Perspective and Challenges in Oral Cancer Screening Practices of Primary Care Providers

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Article

Perspective and Challenges in Oral Cancer Screening Practices of Primary Care Providers

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Abstract: Objectives: The aim of this study is to understand the rationale for the lack of interest to perform regular opportunistic oral cancer screening (OCS) by primary care providers (PCPs) and the challenges they have in incorporating OCS into their annual examination protocol. **Method:** Sequential exploratory mixed methods were used. Both qualitative and quantitative data from PCPs working at Nebraska Medicine were obtained. One-on-one in-depth interviews were performed to identify PCP's perceptions and challenges in performing OCS. The themes identified in the qualitative study were used as a guide in the development of survey questionnaires. The survey was emailed to all the PCPs (N=100), whose information was available on the Nebraska Medicine publicly accessible website. **Results:** The response rate was 34%. Approximately 60% of the participants mentioned that they currently perform oral cancer screening, but only 3.8% of the providers answered that they were performing comprehensive oral cancer screening every time. Forty-eight percent of the providers identified time as the biggest challenge. Over 35.3% of the providers answered that they perform screenings for patients with a history of tobacco (i.e., smoking) or alcohol use. **Conclusion:** Around half of the participants identified lack of time as their primary challenge in performing OCS and lack of knowledge as their second main obstacle. Very few provided comprehensive OCS and visual examination of the oral cavity is the only step performed often.

Keywords: oral cancer screening - primary care providers - oropharyngeal cancer-early detection of cancer-cancer screening-care providers - health care professionals - health care providers

1. Introduction

Oral and oropharyngeal cancer is a complex and devastating disease that greatly impacts a patient's quality of life. They are highly invasive malignancies and amongst` the most debilitating and disfiguring cancers [1–4]. For comprehensibility, oral and oropharyngeal cancer (OPC) is used as an inclusive term for both the oral cavity and oropharyngeal space cancers in this article [5]. Cancer of the oral cavity and pharynx usually are surface malignancies often preceded by a clinical premalignant phase whose signs and symptoms can be recognized early [6]. Despite the oral cavity being the accessible site, over 50% of OPC goes undiagnosed at a localized stage [7]. Although the diagnosis at an early stage is critical, implementation of population-wide screening is not recommended as there is insufficient evidence for its utility or cost-effectiveness [8], since the estimated percentage of OPC in 2023 is only 2.8% of all cancer cases and only 1.9% of all cancer deaths [9]. Primary risk factors for OPC are smoking and alcohol abuse, USPSTF recommends counseling high-risk groups [10]. Targeted screening for OPC is more cost-effective for high-risk groups compared to screening the general population [11] but there is a high noncompliance rate for subjects who are advised to get a biopsy [12]. The emergence of the human papillomavirus (HPV-16) as a contributory risk factor for OPC has made it difficult for healthcare providers to target actual high-risk OPC groups [13]. Opportunistic screening by PCP who are treating patients who are at high risk for developing OPC is logical.

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There is a notable disparity in access to quality oral healthcare for individuals who fall under the categories of low-income, uninsured, and/or are members of racial/ethnic minority, immigrant, or rural populations who are particularly vulnerable to developing OPC [14]. Instead, they tend to seek medical care from PCPs such as physicians, physician assistants, and advanced practice registered nurses for medical care [15]. Opportunistic annual non-symptomatic OCS by PCPs who have been trained in OCS techniques may result in consistent early detection of OPC and very likely lower treatment morbidity and mortality from this disease [13]. It has been shown that opportunistic screening resulted in increment in diagnoses of Stage I oral cancer from 22.8% to 48.2% and reduction in morbidity and mortality rates of oral cancer in Cuba [5].

Unfortunately, PCPs do not regularly screen for OPC and that's the reason most patients are diagnosed at advanced stages [16]. The lack of foolproof screening adjunctive tests and guidelines for PCPs can be a reason why PCPs don't perform OCS [17]. PCPs often lack knowledge about OPC and do not perform routine OCS unless patients present with symptoms [18]. It was found that more than 77% of patients who have been diagnosed with advanced OPC were under the routine care of physicians in the preceding 3-24 months and 94% of the patients diagnosed with advanced OPC visited their physician in the preceding year [19].

The aim of this study is to understand the rationale for the lack of interest to perform regular opportunistic OCS by PCPs and the challenges they have in incorporating OCS into their annual examination protocol. The purpose is to understand these challenges to overcome the barriers preventing PCPs from performing OCS.

