ORIGINAL RESEARCH ARTICLE
pISSN 0976 3325 | eISSN 2229 6816
Open Access Article
www.njcmindia.org

# Changes in Addiction Pattern in Patients after Being Diagnosed with Oral and Oropharyngeal Cancer

**Rakesh Kumar[1], Ajay J Panchal[2]**

**Financial Support:** None declared
**Conflict of Interest:** None declared


**How to cite this article:**
Kumar R, Panchal AJ. Changes in Addiction Pattern in Patients after Being Diagnosed With Oral and Oropharyngeal Cancer. Natl J Community Med 2019;10(3):182-186

**Author's Affiliation:**
[1]Assistant Professor, [2]Associate Professor, Dept of ENT, SMIMER, Surat

**Correspondence**
Dr. Ajay J Panchal
ajshef @yahoo.in

**Date of Submission:** 01-01-19
**Date of Acceptance:** 01-03-19
**Date of Publication:** 31-03-19

## ABSTRACT

**Introduction:** Head and neck cancer predominantly relates to tobacco and alcohol abuse. Majority of patients give up addiction on their own after diagnosis. The present study explores the changes in addiction pattern in patients diagnosed with cancer of oral cavity and oropharynx.

**Material and methods:** The patients who were diagnosed with, and received treatment for oral cavity and oropharyngeal cancer from 2012 to 2017.

**Results:** Study findings showed that majority patients of oropharyngeal cancer were found to be addicted to both tobacco and alcohol, as compared to only tobacco addiction in majority patients of oral cancer. After treatment most patients of oral cancer had given up addiction. Relatively more patients of oropharyngeal cancer continued to smoke and drink after treatment. Only 80 % of all patients in the study were addiction free at 6 months post - treatment. The majority of non -quitters were males, largely uneducated, from rural background, aged 50 years or more. Only 60 % patients were advised to give up addiction. None recalled being offered help to quit addiction in terms of medical treatment and/or counseling.

**Conclusion:** A number of cancer patients continue to be addicted to tobacco and alcohol. They are at risk of poor treatment outcomes and recurrence. There is a need to increase awareness regarding offering treatment for these addictions, which is currently lacking in our health care system.

**Keywords:** cancer, addiction, tobacco, alcohol, quit

## INTRODUCTION

Incidence of cancer in head and neck region is gradually increasing and imposing a huge burden on the health care delivery system of India. There are many risk factors known - smoking, drinking, radiation, nutritional deficiency, sedentary lifestyle, genetic predisposition etc. Recently infection with HPV is also considered as a possible risk factor for oropharyngeal cancer.[1]

In South-central Asia, the oral cavity and oropharynx are commonest sub sites, where 80% of head and neck cancers are found.[2] Oral cancer is the commonest cancer, topping the cancer registries in India. In India, about 200,000 new cases of head neck cancer are detected every year.[3] Another distressing fact in our country is that 60–80% of patients present with advanced disease, as compared to 40% in developed countries.[4]

Smoking is a major risk factor for head and neck cancer, and the risk of developing cancer in smokers is six times that of non-smokers for tumours of the upper aerodigestive tract.[5] Tobacco in all its manifest forms can be carcinogenic. It is consumed in our country in various forms.

Alcohol is a major cause of cancer at certain sites in the body. The sites significantly associated with

alcohol use are oral cavity, pharynx, larynx, esophagus, liver, breast, and colon and rectum.[6, 7] The risk of alcohol-related cancers increases with increasing amount of alcohol consumption.[8] Drinking along with smoking increases risk many times.

Many studies show that approximately 1 in 10 cancer survivors smoke.[9] It is the same in case of alcohol. Persistent addiction following a cancer diagnosis has a marked detrimental effect on treatment outcome. It is associated with diminished effectiveness of cancer treatment. There are increased risks of cancer specific mortality, recurrence and second primary cancer.[10, 11] All these increase morbidity, decrease quality of life [12, 13] and lead to decreased overall survival.[10, 14, 15]

Staying away from addiction increases the chances of disease free survival. Some patients remain addicted even after treatment so all efforts should be made to promote quitting the addiction in cancer patients as cessation of addiction is essential for improving their prognosis. The counseling and guidance along with medications to give up addiction should set in soon after diagnosis and should continue through their path of recovery.

## MATERIAL AND METHODS

Patients who were diagnosed as having squamous cell carcinoma of oral cavity and oropharynx on histopathological examination, between January 2012 and December 2017, at our tertiary care Center, SMIMER were included. It was a retrospective analysis.

