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## Increasing opportunistic oral cancer screening examinations: findings from focus groups with general dentists in Puerto Rico

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*Ethical Standards:* This study received IRB approval and was performed in accordance with the ethical standards of the 1964 Declaration of Helsinki and later amendments.

## Abstract

**Purpose**—To identify educational and training modalities that dentists in Puerto Rico (PR) believe will increase the quality and quantity of opportunistic oral cancer screening examinations (OCS) in dental offices on the island.

**Methods**—The study was conducted in three phases: a systematic search of relevant literature, an expert review and consensus panel, and focus groups (FG) involving PR general dentists.

**Results**—To increase OCS by dentists in PR, the FG participants proposed small group, hands-on OCS training, an integrated oral cancer course, and readily-available videos, photographs, and computer simulations to further demonstrate OCS performance and facilitate differential diagnosis. OCS training requirements for licensure and relicensure, improving OCS dentist-patient communication skills, and establishment of an oral lesion referral center were also viewed favorably.

**Conclusions**—General dentists in our FGs believed the quality and quantity of OCS in Puerto Rico can be increased through the application of specific continuing education and training modalities.

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## Introduction

Worldwide in 2008, there were an estimated 263,900 new cases of lip and oral cavity cancer (OC)(ICD-O C00-C08) [1]. In Puerto Rico (PR), OC incidence rates are high, with an estimated 228 new cases of lip and intraoral cancer in 2012 [2]. Most cancers of the oral cavity (ICD-O C00-C06) are squamous cell carcinomas and develop from clinically detectable precancerous lesions [3, 4]. Early detection and proper management of oral premalignant conditions and cancers are important because 5-year relative survival rates are notably higher for persons diagnosed with localized (83%), compared to persons with regional (59%) or metastatic (36%) disease [5, 6]. Further, persons diagnosed with early stage oral cancers generally undergo less radical treatment and suffer fewer quality of life issues compared to persons diagnosed with more advanced cancers [7, 8].

Given their unique knowledge of and access to the oral cavity, dentists and other dental care providers represent an important frontline in the initial diagnosis of oral cancer. Opportunistic OC screening can be defined as a systematic inspection of the oral cavity and head and neck region to identify clinical signs of oral precancer and cancer during the routine examination of dental patients who present without symptoms of the disease. By conducting opportunistic oral cancer examinations in the dental setting, dentists can facilitate the early identification of precancerous conditions and cancers in the oral cavity of their patients [9].

In Puerto Rico, oral precancers and very early cancers are less likely to be biopsied and diagnosed than on the mainland U.S. [10, 11]. Our studies on the island have also identified a perceived lack of knowledge and personal competency in the proper conduct of OC examinations among PR dentists, thereby creating a significant barrier to opportunistic OC screening and likely contributing to the deficit in early detection [12]. In addition, we found

that OC continuing education (CE) has not been a priority among dentists in PR, paralleling findings from U.S. mainland studies. [12].

The purpose of the current investigation was to identify continuing education and training modalities that PR dentists believed would be culturally and professionally productive in increasing both the quality and quantity of oral cancer examinations by dentists on the island. It is intended that the generated recommendations will serve as a foundation on which to reduce the currently observed deficit in oral premalignant lesion and early cancer identification.

## Methods

The study was conducted in three phases. Initially, we carried out a systematic search of relevant literature and followed that phase with an expert review and consensus panel. Finally, we conducted focus groups (FGs) involving general dentists in Puerto Rico.

### Literature Search

An experienced medical librarian conducted searches in PubMed, Dissertation Abstracts, and social science databases (e.g., PsycInfo, ERIC) to obtain detailed information on past research related to the topic areas under investigation. A senior team member (WJP) then reviewed abstracts from all identified research and selected those with a topical relationship to the questions of interest. Subsequently, an oral epidemiologist and clinical research-trained dentist further triaged the abstracts and obtained copies of those manuscripts relevant to the study aims and needs of the expert panels. After achieving consensus as to which papers should be included, a summary table was created that incorporated details regarding 1) educational and training methods, 2) technologies, and 3) policies, models, and social activities that hold promise in encouraging clinicians to increase the quality and quantity of screening examinations for oral cancer during dental appointments.

Based upon reports presented in the summary table, the two reviewers then prepared a written summary of the findings by strength of the reported evidence. The review was centered primarily on review articles, and the strength of evidence was based on study quality in the opinion of the reviewers.

### Expert Panels

An expert panel of nine US academic professionals (7 dentists) with experience in teaching, research, policy, and clinical practice then reviewed the summary report and table derived from the literature review. After discussing topics identified in the report as well as a limited number of additional related concepts, the panel arrived at an initial framework for questions to be included in the FG field guide.