2. Methods

2.1. Design

The institutional review board at the University of Nebraska Medical Center approved the study (IRB#558-17-EX). A sequential exploratory mixed methods study design was used due to the lack of pre-existing data to build a close-ended survey necessary to answer the research questions. The qualitative data were collected first to explore PCPs' perceptions, challenges, and education on OCS. The quantitative phase followed, in which qualitative study themes were used as a guide in developing the close-ended survey. The study sample included PCPs, limited to physicians (internal medicine and family physicians), nurse practitioners, and physician assistants, employed at Nebraska Medicine in 2017 and who were involved in the physical examination of adult patients.

2.1.1. Phase 1: Qualitative Study

Through purposive homogenous sampling, data were collected from PCPs who were practicing primary care exclusively and not associated with any specialty in medicine. The name, emails, and telephone numbers of PCPs practicing at Nebraska Medicine were obtained from the Nebraska Medicine website in 2017 (https://www.nebraskamed.com/primary-care). Providers who met all the study criteria were selected (N=30) and sent recruitment letters email. A second email was sent to non-respondents one week following the original email. Finally, a telephone call was made to PCPs who did not respond after two emails. The recruitment phase ended upon reaching qualitative saturation. The data obtained on providers' perspectives and their challenges in performing OCS did not change after interviewing the eighth PCP. However, an additional two participant PCPs were interviewed to ensure no new information was obtained.

The PCP interviews (20 to 40 minutes) were conducted in the participants' offices, audio recorded, and transcribed after obtaining written consent. The semi-structured interview guide was used to facilitate and standardize the interviews.

Questionnaire for focus groups (health care provider):

1. Can you describe the typical process (in general) for oral cancer screening in your practice?
2. Based on your experience, what are the barriers (factors that are hindering/ challenging to screening patients for oral cancer) you are facing in your practice of oral cancer screening? (In case they miss talking about lack of understanding from their own side then ask) Do you feel

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that you have enough training to identify the signs and symptoms of oral cancer? (Does continued education curriculum cover oral cancer screening?)
3. You mentioned this barrier (each barrier discusses separately), in your opinion how can this barrier be addressed? (Elaborate ASK WHY and HOW the solution would help)
4. What according to you would be the best educational method to increase the knowledge of providers regarding oral cancer screening? (Hands-on practice, PowerPoint presentations, seminars)
5. Is there any other way to improve oral cancer screening in your practice given the demographic population you are working with? (Patient-provider communication, patient education.)

2.1.2. Questionnaire Design

The results of the qualitative study were used as a guide in developing a 24-item survey questionnaire. One-on-one interview participants mentioned multiple challenges for why they may not perform OCS. All the challenges were incorporated into the survey to determine the variables that most of the participants identified as a challenge. Questions regarding PCP education on OCS and current OCS practice were added to determine if an association between these two variables does occur. Additionally, questions on performing OCS were included to estimate the percentage of providers performing comprehensive OCS. Demographic questions were also included.

2.1.3. Phase 2: Quantitative Study

Data collection was managed with REDCap (Research Electronic Data Capture). All the PCPs (N=100) who were identified on the Nebraska Medicine website (https://www.nebraskamed.com/primary-care) received the survey along with the cover letter. Of the 100 PCPs, 78 were physicians; 12 were physician assistants, and 10 were nurse practitioners. Three email reminders were sent, with a five-day gap between each reminder to increase the response rate [20].

2.2. Analysis

Qualitative data: The verbatim transcription of the one-on-one interviews were completed by using the online transcription software 'Trint' (https://trint.com). The transcripts were read manually by a single investigator who checked for accuracy. Coding was performed by using three pre-determined categories from the interview guide: (1) challenges in performing OCS in PCPs' practices, (2) education received on OCS during PCPs' medical training, and (3) current OCS practice. The coded data were then analyzed to identify themes and trends and were arranged according to the research objectives and questions.