The inclusion criteria of our study were as follows. Patients diagnosed and completed the treatment offered – surgery, surgery with adjuvant radiotherapy or radiotherapy

The exclusion criteria were as follows: Patients who were diagnosed but did not complete the prescribed treatment or were lost to follow up.

All eligible cases were explained about the purpose of the study and informed consent was taken before inclusion in the study. Those who were eligible and consented were interviewed using a pretested, semi-structured questionnaire schedule prepared in local language. The patients were questioned about their addiction at least six months after discharge after surgery or after completion of radiotherapy.

The questionnaire consisted of items on demographic profile including age, sex, literacy and location. They were questioned in relation to their addiction- their habits and awareness about addiction being risk factors. Enquiry was made regarding assistance offered to quit addiction.

Confidentiality was assured at all level of the study.

## RESULTS

### Socio-demographic profile of the patients

A total of 120 patients ($n_{total}$ = 120) ranging from 29 to 86 years, who underwent treatment for oral cancer ($n_{oc}$=100) and oropharyngeal cancer ($n_{op}$=20) were considered. Their epidemiological details and addiction habits were taken into consideration. Characteristics of the individuals are presented in Table 1. Majority of patients of oral cancer were found in the age group less than 50 yrs, while patients with oropharyngeal cancer were more than 50 years of age. The study group showed predominance of males, i.e. 98 subjects were male and 22 were female.

The educational level of this study group was categorized into literate or illiterate, 103 of them were found to be illiterate, 17 were literate. 81 patients were resident of rural area.

### Addiction pattern

Among patients of oral cavity cancer, the common addiction was tobacco chewing (35%). Addiction to tobacco in smoked or smokeless form was seen in all patients. Only 15 % patients had addiction of both tobacco and alcohol.

Addiction to tobacco with alcohol was more common in patients with oropharyngeal cancer 65% (Vs 15 % in patients of oral cancer).

On being asked whether they were aware of the fact that their addiction was the most important risk factor for their current condition, majority expressed their ignorance (90 %). Only 10% patients were aware of the causative association.

### Status of addiction 6 months post - treatment

At 6 months post diagnosis and treatment, 21patients ($n_{oc\ addicts}$) with oral cavity cancer and 5 patients ($n_{\ op\ addicts}$) of oropharyngeal cancer i.e. 20% (26/120) of patients continued to remain addicted. The rest 94 patients did not go back to addiction. (Table 3)

### Characteristics of addicts post treatment.

The following were features of patients who continued to be addicts - they were likely to be illiterate male of age more than 50 years from a rural background. Relatively more patients of oropharyngeal cancer continued to be addicted as compared to oral cancer patients. (Table 3) As these were the patients who were addicted to both tobacco and alcohol hence they found it very difficult to give up addiction.

**Table 1: Socio-epidemiological profile of patients**

| Characteristics | Oral cavity cancer ($n_{oc}$=100) | Oropharyngeal Cancer ($n_{op}$=20) | % |
|---|---|---|---|
| **Age** | | | |
| <50 yrs | 60 | 9 | 58% |
| ≥50 yrs | 40 | 11 | 42% |
| **Gender** | | | |
| Male | 80 | 18 | 82% |
| Female | 20 | 2 | 18% |
| **Level of education** | | | |
| Illiterate | 90 | 13 | 86% |
| Literate | 10 | 7 | 14% |
| **Residence** | | | |
| Rural | 65 | 16 | 68% |
| Urban | 35 | 4 | 32% |

%=(($n_{oc}$+$n_{op}$)/120) x 100

**Table2. Addiction pattern**

| Variables | Oral cavity cancer ($n_{oc}$) (%) | Oropharynx cancer ($n_{op}$) (%) |
|---|---|---|
| **Addiction** | | |
| Tobacco chewing | 35 (35) | 2 (10) |
| Smoking | 20 (20) | 2 (10) |
| Chewing + smoking | 30 (30) | 3 (15) |
| Tobacco+ alcohol | 15 (15) | 13 (65) |
| **Awareness** | | |
| Yes | 10 (10) | 2 (10) |
| No | 90 (90) | 18 (90) |

**Table 3: Characteristics of addicts post treatment ($n_a$ = 26)**

| Characteristics | Oral cavity cancer ($N_{oc\ addicts}$ 21/100) | Oropharynx cancer ($N_{op\ addicts}$ 5/20) | $N_{addicts}$ = 26 |
|---|---|---|---|
| **Age** | | | |
| < 50yrs | 4 | 2 | 23% |
| > 50 yrs | 17 | 3 | 77% |
| **Gender** | | | |
| Male | 17 | 4 | 81% |
| Female | 4 | 1 | 19% |
| **Education** | | | |
| Literate | 8 | 2 | 39% |
| Illiterate | 13 | 3 | 61% |

