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Effectiveness of Self Mouth Examination Method in Case Finding of Oral Cancers and Oral Potentially Malignant Disorders among High Risk Rural Population in India

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Abstract

Objectives: To assess the feasibility of self mouth examination (SME) in case finding of oral cancers and potentially malignant disorders (OPMD) among high risk rural population in India. ***Materials and methods:*** 15,000 pretested pictorial handout (brochure) with instructions (local language) depicting the signs of oral cancer and self mouth examination procedures were distributed among every households (n= 3500), People were also demonstrated self mouth examination (SME) technique. One week later a three day cancer detection camp was carried out. Individuals were instructed to conduct self mouth examination (SME) and report the cancer detection camp if any questionable lesions were noticed. Individuals who reported were screened for oral cancer with the use of toluidine blue vital staining, oral exfoliative cytology and final diagnosis through biopsy. ***Results*:** The total population consisted on 579 individuals out of which 372 (64.25%) were males and 207 (35.75) were females. The total percentage of self mouth examination (SME) performance was 95.34%. 53.20% of the study population identified suspicious lesions in the oral cavity. After thorough oral examination, malignant lesions like oral cancer (2 cases) and many cases of oral potentially malignant disorders were found. The sensitivity of mouth self examination was 48.66% where as the specificity was 44.75%. The positive predictive value was 23.54% where as the negative predictive value was 71.37%. ***Conclusions*:** Self mouth examination is an effective tool which can be used in the case finding of oral cancers and oral potentially malignant disorders.

Keywords: self-mouth examination, case finding, oral squamous cell carcinoma, oral cancer screening.

INTRODUCTION

Oral cancer is a major public problem in the world. Oral cancer is often referred as squamous cell carcinoma of the lip, oral cavity and oro-pharynx. The incidence of oral cancer in India is 75,000 to 85,000 cases per year and resulting in deaths of around 60,000 annually, which is approximately one-fourth of global incidences of oral and pharyngeal cancer [1]. Age-adjusted rates of oral cancer in India are high, that is 20 per 100,000 population and accounts for over 30% of all cancers in the country [2]. Oral cancer is also a major cancer in South East Asian, Western pacific and certain regions of Europe and Latin America. The High proportion of Oral cancer cases may be due to high prevalence of tobacco consumption habits. Moreover, tobacco is consumed in both chewing and smoking forms [3].

Despite numerous advances in treatment, the five year survival has remained nearly about 50% for the last fifty years and has not changed. The most common cause of treatment failure and death in oral cancer patients is due to late diagnosis. The poor survival among oral cancer patients can also be attributed to advanced extent of the disease at the time

of diagnosis [4]. Oral cancers can be easily identified in the oral cavity as they manifest as oral potentially malignant disorders like leukoplakia, erythroplakia and oral submucous fibrosis which can be treated and cancer can be prevented but most of the people ignore because of painless nature of oral cancer.

This problem can be addressed by improving the ability of high risk individuals to detect relevant potentially malignant lesions or cancerous lesions at their earliest through self mouth examination (SME). Such a goal could be achieved by increasing public awareness about the importance of regular examination of the oral cavity using a mirror to identify small, otherwise asymptomatic cancers and potentially malignant disorders (OPMD) through self mouth examination [5].

Community based screening programs is the best method for early detection of Oral cancer. Screening or Case-finding is defined as a diagnostic test or method that is applied to a patient who has abnormal signs or symptoms in order to establish a diagnosis and bring the patient to treatment [6]. In the past, screening (detection) and case-finding (diagnosis) have often been mistakenly used interchangeably in epidemiological studies designed to determine the prevalence of a given disease in a particular population.

The term screening is used to denote a method or test applied to asymptomatic persons to detect disease and case-finding will refer to the application of a diagnostic test or procedure to a patient with an identified lesion [7]. Oral cancer can be easily identified through visual examination and application of vital stain like toluidine blue and hence oral cancer satisfies the criteria for a suitable disease for screening. Community based case finding program to identify oral cancers is the need of the hour in India. Other methods have been used to augment clinical detection of oral lesions and include toluidine blue, brush biopsy, chemiluminescent and VEL scope [8].