Quantitative data: Data analysis was performed using IBM SPSS (Version 22.0, IBM Corporation, Chicago, IL, USA). A Fischer exact test was used to check the significance of the relationship between binary variables, including PCPs' education on OCS and their current OCS practice. The Chi-Square test was used to check the significance between polytomous variables, such as education on OCS and critical steps in comprehensive OCS, visual examination of the oral cavity, visual examination of the extra-oral cavity, inspection of the oropharynx, palpation of soft tissues in the oral cavity, and palpation of the neck. Descriptive statistics regarding the frequency and percentage occurrence of all the variables collected in the survey were gathered to determine the primary challenge in performing OCS and what PCPs consider as risk factors for OPC. A descriptive analysis was also completed to identify participants' characteristics and work styles.

3. Results

3.1. Qualitative Results

A total of 10 providers participated in one-on-one interviews. During concurrent data analysis while recruitment, saturation occurred after the eighth participant, but two more were recruited to ensure no more new data was produced. Out of 10 participants, 80% were females, and 20% were

 doi:10.20944/preprints202408.1142.v1

males. Around 50% of the participants were physicians, 30% were physician's assistants, and 20% were nurse practitioners.

Theme 1: Education on OCS during PCPs medical training: Some providers mentioned that they received training in performing oral examination to detect abnormalities, but they did not receive any specific education on OCS during their medical training. Some PCPs explained that they check the mouth, but it never occurred to them that they should screen for OPC. Some PCPs do not exactly remember what kind of training they received.

However, some providers (Participant 1, and Participant 10) mentioned that they received training on OCS during their medical education.

Theme 2: Barriers to implementing OCS in PCPs practice: Participants identified multiple challenges in performing oral cancer screening for their patients. Some of the obstacles cited include lack of time, lack of equipment required to perform screening, and providers considering OCS as the dentist's responsibility. Among all the challenges mentioned, inadequate time is considered a primary challenge by most of the participants. However, all the participants who mentioned that they received education on OCS during their medical training were performing screenings on their patients. The providers who regularly perform screenings could not identify any challenges in performing OCS, and they explained that OCS consumes only a few minutes. On the other hand, the providers who are not performing OCS mentioned that it is difficult to incorporate OCS in their protocol due to lack of time.

Theme 3: Current OCS practice: When we asked PCPs about oral cancer screening in their practice, most of them mentioned that OCS is not in their protocol. They said they depend on dentists to perform OCS. However, some providers indicated that they discuss oral cancer with alcoholics and with patients who smoke tobacco. When they were asked to describe the process of OCS, providers mentioned that they visually examine for abnormalities. Only two providers mentioned performing comprehensive OCS including palpation of soft tissues and lymph nodes.

3.2. Questionnaire Design

Questions on participant's demographics such as age, gender, and work characteristics such as years of experience and their practice type were included to understand the characteristics of the participants. The one-on-one interview participants identified four significant challenges to performing OCS, inadequate time, lack of equipment, lack of knowledge, and not considering OCS as PCP's responsibility, incorporated all those challenges in the survey to identify the primary problem. Also, qualitative data analysis showed that the providers who received education on OCS during their medical training are more likely to perform OCS. So, questions on provider's education and their current screening practices were incorporated to determine the association between these two variables. The past studies were used as a guide to develop questions to assess the current OCS practice behavior of PCPs [21].

3.3. Quantitative Study

Participants' characteristics: Thirty-four participants completed the survey (34% response rate). Table 1 summarizes the characteristics of the participants.

Table 1. Demographic and work characteristics of survey respondents.

Variables	Frequency (*n*=34)	%
Gender		
Male	15	44.1
Female	19	55.9
Age in Years		
30-39	10	29.4
40-49	9	26.5
50-59	7	20.6
60 or above	8	23.5

 doi:10.20944/preprints202408.1142.v1

Area of Practice		
Family Medicine	19	55.9
Internal Medicine	9	26.5
Physician's Assistant	4	11.8
Nurse Practitioner	2	5.9
Years of Experience		
0-5	6	17.6
6-10	5	14.7
11-20	10	29.4
>20	13	38.2
Practice Type		
Both academically & clinically	23	67.6
Only clinically	10	29.4

A total number of individual variables in practice type is less than 34 because of missing responses.

Challenges in performing OCS: Table 2 summarizes the challenges identified by PCPs in performing OCS. Participants could select only one option, and around half (50.0%) of the participants identified lack of time as their primary challenge in performing OCS. Participants identified lack of knowledge as their second main obstacle (22.5%) and very few providers selected other challenges. Furthermore, no provider considered the lack of equipment as their challenge.

Table 2. Challenges identified by PCPs in performing OCS.