The questions drafted by the first expert panel were then reviewed by a second group of specialists based in Puerto Rico. The second panel, comprised of an anthropologist, public health specialist, two epidemiologists, and two clinical researchers were charged with refining and ensuring the cultural sensitivity of the final versions of the focus group field guide questions.

## Focus Groups

Focus Groups were the qualitative data gathering strategy used [13-16]. In the current study, our FGs were populated with general dentists in order to ascertain their opinions on topics related to increasing the quality and quantity of OCS in PR dental offices.

## Focus Group Participant Recruitment

All FG participants were general dentists licensed in Puerto Rico. Two FGs were conducted; one group was comprised of UPRSDM clinical faculty, and a second was made up of private practice dentists. For logistical reasons, the geographic catchment area for eligible dentists was restricted to the Greater San Juan metropolitan area where the majority of oral health services are concentrated in Puerto Rico.

Participant selection sought to optimize the breadth and depth of source information by purposefully identifying FG participants with a range of personal and professional viewpoints regarding the study information being collected. Participants were also selected to obtain an equal proportion of women and men. One investigator (AE), who had personal familiarity with local dentists, first identified potentially eligible participants in consultation with WJP and a local leader from the Puerto Rico Dental Society. A list (sampling frame) of possible participants was then prepared and stratified by key characteristics, including gender, geographic region, years in and primary type of practice (academic/private), and experience with community or public health. Working from the prepared list, general dental practitioners were selected and sequentially contacted by a recruitment coordinator; those who agreed to participate were scheduled to attend a focus group session.

## Focus Group Sessions

The two FG sessions, both conducted in Spanish, were held in meeting facilities at the UPR Medical Sciences Campus. At the beginning of each session, the researchers explained the purpose of the study. Participants provided informed consent and completed an anonymous socio-demographic questionnaire. The FGs were moderated by a veteran qualitative researcher with the assistance of two experienced research-observers. Each FG was recorded, and participants were compensated for their time.

## Analysis

The recorded FGs were transcribed verbatim and corroborated by the Spanish-speaking researchers. Data were analyzed using content analysis, identifying emergent themes from the FG transcripts. The observer/primary analyst completed the first round of text coding and content analysis. The moderator and secondary observer joined in a secondary analysis after each had separately identified themes and subthemes; final agreements were drawn collectively.

Further analysis was performed through axial coding. Texts were organized within the major content areas/topics. Specific topics covered in the field guide questions were used as major categories, with further categories and subcategories added when FG participants identified additional relevant topics. Categories identified within each topic were reinforced with participant quotes [17].

## Results

### Sociodemographic profile of Focus Group participants

Sixteen general dentists participated in the study, eight males and eight females). Participant dental offices were located around the greater San Juan metropolitan area, and the mean number of hours worked per week was 33. Seventy-five percent of the participants reported accepting patients with the government insurance plan known as Reforma or Mi Salud.

One FG was comprised of seven University of Puerto Rico School of Dental Medicine (UPRSDM) faculty members, three of whom also practiced privately. The second FG was composed of nine private practice dentists. Each FG lasted approximately two and one half hours.

### FG findings

Practitioner recommendations to increase oral cancer screening were grouped into categories based upon themes contained within the FG Guide (questionnaire), with each category having subgroups providing further information to address the research questions.

Findings from both FGs coincided in terms of the categories and codes identified during the analysis of transcription texts and field notes, with saturation obtained during early stages of the analytic process. “Saturation” indicates that the same categories of information arose in both groups with very similar responses, thus validating the information being documented and suggesting that more interviews would not produce additional information.

### Continuing Education (CE), Format and Content

Most FG participants agreed that the essential element in increasing the quality and quantity of oral cancer screenings in dental offices was to train dentists via small groups that incorporated a “hands-on” component. A typical comment regarding small groups was as follows:

“This would be very good, a reduced number of people. I think that if there is a plan, you know a strategy to cover the Island, it would be better to begin in particular areas where you can do group education. And then we will begin to see the number of exams increase to ... detect lesions in a timely way. I think it would be fantastic.”

Participants who had attended and appreciated such a course stated:

“He [the instructor] went step by step, with clinical photographs in which some lesions were presented and where [anatomically] they were mainly located. He would talk with evidence from articles that said what are the most incident pathologies, and where we should focus in terms of the clinical evaluation in order to be able to detect and see more effectively.”

“...from seven in the morning until six at night. ‘Hands- on.’”

The integration of epidemiology, pathology, and differential diagnosis in OCS CE courses was also strongly recommended, and Webinars were viewed as a viable alternative to the

potentially high costs of attending CE activities, particularly among the private practitioners. Participants in both groups stated that including content regarding the epidemiology of oral cancer is essential, with the presentation of cancer statistics providing a foundation to increase awareness of the OC challenge in Puerto Rico.

