ORIGINAL PAPER

ORAL CANCER AWARENESS OF RECOVERING DRUG ADDICTS IN THE NATIONAL NARCOTICS BOARD DRUG REHABILITATION CENTER IN THE REPUBLIC OF INDONESIA

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ABSTRACT

Introduction: Oral cancer (OC) is a disease with poor prognosis, but this can be improved with early detection. OC occurrence is closely related to various risk behaviors, especially consumption of tobacco, betel quid, alcohol, or illicit drugs; individuals with those habits should be aware of OC risk.

Objectives: This study assessed the awareness of OC among recovering drug addicts through analyses of their understanding of OC risk factors and early signs, as well as the need for early diagnostic screening.

Material and methods: This cross-sectional study included 163 consecutive patients (145 men, 18 women; aged 18 to 49 years) enrolled in the National Narcotics Board Drug Rehabilitation Program in the Republic of Indonesia during January and February 2018. A self-administered questionnaire was designed to collect data regarding sociodemographic characteristics, OC-related behaviors, risk factors, early signs, screening, and dental visits.

Results: Of 163 subjects, 125 (76.7%) were aware of OC, and 54 (43.2%) knew that illicit drug consumption was a risk factor; 68 (54.4%) subjects did not recognize early signs of OC, and 104 (83.2%) subjects had never undergone OC screening. After illicit drug consumption, the prevalence of tobacco consumption was highest (140, 85.9%), followed by alcohol (35, 21.5%), and betel quid (4, 2.5%). Among subjects who had visited dental clinics, 24 (14.7%) learned about OC from their dentists.

Conclusions: OC awareness remains low among recovering drug addicts, potentially due to a lack of information. Dental practitioners play major roles in the detection, education, and intervention needed to reduce the incidence of OC.

Key words: dentists, drug addicts, Indonesia, oral cancer.

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INTRODUCTION

Oral cancer (OC) is considered the eighth most important public health issue worldwide and comprises 3.9% of all cancers [1]. OC reportedly occurs more frequently in developing nations than in developed nations, and the highest rates are in Melanesia, South-Central Asia, and Central and Eastern Europe; the lowest rates are in Africa, Central America, and Eastern Asia [2]. There are many predisposing factors involved in OC development, including cigarette/pipe smoking, tobacco/betel quid chewing, excessive alcohol consumption,

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prolonged sunlight exposure, human papillomavirus, genetics, poor diet, ultraviolet light exposure, and illicit drug consumption [3]. A study in India showed that premalignant lesions, such as leukoplakia and oral submucous fibrosis, were found more often in illicit drug users than in non-users [4]. Nevertheless, the two most influential factors in OC occurrence are the consumption of tobacco and alcohol, both independently and synergistically [2].

Squamous cell carcinoma, the most prevalent type of OC, has poor prognosis. The five-year survival rate is only 50-60% of patients, depending on staging at the time of diagnosis; importantly, two of three patients with OC receive a delayed diagnosis [2]. This may be related to oversight by health professionals and health systems, as well as a lack of awareness by the patient [5]. In terms of psychology, awareness can be defined as a state where people actively identify, process, and store information about what requires attention. A person's level of awareness of OC can be assessed by their knowledge about OC, whether they have undergone OC screening to evaluate themselves, and whether they exhibit sufficient self-regulation to avoid risk factors. Self-administered questionnaires constitute a popular tool for assessing awareness [5].

Illicit drug addiction is another public health issue that is a critical concern in many countries, including Indonesia. According to the United States National Institute on Drug Abuse, drug addiction is a chronic brain disease that may involve relapses and uncontrollable drug use. Although the initial decision to consume illicit drugs is voluntary, brain destruction that occurs due to prolonged drug use alters a person's self-control abilities; consequently, affected individuals exhibit increasing consumption of illicit drugs [6]. In Indonesia, the most popular illicit drugs used are cannabis and methamphetamines [7]. Both are genotoxic [8] and can initiate carcinogenesis, a process of cancer development that can occur in any part of the body and always comprises three stages: initiation, promotion, and progression [9]. Continuous exposure, from either direct or indirect administration routes, leads to interactions between illicit drugs and DNA, which are known to trigger chromosomal damage as an initiation step of carcinogenesis. Abolfazi *et al*. showed that the genotoxic effects of cannabis can cause structural disruption of chromosomes 1, 2, and 9 [10]. Li *et al*. reported that, in methamphetamine users, the overproduction of reactive oxygen species due to illicit drug consumption plays an important role in the induction of genotoxic effects [11]. However, the role of drug abuse as a basis for carcinogenesis has not been explored.

