

Feasibility of opportunistic screening for oral cancers in a dental outpatient department of a secondary care hospital in Northern India

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ABSTRACT

Background: Oral cancer is one of the most common forms of cancer in India. Majority of the patients are diagnosed at advanced stages, resulting in poor outcomes. Most of the oral cancers are preceded by visible lesions known as potentially malignant disorders (PMDs), which are amenable to early detection by screening. Oral visual examination is an established method of screening, and dentists have a unique opportunity to screen patients who come for various dental morbidities. Opportunistic screening is being recommended as a measure of cancer control. This study was conducted to assess the feasibility of opportunistic screening in a public health facility. **Methods:** Patients coming to the dental outpatient department (OPD) of a secondary care hospital were screened for oral cancer or PMD by a trained dental surgeon by visual inspection of the oral cavity. In-depth interviews were conducted with the dental surgeon and officer-in-charge of dental OPD to identify barriers and facilitators for screening. A feasibility model was used to assess the acceptability, implementation, practicality, and integration of opportunistic screening. **Results:** All patients attending dental OPD underwent screening. PMDs were detected in 0.5% of the new OPD attendees. Leukoplakia was found to be the most common lesion. Biopsy for suspected lesions was not conducted. The shortage of support staff was identified as a barrier to documenting risk factors. There was a lack of follow-up and referral linkages. **Conclusion:** Opportunistic screening for oral cancers is feasible at a secondary care public health care facility. However, a well-developed system for follow-up and linkage with referral sites is required.

Keywords: Cancer, control, opportunistic, prevention, public health, screening

Introduction

Oral cancer is one of the most common forms of cancer in India and accounts for over 30% of all cancers in the country.^[1] Besides high incidence, oral cancer in India is usually diagnosed at an advanced stage, which results in poor treatment outcomes and considerable cost to the patient. The 5-year survival rate for

localized cancers is 54.3–60.2%, while it is as low as 3.1–3.3% in advanced stages.^[2] The majority of oral cancers are preceded by visible lesions known as potentially malignant disorders (PMDs) that exhibit oral epithelial dysplasia.^[3] Screening for cancer is based on the premise that earlier diagnosis of the disease, either in a precancerous condition or at an earlier stage leads to a reduction in the risk of mortality or development of the invasive disease. Oral visual examination is an established method of screening, with reported sensitivity and specificity of 85% and 97%, respectively.^[4] Studies have also shown that screening for oral cancer is a cost-effective strategy.^[5]

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Received: 11-11-2019

Revised: 20-12-2019

Accepted: 23-01-2020

Published: 28-02-2020

Access this article online

Quick Response Code:



Website:
www.jfmpc.com

DOI:
10.4103/jfmpc.jfmpc_999_19

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How to cite this article: Kaur R, Kant S, Mathur VP, Lohia A. Feasibility of opportunistic screening for oral cancers in a dental outpatient department of a secondary care hospital in Northern India. J Family Med Prim Care 2020;9:909-14.

Dentists have an opportunity to screen the patients who come to them for various dental morbidities. Recently, an expert panel, along with other recommendations, has suggested that facility-based opportunistic screening for oral cancers should be considered in India.^[6]

The guidelines of the National Program for Prevention and Control of Cancer, Diabetes, Cardiovascular diseases, and Stroke (NPCDCS) also recommend that opportunistic screening should be carried out for early detection of cancers.^[7]

Presently, there is a paucity of studies in India that have evaluated the feasibility of opportunistic screening for oral cancers in public health facilities. The available literature suggests that opportunistic screening is feasible in some settings, while not feasible in others.^[8] Hence, the present study was conducted to assess the feasibility of opportunistic screening of oral cancers and identify the barriers and facilitators for opportunistic screening in a public health facility.

Methodology

This hospital-based, cross-sectional study was conducted in the dental outpatient department (OPD) of subdistrict hospital (SDH) in the Faridabad district of Haryana, India. The hospital provides secondary level health care to population residing in Ballabgarh town and nearby areas. Most of the patients attending the hospital come from the nearby small towns, as well as 28 villages that comprise the rural field practice area of the research institute. The total population of Ballabgarh town was 187,000 in the year 2016. The study was conducted over a period of 1 year from January to December 2016.

