

Oral Cancers in Young adults in the state of Chhattisgarh A hospital-based study

Pradeep Kumar Chandrakar¹, Vivek Choudhary², Surendra Kumar Azad², Manjula Kerketta¹, Divya Samuel³, Madhu Kshatri³, Prashant Kaser³, Rahul Swaroop Singh³, Satish Dewangan³, Awani Tiwari³, Dolly Prashant³, Ashutosh Gupta¹, Gunjan Agrawal³, Shantanu Tiwari³, Amit Choraria³
Madhuri Shukla³

¹(Associate Professor, Department of Radiation Oncology, RCC, Pt. JNM Medical College Raipur, Chhattisgarh)

²(Professor, Department of Radiation Oncology, RCC, Pt. JNM Medical College Raipur, Chhattisgarh)

³(Assistant Professor, Department of Radiation Oncology, RCC, Pt. JNM Medical College Raipur, Chhattisgarh)

Corresponding author: Pradeep Kumar Chandrakar

Abstract: Incidence of oral cancer is higher above 40 years of age. There is a rising trend in young adult specially in western world due to change in human behavior and life style. HPV induced cancer is more common in young adults. But increased habit of tobacco consumption, starting from early childhood is the major cause oral cancer in young adults in India. We Conducted a retrospective study in the patients of oral cancer in young adults below 35 years, reporting to our hospital between January 2013 to December 2017. 271 (7.64%) patients below 35 years were found with oral cancer among total 3545 oral cavity cancer patients in all age group registered between this periods. Carcinoma buccal mucosa is the most common site (37.64%) followed by tongue (35.52%). Majority were in age group 25-29 years (45.4%). They started tobacco consumption early in teenage, mostly addicted to two forms of habit for at least four to six years.

Keywords: oral cancer, young adults, tobacco consumption.

Date of Submission: 13-11-2018

Date of acceptance: 28-11-2018

I. Introduction

Cancer is one of the leading causes of adult deaths worldwide. In India, the International Agency for Research on Cancer (IARC) estimated that indirectly the number of people died from cancer in 2008 was 8% of all projected global cancer deaths and about 6% of all deaths in India¹. South Asia is a major producer and net exporter of tobacco. Over one third of tobacco consumed regionally is smokeless. Traditional forms like betel quid, tobacco with lime and tobacco tooth powder are commonly used. Use of new products is increasing not only among men but also among children and teenagers.²

Oral cancer are cancers arising inside oral cavity. Histologically may be squamous cell carcinomas (SCC), adenocarcinoma, adenoid cystic carcinoma, basal cell carcinomas, verrucous carcinomas, malignant melanoma, ameloblastoma, and so on. Around 90% are SCC, originating in the mucosa lining the mouth and lips. Most common sites of oral cancer are buccal mucosa and tongue. Report from Registrar General of India, 2011, it is expected that average life expectancy of the Indian population will increase to 70 years by 2021-25 and there will be a substantial rise in the proportion of elderly people above 60 years in the country. In-terms of absolute numbers, the increase is from 14 million 1971 to 113 million in 2016.³ Due to such changes in age structure, population will have an increased incidence of cancers and other non-communicable diseases, which has a higher chance of occurrence among elderly.

Estimate indicates 57% of men and 11% of women between 15-49 years of age use some form of tobacco. More than 90% of oral cancers cases are due to using tobacco and its products. The forms of smokeless tobacco used are *betel quid* or *Pan* (pieces of areca nut, slaked lime i.e. aqueous calcium hydroxide with or without tobacco wrapped in the leaf of piper betel vine leaf), *gutkha*, *panmasala*, *zarda*, *mawa*, *kharra* and *khaini* etc. which are dry mixture of powdered tobacco, lime and areca nut flakes chewed or sucked orally. Betel quid chewing induces euphoria, increases salivation, and is said to possess anti-helminthic properties. It is very popular among muslims especially in females consumed in occasions like marriage etc. They use it like a mouth freshner, which helps in digestion.

Gutkhas has changed the trends in the tobacco market. It is a dry, relatively non-perishable, commercial preparation containing areca nut, slaked lime, catechu, condiments and powdered tobacco. The same mixture without tobacco is called pan masala.^{4,5} Pan masala is very popular in urban areas and its popularity has grown fast in rural areas. It also contains betel nut, catechu, tobacco, lime, saffron, flavoring agents. Both gutkha and pan masala come in attractive foil packets (sachets) and tins, which can be stored and carried conveniently. It is exported to 22 countries worldwide, which shows its spreading usage in the world especially to migrant workers. Preparations have been marketed since 1975, and in recent years there are advertisement on television and newspaper. Although advertising of tobacco products is banned, there is no restriction for pan masala. Aggressive advertising, targeted at the middle class and youth, has enhanced the sales of these products. Gutkha is used in India is mainly by youth and adults less than 40 years. Five million children are estimated to be addicted to gutkha who are under the age group of 15 years. In Chhattisgarh state geographic location of use of gutkha is in Raipur, Durg, Raigarh, Janjgir-Champa Jagdalpur district etc. Tobacco is used in other form known as *Gudakhu* which mixture of tobacco and jaggery which is popular in different parts of Chhattisgarh and Orissa. Its practice is very prevalent in early age group especially in females. Women chewing tobacco ten or more times a day have risk 9.2 times that of non-tobacco chewers irrespective of age of initiation of tobacco chewing.⁶

