



THE ASSOCIATION BETWEEN ORAL HEALTH RELATED QUALITY OF LIFE & TOBACCO RELATED CANCERS OF ORAL CAVITY

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Abstract:

In India, though Oral Cancer ranks among the top 3 cancers according to their prevalence rate, still huge dearth in the availability of literature assessing & evaluating the quality of life of tobacco related oral cancers. QOL is largely affected by lot of overlapping facts and domains. Though enormous health care research is happening through out entire globe to improve the survival and to improve the quality of life in all the cancers of human body. Human being's individual perception for quality of life is among the significant and most important parameter to enhance the overall well being of patients of cancer.

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INTRODUCTION

Tobacco has predominant constituents which exert their action by propounding effect on initiating and promoting carcinogenesis, mucosal toxicity and irritation⁴. Worldwide Oropharyngeal carcinoma malignancy stands sixth position in term of its occurrence and is accounting approximately 40% of cancers in Indian subcontinent.

According to Globocan data, Tobacco consumption is second main cause of mortality and approximately causing 5 million death on yearly basis. It is presumed that this number would increase reaching a value 8.4 million approximately till year 2020.

Tobacco & tobacco related products causes numerous oral changes. Clinical appearance, frequency and location of oral changes are dependent largely on type & manner of usage of tobacco. Tobacco used in long term along alcoholic beverages consumption compromise nutritional status and dietary needs are prime factor causing

majority malignancies of neck and head. The oral changes observed on long term ingestion of tobacco could be secondary to the carcinogens present in tobacco related products and oral cavity's protective defence mechanism. The duration, nature and frequency of tobacco consumption is in turn dependent on many factor like socioeconomic standard and attitude of the individual education status, availability, etc⁷. Main reason of deaths related to Tobacco are because of carcinoma of oral cavity, lung, stroke and myocardial infarction. Long term Continuous habit for pan and chewing of tobacco and also smoking approximately leads to annual 7% all cancer death among male, approximately 4% among females. Fundamental genetical mechanism behind causation of cancer involves oncogene overexpression and silent expression of tumour suppressor gene TSGs. Due to over-activity of oncogenes the control over the cell cycle is disrupted leading to majorly affecting cell

proliferation. Few of very important expressions of TSG is P16 acting as checkpoint for growth control and also another expression of TSG is P53 leading to repair malignant cell or destroy them due to apoptosis. Over-expression for oncogenes involving epidermal growth factor receptor gene EGFR can help in growth, spread and survival of affected cells leading to development of cancer. Range of oncogenes mechanisms due to which they are acting are very complex. The main Cancer risk factor and DNA mutation occur so spontaneously, specially by oxidational damage and free radicals. This rate of increase in DNA mutation is so much increased due to presence of varied exogenous cancer risk factor like tobacco and also alcohol consumption.

Life style related factors like chemicals, infections, radiations from sunlight and diet are relevant risk factor related to oral cancer occurrence. Oral cancer aetiology is multifactorial with most relevant risk factors acting separately and synergistically are tobacco with increased alcohol intake along with usage of betel quid. Along with lifestyle related factors which are most relevant and important in cancer predis-position, environment and genetic associated factors also play vital role⁹.

According to global data, approximately two billion ingest alcohol, 1 billion men and two hundred fifty million female are cigarette smokers. Huge number of 600 -1200 million also consumes betel quid³ 2, 2015. So oral cancers and other associated cancers incidence reduction could be expected by few alterations in lifestyle only. Too many Carcinogens are generated by tobacco use e.g. - tobacco-specific nitrosamines TSNA and also free radical which thereby prevent the function of antioxidant enzyme (glutathione-S-transferase (GST), glutathione reductase, superoxide dismutase, catalase, and glutathione peroxidase).