**Table 4: Post Treatment Support with respect to Addiction**

| Post Treatment Support | Oral cavity Cancer ($n_{oc}$=100) | Oropharynx Cancer ($n_{op}$=20) | % ($n_{oc}$+$n_{op}$=120) |
|---|---|---|---|
| **Advised to Quit** | | | |
| Yes | 57 | 15 | 60% |
| No | 43 | 5 | 40% |
| **Helped to Quit-Medication/Counseling** | | | |
| Yes | 0 | 0 | 0% |
| No | 100 | 20 | 100% |

**Post Treatment Support with respect to Addiction**

When asked, if they were advised to quit their habits, only 60% patients affirmed being advised by treating doctors to give up addiction. None of the patients recalled being offered any help regarding quitting their addiction to smoking or alcohol. This is an eye –opener! (Table 4)

## DISCUSSION

Behavior is long-recognized as important contributors to cancer include tobacco and alcohol use, poor diet, physical inactivity, high-risk reproductive behavior, and occupational hazards. [1]All patients in the present study had addiction in one form or the other .This does not in any way mean that all patients who are addicted have cancer. As in certain patients, cancer develops even though they do not have any addiction, pointing towards multifactorial interplay for carcinogenesis

Why a person gets addicted is still a subject matter of intense research and debate in scientific field. Addiction is a result of very complex interaction between genetic, environmental and individual traits. It is commonly agreed that addictive behaviors exert their rewarding effects by increasing dopamine in the striatum– a central structure in the meso-cortico limbic brain reward pathway.[16]

Due to the social and cultural practices, the prevalence of addictions was found more in male compared to female. Males far outnumbered females when we consider cancer of oropharynx. Majority of patients were more than 50 years. Patients with carcinoma of oropharynx presented at a later age as compared to oral cavity cancer patients and they had addiction of both alcohol as well as tobacco. Tabrena et al in a study in France, showed that most oropharyngeal cancer (approximately 70%) are still imputable to alcohol and tobacco consumption with a mean age at diagnosis at 60 -65 years. [17]

As 68 % patients were from rural background and 86 % patients were illiterate, they were unaware of the fact that tobacco (smoking or chewing) and / or alcohol use is an important risk factor for cancer (Table 1). Only 10% patients were aware of the causative association. (Table 2) These findings are in agreement with other published studies by Saraswathi et al. and Gupta et al.[18, 19]

20 % patients continued to be addicted in our study. Studies utilizing large datasets have shown that approximately 1 in10 cancer survivors smoke; this figure could go as high as 1 in 3 patients.[9] Coup et al concluded after their study that it is necessary to provide high-risk drinking survivors who have experienced alcohol-related cancer with more aggressive interventional therapy for quitting alcohol consumption.[20]

Most of the patients gave up addiction on their own. During frequent contact with and visit to the

health care facility, many patients realize that their addiction is one of the factors responsible for their health condition or it may so happen that the patient on their own decided not to go back to addiction. Because of prolonged period of convalescence after surgery and/or radiotherapy, they inevitably remained away from their addiction for a reasonable period of time. After surgery or radiotherapy there can occur dysphasia, odynophagia, xerostomia, mucosal sensitivity, pain, taste alteration or taste loss, trismus, limited tongue mobility or narrow oral aperture, discontinuous jaw and dental disease. As a result, eating and the eating experience may remain problematic for months or years, and for some, eating may never return to normal. This may be responsible for majority of patients refraining from addiction during and after convalescence. [21]

There were more alcoholics among carcinoma oropharynx than oral cavity cancer patients. They continued to drink and smoke even after being diagnosed with cancer. These patients found it more difficult to give up addiction as compared to oral cavity patients. The longer the patient has remains addicted, the more difficult it is for him to quit.

Cigarette smoking is associated with over- expression of the proto-oncogene Bcl-2, which is a protein known to inhibit apoptosis – programmed cell death.[22] This is one mechanism known to promote carcinogenesis. Field change as a result of smoking is thought to be the reason for the development of recurrences and second primary lesions.[23] Therefore continued smoking during post-treatment period is associated with reduced survival.[24]

Carcinogenesis is also seen in tissues that are in direct contact with alcohol and the risk increases with increasing exposure. The mechanism of carcinogenesis likely involves ethanol's genotoxic metabolite, acetaldehyde. Additional evidence comes from East Asian populations, in which variant genotypes that impair aldehyde dehydrogenase are common (thereby raising aldehyde concentrations) and the incidence of aerodigestive tract tumours is increased. Because alcohol is a solvent, other toxic compounds, particularly those added to inferior quality products to enhance palatability, might also play a part in stimulating new growth.[25]