The evidence from three cohort studies in India indicates that the age-adjusted relative risk of mortality for users of smokeless tobacco, is elevated compared to that of nontobacco users.² Smokeless tobacco use in Chhattisgarh may be considered as a potent contributor to mortality and seen in backward areas of state like Bastar, Jashpur, Kondagaon district etc. It can be used orally or nasally. In the nasal use, a small quantity of very fine tobacco powder mixed with aromatic substances called *Dry Snuff* is inhaled nasally. Orally used in two ways, preparations are either placed in various parts of the mouth and sucked or they are chewed. They are made from dark or burley tobacco leaves, which are brown with golden highlights. These leaves are aged from one to three years to prepare chewing tobacco and for longer periods to produce snuff.

Tobacco Preparations used in Chhattisgarh are:

Tobacco Leaf are 'powdered sticks' of tobacco leaf is the cheapest form of tobacco, made by crushing the stalks and petioles of the tobacco plant into a fine powder. It is also used in a processed form, as bricks and blocks made with jaggery (sugar molasses) and water in known as *Gudakhu*.

Zarda is prepared by cutting tobacco leaves into small pieces and boiling them in water with slaked lime and spices until the water evaporates. It is then dried, colouring and flavouring agents are added. Zarda may be chewed by itself, with areca nut or in betel quid. It is available in small packets or tins. In Chhattisgarh it is used in two forms *pilapatti* and *kalipatti*. *Pilapatti* is supposed to be milder in form whereas *kalipatti* is harder. *Pilapatti* look yellow in colour, granules are fine whereas *kalipatti* look black and granules are loose.

Pan masala is a commercial preparation containing areca nut, slaked lime, catechu and condiments, with or without powdered tobacco. It contains almost all of the ingredients of pan, but are dehydrated to the final product which is nonperishable. It comes in attractive foil packets (sachets) and tins, which can be stored and carried conveniently. Pan masala is very popular in developing areas of Chhattisgarh and is becoming popular in rural areas like Bastar, Jashpur districts. Currently 500-600 million sachets of one popular brand are sold annually which are more common in females. Product constituents are tobacco, areca nuts, slaked lime, betel quid leaf and sometimes flavoring agents such as menthol, camphor, sugar, rosewater, aniseed, mint, or other spices are added in different regions. For preparing *betel quid*, slaked lime and catechu are smeared on a betel quid leaf and is folded into a funnel shape. Tobacco, areca nut and other ingredients are added and then top is folded over, resulting in a quid, which is placed in the mouth for use.

Khaini is a mixture of sun-dried tobacco and slaked lime. A regular khaini user may carry a double-ended metal container, one side of which is filled with tobacco and the other with slightly moistened slaked lime. A small quantity of tobacco is taken in the palm and a little slaked lime is added. The ingredients are then mixed vigorously with the thumb to make them alkaline (pH 8.3) and placed in the mouth mainly in lower labial region, dorsum of the tongue, mandibular groove. It is generally not chewed but is retained in the such location and sucked slowly for ten to fifteen minutes and occasionally left in the groove overnight. Sometimes *dry snuff* is also used especially in Sarguja district of Chhattisgarh. This is more common among men but often used by women as well.⁷

II. Material and Methods

The study was conducted at Regional Cancer Center Raipur Chhattisgarh for cases registered during January 2013 to December 2017. Around 40,000-50,000 patients are seen every year with 4000-5000 new cancer patients every year. We reviewed 271 patients of oral cavity cancer below 35 years of age registered during this period. We formulated questionnaire which was validated by expert opinion. The questionnaire included demographic information such as age, gender, literacy, occupation, medical history, habits and its frequency. We abstracted the data based on these questionnaires.

III. Results

Gender and age Group distribution:

Our data depicts that 271(7.64%) patients belong to age group of less than 35 years among the total 3545 oral cavity cancer patients in all age group registered in during this time frame. Out of 271 patients 55(20.3%) are females and 216(79.7%) are males (Figure1). Maximum i.e. 45.39% belongs to age group 25-29 years, out of which 101(37.27%) are males and 22(8.12%) are females (Table no.1& Figure 2).

