Special Article - Oral Squamous Cell Carcinoma

# Fight Back Strategies for Oral Cancer-Early Screening and Health Promotion

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## Abstract

Worldwide, oral cancer is among the 10 most common cancers and in Indian subcontinent, it is the third most common cancer. In India, it is predominantly due to wide exposure to high risk factors like tobacco especially in people with low socioeconomic background. Despite of utmost advancements in oral cancer diagnosis and treatment, the advent of Oral Cancer (OC) remains undeterred. Thus, there is need to implement adequate reforms or strategies in the direction of curbing the high mortality and morbidity rate associated with oral cancer. In the present review, two fight back strategies have been discussed- early diagnosis and health promotion. Mass education and legislative approach are few of the suitable methods of health promotion. Recently, practices like yoga has also shown to reduce the fatal consequences of OC and with defined protocols may serve as economical method in management of oral cancer.

**Keywords:** Oral Cancer; Oral Squamous Cell Carcinoma; Prevention

## Introduction

Worldwide, oral cancer is among the 10 most common cancers [1]. Most frequently occurring among oral cancers is Oral Squamous Cell Carcinoma (OSCC) and therefore it is synonymously used with oral cancer [2]. The advent of Oral Cancer (OC) remains undeterred despite of the remarkable advancements that have been made in its treatment and management. Prognosis of these treatments and management techniques largely relies on stage at which cancer is diagnosed. Since majority of the cases are identified in advanced stage [2], it leaves the patients in more distress or morbid situation. Along with their family, their quality of overall life is greatly affected [3]. Profound measures have been taken to prevent its occurrence but the incidence rate has not considerably reduced. Thus, this unnerving situation calls for more promising solutions that will aid to expedite its prevention. Therefore, present review focuses on such fight back strategies to hamper the oral cancer.

### Method of literature search

Initially we made manual search in the journals available in the library of the institution. Further a literature search was performed in the varied databases of PubMed, EBSCO and Google scholar. The keywords used for search in databases were identified after analysing few seminal articles. Data was retrieved using keywords like "oral squamous cell carcinoma" ,"oral cancer", "mouth neoplasms" "prevention", "preventive strategies", "Prevalence of Oral Cancer" and "primary prevention". Some data was also obtained by cross checking the reference lists of the articles accessed. Peer reviewed studies in English language were included in the present review.

### Preventive strategies

**Early screening**: It is one of the most efficient ways to reduce high mortality associated with oral cancer. By doing so, it assist in instituting timely treatment which further prevents severe loss of function, disfigurement or depression. Until now enormous work has been done in the light of the present plight situation of oral cancer. One of the oldest and the non-invasive techniques is application of Toluidine Blue (TB). It has an affinity for nucleic acids which subsequently binds to nuclear material in tissues with a high DNA and RNA content. Another reliable method for diagnosing oral mucosal abnormalities remains the scalpel biopsy. Being an invasive procedure, it causes apprehensiveness among patients. It has been substituted with oral brush biopsy which is less invasive [4,5]. An objective and reliable resource called Optical diagnostics or biopsy is capable to provide instant diagnoses of soft and hard tissue of oral diseases [6]. Among them Experimental spectroscopy for head and neck malignancies involves fluorescence spectroscopy, Raman spectroscopy, Elastic Scattering Spectroscopy (ESS), optical Coherence Tomography (OCT) and micro-endoscopy (for the upper aerodigestive tract) [7]. Various biomarkers [8] and genetic make up [9] have also been identified in order to trace the susceptibility to cancer. Laser-Induced Fluorescence (LIF) LIF is another non-invasive tool which is used for the detection of structural and chemical alterations of the cells [10]. A more recent boost in oral cancer diagnosis came up in 2002 with advent of Saliva diagnosis when the US National Institute of Dental & Craniofacial Research funded a project for the same. Under this project with a collaborative team of engineers, experts in nanotechnology and biomedical diagnostic fluids, and scientists in oral biology initiatives have been taken to develop a point-of-care technique which will be automated, miniaturised and has a multiplexed platform, named as - lab-on-a-chip [11,12]. Health care professionals should use either of the techniques routinely for appreciation of precancerous or cancerous lesions in their clinical practice based on the feasibility and affordability.

### Prevention and health promotion

Along with the availability of these advances to facilitate the early detection, there is need for personnel expertise also for their application. On the contrary research has shown that a lack of confidence among health care professionals exists in detecting oral cancer [13-15]. It is assumed to be a significant barrier in providing

utmost care during early stages of OC. Knowledge about the risk factors and specific signs is found to be lacking in primary care health professionals. Among health professionals, Dentists gets to examine the oral cavity of the patients more frequently during their regular check-ups or for other treatment. Thus, they can be the first line personnel for early diagnosis of oral cancer. In countries like Canada or British Columbia, dentist has been playing a vital role in identification of this deadly condition in its early stage [16].

But in developing countries, there has not been considerable change in identification of stage of Oral cancer which is mostly advanced stage [17,18]. Ineffective attitudes and lack of knowledge of the dentists for adequately detecting oral cancer in its early stages is the one pretext which has been considered [19]. In this context, FDI has given a chair side guide for the dental professionals for the prevention and patient management of OC. It provides information about the risk factors of the OC along with the procedural steps of detecting OC in high risk patients followed by screening methods for early diagnosis [20]. Such guidelines can be propagated and used widely to educate the health professionals to integrate oral cancer screening examination into daily practice which will require little additional time in their busy practice.

Other barriers which are considered to be outside the control of health professionals can be patient refusal and time constraints. To overcome such barrier, first and the foremost strategy has been oral health education of school children and the public with the use of Information, Education And Communication (IEC) materials for awareness generation. It can be pursued using social media or folk media. This way people can be clued up with risk factors of the OC thoroughly and sensitized about its fatal health consequences. Tobacco or alcohol are the most common known risk factors [1]. Their consumption can be curbed at grass root level through individual counselling during the appointments for dental treatment. Diet rich in fruits has shown considerable reduction in emergence of oral cancer [21]. Therewith educating the patients about the healthy practices like consuming fresh fruits or vegetable and methods to avoid risk factors can greatly impact the patient's outlook and their health. A recent review has highlighted the integration of Complementary and Alternative Medicine, particularly Yoga as an intervention for preventing oral cancer [21]. Studies have shown Nerve Growth Factor (NGF) regulation as an effect of yogic breathing (also called Pranayama). It involves methods to regulate breathing voluntarily and thereby making strong relaxation response. Also yogic breathing has shown to produce theta waves in brain which may again potentially regulate the molecular expression of neurotrophic NGF [22]. As there are only handful of studies, a need is perceived for standardization of yoga protocol which is backed up by scientific data to establish yoga as a promising non pharmacological approach to prevent OC. If confirmed it has potential for unleashing the economic burden associated with management of OC.

## Conclusion

The process of screening or detection, diagnosis and management of oral cancer is undoubtedly a complex process. It requires for the dental professional to have a keen observation, refined skills to ensure the detection of the disease at earliest stage and information regarding referral systems for adequate treatment. The dental education curriculum must necessitate training for screening and management of oral malignancies. Also, empathetic efforts should be made in the direction of health promotion using social or print media regarding the ill effects of tobacco and unhealthy products. If effective, alternative medicines can be looked upon and integrated with modern medicine. They have a huge potential to take the edge off from the present alarming situation of morbid oral diseases in a more acceptable and economical manner.

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