Smokers consuming tobacco exposes their own digestive tract (upper) to varied tobacco and other carcinogens leading to huge changes in their genetic systems affecting entire upper digestive system of their body with persistent long term visible effects even after smoking cessation. The health effects are so alarming that few carcinomas and also second primary tumour are seen in digestive tract because carcinogens are absorbed and circulate in the blood to other organs. Burden of acetaldehyde and pro-carcinogens activation are greatly enhanced by tobacco consumption. Out of all cancers affecting the human body, oral cancer

affects approximately three fourth. Among them, 96% oral cancers fall in category of carcinomas and 4% comes in the category of sarcomas. Squamous-cell carcinoma is highly common variant of cancers of mouth.¹⁰

Many potential carcinogens, Nitrosamines and couple of hydrocarbons are found in Tobacco which are the leading cause for oral cancer. All carcinogens in tobacco products are DNA-toxic playing main role for initiating and promoting specific cancer types as squamous-cell carcinoma and also verrucous carcinoma¹.

Oral cavity constantly is exposed to couple of alteration. Changes in oral mucosa is visible consequently to traumatic, infectious, genetic inflammatory, hormonal, chemical, mechanical and numerous other factor. tobacco Consumption in all forms are associated by numerous problems in health affecting all systems of human body. mucosal changes.¹¹

RESEARCH PROBLEM

Our oral cavity is that part of human body which is the first in exposure to any of the tobacco /tobacco related products / carcinogens. So only, oral cavity is categorized as frequent site for exposure in carcinogenic, clinical, immunologic and microbial effect of tobacco.

According to International Agency for Research on Cancer 2004 and US Department of Health and Human Services 2014- Tobacco use is one among the major causative factor in cancers of mouth and associated structures. Among cancers of mouth, most significant carcinogens type present in smoke of the cigarette are called as N'-nitrosornicotine and also polycyclic aromatic hydrocarbon.

(NNN) N'-nitrosornicotine and other tobacco-specific nitrosamine are seen among all tobacco products. They typically are formed during curing and tobacco processing. They are very typically seen in quantity of parts per million in the tobacco.

This quantity in parts per million of tobacco related products are much higher as proportionate to any of the quantity of carcinogenic compounds present among any other products made for oral consumption among humans.²

Oral cavity comprises different cell types present among oral mucosa are main source of defence mechanisms against any type of oral damage against various toxins and pathogens. Along with all of mucosal cells, a very collaborative and

integrated defence response is exerted which is mainly aimed to protect us from any type of perturbation caused by any inhaled toxins and pathogens which if not taken care would lead to major harm. Inhaled toxins from tobacco smoke not only causes a major attack just on respiratory mucosa but it also reduce functional barrier, modifies chemokine /cytokine production, increase mucus production. Tobacco use whether smoking/chewing form is prominent causative factor of oral cancer. Various research have shown tobacco & its products have a huge predisposition for causing squamous carcinoma of oral cavity.⁵ Various Impacts faced by oral cancer patients are

1. IMPACT ON PHYSICAL STRUCTURES

Oral cancer treatment are associated by varied effects inside and outside oral cavity. The various effects are visualized on facial region, phonetics and reflexes of swallowing. Diminished functions observed among oral cancer usually are related by treatment itself and various regimens leading to adversely affecting the diseased human being. Common Complaints are dysphagia, pain, xerostomia, mucositis and sometimes even associated fibrosis in radiotherapy.

Oral Complaints are often main cause in impairing quality of living among oral cancer patient can be present either as result of chronic disease or just after the treatment which can remain during entire treatment course or may show modifications.

Self-esteem can be affected when normal facial appearance or communication ability is changed by oral cancer treatment.

Impact on Aesthetics

Treatment of oral cancer specially those tumours which are localised and are in initial stages usually undergo surgery involving removal of significant larger areas in the face. Appearance of altered face causes socially isolated and eventually leading psychological distress.

With such treatment options palliative care and rehabilitation are often required which includes Reconstructive surgery, various grafts bony or tissue harvested from somewhere else in the body sites so as to replenish affected tissue like buccal mucosa, tongue, maxilla or mandible.

Few instances team of oral maxillofacial surgeon and prosthodontist would be helpful in reducing the after effects of surgery.

Impact on phonetics

Effect on Phonetics is visible largely post chemotherapy and radio therapy. The impact is between mild to moderate. This impact is caused primarily by treatment in regions of teeth, tongue, lips and palate. Patient of oral cancer experiences problems while articulating speech and intensity of these symptoms enhances upon presence of clinical complaints like dry mouth or mucositis.