Self-mouth examination (SME) is one of the best method to identify early changes in the oral cavity by an individual and report to the dentist where early diagnosis can be made which will halt the disease process by providing appropriate treatment, their by reducing the mortality and morbidity associated with oral cancer [9]. Hence the present, community based case finding study was undertaken using self mouth examination technique.

OBJECTIVES

- To assess the feasibility of self mouth examination (SME) in case finding of oral cancers and potentially malignant disorders (OPMD) among high risk rural population in India.
- To provide preventive and curative care for the diagnosed lesions.
- To create awareness regarding oral cancer and hazards of tobacco.

MATERIALS AND METHODS

Type of study

The study was a community based targeted case finding study to identify cases of oral cancers and oral potentially malignant disorders using self mouth examination technique.

Study setting

The study was set in Jamwa Ramgarh, a tehsil in Jaipur District. Out of total of 13 tehsils in Jaipur District, Rajasthan, India, Jamwa Ramgarh was selected based on simple random sampling procedure.

Study Population

The study population consisted of the residents of Jamwa Ramgarh. There were 3500 households with a total population of 17,000. The study population was at high risk for oral cancer because of increased prevalence of tobacco habits. Jamwa Ramgarh is considered a rural area of Jaipur district and formed the setting of the present study.

Study procedures

Designing of the mouth self examination brochure.

A pictorial brochure was designed to conduct self mouth examination to identify suspicious looking lesions. The brochure contained detailed pictures of examination of lip, labial mucosa, buccal mucosa, floor of the mouth, tongue and palate. A reference picture was provided which consisted of oral cancer, leukoplakia, erythroplakia, oral submucous fibrosis, and lichen planus. A detailed instruction was given regarding identification of suspicious lesions in the oral cavity and report to the three day cancer detection camp which was organized one week after the distribution of brochures in all the households. The pictorial brochure also contained information about hazards of using tobacco products and were motivated to quit the tobacco habit to prevent from various types of cancers including oral cancer.

Distribution of the brochures among the households

Jamwa Ramgargh town consists of a total population of 17000 and 3500 households. There were 10 schools, offices, industrial units and commercial establishment. 15,000 brochures were distributed among the population. Students, interns and multiple health workers distributed the brochures one week before three day cancer detection program held in a school. Efforts were made so that the pictorial brochures reached entire population. The brochures were distributed among school children and were asked to give it to their parents. They were also motivated to bring their parents to cancer detection camp. Children were also were educated about hazards of smoking.

Information, education and communication activities

Banners and posters were placed in strategic areas of the rural town of Jamwa Ramgarh regarding mouth self examination to identify suspicious lesions in the oral cavity. Mass media like newspapers, and television were used to spread information regarding hazards of tobacco and method to conduct mouth self examination. Individuals were instructed to conduct mouth self examination and report to cancer detection camp which was held after one week after brochure distribution among the population.

Collaboration for conducting cancer detection camp

Three day cancer detection program was done in collaboration of Jaipur Dental College, Jaipur and Bhagwan Mahavir Cancer Hospital, Jaipur. Since the study was a community based case finding study, cases of oral cancer and oral potentially malignant disorders were treated at Bhagwan Mahavir cancer Hospital, Jaipur and Department of Oral Medicine and Radiology, Jaipur Dental College, Jaipur.

18 specialists belonging to Oral Pathology and Microbiology, Public Health Dentistry, Oral Surgery and Oral Medicine participated in the cancer detection program. Cancer surgeons from Bhagwan Mahavir cancer hospital also participated in the program. The program also used the services of Postgraduate students and interns and multiple health workers.

Identification of Oral Cancers and Oral Potentially malignant disorders

Individuals who conducted self mouth examination and identified suspicious lesions in the oral cavity were screened for presence of oral cancer with toluidine blue vital stain. Appearance of royal blue color was considered as positive. Oral exfoliative cytology was also performed. Incisional biopsy was performed for the lesions which demonstrated positive for toluidine blue staining. For small lesions like traumatic fibroma and pyogenic granuloma, excissional biopsy was performed.

Data collection and management

The data was collected through pretested questionnaire which consisted of knowledge, attitude and practices regarding oral cancer, performance of mouth self examination, benefits of mouth self examination, ease of conducting mouth self examination. The lesions were recorded on a prescribed format. The oral cavity was divided in to four quadrants and the size, shape, color, consistence, surface texture and tenderness of the lesions were recorded. Deep cervical and sub-mandibular and sub mental lymph nodes were examined and recorded.