Challenges	**Percent of providers agreed with the challenge n= 34 n (%)**
Lack of knowledge to perform OCS	8 (22.5)
Inadequate time to perform OCS	17 (50.0)
Not considering OCS as PCPs responsibility	5 (14.7)
None of them mentioned above	4 (11.4)
Total	34 (100.0)

*PCPs= Primary care providers; OCS = Oral cancer screening.

Factors that influence providers' decision to perform OCS: Table 3 presents the data about which variable was an important factor in deciding to perform OCS. Providers could select only one option. Most providers mentioned that they screen for patients who have a history of tobacco/ alcohol use (35.3%). The least significant factor considered for screening was the age of the patient (2.9%). Furthermore, 17.6% of participants mentioned screening every patient regardless of the patient's characteristics.

Table 3. Factors that influence providers decision to perform the oral cancer screening.

Factors	**Number of providers agreed with each variable as an important factor in deciding to perform OCS n=34 *n* (%)**
Patient complains of a problem	9 (26.5)
Age of the patient	1 (2.9)
Smoking/alcohol history	12 (35.3)
I do it on every patient	6 (17.6)
I do not screen for OCS	6 (17.6)
Total	34 (100.0)

*OCS = Oral cancer screening.

Association between the education received on OCS and current OCS practice: The association between the education received on OCS and current OCS practice of PCPs with Fischer's exact test was analyzed (Table 4). Participants who did not respond to both questions were excluded while

 doi:10.20944/preprints202408.1142.v1

analyzing the association between the variables. And participants who indicated they did not receive education on OCS and who mentioned they do not remember if they received an education were combined while analyzing the data. The providers who received education and who did not receive education on OCS during their medical training were equally performing OCS in their current practice (P=0.665).

Table 4. Association between the education received on OCS and current OCS practice of PCPs.

Variable		Providers Received Training on OCS		Total	n	P-value Sig (2-sided)
		Yes	No			
Providers Performing OCS	Yes	11 (78.5%)	8 (66.7%)	19 (73.1%)	26	0.665
	No	3(21.4%)	4 (33.3%)	7 (26.9%)		
	Total	14 (73.0%)	12 (27.0%)	26(100.0%)		

* PCPs = Primary care providers; OCS = Oral cancer screening.

Current OCS practice: Table 5 presents the data on the current OCS practice behavior of PCPs compared to their education received on OCS. Participants could select only one option. Yes, denotes participants who received education on OCS. No, denotes participants who did not receive education on OCS and who mentioned that they do not remember if they received education on OCS. Although 60% of the providers answered that they perform OCS, only 3.8% mentioned that they perform comprehensive OCS every time.

Table 5. Primary care providers OCS behavior related to the education they received on OCS during their medical training.

Current OCS behavior	PCPs received education OCS			
Screening Practices	Yes (%) (*n*=14)	No (%) (*n*=12)	Total(%) (*n*=26)	P-value
How often do you perform comprehensive OCS?				
100% of the patients	7.1	0.0	3.8	
75% of the patients	7.1	0.0	3.8	
50% of the patients	14.3	8.3	11.5	0.438
< 25% of the patients	57.1	50.0	53.8	
Do not perform	14.3	41.7	26.9	
How often do you discuss risk factors of OPC with patients?				
100% of the patients	14.3	0.0	7.7	
75% of the patients	14.3	0.0	7.7	
50% of the patients	14.3	8.3	11.5	0.260
<25% of the patients	50.0	66.7	57.7	
Do not discuss	7.1	25.0	15.4	
How often do you perform visual inspection of oral cavity?				
100% of the patients	28.6	16.7	23.1	
75% of the patients	42.9	41.7	42.3	0.856
50% of the patients	21.4	16.7	19.2	
<25% of the patients	7.1	25.0	15.4	
Do not perform	0.0	0.0	0.0	
How often do you palpate soft tissues in the oral cavity for lumps and bumps?				
100% of the patients	0.0	0.0	0.0	0.944