The present study found that though 60 % patients recalled being advised to quit addiction; none recalled being offered any medical or psychological assistance to quit. Many cancer patients who smoke and/or drink do not get proper assistance to quit or stay quit.[26, 27, 28]This is quite surprising, as many cancer patients want to quit.[29,30] We should help the patients by getting a psychological counseling and requisite medical treatment to enable quitting the addictions. Addiction treatment should start as close to the time of diagnosis as possible. The closer the cessation of addiction is to the time of diagnosis, the higher the likelihood for continued abstinence from addiction.

80 % patients who underwent treatment had given up addiction. Only 20 % ($n_{addict}$ = 26 /120) patients were addicted at 6 months post- diagnosis and treatment .The patients who chewed tobacco could give up earlier. Patients who smoke and drank were less likely to give up, as they had probably become psychologically more dependent on these substance. Hence quitting was difficult. Despite the large proportion of patients with head and neck cancer with addiction who attempt to quit, a substantial amount relapse.[28] This occurs due to interplay of various factors in the immediate post quit period like withdrawal symptoms, physical symptom burden, psychological distress, lack of information etc.[28] Proper emphasis has to be given in post treatment follow-up period, to reinforce maintenance of status as a quitter.

Organizations like American Society of Clinical Oncology (ASCO) and the American Association for Cancer Research (AACR), routinely promote de-addiction treatment integrated with cancer care. As tobacco and/or alcohol addiction account for an estimated 75% of head and neck cancer diagnoses, the treatment protocol should be accompanied by recommendations for quitting addiction to facilitate reduction in recurrences, symptom burden, treatment complications, and mortality.

## CONCLUSION

At present, treatment for addiction does not figure in delivery of cancer care. This is a blow for patients – they are not routinely screened and so are usually diagnosed at an advanced stage; and to add to that, they are not offered proper guidance in terms of quitting their addiction after being diagnosed with cancer. They are neither counseled nor helped to quit their addiction. Several leading oncology organizations have identified this as a missed opportunity for addressing an important modifiable behavior associated with poorer cancer outcomes. There is a need to increase awareness about this aspect of cancer care amongst both the care givers and the patients alike. Community measures to curtail addiction can reduce the number of head and neck cancers and also improve survival from head and neck cancer.

## REFERENCES

1. Doll R, Peto R. The causes of cancer: quantitative estimates of avoidable risks of cancer in the U.S. today. J Natl Cancer Inst 1981; 66:1197–308.

2. Silverman S. Demographics and occurrence of oral and pharyngeal cancers. The outcomes, the trends, the challenge. J Am Dent Assoc. 2001; 132(suppl): 7S–11S.

3. Kulkarni MR. Head and neck cancer burden in India. Int J Head Neck Surg. 2013;4(1):25–29.

4. Mehta FS, Hamner III JE. Tobacco Related Oral Mucosal Lesions and Conditions in India. New Delhi: Jaypee Brothers Medical Publishers; 1993

5. Szymanska K, HungRJ, Wünsch-FilhoV,et al. Alcohol and tobacco, and the risk of cancers of the upper aerodigestive tract in LatinAmerica: a case–control study. Cancer CausesControl 2011; 22:1037–46.

6. Baan R, Straif K, Grosse Y, Secretan B, El Ghissassi F, Bouvard V, Altieri A,Cogliano V, Group, W.H.O. Carcinogenicity of alcoholic beverages. Lancet Oncol. 2007; 8: 292–293.

7. Nelson DE, Jarman DW, Rehm J, Greenfield TK, Rey G, Kerr WC, Miller P,Shield KD, Ye Y, Naimi TS. Alcohol-attributable cancer deaths and years of potential life lost in the United States. Am. J. Public Health 2013;103:641–648.

8. Bagnardi V, Rota M, Botteri E, Tramacere I, Islami F, Fedirko V, Scotti L,Jenab M, Turati F, Pasquali E, Pelucchi C, Galeone C, Bellocco R, Negri E,Corrao G, Boffetta P, La Vecchia C. Alcohol consumption and site-specific cancer risk: a comprehensive dose-response meta-analysis. Br. J. Cancer 2015;112: 580–593.

9. Westmaas JL , Alcaraz KI , Berg CJ , Stein KD .Prevalence and correlates of smoking and cessation-related behavior among survivors of ten cancers: findings from a nationwide survey nine years after diagnosis Cancer Epidemiol. Biomark. Prev. 2014; 23 (9): 1783–1792.