STATISTICAL ANALYSIS

The data was analyzed by SPSS 17 with calculation of descriptive statistics like frequencies. Pearson chi square test was applied to find out the difference between the variables with P value fixed at 0.05

RESULTS

The total population consisted on 579 individuals out of which 372 (64.25%) were males and 207 (35.75) were females. The mean age of the study population was 37.49 ±13.43 years and age range was 15-78 years. (Table 1) 65.2% of males performed mouth self examination when compared 34.78% females. The total percentage of MSE performance was 95.34%. (Table 2) 53.20% of the study population identified suspicious lesions in the oral cavity out which 75.97% were males and 24.02% were females. ($P<0.05$) (Table 3) There was increased prevalence of tobacco habits (65.63%) among the study population. Predominant habits were Ghutka chewing (13.47%). Panmasala chewing (13.82), Bidi smoking (17.44%) cigarette smoking (13.64%) The tobacco habits were more common among males than which was statistically significant.(Table 4).

After thorough oral examination, malignant lesions like oral cancer and many cases of oral potentially malignant disorders were found. There were 2(0.53%) cases of oral cancer which were found among males. The predominant lesions were smoker's melanosis 97 (16.75%), leukoplakia 78 (13.47%), leukodema 59 (10.19%), Oral submucous fibrosis 34 (5.87%) tobacco pouch keratosis 20(3.45%), erythroplakia 6(1.04%). Other cases like betel chewers mucosa, frictional keratosis, lichen planus, were also found. The oral lesions were more common among males when compared to females which were associated with increased prevalence of tobacco habits among males (Table 5).

Toluidine blue was applied on the diagnosed lesions and among them 105 (918.13%) turned positive (appearance of Royal blue). The positive lesions were more common among males 72 (68.57%) when compared to females 33(31.42%). There were substantial amount of negative lesions in the study population 204(34.89%). Many did not require toluidine blue application 270 (44.56%) as there were no suspicious oral lesions (Table 6).

72 out of 105 individuals gave their consent for biopsy. Punch biopsy, incissional biopsy and excissional biopsy was performed. Histopathological investigations were carried out and final diagnosis was arrived. Out of 72 biopsies, 2 (2.77%) cases of oral squamous cell carcinoma was found out. Other lesions were as follows squamous hyperplasia 18 (25%), mild dysplasia 9 (12.5%), moderate dysplasia 8 (11.11%), severe dysplasia 15 (20.83%), carcinoma in situ 1 (1.3%), early stage of oral submucous fibrosis 9 (12.5%), intermediate stage of oral submucous fibrosis 3 (4.16%), advanced stage of oral submucous fibrosis 1

(1.3%). Other lesions were lichen planus, pyogenic granuloma, fibroma and gingival hyperplasia (Table 7).

The sensitivity of mouth self examination was 48.66% where as the specificity was 44.75%. The positive predictive value was 23.54% whereas the negative predicitive value was 71.37% (Table 8).

Table-1: Characteristics of the study population

AGE(years)	MALE	%	FEMALE	%	TOTAL	%
15-24	55	64.7	30	35.2	85	14.68
25-34	108	65.6	58	34.9	166	28.67
35-44	91	64.08	51	35.9	142	24.53
45-54	72	67.92	34	32.07	106	18.31
55-64	39	61.9	24	38.09	63	10.88
≥65	7	41.17	10	58.8	17	2.94
Total	**372**	**64.25**	**207**	**35.75**	**579**	**100.00**
RANGE	15-66		15-78		15-78	
MEAN±SD	37.17±12.75		38.07±14.57		37.49±13.43	

Table-2: Performing Mouth self-examination (MSE) by the population

MSE	MALE	%	FEMALE	%	TOTAL	%
YES	360	65.2	192	34.78	552	95.34
NO	5	45.45	6	54.54	11	1.90
DON'T KNOW	7	43.7	9	56.25	16	2.76
TOTAL	**372**	**64.25**	**207**	**35.75**	**579**	**100.00**

Chi-square value =4.545 df= 3 P= .208

Table-3: Detection of lesion upon Mouth self-examination

Lesion MSE	MALE	%	FEMALE	%	TOTAL	%
Positive	234	75.97	74	24.02	**308**	**53.20**
Negative	138	50.9	133	49.007	**271**	**46.80**
Total	**372**	**64.25**	**207**	**35.75**	**579**	**100.00**