 doi:10.20944/preprints202408.1142.v1

75% of the patients	14.3	8.3	11.5	
50% of the patients	7.1	8.3	7.7	
<25% of the patients	57.1	66.7	61.5	
Do not perform	21.4	16.7	19.2	
How often do you perform visual inspection of the oro-pharynx?				
100% of the patients	14.3	16.7	15.4	
75% of the patients	35.7	33.3	34.6	0.650
50% of the patients	35.7	25.0	30.8	
<25% of the patients	7.1	25.0	15.4	
Do not perform	7.1	0.0	3.8	
How often do you perform neck palpation?				
100% of the patients	35.7	16.7	26.9	
75% of the patients	42.9	58.3	50.0	0.064
50% of the patients	21.4	0.0	11.5	
<25% of the patients	0.0	25.0	11.5	
Do not perform	0.0	0.0	0.0	
How often do you perform extra-oral visual exam of the oral cavity?				
100% of the patients	14.3	0.0	7.7	
75% of the patients	21.4	25.0	23.1	
50% of the patients	14.3	0.0	7.7	0.188
<25% of the patients	21.4	58.3	38.5	
Do not perform	28.6	16.7	23.1	

*OCS = Oral cancer screening; OPC = Oropharyngeal cancer.

Furthermore, 26.9% of the participants said that they never perform comprehensive OCS on their patients. Visual examination of the oral cavity is the only step performed very frequently, and all other steps are performed very rarely on all the patients. Moreover, no participant mentioned palpating soft tissues of the oral cavity on every patient, and more than 60% of participants are performing on less than 25% of their patients.

Data were analyzed to check if education influenced PCPs to perform any of the critical steps in comprehensive OCS. However, unable to find any significant finding except for neck palpation which shows a certain trend toward significance with a p-value of 0.064.

4. Discussion

Thirty-four participants completed the survey (34% response rate). A majority (82.4%) of the participants were physicians. Around half (50.0%) of the participants identified lack of time as their primary challenge in performing OCS. Participants identified a lack of knowledge as their second main obstacle (22.5%). Furthermore, no provider considered the lack of equipment as their challenge. These results are similar to a survey done to assess the knowledge level and practices related to screening and preventing oral cancer of PCPs who worked in Federally Qualified Health Centers in Michigan, where it was concluded that the most prominent barrier for OCS was the lack of adequate training (64%), followed by shortage of specialist to whom they could refer a patient (48%) and lack of time (15%) [24]. Results from this survey indicated that there is a significant association between PCPs' knowledge level and practice of oral cancer screening as well as a willingness to participate in oral cancer screening/prevention programs. These findings underscore the importance of providing up-to-date education regarding oral cancer screening to PCPs [22].

Lack of time is the most important barrier and PCPs should be educated that it doesn't take very long to screen for OPC if you do it regularly. The more you do the easier it gets to understand what's normal, and you get really quick in performing OCS. It is possible to train health workers to perform the OCS test as accurately as doctors, although experience appears to be a crucial component of health workers' accuracy [23]. Lack of time can be overcome by educating the entire office staff, not just the physicians or main service providers. It could be facilitated through courses offered at conventions and study clubs or as in-office sessions [24].

 doi:10.20944/preprints202408.1142.v1

When they were asked about each step in the OCS, no provider answered that they palpate soft tissues for lumps and bumps all the time. Only 26.9% perform neck palpation in every patient. These two discovery procedures are essential aspects in the detection of OPC, and the study results indicate that only a few providers are performing them. Probably inadequate skills and knowledge to perform OCS might be a reason for not completing comprehensive OCS. This result is comparable to the study conducted in Massachusetts, where PCPs demonstrated poor knowledge in identifying symptoms associated with OPC and self-reported that they are not adequately trained to perform OCS [22,25]. It's indicated that continuing education courses had a positive influence on dentist's inclusion of neck palpation as part of the examination significantly [26]. A systematic review to summarize the available scientific evidence about the educational competence of medical practitioners in dealing with OC/OPC concluded that there's a need for improved OC/OPC training at all levels of medical education is required to increase competence worldwide [27].

A high proportion of participants (35.5%) mentioned that they perform OCS when patients have a history of smoking and alcohol and consider them as significant risk factors for OPC. However, very few participants (2.9%) mentioned that they consider the age of the patient while screening for OPC. There is evidence that risk-based screening of high-risk individuals could provide substantial gains in the efficiency of OCS programs [28]. Tobacco and alcohol consumption are considered to be the main risk factors in the etiology of OPC. However, the etiology is multifactorial and genetic factors, diet, occupational exposure, and lifestyle can also be implicated in the development of these cancers [29]. Over the past three decades, despite decreasing smoking rates, there has been stagnation followed by an increase in the incidence of OPC. This site-specific increase has been noted particularly among middle-aged white men compared with traditional patients with OPC, i.e., older men with a significant smoking and drinking history [30]. This is probably because HPV plays a pathogenic role in a subset of head and neck cancers, mostly cancers of the oropharynx, with distinct epidemiological, clinical, and molecular characteristics compared with head and neck cancers not caused by HPV [31]. So, it can be stated that it will help to do opportunistic screening in asymptomatic patients versus the push for targeted screening OPC.