All patients attending the dental OPD of SDH, Ballabgarh during this period were included in the study. Patients already diagnosed with oral cancer were excluded from the study.

The study participants were interviewed using a semistructured interview schedule. An interview schedule was used to collect sociodemographic details of the participants. All the included patients were screened by visual inspection of the oral cavity by a trained dental practitioner. The patients were categorized as screen positive or screen negative as per the operational definition.

Following operational definitions were used in the study:

Opportunistic screening- Patients who were attending the dental clinic for another purpose were examined for signs of oral cancer or PMD.

Oral cancer- Squamous cell carcinoma of the lip, tongue, gums, floor of the mouth, mouth, oropharynx, hypopharynx, and other sites (ICD-10, C00–C14).

PMD- PMD includes leukoplakia, erythroplakia, lichen planus, actinic keratosis, and submucous fibrosis.

Training of the dental practitioner

The dental practitioner posted at SDH Ballabgarh was trained by the faculty member of the research institute's Centre for Dental Education and Research (CDER), which was a collaborating center for the Oral Health Promotion and National Centre of Excellence for Implementation of National Oral Health Programme in the country.

The training was conducted for 2 days. For future reference, colored charts developed by the International Agency for Research on Cancer (IARC) were displayed in the dental OPD.

Screen positive patients, i.e. subjects screened for PMD, oral cancer, or suspected for oral cancer were referred to the cancer hospital of the research institute for further management.

To gain an insight into the facilitators and barriers, perceived sustainability, and perceived quality of services being provided, in-depth interviews were conducted with the dental practitioner and faculty in charge of the dental OPD.

To assess the feasibility of opportunistic screening of oral cancers, the model based on a series of feasibility studies conducted by the National Cancer Institute (NCI) was used.^[9] The investigators conducting the feasibility studies are permitted to choose the areas of focus that are relevant to the needs of their study.

Using this model, the following areas of focus were assessed in this study:

1. Acceptability
2. Implementation
3. Practicality
4. Integration with an existing system

The following outcomes of interest based on the model were included in this study:

1. Perceived appropriateness
2. Actual use
3. Degree of execution
4. Resources required
5. Barriers and facilitators
6. Quality of services
7. Sustainability.

Data Analysis

Data were entered in Epi Info version 7. The analysis was done using the Statistical Package for the Social Sciences (SPSS) software, version 22. Results were presented as mean (standard deviation [SD]) or proportions.

For the qualitative component, the in-depth interviews were recorded manually. Thematic analysis was done after coding of the data.

Ethical considerations

The study was conducted after obtaining approval by the Institute Ethics Committee, All India Institute of Medical Sciences, New Delhi (Approval number: IEC/176/3/2016, dated 25.04.2016).

All information collected during the study was kept confidential. A trained health educator in the dental OPD, regularly, conducted health education programs for the awareness of oral cancers. Screen positive patients were referred to the concerned collaborating departments at the apex institute.

Results

In 2016, 8,266 patients visited the dental OPD of SDH Ballabgarh. Of them, 4,965 were newly registered in 2016 and the rest were revisit or follow-up patients. Of all the new OPD patients, 26 (0.5%) had suspected lesions.

As shown in Table 1, the mean (SD) age of the participants having suspected lesions was 41.7 (14.7) years. Most of the patients (30.8%) were in the age group 41–50 years. Among those having suspected PMD, 88.5% were men, while 11.5% were women.

All the patients attending the OPD underwent opportunistic screening. Table 2 shows the lesions found on visual screening. The most common suspected lesion detected by the dental practitioner was leukoplakia, which was found in 7 (23.1%) patients. A nonhealing ulcer was detected in 4 (15.4%) of patients. Submucous fibrosis was found in 7.7% patients. Other common lesions (11.5%) were suspected carcinoma of various parts of the oral cavity.

The primary objective of our study was to assess the feasibility of opportunistic screening in the dental OPD.