Chi-square = 41.227 with 1 degree of freedom; p= 0.000

Table-4: Prevalence of tobacco habits among study population

TYPE OF TOBACCO	MALE	%	FEMALE	%	TOTAL	%
No Habit	92	46.23	107	53.76	**199**	**34.37**
Ghutka	61	78.20	17	21.79	**78**	**13.47**
Pan masala	44	55.00	36	45.00	**80**	**13.82**
Khaini	3	100	0	0.00	**3**	**0.52**
Zarda	12	63.00	7	36.84	**19**	**3.28**
Bidi	72	71.28	29	28.71	**101**	**17.44**
Hukka	4	100.00	0	0.00	**4**	**0.69**
Former smoker	5	71.4	2	28.5	**7**	**1.2**
Pan beetle nut	1	12.5	7	87.5	**8**	**1.38**
Cigarette	78	98.73	1	1.26	**79**	**13.64**
Total	**372**	**64.25**	**207**	**35.75**	**579**	**100.00**

Chi-square = 96.537 df=9 p = 0.000

Table-5: Clinical diagnosis of the lesions after oral examination

Clinical diagnosis	MALE	%	FEMALE	%	TOTAL	%
Normal	136	36.55	115	55.55	**251**	**43.3**
Oral cancer	2	0.53	0	0	**2**	**0.35**
Leukoplakia	48	12.90	30	14	**78**	**13.47**
Erythroplakia	6	1.61	0	0	**6**	**1.04**
OSMF	25	6.7	9	4.34	**34**	**5.87**
Lichen planus	0	0	2	0.96	**2**	**0.35**
Discoid lupus erythymatosis	1	0.26	0	0	**1**	**0.17**
Smokers palate	7	1.88	0	0	**7**	**1.21**
Smokers Melanosis	94	25.26	3	1.44	**97**	**16.75**
Tobacco pouch keratosis	16	4.30	4	1.93	**20**	**3.45**
Betel Chewers mucosa	0	0	2	0.96	2	0.35
Leukodema	27	7.2	32	15.45	**59**	**10.19**
Frictional Keratosis	2	0.53	3	1.44	5	0.86
Major apthous ulcer	1	0.26	0	0	1	0.17
Fibroma	2	0.53	0	0	2	0.35
Traumatic ulcer	1	0.26	1	3.70	2	0.35
Intra oral sinus	2	0.53	1	3.70	3	0.52
Periodontal abscess	2	0.53	0	0	2	0.35
Gingival hypertrophy	0	0	1	3.70	1	0.17
Candidiasis	1	0.26	1	3.70	2	0.35
Median Rhomboid glossitis	0	0	1	3.70	1	0.17
Geographic tongue	0	0	1	3.70	1	0.17
Total	**372**	**64.25**	**207**	**35.75**	579	100.00

Table-6: Toluidine Blue application

RESULT	MALE	%	FEMALE	%	TOTAL	%
Positive	72	68.57	33	31.42	**105**	**18.13**
Negative	152	74.51	54	26.47	**204**	**34.89**
Not Required	148	54.81	120	44.44	270	44.56
Total	**372**	**64.25**	**207**	**35.75**	**579**	**100.00**

Chi-square = 19.473 df=3 p = 0.000

Table-7: Histopathology 72 out of 105 gave their consent for biopsy

Final diagnosis	MALE	%	FEMALE	%	TOTAL	%
Squamous cell carcinoma (SCC)	2	4	0	0	**2**	**2.77**
Squamous hyperplasia	11	22	7	31.81	**18**	**25.0**
Mild dysplasia	7	14	2	9.09	**9**	**12.5**
Moderate dysplasia	5	10	3	13.63	**8**	**11.11**
Severe dysplasia	13	26	2	9.09	**15**	**20.83**
Carcinoma in situ	1	2	0	0	**1**	**1.3**
Early stage Oral submucous fibrosis	7	14	2	9.09	**9**	**12.5**
Intermediate stage Oral submucous fibrosis	2	4	1	4.54	**3**	**4.16**
Advanced stage Oral submucous fibrosis	1	2	0	0	**1**	**1.3**
Lichen planus	0	0	2	9.09	**2**	**2.77**
Pyogenic granuloma	0	0	1	4.54	1	1.3
Fibroma	2	4	0	O	2	2.77
Gingival hyperplasia	0	0	1	4.54	1	1.3
Total	**50**	**69.44**	**22**	**30.55**	**72**	**100.00**