Figure 1. Gender Distribution

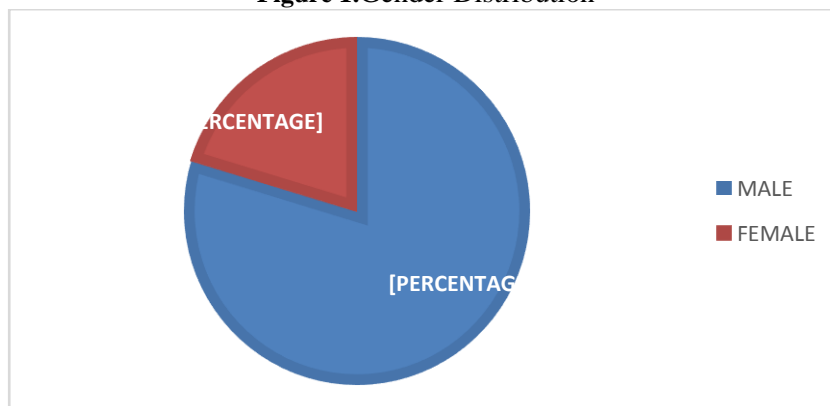
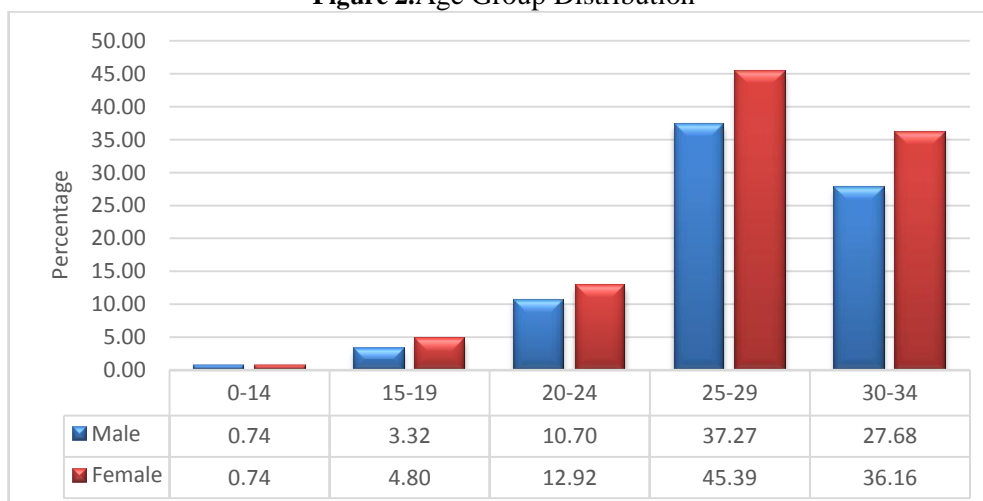


Table no.1: Age Group Distribution

AGE	MALE		FEMALE		TOTAL	
	NO	%	NO	%	NO	%
0 - 14	2	0.74	0	0.00	2	0.74
15-19	9	3.32	4	1.48	13	4.80
20-24	29	10.70	6	2.21	35	12.92
25-29	101	37.27	22	8.12	123	45.39
30-34	75	27.68	23	8.49	98	36.16

Figure 2. Age Group Distribution



Education Level:

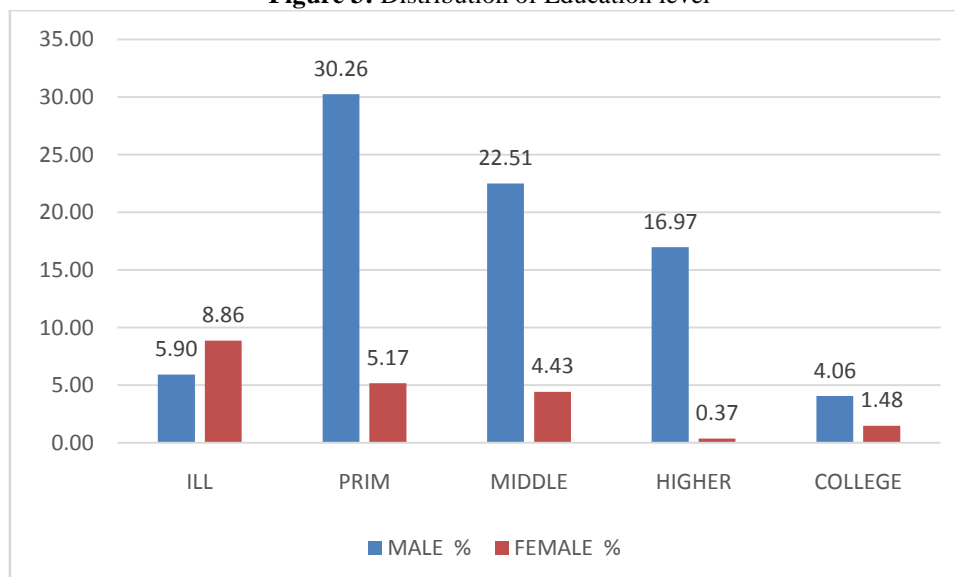
According to our data around 40(15%) oral cancer patients are illiterate. Out of which 16 (5.9%) are males and 24(8.86%) are females. Maximum i.e. 62.36% patients have accessed education primary to middle school. Only 17.34% male patients have gained higher education. Around 5.54% patients have attended college out of which 4(1.48%) are females and 11(4.06%) are males. (Table no.2 & Figure3)

This reflects that male patients are addicted to tobacco irrespective of their level of education. Tobacco addiction in female patients is observed in less educated strata, except 2% of patients who have studied up to College.