Table 3 shows the findings of the feasibility assessment as per the model, based on studies conducted by the NCI. All the patients underwent a thorough examination of the oral cavity. Although the history of risk factors was asked verbally, it was not documented. A biopsy was not conducted for any of the patients. The patients who were screen positive were referred to the higher center, but the details of diagnosis and treatment could not be obtained.

Table 1: Distribution of participants with suspected lesions by age and sex (n=26)

Variable	Category	Number (Percentage %)
Age (Years)	<18	2 (7.7)
	18-30	5 (19.2)
	31-40	6 (23.1)
	41-50	8 (30.8)
	51-60	3 (11.5)
	>60	2 (7.7)
Sex	Male	23 (88.5)
	Female	3 (11.5)

Findings from in-depth interviews with the dental practitioner

The in-depth interviews highlighted that the dental practitioner was willing to do an oral examination for screening. However, he was reluctant to record a history of risk factors or other patient information. The reason cited for this was lack of time and labor because of a large number of patients in the dental OPD. In addition, he did not do the biopsy because of a lack of liaison with other facilities for histopathological diagnosis.

“I am the only dental surgeon here. I have to examine all the patients and do nearly 25 procedures per day. This leaves very little time for recording the information on risk factors etc., It will be good if I can get support from another person to help me with this work.”

The dentist was satisfied with the training and recommended that all dental practitioners should undergo such training.

“The training is very helpful. I believe all dentists should undergo this before undertaking screening.”

It was suggested that there should be better linkages for referral for diagnosis and treatment.

“We are referring all the patients to the apex institute, which is nearly 40 km away. Although the patients will be diagnosed and treated there by the collaborating departments, however, it is likely that they may go to other facility, due to distance. They may even want to consult providers from alternate system. It is better if we have referral linkages with nearby facilities, even private health care facilities. Also, it would be helpful if some personnel from our hospital could facilitate their treatment at the institute. However, we are already having shortage of staff here.”

The service providers identified streamlining of referrals and follow-up of screen positive patients as a major challenge.

Discussion

In this study, we assessed the feasibility of opportunistic screening for oral cancers at the dental outpatient clinic of a secondary level public health care facility in northern India. A trained general dental practitioner screened all the patients coming to the dental OPD for potentially malignant oral lesions or cancers. In our study, suspected PMDs were found in 0.5% of the new OPD attendees. Almost 90% of the patients were male. The prevalence of PMDs reported in earlier studies conducted in other parts of the country viz. Telangana and Indore were higher, i.e. 4.5% and 13.8%, respectively,^[10,11] which might be because those studies were in the form of organized screening campaigns, coupled with community outreach, which might have increased the acceptability of screening among high-risk groups, and hence, resulted in high yield.

In the present study, the highest proportion (54%) of PMDs was found in patients belonging to the age group of 31–50 years.

This is similar to other studies conducted worldwide, as well as in India.^[12,13]

We assessed the feasibility of opportunistic screening in the dental OPD. We found that a thorough oral examination was done for all the patients, and the findings were recorded. However, the history of risk factors was asked verbally but was not documented in the records. The reason cited for this was a lack of support staff and time. Kedar *et al.*, in their study on views of health personnel regarding the cancer-screening programs, also reported that lack of human resources and increased workload on existing labor was considered a challenge in the implementation of the cancer screening program.^[14]

Due to lack of documentation, prevalence of risk factors and thus the profile of the patients based on high-risk behavior could not be determined in our study. This is similar to other studies conducted in India, and the United States, which have reported that although the dental practitioners performed the screening, they did not record the risk factors routinely.^[15,16]

Table 2: Frequency distribution of various types of lesions among participants (n=26)

Type of Lesion	Number (Percentage %)
Leukoplakia	7 (26.9)
Nonhealing ulcer	4 (15.4)
Suspected carcinoma tongue	3 (11.5)
Suspected carcinoma cheek	3 (11.5)
Submucous fibrosis	2 (7.7)
Suspected carcinoma palate	2 (7.7)
Tobacco pouch keratosis	1 (3.8)
Suspected carcinoma of other parts of the oral cavity (vestibule, the floor of the mouth, alveolus, and gum)	4 (15.4)
Total	26 (100)