10. Garces YI , Schroeder DR , Nirelli LM , Croghan GA , Croghan, IT , Foote RL et al. Second primary tumors following tobacco dependence treatments among head and neck cancer patients. Am. J. Clin. Oncol. 2007; 30 (5): 531–539.

11. Do KA, Johnson MM, Doherty DA, Lee JJ, Wu X, Dong Q et al. Second primary tumors in patients with upper aerodigestive tract cancers: joint effects of smoking and alcohol (United States). Cancer Causes Control 2003; 14 (2) :131–138.

12. Garces YI , Yang P, Parkinson J, Zhao X , Wampfler JA , Ebbert JO et al. The relationship between cigarette smoking and quality of life after lung cancer diagnosis. Chest 2004; 126 (6): 1733–1741.

13. Danson SJ , Rowland C , Rowe R , Ellis S , Crabtree C, Horsman JM et al. The relationship between smoking and quality of life in advanced lung cancer patients: a prospective longitudinal study. Support Care Cancer 2015; 24: 1-4.

14. Parsons A, Daley A, Begh R , Aveyard P. Influence of smoking cessation after diagnosis of early stage lung cancer on prognosis: systematic review of observational studies with meta-analysis. BMJ 2010; 340 : 55 -69.

15. Westmaas JL, Newton CC, Stevens VL, Flanders WD, Gapstur SM, Jacobs EJ. Does a recent cancer diagnosis predict smoking cessation? An analysis from a large prospective US cohort. J. Clin. Oncol. 2015; 33 (15) :1647–1652.

16. Le Foll B, Gallo A, Le Strat Y, Lu L, Gorwood P. Genetics of dopamine receptors and drug addiction: A comprehensive review. Behavioural Pharmacology 2009; 20: 1–17.

17. Taberna M , Mena M, Pavon MA, Alemany L, Gillison ML , Mesía R. Human Papilloma virus related oropharyngeal cancer, Ann. Oncol. 2017 ;28:2386-2398.

18. Saraswathi TR, Ranganathan K, Shanmugam S, Sowmya RN, Narasimhan PD, Gunaseelan R. Prevalence of oral lesions in relation to habits: cross-sectional study in South India. Indian J Dent Res. 2006;17(3):121–125.

19. Gupta V, Yadav K, Anand K. Patterns of tobacco use across rural, urban, and urban-slum populations in a North Indian community. Indian J Community Med. 2010;35(2):235–251.

20. Coups EJ, Ostroff JS, . A population-based estimate of the prevalence of behavioral risk factors among adult cancer survivors and non-cancer controls. Prev. Med. 2005;40: 702–711.

21. Ottosson S, Laurell G, Olsson C. The experience of food, eating and meals following radiotherapy for head and neck cancer: a qualitative study. J Clin Nurs 2013;22:1034–43.

22. Gallo O, Bianchi S, Porfirio B. Bcl-2 over expression and smoking history in head and neck cancer. J. Natl. Cancer Inst 1995;87:1024–5.

23. Vauthey JN,Walsh GL,Vlastos G,et al. Importance of field cancerisation in clinical oncology. *Lancet Oncol* 2000;1:15–6.

24. Browman GP, Wong G, Hodson I, et al. Influence of cigarette smoking on the efficacy of radiation therapy in head and neck cancer. N. Engl.J. Med 1993;328: 159–63.

25. Lancet, The. 2017-11-18, Volume 390, Issue 10109, Pages 2215-2215

26. Gritz ER , Fingeret MC , Vidrine DJ , Lazev AB , Mehta NV , Reece GP. Successes and failures of the teachable moment: smoking cessation in cancer patients. Cancer 2006; 106 (1) :17–27.

27. Simmons VN , Litvin EB , Patel RD , Jacobson PB , McCaffrey JC , Bepler G.et al. Patient-provider communication and perspectives on smoking cessation and relapse in the oncology setting. Patient Educ. Couns 2009; 77 (3): 398–403.

28. American Society of Clinical Oncology, Tobacco cessation and quality cancer care. J.Oncol. Pract 2009; 5 (1) : 2–5.

29. Gritz ER , Nisenbaum R, Elashoff RE , Holmes EC . Smoking behavior following diagnosis in patients with stage I non-small-cell lung cancer .Cancer Causes Control 1991 ;2:105–112.

30. Cooley ME , Emmons KM , Haddad R , Wang Q, Posner M , Bueno R et al. Patient reported receipt of and interest in smoking-cessation interventions after a diagnosis of cancer. Cancer 2011 ;117 (13) :2961–2969.