“I think it is the greatest impact. You know, the statistics in Puerto Rico are alarming, and I believe that it is a fact that everyone should know, and it creates interest.”

As an adjunct to group training sessions, the participants, primarily those in private practice, stressed the importance of resources on the Internet or CDs/DVDs, including a portfolio of lesions ranging from oral precancers to early-cancers to late-stage malignancies. They endorsed the use of photographs, videos, and computer simulations that allow for practicing the visual component of an oral cancer screening examination. In addition to audiovisual aids for the identification of mucosal lesions, it was recommended that there be step-by-step instructions on how to perform an OCS, including tactile and visual experiences, as well as tools to facilitate skills in differential diagnosis such as a diagnostic flow-sheet to assist participants in the systematic, clinical identification of suspicious lesions and how to proceed should an abnormality be detected.

“It would be helpful... to create a course [either on-line or using the small group context] where you can do differential diagnosis. I mean, what other lesions could be confused with OC, what questions should I ask as a dentist in order to get information out of this patient that can validate what I am observing, if it is a cancer lesion or not, so I can make the differential diagnosis.”

In addition to the above recommendations, the private practitioners felt that in-office OCS workshops could be useful if limited to thirty minutes and inclusive of staff.

### **Communication skills, cultural sensitivity, and interaction with cancer patients**

There was broad agreement that communication skills are essential for dentists to explain the OCS examination procedure to their patients, to educate patients on the benefits of screening, and to effectively communicate when a lesion is found. Members of both FGs felt that with training in the “what, why, and how” of OCS, dentists will gain confidence in conducting the examination and improve their ability to educate patients about the procedure. Suggestions to advance OCS communication skills included the use of Internet-based “how-to” materials, e.g., step-by-step educational videos. Further, standardized patients, used successfully at UPRSDM for teaching general oral health, were recommended for training OCS at both the School and in CE courses. It was widely agreed that communication skills be taught as part of specific clinical topic areas rather than as a separate communication course.

Increasing the sensitivity of dentists to the devastating consequences of OC and its treatment was also seen as imperative for both current practitioners and dental students. It was recommended that both dentists and dental students gain exposure to the effects of OC through pictures with accompanying narratives as well as via personal interactions with oral cancer patients discussing their experiences with the disease. Contact with oral cancer

patients was strongly endorsed by both groups and could be facilitated with the creation of a lesion clinic (see below).

“... evidence from cancer patients, that can be of great impact, and this helps make the professional more sensitive.”

### **OCS training and dental licensure**

There was almost universal agreement that proficiency in performing an oral cancer examination should be a requirement for initial dental licensure and that documented “hands-on” OCS training every three years, with annual refresher courses, be made a requirement for re-licensure. It was also broadly agreed that the requisite OCS training for re-licensure should not be of the mass meeting approach.

### **Oral lesion referral center**

A centralized oral lesion referral center was strongly supported by the participants, although concerns were voiced regarding financing. In the context of CE, it was believed that such a center would attract and localize experts for the other suggested activities, and include on-site, small group CE courses.

## **Discussion**

Most dentists in Puerto Rico were trained in ADA-accredited dental schools, primarily the University of Puerto Rico School of Dental Medicine, have continuing professional and educational ties to their U.S. counterparts via American Dental Association memberships, and are in many ways similar to US Mainland dentists in terms of what they believe will increase the quality and quantity of in-office oral cancer screenings. The current report focuses on continuing education and training modalities identified by general dentists in Puerto Rico as necessary and acceptable to support an increase in the quality and quantity of oral cancer screenings on the island.

The practitioner-centered recommendations were predicated on traditional and systematic literature searches, expert consensus panels and focus groups that we then triangulated across the various methodologic approaches. The multi-technique approach employed in this study represents a discover approach called “triangulation,” which combines multiple qualitative research methodologies to support the uniformity of findings. The resulting recommendations demonstrated a well-delineated and limited practical OCS continuing education and supporting actions program that end-users said was necessary to achieve an increased quantity and quality of OCS. The fact that saturation was achieved with only two focus groups provides further evidence of the consistency of findings among practicing PR dentists.

There is growing consensus regarding the value of opportunistic oral cancer screening examinations. A recent Cochran Review states “systematic examination of the oral cavity by the general dental practitioner or physician should remain an integral part of their routine daily work,” and the National Cancer Institute affirms “the routine examination of asymptomatic and symptomatic patients can lead to detection of earlier stage cancers and

pre-malignant lesions” [18, 19]. Further, a recent report from an expert panel convened by the American Dental Association to evaluate current evidence regarding the possible risks and benefits of oral cancer screening recommended that “clinicians remain alert for signs of potential malignant lesions or early-stage cancers while performing routine visual and tactile examinations in all dental patients, but particularly those who use tobacco or consume alcohol heavily” [20]. It is also noteworthy that in addition to identifying potentially precancerous and cancerous oral lesions and conditions, the conduct of a systematic inspection of the oral cavity and head and neck has the potential to identify various non-malignant pathologies that otherwise may have avoided detection.