Table no2:Distribution of Education level

EDUCATION	NUMBER	MALE IN %	NUMBER	FEMALE IN %
ILL	16	5.90	24	8.86
PRIM	82	30.26	14	5.17
MIDDLE	61	22.51	12	4.43
HIGHER	46	16.97	1	0.37
COLLEGE	11	4.06	4	1.48

Figure 3: Distribution of Education level



Site wise distribution:

Our data points out most common topographic sites of occurrence of oral cancer are tongue and buccal mucosa. Around 198(73.06%) patients have faced cancer in these two sites. Out of this 37.64% have cancer in buccal mucosa and 35.42% patients in oral tongue. Cancer of alveolus and gingivobuccal sulcus are seen 9.96% and 9.23% patients respectively. Other sites of oral cavity cancer are involved in less than 8% of patients.No cases of angle of mouth and floor of mouth reported in females. (Table no. 4)

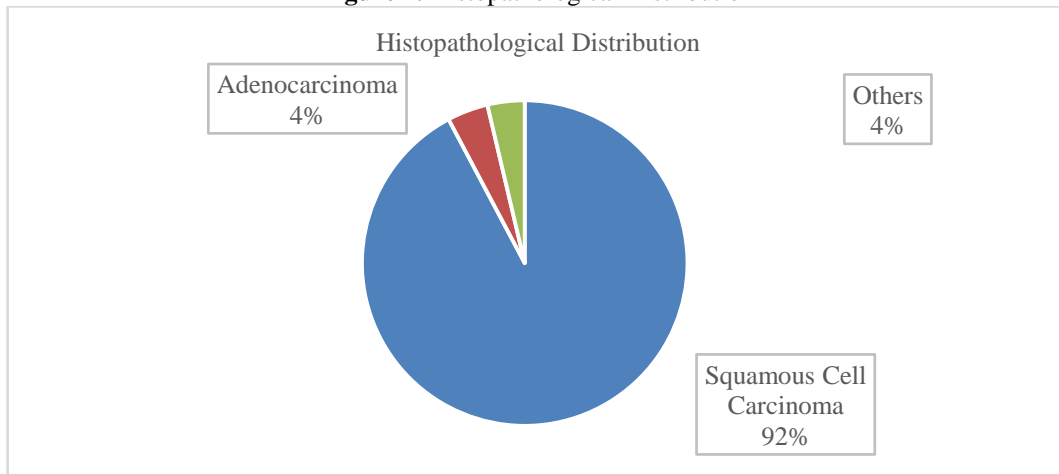
Table no. 4: Site wise Distribution

Site	Male		Female		Total	
	No.	%	No.	%	No.	%
BUCCAL MUCOSA	84	31	18	6.64	102	37.64
TONGUE	78	28.78	18	6.64	96	35.42
FLOOR OF MOUTH	3	1.11	0	0	3	1.11
ANGLE OF MOUTH	1	0.37	0	0	1	0.37
RETROMOLAR TRIGONE	3	1.11	4	1.48	7	2.58
ALVELOUS	20	7.38	7	2.58	27	9.96
LIP	7	2.58	3	1.11	10	3.69
GINGIOBUCCAL SULCUS	20	7.38	5	1.85	25	9.23

Histopathological distribution:

In our study morphologically 92% patients have squamous cell carcinoma ,4 % adenocarcinoma and other 4% have other histopathology like muco-epidermoid, adenoid cystic and sebaceous carcinomas. (Figure.4)

Figure 4. Histopathological Distribution



Addiction among Patients:

In our study 201(74%) out of 271 patients reported taking some or other form addiction. While, 13% reported no addiction, 13% of the patients did not specified, of these, 2 patients mentioned no addiction but problem of teeth bite. (table no.5)