Despite the fact that thorough examination of the oral cavity for the screening of oral cancers requires an extra of seven to ten minutes, which can be challenging in the already overburdened public health facilities, the dentist in the present study was willing and motivated to screen the patients. This may be because he had attended sensitization programs, and had received hands-on training for oral cancer screening. The need for training for effective implementation of cancer screening programs was emphasized by Patil *et al.*, who in their study among health care providers in tribal areas of Maharashtra, reported that lack of training was perceived as a major barrier.^[17]

Earlier studies have also demonstrated that training programs and continuing education enhanced the promptness for the screening of oral cancers and other primary prevention activities. These studies have also reported the need for training in communication with patients who would screen positive for cancers or PMLs.^[18,19] The same has also been suggested recently by the expert panel, along with other recommendations for cancer screening in India.^[7] Our study further highlighted the importance of training programs for dental practitioners.

The Government of India has emphasized to utilize primary and secondary care health facilities as key points for screening and diagnosis of cancers. The national guidelines recommend that after screening at primary health care level, the suspected cases should be referred to a secondary care facility for biopsy, and the specimens may be sent to the nearest medical college for histopathology.^[14]

The site of our study was a secondary care facility; however, there was no provision for biopsy. Earlier research has also shown that most of the general dental practitioners were either not willing or not skilled to do the biopsy. The study conducted in Udaipur

Table 3: Assessment of the feasibility of opportunistic screening

Area of Focus	Outcome Measure	Methodology/Indicator	Findings
Acceptability	Perceived appropriateness Actual use	The proportion of patients who undergo the screening	All the eligible patients underwent opportunistic screening.
Implementation	Degree of execution	The proportion of participants who undergo screening The proportion of patients who comply with referral and follow-up	A thorough oral examination was done for all patients, but a history of risk factors not recorded. A biopsy was not conducted for any patient. None of the patients referred to the higher center came back for a follow-up visit. Status of confirmation of diagnosis and treatment could not be obtained for referred patients.
Practicality	Additional resources required Factors affecting implementation (Barriers and facilitators)	In-depth interviews with the providers Estimation of the cost of services being provided Perceived quality of implementation	Need for better linkage with referral facility, including the transfer of patients and communication of the diagnosis. The perceived shortage of human resources including support staff. Support required for the maintenance of records and data.
Integration	Perceived fit with infrastructure Perceived sustainability Fit with organization goals and culture	In-depth interviews with the providers	Opportunistic screening can be integrated within the existing system; however, since public health facilities are already over-burdened, there is a need for additional staff. Facilities for biopsy need to be developed. Training of dental practitioners is important to ensure quality. A well-developed system for follow-up and linkage with referral sites is required.

also reported that for the lesions requiring a biopsy, most of the GDPs referred the patients to the higher center rather than performing the biopsies themselves.^[15]

Another challenge encountered in our study was streamlining referrals and their follow-up. The patients who screened positive for suspected lesions were referred to the department of dentistry at the parent institute. Although the investigators had a liaison with the departments of preventive dentistry, and radiation oncology at the institute, however, the status of the patients referred from the dental OPD could not be established. In addition, once referred, none of the patients returned to the clinic. This might be because the referral institute was nearly 35 km from the study site, and the patients might have preferred to go to another health facility.

Other studies have also reported similar challenges. Meena *et al.*, in their study conducted in two rural health facilities of Jodhpur, reported that complete treatment and assistance could not be provided to the patient who was found to have cancerous or pre-cancerous lesions, due to resource constraints.^[20]

This is in contrast to the experience in a screening camp, where referrals were closely followed up.^[21]

As a principle, a screening program should be thought of as a service that incorporates all steps in the process that leads to the control of disease, including diagnosis and treatment.

In our study, although the acceptability of opportunistic screening was high, both from the patient and provider perspective, however, implementation was limited, as the degree of execution was restricted to early detection only.

For effective implementation of a screening program, strengthening of facilities at sub-district and district hospitals is required. It may require improvement in infrastructure, augmentation of the workforce, and support for creating a referral network for confirmation of diagnosis and treatment.

Conclusion

Opportunistic screening for oral cancers is feasible at a dental clinic of secondary care public health facility. However, a well-developed system for follow-up and linkage with referral sites is required.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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