Drug addicts often exhibit additional risk factors for OC, such as tobacco and alcohol consumption; therefore, it is difficult to separate the effects of drug consumption from those of other risky habits [12, 13]. Notably, no studies have shown that initiation of carcinogenesis is a direct effect of illicit drug consumption alone. Hence, it is important that drug addicts are aware of OC, as their lifestyles are more likely to be associated with its occurrence; increased awareness can prevent delayed diagnosis. With increasingly delayed diagnosis, a poor prognosis becomes progressively more probable [5]. Therefore, the aim of this study was to assess OC awareness among recovering drug addicts, who were undergoing rehabilitation programs in the Republic of Indonesia National Narcotics Board Drug Rehabilitation Center, through a self-administered questionnaire.

MATERIAL AND METHODS

This cross-sectional study enrolled 163 consecutive patients in the Republic of Indonesia National Narcotics Board Drug Rehabilitation Center during January and February 2018. In this study, subjects completed a self-administered questionnaire that consisted of two sections: sociodemographic data (age, sex, marital status, educational background, and occupation) and various questions related to OC awareness (risk behaviors, knowledge regarding risk factors, early signs, and screenings). Additionally, they were asked about their histories of dental visits. The development and standardization of the Indonesian translation of this questionnaire has been published previously [5]. This study was approved by the Ethics Committee of the Faculty of Dentistry, Universitas Indonesia. All subjects received an explanation of the study's purpose and provided written informed consent to participate prior to data collection.

In the section regarding OC awareness, the eight questions were multiple choice in format; for some questions, subjects were allowed to choose more than one answer. Subjects were first asked whether they had some awareness of OC. If they answered yes, they were then asked how many risk factors they knew about, how many early signs they recognized, and whether they had undergone screening for early diagnosis. Their histories of other high-risk behaviors, such as cigarette smoking, alcohol consumption, and tobacco/betel quid chewing, were also assessed.

In the section regarding history of dental visits, subjects were asked six questions about how many times they had visited a dentist, when the last visit was, and why they had visited the dentist most recently. They were asked whether the dentist assessed their habits (tobacco smoking and alcohol consumption) and educated them about the impacts of those habits on oral health; these questions were designed to evaluate the dental practitioner's role in subjects' acknowledgment of risky habits.

After data had been recorded, univariate analysis was performed to investigate the distributions of subjects' sociodemographic characteristics, their sources of information regarding OC, knowledge regarding risk factors, and recognition of early signs. Associations between OC awareness and each of several factors (e.g., sociodemo-

TABLE 1. Distribution of source of information, risk factor knowledge, and early sign recognition in 125 subjects who had some awareness of oral cancer

Parameter	*n*	%
Sources of information regarding oral cancer		
Advertisements	49	39
Dentist	24	19
TV/radio	17	14
Newspaper	10	8
Doctor and other health workers	9	7
Internet	10	8
Family/friends	6	5
Risk factor knowledge*		
Cigarette/pipe smoking	89	71
Illicit drug use	54	43
Poor oral hygiene	54	43
Human papillomavirus exposure	18	14
Excessive alcohol consumption	17	14
Tobacco/betel quid chewing	12	10
Spicy or hot food consumption	9	7
Lip or cheek biting	8	6
Excessive coffee consumption	7	6
Genetics	5	4
Poor diet	4	3
Ultraviolet light	2	2
Do not know	13	10
Early sign recognition*		
Oral ulcers that do not heal	35	28
Oral bleeding	17	14
Painless white plaque	12	10
Painless red plaque	11	9
Do not know	68	54

**Can be answered more than one*

graphic characteristics, risk behaviors, and history of dental visits) were investigated through bivariate analyses. *P* values < 0.05 were considered statistically significant. All analyses were performed using IBM SPSS software (version 23, IBM Corp., Armonk, NY, USA).

RESULTS

The subjects in this study comprised 145 men and 18 women, aged 18 to 49 years; 108 subjects were unmarried. Their education was mainly at secondary level (up to 12 years of schooling); 25 subjects were unemployed. All subjects had similar levels of drug dependency, as established by addiction physicians in the initial assessments prior to joining the rehabilitation program.

Of the 163 subjects, 125 had some awareness of OC; these 125 subjects were asked about their sources of information. Table 1 shows that more than half of the subjects learned about OC from media (e.g., advertisements, TV/radio, newspapers, and the internet); only 26% learned about OC from health professionals, including dentists. Regarding risk factors of OC, more than 75% of subjects knew of at least one of the listed risk factors; the most common answer was cigarette/pipe smoking. Notably, only 54 subjects knew that illicit drug consumption was an OC risk factor. Regarding recognition of the early signs of OC, only 57 subjects recognized at least one sign; the most commonly known sign was the presence of oral ulcers that did not heal.