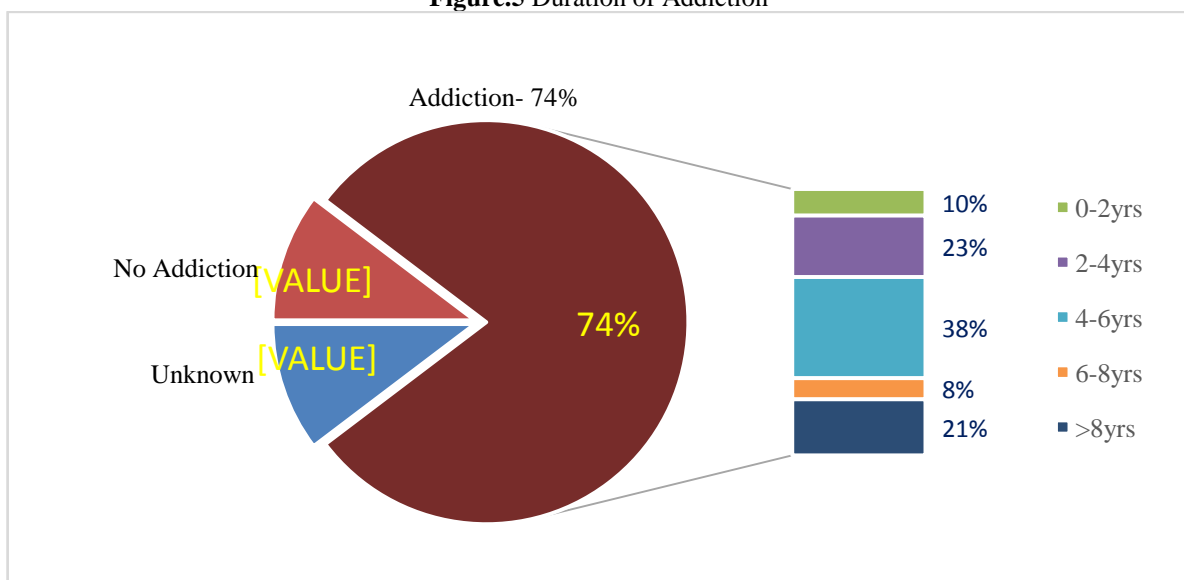
Table no.5: Addiction among patients

ADDICTION	MALE		FEMALE		TOTAL	
	NO	%	NO	%	NO	%
YES	170	62.73	31	11.43	201	74.16
NO	20	7.38	15	5.54	35	12.92
UNKNOWN	26	9.59	9	3.32	35	12.92

Duration of Addiction:

Among the patients who were reported taking some addiction, over two-thirds had been addicted for a long period of time i.e. more than 4 to more than 8 years. Among these, most of them vulnerable to the incidence of cancer were addicted for time period of 4-6 years. (Figure.5)

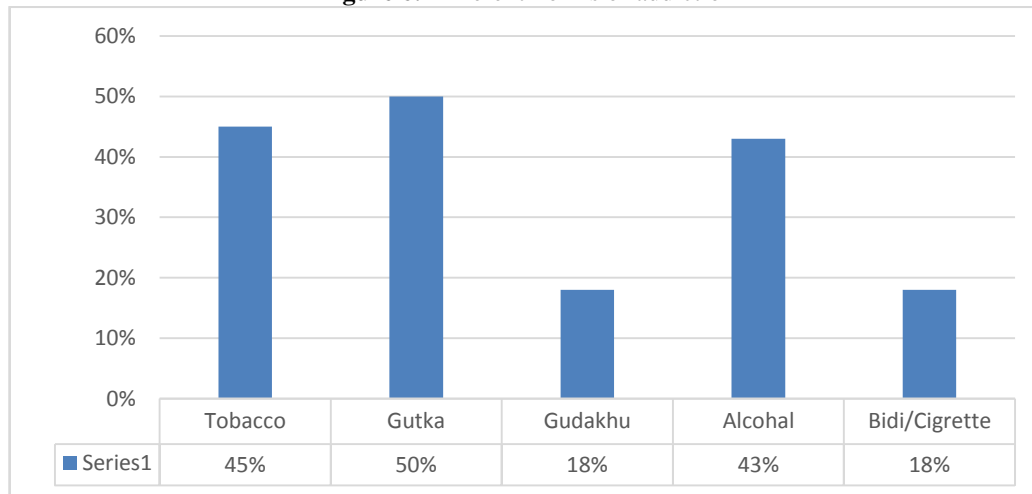
Figure.5 Duration of Addiction



Different forms of Addiction:

The most common form of addiction seemed to be *gutka* with over 50% of the patients addicted to this form of tobacco consumption. a substantial majority around 55% takes it for 5-6 times a day. Over 20% of the patients reported an even high frequency while 25% of the patients reported a consumption frequency of less than 5 times per day. *Tobacco leaves* are consumed by 45% of patients. Among them 72% takes it for 4-5 times a day. Alcohol consumption was seen in 43%, mostly consumed less than twice per day. *Gudakhu* in females and *bidi* and or cigarette smoking in males are around 18% each. Among *gudakhu* consumers, 43% of the patients reported a consumption frequency of less than 3 times a day. Among smokers, 43% of the patients got cancer despite a consumption frequency of less than 4 times a day. Another 43% of patients reported a frequency of 5 to 6 times a day while only 14% reported a higher frequency. (figure 6)