Since the disease cancer has multifaced aetiology and so are the treatment as well their complications. Often a multifigured team are required in treating oral cancer. For correcting phonetics impact, a speech therapist is needed for evaluating before, during, and after effects of treatment of cancer.

Main aim always is to revert the patient in highest satisfactory physiological functions in shortest time..

Impact on Voice

Quality of Voice among oral cancer patient are greatly affected due to varied factors

- 1) vocal fold mobility impairment
- 2) anatomy of tongue is altered, and
- 3) Chronic edema in laryngeal leading to harshness and strained voice. Xerostomia patients experience such changes in their voice due to laryngeal mucosa dryness. Speech therapist and maxillofacial prosthodontist are an important members for undergoing long term management related to these chronic conditions.

Impact on Swallowing

Dysphagia is one among most common after effects for treating oral cancer. Mainly observed because of difficulty to masticate as result of resection of mandible, extractions, hampered tongue mobility. Patients of oral cancer show significant risk by aspirating during eating owing to impact on swallowing. Swallowing can be affected post radiation therapy too.

IMPACT ON PSYCHOSOCIAL ASPECTS

Oral cancer lead psychosocial effects for patients and family.

Those affected by oral cancer experiences different fears: anxiety of death, loneliness, loss of control. These fears are tackled by defense steps followed during entire disease course.⁶

SOLUTIONS FOUND

Treating oral cancer patient involves surgical intervention. This experience, or anticipation of this experience, can provoke emotional trauma and can seem to the patient as a life-or-death threat. The patient reaction to surgery is complex and fluctuates based on their personality, defence systems, and accumulated fears and traumas. Face distortion has a significant role to categorize surgery as one among few of available treatment options because of its deleterious effect upon change in physical appearance. Scarring and disfigurement of face are coupled with taboos. Such stigma related response such as fear, depression, unwillingness for accepting physical damage. During postoperative phase in treatment patient believes their self body image, facial disfiguration due to jaw resection force them to be rejected in social personal circles.

Post surgery patient also experiences withdrawal, anxiety, depression, impotency and rage. Postoperatively patients often notice a level of hyperawareness about disfigurement faced by them leading them into facing socially stigma and sometimes they hide in public by wearing scarves and surgical mask so as to avoid attention from others. They experience frustration as they find difficult to accept their own facial appearance as well as face difficulty in communicating. Such situations lead such patients to face bitterness and apathy.

All this eventually lead to social unacceptance and death from which patient withdraw in every form of social interaction. Along with cancer therapy and conventional treatment comprehend-sive programme of rehabilitation encompassing surgeon, internal medicine, plastic surgeon, prosthodontist, occupational, psychotherapy and physical therapist would help for balancing patient's behaviour from reverting from negative after effect related for various cancer treatments. It also engages rebuilding various feeling related in relation from self-confidence, self-worth, increasing physical capacity and re-establishing disappeared social support. Some instance it is observed as Group therapy as a very useful tool with others suffering from same issues but still therapy of individuals are always preferred by those who have experienced involvement of face. Taking into considerations of all these pressing issues it becomes all the more important that Psychologist involved should be mandate as impart of standard care of patient suffering oral cancer. Along with conventional therapy in order to target

very high level in leading quality of life sometime Psychiatric medication serve to be soothing for patient during entire difficult course disease.

Just by eliminating and reducing the exposure to risky behaviours and lifestyle like utilization of tobacco and consuming alcohol, majority of three fourth among oral cancers can be easily prevented. Just smoking cessation contribute to reduce risk for oral cancer by approximately 35% in 1-4 year and approximately 80% risk reduction is observed in 20 year.

Due to high dependence seen among tobacco consumers, tobacco dependence treatment becomes one of most important part to decrease oral cancer specially among groups of high risk. Tobacco dependence concept for cessation of tobacco specially seen in high-risk patient needs for addressal through incorporation of counselling sessions by primary health care providers and also by a trained tobacco cessation specialists.

Most establishing and significant fact associated to the treatment options and outcomes for treating cancers of neck and head are involving reconstruction, rehabilitation of the affected individual. Since oral cancers have direct effect on functions of hard tissues like tongue, teeth, palate and mandible, patients are usually seen with functional disruption of ability to chew, drink, eat, swallow etc. Tobacco related Oral Cancers are often squamous cell carcinomas which are among most progressive of all tumours affecting human body.