Table 2 shows the associations between OC awareness and each of several factors: sociodemographic characteristics, risk behaviors, and history of dental visits. All data were analyzed using the Mann-Whitney *U* test. Marital status showed a significant association ($p < 0.05$) with awareness of OC; in contrast, age, sex, education, and occupation did not. Betel quid chewing was the only risk behavior associated with recognition of early signs of OC. Finally, a history of dental visits was significantly associated with the experience of undergoing OC screening.

Regarding the history of dental visits, 117 subjects reported at least one visit since they began participating in risk behaviors (Table 2). More than 50% of subjects reported that the dentist asked about their tobacco smoking and alcohol consumption habits; however, fewer than half of the subjects were educated on the impact of these behaviors on oral health (Table 3). These data were consistent with the finding that only 24 subjects had learned about OC from their dentists (Table 1). During the study period, premalignant lesions, such as leukoplakia, and mucosal changes, such as multiple melanosis, cheilitis, and chronic ulcers, were found in some of the subjects.

DISCUSSION

Although the epidemiology data of OC incidence in Indonesia remains incomplete, GLOBOCAN estimated in 2012 that the annual OC incidence was approximately 2.3/100,000. There have been few studies regarding the level of OC awareness. In 2018, two studies measured awareness levels in a sample of older adults in the Depok region and in a sample of the greater public in the Jakarta region. Notably, both indicated a low level of awareness [3, 14].

OC awareness is essential to prevent delayed diagnosis. To build awareness, people at risk should gather as much OC-related information as possible [15, 16]. In the present study, recovering drug addicts were included as subjects because they are at high risk of OC. To the best of our knowledge, there have been no previous studies involving similar subjects, so we could not make any comparisons of these data.

TABLE 2. Awareness of oral cancer by sociodemographic characteristics, risk behaviors, and history of dental visits

Variables	*n*	Awareness of oral cancer																			
		Ever heard about oral cancer					Knowledge of risk factors					Recognition of early signs					Ever had oral cancer screening				
		Yes	%	No	%	*p* value	Yes	%	No	%	*p* value	Yes	%	No	%	*p* value	Yes	%	No	%	*p* value
Sociodemographic characteristics																					
Sex																					
Male	145	111	76.5	34	23.5	0.908	101	91	10	9	0.153	52	46.8	59	53.2	0.432	19	17.1	92	82.3	0.79
Female	18	14	77.8	4	22.2		11	78.6	3	21.4		5	35.7	9	64.3		2	14.3	12	85.7	
Age (years)																					
18-24	69	50	72.5	19	27.5	0.21	44	88	6	12	0.81	24	48	26	52	0.71	8	16	42	84	0.36
25-44	90	71	78.9	19	21.1		65	72.2	6	27.8		31	43.7	40	56.3		15	21	56	79	
> 45	4	4	100	0	0		3	75	1	25		2	50	2	50		0	0	4	100	
Education																					
No schooling or up to 6 years	13	9	69.2	4	30.8	0.62	9	100	0	0	0.90	4	44.4	5	55.6	0.53	2	22.2	7	77.8	0.43
6-12 years	118	91	77.1	27	22.3		80	88	11	12		40	44	51	56		16	17.6	75	82.4	
> 12 years	32	25	78.1	7	21.9		23	92	2	8		13	52	12	48		3	12	22	88	
Occupation																					
Unemployed	25	19	76	6	24	0.93	16	84.2	3	15.8	0.41	8	42.1	11	57.9	0.74	2	10.5	17	89.5	0.43
Employed	138	106	76.9	32	23.1		96	90.6	10	9.4		49	46.2	57	53.8		19	17.9	87	82.1	
Marital status																					
Unmarried	87	61	70.1	26	29.9	0.04*	53	86.9	8	13.1	0.30	31	50.8	30	49.2	0.19	8	13.1	53	86.9	0.39
Married	55	46	83.6	9	16.4		42	91.3	4	8.7		20	43.5	26	56.5		10	21.7	36	78.3	
Widow	21	18	85.7	3	14.3		17	94.4	1	5.6		6	33.3	12	66.7		3	14.3	15	85.7	

TABLE 2. Cont.