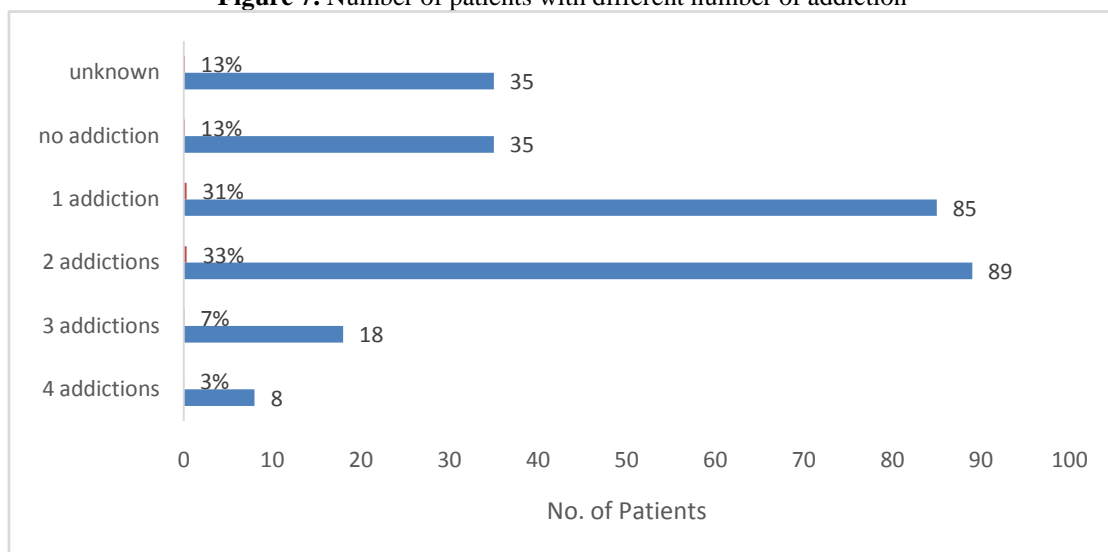
Figure 6. Different Forms of addiction



Number of Addiction:

The incidence of multiple addictions was low, with less than 10% of the patients having more than two addictions. Nearly one third of the patients had single addiction while another third had two types of addictions. (figure 7)

Figure 7. Number of patients with different number of addiction



IV. Discussion

Tobacco use is one of the major preventable causes of death and diseases in the world. Seventy percent of these deaths are likely to occur in developing countries.^{8,9} Patients who consume *gutka* were more likely to get oral cancer compared to people who did not. The findings were similar to a study by *Madani et al* which showed *gutka* to be an important risk factor.¹⁰ The patients who chew tobacco were more likely to get oral

cancer as compared to people who did not consume tobacco by chewing. The findings were similar to a study by *Sharma et al* which showed chewing tobacco is associated with oral cancer.¹¹

Annual health survey fact sheet 2010-11 by Registrar general and census commissioner of India showed 40.3% in males and 24.4% in females, overall mean 32.5% having habit of tobacco chewing above 15 years of age. Highest incidences seen in Dantewada(49.6%) followed by Raigarh, Mahasamund, Jashpur, Surguja, Dhamtari, Rajnandgaon, Kanker, Korba respectively all above the mean. It also showed there is increased habit of tobacco chewing in rural areas(36.6%) then urban (19.6%). Similarly smoking and alcohol addiction are common among males 12.3% and 31.4% respectively more in rural areas. Among females habit of smoking and alcohol consumption were more common in tribal population of four districts of Chhattisgarh i.e Dantewada, Jashpur, Bastar and Surguja.¹²

Bidi smokers were more likely to get oral cancer as compared to people who did not smoke. Similar results were seen in a study conducted by *Znaor et al* which showed smoking to be a risk of oral cancer.¹³ The findings were also consistent with a study conducted by *Rahman et al.* which showed an increased risk of oral cancer for bidi smokers compared to never smokers.¹⁴ This is the first cohort study to show the association between risk factors like gutka, gudakhu, tobacco, bidi/cigarette smoking for causing cancer of the oral cavity, mainly of tongue and buccal mucosa in young adults of 15-30 years age range in Chhattisgarh region.

Study on gutka consumption among high school students in Raipur city, Chhattisgarh state study shows that prevalence of current gutka consumer were 6%, which is close to the finding in study by U M Bhojani et al in which prevalence of current tobacco use were 5.3%.¹⁵ While Mukherjee, R S Hadaye reported the prevalence of gutka consumption 10% in their study.¹⁶

The youth is targeted by the tobacco industry effectively with the help of mass media by projecting smokers and tobacco chewers as trendy, sporty and super successful and thereby demonstrate tobacco consumption as a daily necessary routine a study by Chadda et al. in 2002,¹⁷ and Smith in 2006.¹⁸ Advertisement of gutka promotion had strongly influenced the users than non-users as proved by the present study. Although the advertisement of tobacco product in national electronic media (Radio, Television) were already banned, in addition to this youth are being targeted through billboards, on city corner and through sporting event, music concert, other social events and gatherings that are sponsored by tobacco companies. One of the striking points in the study was that 93% patients knew about health hazard of gutka use i.e. oral cancer is caused by gutka consumption.