Table-8: Sensitivity and specificity of mouth self-examination

	DENTAL EXAMINATION		
MOUTH SELF EXAMINATION	**Positive**	**Negative**	**Total**
Positive	73	237	310
Negative	77	192	269
Total	150	429	579

Sensitivity = 73/150 = 48.66 (95% CI)
Specificity = 192/429 = 44.75 (95% CI)
Positive Predictive Value = 73/310 = 23.54
Negative Predictive Value = 192/269 = 71.37

DISCUSSION

Case finding is a strategy for targeting resources at individuals or groups who are suspected to be at risk for a particular disease. It involves actively searching systematically for at risk people, rather than waiting for them to present with symptoms or signs of active disease. Case finding strategies have been employed for identification of cases of tuberculosis in the population [10]. In this method the high risk population is screened with blood or saliva based test and the diagnosis is made. The diagnosed individuals with disease are provided with appropriate treatment so that it halts the disease process and reduce the mortality and morbidity associated with the disease.

Screening of the disease is often used for various cancers like breast cancer, cervical cancer and colon cancer [11]. Since oral cancer is easily accessible for visual examination and diagnosis can be made through noninvasive tests like toluidine blue, VELscope and chemiluminescence method, screening of high risk individuals is often carried out. Screening of the entire population involves an enormous amount of money, manpower and time; hence targeted high risk group screening is usually done. There are other types of screening such as invitational screening, opportunistic screening, work place screening and other methods [12].

Oral cavity is easily accessible for visual examination and hence "Self mouth examination" method is often used. The individual is advised to examine his oral cavity in front of the mirror and identify suspicious lesions. The identified suspicious lesions can be subjected to diagnostic procedures like biopsy. The objective of case finding through self mouth examination is to identify individuals with oral cancer and oral potentially malignant disorders so that relevant treatment can be provided which will halt the disease process [9, 13].

The instructions for self-mouth examination can be given through leaflets, brochures, pamphlets, live demonstrations, through banners, posters etc. The instructions usually consist of procedures for examining lips, labial mucosa, buccal mucosa, floor of the mouth, tongue, palate etc. In the present study, a colorful pictorial brochure comprising instruction in Hindi language about conduction of self mouth examination was provided to every individual of Jamwa Ramgarh town. They were instructed to identify the suspicious lesions in the oral cavity and report to the cancer detection camp which was held one week after the distribution of pictorial brochures. 579 individuals visited the three day cancer detection out of which 64.25% were males and 35.75% were females (Table 1).

It is very essential to design the brochure of self mouth examination for easy understanding and comprehension. Our pictorial brochure turned out is successful as 95.34 % conducted self-mouth examination (Table 2). Our study is in agreement with the findings of Elango KJ et al. [13] where pictorial brochures and health care workers were employed to distribute the pictorial brochures which were similar to our study. It was reported in their study that 87% practiced self mouth examination and 3% did not know how to perform the SME. This provides evidence that a well designed pictorial brochure will enable individuals to carryout self mouth examination. Similar studies have been reported by Furquim CP et al. 2014 [14] and Pivovor A et al. 2017 [15] Where as contradictory findings has been reported by Scott SE 2010 [16] where high risk group were poor at correctly identifying the presence or absence of potentially malignant oral lesions. They concluded that a leaflet may be an ineffective training tool to aid self-identification of potentially malignant oral lesions.

In our study, 53.20% detected suspicious lesions upon self mouth examination which was similar to the findings of Elango KJ et al. [13]. It is also in agreement with findings of Shah A et al. 2020 [17] who reported that 40.8% practiced MSE and 59.2% have never practiced. Contradictory findings have been reported by Ghani WMN et al. 2019 [9] where many participants (64.5%) found mouth self examination difficult to perform and could not visualize the oral cavity. They concluded that MSE was not an effective self-screening tool for early detection of potentially malignant lesions for this population.