Variables	*n*	Awareness of oral cancer																	
		Ever heard about OC					Knowledge of risk factors					Recognition of early signs					Ever had OC screening		
		Yes	%	No	%	*p* value	Yes	%	No	%	*p* value	Yes	%	No	%	*p* value	Yes	%	No	%	*p* value
Risk behaviors																					
Tobacco smoking																					
Yes	148	114	77	34	23	0.75	101	88.6	13	11.4	0.24	49	43	65	57	0.06	19	16.7	95	83.3	0.90
Never	15	11	73.3	4	26.7		11	100	0	0		8	72.7	3	27.3		2	18.2	9	81.8	
Betel chewing																					
Yes	4	4	100	0	0	0.27	4	100	0	0	0.49	4	100	0	0	0.03*	2	50	2	50	0.07
Never	159	121	76.1	38	23.9		108	89.3	13	10.7		53	43.8	68	56.2		19	15.7	102	84.3	
Alcohol consumption																					
Yes	35	27	77.1	8	22.9	0.94	25	92.6	2	7.4	0.57	14	51.9	13	48.1	0.46	5	18.5	22	81.5	0.79
Never	128	98	76.6	30	23.4		87	88.8	11	11.2		43	43.9	55	56.1		16	16.3	82	83.7	
History of dental visits																					
Yes	117	89	76	28	24	0.77	80	90	9	10	0.87	43	48.3	46	51.7	0.34	20	22.5	69	77.5	0.01*
Never	46	36	78.3	10	21.7		32	88.9	4	11.1		14	38.9	22	61.1		1	2.8	35	97.2	

*$p < 0.05$, *Mann-Whitney U*

The results showed that recovering drug addicts in our study had low OC awareness. Approximately one third of the subjects stated that they had no OC awareness. Among the subjects who had some awareness, fewer than 50% knew that illicit drug consumption was a risk factor and more than 45% had wrong answers pointed that spicy and hot food, excessive coffee consumption, and poor oral hygiene as risk factors for oral cancer. Subjects' histories of drug consumption were not collected, but all subjects had similar drug dependence diagnoses, based on the ICD-10 definition. Moreover, the subjects had other behaviors associated with increased risk of OC, such as cigarette smoking, excessive alcohol consumption, and tobacco/betel quid chewing [17-19]. The findings of premalignant lesions in some of the subjects support the grouping of drug addicts as a high-risk population and indicate that OC awareness is urgently needed among these individuals.

Regarding sources of information about OC, advertisements and TV/radio were the first and third most common. This suggests that the campaign of placing cancer warnings on cigarette packages, billboards, and electronic media is effective for increasing OC awareness. Although dentists were the second most common source of information about OC, this answer was given by fewer than 15% of all subjects in the study. Furthermore, ≤ 50% of dentists inquired about patients' lifestyles and provided education regarding the impact of lifestyle on oral health during dental visits (Table 3). This study's findings suggest that dental professionals should serve as both medical providers and oral health educators [14].

Social support, particularly from close relatives, is known to be an important determinant of OC awareness [20]. The associations between awareness of OC and sociodemographic characteristics in this study showed that only marital status significantly affected OC awareness. It is undeniable because family interventions have become a standard component of most substance abuse programs. A simple family intervention can acknowledge each other's habits and possible impacts, because many studies have shown that initiation, maintenance, and cessation of habits are strongly influenced by family members as a support system [21].

The presence of a tobacco/betel quid chewing habit in the section regarding risk behaviors was significantly associated with the recognition of early signs of OC, whereas other factors were not. This finding may be related to the incidence of oral lesions that cause discomfort for chewers, characterized by oral mucosa staining, periodontal disease, whitish (leukoplakia) or reddish (erythroplakia) plaques, stiffening, and oral submucosa fibrosis [22]. These phenomena may increase the need to search for additional information related to their habits.

From the history of dental visits, subjects who had visited a dentist had a greater likelihood of undergoing OC screenings than those who had never visited a dentist. Although ≤ 50% of dentists inquired about their pa-

TABLE 3. Role of dentist in assessing and educating 117 patients reporting at least one history of dental visit

Role	Yes, *n* (%)	No, *n* (%)
Assessment of tobacco smoking habit	88 (75.2)	29 (24.8)
Assessment of alcohol consumption habit	65 (55.6)	52 (44.4)
Education regarding tobacco use and oral health	55 (47.0)	62 (53.0)
Education regarding alcohol consumption and oral health	44 (37.6)	73 (62.4)

tients' oral health and provided relevant education, most dentists offered OC screenings. The dentists may have performed screenings because of the presence of oral lesions that were suspected to be premalignant or malignant [23]; however, many such lesions comprise later stages of OC [24, 25].

This study had multiple limitations. The number of subjects was quite small, and there was an imbalance in the proportion of men and women. Furthermore, the study did not include collection of the subjects' histories of drug dependence. Finally, the study was performed in a single rehabilitation center. However, the results of this study can be used as initial data regarding the general awareness of OC in recovering drug addicts.

CONCLUSIONS

OC awareness in a sample of recovering drug addicts, a high-risk population, remains low. The lack of information that these individuals gather from available sources, particularly health providers, may be a primary reason for this low awareness. Dental practitioners play major roles in detection, education, and intervention, which are needed to reduce the incidence of OC.

CONFLICT OF INTEREST

The authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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