Among men without a tobacco chewing habit, the risk of oral cancer was associated with larger amounts of bidi smoked a day, younger age of starting smoking and total duration of bidi smoking with marginal statistical significance. The risk was not limited to cancer of the tongue and floor of mouth but also extends to lungs, esophagus and stomach. The risk of tongue cancer among those without a tobacco chewing habit was related to a longer duration of bidi smoking, more than 30 years or longer. High risk was also seen when bidi smoking was started at 18 years or younger. In contrast, among men with a tobacco chewing habit, bidi smoking itself did not evidently increase the risk of oral cancer. Our findings are similar to those reported by *Sankranarayanan et al.*, who showed that bidi smoking increased buccal and labial cancer risk by 4.2fold, but only 1.5fold among pan-tobacco chewers.¹⁹ They made a similar finding in cancers of the tongue and floor of the mouth. They reported that the risk of cancer of the tongue and floor of the mouth was increased 4.98fold among men without the habit of pan-tobacco chewing, but only 1.1fold among pan-tobacco chewers.²⁰ Although it is suspected that the combined habits of bidi smoking and tobacco chewing is associated with larger oral cancer risk than the sum of the risk associated with bidi smoking alone and tobacco chewing alone, no study has clearly shown such synergistic effects. Alcohol drinking was not evidently related to oral cancer risk regardless of tobacco chewing habit in the present study, confirming the notion made in the review by *Boyle et al.*, which pointed out that alcohol consumption was an important risk factor in Western countries but not in Asian societies.²¹

Socioeconomic status is also suspected to be related to oral cancer risk. In the present study, oral cancer risk among men was related to education levels which are mostly seen in illiterate and education up to primary level patients. Case-control studies carried out in India also showed that lower education levels were related to increased oral cancer risk.^{22,23} A review by *Faggiano et al.* concluded that most incidence studies did not show a clear association, whereas oral cancer mortality was elevated in lower socioeconomic sections of various populations.²⁴ Recently, *Hashibe et al.* reported a case-control study in Kerala, India, that showed that lower levels of education and income were related to relatively high prevalence of oral premalignant lesions.²⁵

The best and only way to avoid cancer risk associated with smokeless tobacco is cessation of its use. It is necessary to step up our efforts in public education regarding the harm of tobacco use. Ever use of smokeless tobacco products, was found to be more common in government schools in comparison to private schools, this findings are in accordance with the results of *Mathur et al.*²⁶ Low socio-economic status of government school students may be responsible for this, since being relatively inexpensive and readily available, these children often see tobacco as an alternative to food. *Parakh et al* on their cross sectional study which is based on the

responding dentists' self-reports, 76% were not confident in Tobacco Cessation Counseling (TCC), 48% did not assume TCC as their responsibility, 17% considered that it might have a negative impact on their clinical practice whereas 24% considered it might take away precious time from their practice, 25% considered TCC by dentists to be effective to a considerable extent and 80% considered TCC activities are not effective due to lack of formal training, 69% considered dental clinics as an appropriate place for TCC but 82% thought there must be separate TCC centre and 100% of the dentists wanted TCC training to be a part of practice and that it should be included in dental curriculum. 95% of them were of the view that tobacco products should be banned in India and 86% responded that health professionals must refrain from tobacco habits so to act as role models for the society.²⁷

Student should assess their attitude and knowledge towards tobacco and its health implications in the Chhattisgarh state. Tobacco chewing was considered injurious to health for both boys and girls. Cigarettes and Other Tobacco Products Act (COTPA), Ministry of Health and Family Welfare, Government of India, 2003 makes sure that it is illegal to sell any tobacco containing product to the person aged below 18 years. When assessed for the knowledge of this legislation among the children boys (69.2) had a fair more knowledge than do the girls (63.8).²⁹

V. Conclusion

The present study is showing that tobacco chewing increases risk of oral cancer among young adults. Bidi smoking strongly increases the risk of oral cancer among men without a tobacco chewing habit even in young adults if duration is longer and associated with the use of alcohol.

