the first question, they were asked whether swollen lymph nodes that were palpable and hard on palpation are a sign of OSCC. The results showed that many subjects answered correctly. These findings are consistent with a study conducted in the United Arab Emirates, which reported a percentage of 82.9%. Similarly, research by Wimardhani et al. (2021) found that 52.5% of subjects identified hard, painless, movable, or fixed lymph nodes on palpation as a characteristic of cancer metastasis. When asked about oral cavity examinations, 76.8% of subjects reported performing the procedure, while the remaining subjects did not. This may be due to a lack of knowledge about how to conduct an oral cancer examination.

This study has several limitations. It was based on a questionnaire and involved participants from a single area, limiting the generalizability of the results to the entire province. Despite this limitation, the study provides valuable baseline information on dentists' knowledge and attitudes regarding oral cancer. To the best of our knowledge, this may be the first study conducted in Banda Aceh and the Aceh province. In conclusion, our study found that most dental practitioners demonstrated good knowledge of the etiology, risk factors, clinical features, signs, and symptoms of oral squamous cell carcinoma (OSCC). However, further continuing education programs on oral cancer screening should be organized to enhance early detection and improve the training of dental practitioners.

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CONFLICT OF INTEREST

Authors declare no conflict of interest.

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