Results showed that the providers who received education on OCS during their medical training and the providers who did not receive any education are equally performing the screening. This finding does not support the importance of education for providers on OCS. But we cannot rule out the importance of education because the participants were not tested for their actual knowledge of OCS. Those who are educated might have a better understanding of OCS but are not doing it for various other reasons. These results are consistent with the previous study, where traditional education methods did not improve provider's knowledge or did not influence their screening behavior [32].

In the survey, 60% of participants answered that they perform OCS. However, only 3.8% of participants mentioned performing comprehensive OCS every time they saw a patient.A study to evaluate self-perceived competency in screening for OPCs found that only 7% of the PCPs reported examining 100% of their patients for OPCs [33]. This is very similar to our findings. A greater percentage of the PCP group felt their knowledge about OPCs was not up to date and inaccurately identified common signs and sites of early OPCs [33].

An important determinant of delay in OPC diagnosis is tumor location on the less visible surfaces of the oral cavity and oropharynx. This means that health campaigns should not only be for public education but also professional training, otherwise, several patients with an early lesion will certainly be misdiagnosed [18]. Analysis of data from general dentists who attended standardized continuing education courses throughout the ten public health districts of the USA indicated that continuing education courses had a positive influence on participants' oral cancer attitudes, knowledge, and behavior that potentially could make a difference in prevention, early detection, and ultimately OPC control [26]. Dentists in British Columbia and Nova Scotia observed that they could benefit from undergraduate and continuing education courses to increase their knowledge of health history assessment, examination for oral and pharyngeal cancers, and risk reduction strategies, such as counseling about tobacco cessation [34].

 doi:10.20944/preprints202408.1142.v1

4.1. Limitations

The study has several limitations, including the sample size of the study is small and may not represent all the PCPs at Nebraska Medicine. Non-respondents were excluded from the study and sixty percent of the providers who participated in the survey were already performing OCS, which indicates there is a selection bias and responses are from providers who have an interest in the topic of discussion. Also, these results may not be generalized to all providers, because Nebraska Medicine is an educational institution and 67% of the participants work both clinically and academically with the university. Teachers functioning as role models for their students may often strive to incorporate a significant amount of the guidelines recommended by health promotion organizations like WHO or the United States Preventive Task Force. Also, the providers who are not academically involved might be influenced by their colleagues or by the results of the research conducted in the organization. All these factors may influence the way providers develop their perspectives and the way they provide care. Therefore, the results derived may not be generalized to non-academic institutions or organizations that practice exclusively clinical medicine.

The study was focused on understanding PCP's perceptions of their knowledge, barriers, and their OCS screening practices. Accordingly, the study collected subjective data. For instance, data were collected to determine whether PCPs have enough knowledge to perform OCS. In fact, objective data were not collected to assess their actual knowledge. Similarly, the study collected data directly from PCPs about their screening practices but didn't evaluate patient's charts to determine how many patient's PCPs screened. There is a possibility of socially desirable bias in this study in which participants overreport their knowledge and OCS practices.

4.2. Future Direction

A large sample size should be recruited, including participants from academic, non-academic, public health, and private organizations. The results could have greater secondary validity. In addition, the questionnaire can include inquiries on OPC and OCS to test the knowledge of PCPs, and the results can be compared with their educational background to determine if providers who received education on OCS are more knowledgeable than the providers who did not receive the education.

5. Conclusions

Around half of the participants identified lack of time as their primary challenge in performing OCS and lack of knowledge as their second main obstacle. Very few provided comprehensive OCS and visual examination of the oral cavity is the only step performed often. A high proportion of participants mentioned that they perform OCS only when patients have a history of smoking and alcohol and consider them as significant risk factors for OPC. The providers who received education on OCS during their medical training and the providers who did not receive any education are equally performing the screening. Therefore, planning educational programs to emphasize the importance of performing comprehensive OCS, and to address skill gaps are necessary to develop competence in this area.

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