Various treatment modalities associated to oral cancer often results in more further deterioration of loss in their function abilities. Multidimensional approach for treating tobacco related oral cancers which are incorporating organizations and various specialists is the need of hour. Team of specialist professionals of health care for treating such type of cancers would require oncologists, surgeon, dentist, nutritionist, pathologists and many more. Patients of oral cancer suffer largely not just because they are often associated to few of vital sites but largely because the basic daily needs is extensively affected by involving the oral cavity & associated structures. Main three treatment modalities for managing oral cancer as surgery, radio-therapy & chemotherapy OR combination of all. Although the availability of new research & advances for all the treatment modalities involved to oral cancer, still this cancer is still associated

with huge dysfunctions & disfigurement critically affecting the important domains of life.^{4,8}

The main essential role of anatomical parts and adjoining structures of mouth encompasses very important functions like chewing, swallowing, speaking, taste and salivation. Cancers & thereby the treatment modalities of oral cavity & adjoining structures often results in worst outcomes due to impaired functions ultimately deteriorating oral health-related quality of life (ORHQoL). Deteriorated & compromised oral health largely affects the overall well-being and health related to individual ultimately negatively affecting the health-related QoL (HRQoL) at larger prospects

Though due to more & more advancement in treatment modalities & approaches for treating oral cancer, noticeable improvements are visualized in oral cancer survival rates but still oral cancers all sites still experiences deteriorated OHQOL.

CONCLUSIONS DRAWN

Cancers of mouth and associated structures and tissues is very challenging because often it show association with very high mortality rate.

The varied team of dental specialists plays very crucial role.

Since oral cancer among Indian population is the third most common tumour in occurrence which is predominantly caused by the main intake of tobacco, thus tobacco cessation play a very vital role in its prevention. Literature have shown that major oral cancers affected by tobacco are carcinoma of squamous cell and carcinoma of squamous cells are known very progressive cancers having an impounding effect on patient's quality of life⁶. Thus early prevention through prompt diagnosis and thorough screening are the important key for stopping further spread by oral cancer.^{10,11}

SCOPE FOR FURTHER RESEARCH

All the patients suffering due to oral cancer often present to his/her clinician by different, complex and challenging clinical difficulties.

Solutions for all among these difficulties in clinical parameters often impact not only survival but also their quality of life.

Management of oral cancers are expected and needed essentially to take place by Multi-disciplinary team of neck and head Oncology departments precisely. Many clinicians forms part

of neck and head Multidisciplinary Team which includes maxillofacial oral surgeon, surgeon of throat, ear, nose along with plastic surgeon, oncologists both radiation and medical, radiologists, pathologists, anaesthetists, speech therapists, physiotherapist, dieticians, dental specialists of oral medicine, oral pathology, prosthodontists.

Managing oral cancers are so complex which are mainly pertaining to location of such tumours in close proximity of important structures of mouth. Important and critical functions like breathing, sight speech, smell, deglutition, mastication, taste and jaw related functions are few of the important function of the neck and head which have high probability to be impaired, during the entire course of cancer treatment either temporary or permanent.¹²

QOL is largely affected by lot of overlapping facts and domains. Though enormous health care research is happening throughout entire globe to improve the survival and to improve the quality of life in all the cancers of human body. Human being's individual perception for quality of life is among the significant and most important parameter to enhance the overall wellbeing of patients of cancer. During last decades, this idea of QOL has developed enormously in health care research to assess individual's own understanding of well-being.

Great scope of health care research is evident in evaluating the affect of quality of life.

Disappointingly, very few research are conducted till date which relates the consumption of tobacco with the quality of life among patients of oral cancer. In India, though Oral Cancer ranks among the top 3 cancers according to their prevalence rate, still huge dearth in the availability of literature assessing & evaluating the quality of life of tobacco related oral cancers.

Thus increase research are to be planned in future not only in India but also in other developing nations so that we can have tobacco cessation practices to be included as primary health education norms at all health centres.

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