There was increased prevalence of tobacco habits (65.63%) among the study population. Predominant habits were Ghutka chewing (13.47%). Panmasala chewing (13.82), Bidi smoking (17.44%) cigarette smoking (13.64%). The tobacco habits were more common among males than which was statistically significant**.** The prevalence of tobacco habits was more when compared to Elango KJ et al. [13] who reported that 33% of males and 3 % females had risk factors such as tobacco and alcohol. Tobacco and alcohol are the main risk factors for oral cancer and community based approaches are essential for prevention of tobacco habits in the community. Our study was successful in case finding of oral cancers and many cases of oral potentially malignant disorders. There were 2 (0.53%) cases of oral cancer which were found among males. The predominant lesions were smoker's melanosis 97 (16.75%) leukoplakia 78 (13.47%) leukodema 59 (10.19%), Oral submucous fibrosis 34 (5.87%) tobacco pouch keratosis 20 (3.45%), erythroplakia 6 (1.04%). Our results provide evidence that a well conducted case finding study will identify oral cancers and potentially malignant disorders at the earliest stage and their by reducing the mortality and morbidity associated with oral cancers.

Our study was able to identify more lesions when compared to Scott SE 2010 [16] who reported that the prevalence of potentially malignant oral lesions was 22%. Similarly Shah A et al. [17] reported that the prevalence of oral lesions identified by health worker was 213 (39.5%), whereas MSE showed only prevalence rate of 69 (12.8%). Whereas Elango KJ et al. [13] reported that though the technique identified high-risk lesions such as red patches (66.7%) and non-healing ulcers (42.9%), the detection rate of white patches was low (12.7%). The study inferred that mouth self-examination may be used as an effective tool to improve the awareness of oral cancer and for the early detection of lesions.

After clinical diagnosis, toluidine blue was applied on the suspected lesions in which 105 (18.13%) lesions became positive among which 72 (68.57%) lesions were found in males and 33 (31.42%) lesions were found among females. 72 out of 105 individuals gave their consent for biopsy. Out of 72 biopsies, 2 (2.77%) cases of oral squamous cell carcinoma were found out. One was cancer of the gingiva and other was cancer of the tongue. Both the cases were referred to Bhagwan Mahavir Cancer hospital where they were operated free of cost. After surgery and radiotherapy, obturators were provided by the Department of Prosthodontics, Jaipur Dental College, Jaipur.

Other lesions were squamous hyperplasia 18 (25%), mild dysplasia 9 (12.5%), moderate dysplasia 8 (11.11%), severe dysplasia 15 (20.83%), carcinoma in situ 1 (1.3%), early stage of oral submucous fibrosis 9 (12.5%), intermediate stage of oral submucous fibrosis 3 (4.16%), advanced stage of oral submucous fibrosis 1 (1.3%). Oral potentially malignant disorders were treated at Department of Oral Medicine, Jaipur Dental College, Jaipur.

In our study, the sensitivity of mouth self examination was 48.66% where as the specificity was 44.75%. The positive predictive value was 23.54% where as the negative predictive value was 71.37% (Table 8). Our study was not in accordance with study by Ghani WMN et al. 2019 [9] who reported that sensitivity and specificity of MSE for detection of all types of lesions were 8.6 % and 95.0% respectively. It was inferred that MSE was not an effective self-screening tool for early detection of potentially malignant lesions for this population. Shah A et al. [17] reported that MSE had low sensitivity (24.6%), whereas high specificity (87.4%) for all the lesions and most sensitive in detecting ulcers (72.7%), and highest specificity in identifying red lesions (99.2%). Sensitivity of MSE for detecting oral premalignant/malignant lesions was low, specificity was very high. Furquim CP et al. 2014 [14] reported that the sensitivity and specificity values of MSE were 43% and 44%, respectively. The MSE accuracy was 43%. It was inferred that most patients (73%) reported that MSE was easy or very easy, although 75% showed insufficient performance. Elango KJ et al. [13] reported that MSE had a low sensitivity of 18%, while the specificity was 99.9%. Scott SE 2010 [16] reported that the sensitivity of MSE was 33% and the specificity was 54%. MSE had a positive predictive value of 17% and a negative predictive value of 73%.

CONCLUSIONS

Self mouth examination is an effective tool which can be used in the case finding of oral cancers and oral potentially malignant disorders. Case finding can reduce the mortality and morbidity associated with oral cancers and hence should be employed in the high risk group for early detection of oral cancers.

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