There is a mounting body of mutually supportive U.S. and international literature regarding dentist OC screening practices and techniques. Collectively, reports suggest that dentists have insecurity about conducting OC examinations and lack confidence in their overall knowledge of oral cancer and precancer, concerns echoed by practitioners in Puerto Rico [12, 21-29]. Previous studies have also found that dentists report a need for more dental school training and continuing education on the topic of oral cancer and express openness to various educational formats and settings [12, 21, 22, 25, 30-32].

In order to address the perceived lack of competency in conducting OC examinations, the FG members in the current study strongly recommended small group sessions providing hands-on training for the proper conduct of the OC examination. To overcome a deficit in overall OC knowledge, there was widespread agreement on the importance of an integrated course providing information on oral cancer epidemiology as well as the physical appearance of oral pre-malignant lesions and early- and late-stage cancers. A spectrum of technologies, including use of the Internet, CDs/DVDs, computer simulations, and webcasts, were envisioned as appropriate strategies for distributing educational materials to augment the CE courses. Additionally and in keeping with the conclusions of Choi, et al. (ref 21), improving communication skills was viewed as essential in providing clinicians with the ability to discuss with patients the OCS procedure, its benefits, and the capacity to effectively communicate with the patient when a lesion is found. It was also strongly recommended that oral cancer survivors be included in the educational process.

Previous studies have found that OC continuing education can have a positive influence on clinical practice in terms of oral cancer prevention and detection [33-37] and is therefore a rational approach to improve the quality and quantity of OC screening exams in PR. In a large study of United States dentists, Silverman, et al. evaluated the benefit of a standardized continuing education course that included an OPC detection module and found improvements in oral cancer screening knowledge, attitudes, and behaviors that persisted for at least six months after course completion [38, 36]. In Germany, an educational intervention that included primary and secondary OC prevention as well as a standardized oral cavity examination was reported to have improved early detection practices [37]. While the dentists in our study viewed the integration of epidemiology, pathology, and differential diagnosis as essential components to OC continuing education, they also strongly emphasized the necessity of hands-on training and recognized the importance of receiving instruction in doctor-patient communication skills.



Linking dental licensure to OCS training has been recommended in previous reports [12, 39]. In the current study there was widespread agreement that candidates for initial dental licensure be required to demonstrate proficiency in performing an oral cancer examination and that requisites for re-licensure include documentation of “hands-on” OCS training every three years and yearly refresher courses. Participants in our focus groups felt strongly that the requisite OCS training for re-licensure should not utilize the mass meeting approach.

In accordance with our research protocol, study findings will be presented to the University of Puerto Rico School of Dental Medicine faculty as well as to the membership of the Puerto Rican Dental Society and applicable administrators in the Health Department. Individuals in those institutions and organizations will then play the pivotal role of determining which of the recommendations will be implemented and in what order. It is our intention to ultimately evaluate the effectiveness of the recommendations in increasing the quality and quantity of opportunistic oral cancer screening examinations by dentists on the island of Puerto Rico.

### **Limitations**

As indicated above, the dentists in our focus groups were restricted to general dentists practicing in the Greater San Juan area where much of PR healthcare is concentrated. While it is possible that dentists practicing in other areas of the island may have articulated additional thoughts, it is noteworthy that the core ideas expressed by our FG members were in keeping with those presented in the literature and by our expert panelists. We considered including dental hygienists in our focus groups, but elected to exclude them from the selection process because there are few dental hygienists practicing in Puerto Rico.

### **Summary**

In summary, the focus group participants, all general dentists and most with active practices, believed the quality and quantity of opportunistic oral cancer screening in Puerto Rico can be increased through the application of specific continuing educational and training modalities. Hands-on training in small groups was considered essential to achieving success, as was the ready availability of audio-visual material, including “how-to” instructional videos and resources showing the physical appearance of premalignant lesions and early through late-stage cancers. The participants favored an integrated, multidisciplinary oral cancer course that includes discussion of oral cancer statistics and the clinical presentation of relevant oral lesions. OCS training requirements for licensure and re-licensure, improving dentist-patient communication skills in the area of OCS, and the establishment of an oral mucosal lesion referral center for specialist care and education were also viewed. The recommendations put forth by our FG participants offer a rational foundation for increasing the quality and quantity of oral cancer screenings by dentists in Puerto Rico.

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