References

- [1]. SukantSahoo, Suraj Suvarna, Akhilesh Chandra, Saurabh Wahi, Prince Kumar, Gagan Khanna. Prevalence based Epidemiological Cancer Statistics: A Brief Assessment from Different Populations in India. *Journal of Oral Health and Dental Management*. 2013;12(3):132-137.
- [2]. World Health Organization. *The World Health Report 2004: Changing History*. Geneva: WHO; 2004.
- [3]. Government of India: Ministry of Home Affairs 2011, Office of the Registrar General & Census Commissioner, India, <http://censusindia.gov.in/>.
- [4]. Gupta PC. Smokeless tobacco uses in India. In: *Smokeless Tobacco or Health—an International Perspective*. USA, Smoking and Tobacco Control Monograph 2. NIH Publication no. 92-3461, 1992, 19-25.
- [5]. Gupta PC, Ray CS. *Respirology, Smokeless Tobacco and Health in India & South Asia*, 2003; 8:419-432.
- [6]. World Health Organization and International Union against Cancer. *Global Action against Cancer*. Geneva: WHO; 2003.
- [7]. World Health Organization. *Tobacco or Health, a Global Status Report*. WHO, Geneva, 1997.
- [8]. De Beyer J, Brigden LW, editors. *Tobacco control policy: strategies successes and setbacks*. World Bank and Research for International Tobacco Control (RITC). Washington, USA: World Bank; 2003.
- [9]. Kumar S. WHO intensifies war against tobacco in developing countries. *Lancet* 2000; 355:210.
- [10]. Madani AH, Dikshit M, Bhaduri D. Risk for oral cancer associated to smoking, smokeless and oral dip products. *Indian J Public Health* 2012; 56:57- 60.
- [11]. Sharma MK, Gour N, Pandey A, Wallia D. Epidemiological study of risk factors for oral, laryngeal and esophageal cancers at a tertiary care hospital in India. *Asian Pac J Cancer Prev* 2011; 12:1215- 1218.
- [12]. Registrar general and census commissioner of India. *Annual health survey fact sheet 2010-11*:35-37.
- [13]. Znaor A, Brennan P, Gajalakshmi V, Mathew A, Shanta V, Varghese C, et al. Independent and combined effects of tobacco smoking, chewing and alcohol drinking on the risk of oral, pharyngeal and esophageal cancers in Indian men. *Int J Cancer* 2003; 105:681- 686.
- [14]. Rahman M, Sakamoto J, Fukui T. Bidi smoking and oral cancer: A meta- analysis. *Int J Cancer* 2003; 106:600- 604.
- [15]. Bhojani UM, Chander SJ, Devadasan N. Tobacco use and related factors among pre-university students in a college in Bangalore, India. *Natl Med J India* 2009 22: 294-297.
- [16]. Mukherjee K, Hadaye RS. Gutkha Consumption and its Determinants among Secondary School Male Students. *Indian J of Community Medicine* 2006; 31(4): 177.
- [17]. Chadda RK, Sengupta SN (2002). Tobacco use by Indian adolescents. *Tobacco Induced Diseases*, 2, 111-119
- [18]. Smith EA (2006). 'It's interesting how few people die from smoking': tobacco industry efforts to minimize risk and discredit health promotion. *Eur J Public Health*, 17, 162-170.
- [19]. Sankaranarayanan R. Oral cancer in India: an epidemiologic and clinical review. *Oral Surg Oral Med Oral Pathol* 1990; 69: 325–330.
- [20]. Sankaranarayanan R, Duffy SW, Padmakumary G, Day NE, Krishan Nair M. Risk factors for cancer of the buccal and labial mucosa in Kerala, southern India. *J Epidemiol Community Health* 1990; 44(4): 286–92.
- [21]. Boyle P, Macfarlane GJ, Maisonneuve P, Zheng T, Scully C, Tedesco B. Epidemiology of mouth cancer in 1989. *J R Soc Med* 1990; 83: 724–730.
- [22]. Rao DN, Ganesh B, Rao RS, Desai PB. Risk assessment of tobacco, alcohol and diet in oral cancer – a case-control study. *Int J Cancer* 1994; 58(4): 469–473.
- [23]. Balaram P, Sridhar H, Rajkumar T et al. Oral cancer in southern India: the influence of smoking, drinking, paan-chewing and oral hygiene. *Int J Cancer* 2002; 98(3): 440–445.
- [24]. Faggiano F, Partane T, Kogevinas M, Boffetta P. Socioeconomic Differences in Cancer Incidence and Mortality. IARC Scientific publication No 138. Lyon: IARC Press, 1997; 65–176.
- [25]. Hashibe M, Jacob BJ, Thomas G et al. Socioeconomic status, lifestyle factors and oral premalignant lesions. *Oral Oncol* 2003; 39(7): 664–671.
- [26]. Mathur C, Stigler MH, Perry CL, Arora M, Reddy KS. Differences in prevalence of tobacco use among Indian urban youth: the role of socioeconomic status. *Nicotine Tob Res*. 2008; 10:109-116.

- [27]. Abhinav Parakh, Chandan Matsyapal Dental practitioners self-reported performance of tobacco cessation counselling interventions – A cross sectional study. *Nepal Journal of Epidemiology* 2014;4(2).
- [28]. Ram Vinod Tiwari, JayachandraMegalamanegowdru, Anjali Gupta, Ankush Agrawal, Abhinav Parakh, SulabhPagaria, Abhishek Sahu. Knowledge, Attitude and Practice of Tobacco Use and Its Impact on Oral Health Status of 12- and 15-Year-Old School Children of Chhattisgarh, India *Asian Pacific Journal of Cancer Prevention*, Vol 15, 2014.

Pradeep Kumar Chandrakar, ““Oral Cancers in Young adults in the state of Chhattisgarh A hospital-based study.”. ” *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, vol. 17, no. 11, 2018, pp 24-32.