www.jmscr.igmpublication.org
Impact Factor (SJIF): 6.379
Index Copernicus Value: 79.54
ISSN (e)-2347-176x ISSN (p) 2455-0450
crossrefDOI: https://dx.doi.org/10.18535/jmscr/v6i10.06

IGM Publication
Journal Of Medical Science And Clinical Research
An Official Publication Of IGM Publication

Original Research Article

An observational analysis regarding factors contributing to tobacco usage among patients diagnosed with tobacco associated malignancies: a study from the Kumaon region of India

Authors
Lalit Mohan[1], Aradhana Arya[2], Kailash Chandra Pandey[3], Nirdosh Kumar Pant[4], Swaroop Revannasiddaiah[5], Rajan Yadav[6], Soorej Balan[7]
[1]Senior Resident, Department of Radiotherapy, Govt Medical College, Haldwani, Uttarakhand
[2]Assistant Professor, Department of Anaesthesiology, Govt Medical College, Haldwani, Uttarakhand
[3]Associate Professor and Head of Department, Department of Radiotherapy, Govt Medical College, Haldwani, Uttarakhand
[4,5]Assistant Professor, Department of Radiotherapy, Govt Medical College, Haldwani, Uttarakhand
[6]Senior Resident, Dept of Radiotherapy, Sanjay Gandhi Post Graduate Institute of Medical Sciences, Lucknow
[7]Senior Resident, Department of Radiotherapy, Institute Rotary Cancer Hospital, All India Institute of Medical Sciences, New Delhi
Corresponding Author
Dr Aradhana Arya
Assistant Professor, Department of Anaesthesiology, Govt Medical College, Haldwani, Uttarakhand, India
Email: *aradhanaluckystar@gmail.com*

Abstract
Aim: *Despite decades of efforts by the government of India toward tobacco regulation and raising awareness of tobacco induced carcinogenesis, there is a very high incidence of tobacco induced malignancy in Indian subcontinent as well as in the Kumaon region of India. This study will throw light upon factors which prompted tobacco usage by people to the point of carcinogenesis.*
Material and Methods: *New and earlier diagnosed patients with tobacco associated malignancies (head and neck squamous cell carcinoma (HNSCC) and carcinoma lung) with history of chronic tobacco use of least 5 years; visiting in outdoor patients department of Swami Rama Cancer Hospital and Research Institute, Haldwani, India (SRCH&RI) were asked to read and fill questionnaire, inquiring the details of their tobacco usages. Of the 334 patients of HNSCC and carcinoma lung visited in OPD during 1st April 2017 to 31st March 2018; 318 patients were analyzed, 8 patients never consumed tobacco, 4 patients consumed tobacco for less than 5 years and 4 patients were excluded due to ambiguous or self contradictory history.*
Results: *Of the 318 patients analyzed in the study 269 (84.6%) patients were well aware for the carcinogenic effect of tobacco, for 73 (23%) patients tobacco consumption was a financial burden, 232 (73%) patient noticed pictorial health warning (PHW) over the tobacco products, addiction to tobacco was the most common cause to not to discontinue consumption, 265 (83.3%) patients attempted to quit tobacco and only 12 (3.8%) could ever quit.*
Conclusion: *Despite high level of awareness of tobacco induced carcinogenesis, PHW and even willing to quit tobacco; patients still continues to consume tobacco to the point of carcinogenesis, this indicates strict implementation of existing laws, new legislation and even gradual cessation of all kind of tobacco production.*

Introduction

Tobacco smoking and chewing is a major risk factor for oral cavity premalignant and malignant lesions [Bhawna, 2013]. Risk of developing these lesions increases with increase use of tobacco. Tobacco is marketed and consumed in various forms and by different names; *beedi* (smoked), cigarette and *gutkha* (chewable) are being the most common in northern part of India. There is clear benefit of quitting tobacco use in developing oral malignancy as well as good response to anticancer treatment in malignant cases [Marron 2010, Petros 2012, Sanner 2015]. Despite decades of efforts by the government toward tobacco regulation and raising awareness of tobacco induced carcinogenesis, there is a very large incidence of tobacco induced malignancy in India (NCDIR-HBCR 2012-14).

Of the 250 known harmful chemicals in tobacco smoke, over 60 are known to cause cancer (Hoffmann et al.2001). These carcinogenic chemicals include Acetaldehyde, Aromatic amines, Benzene, Arsenic, Beryllium, 1,3–Butadiene (a hazardous gas), Chromium, Cadmium, Cumene Ethylene oxide, Formaldehyde, Nickel, Polonium-210 (a radioactive chemical element), Polycyclic aromatic hydrocarbons, Tobacco-specific nitrosamines and Vinyl chloride.

At the department of Radiotherapy, Swami Ram Cancer Hospital and Research Center, Haldwani which runs as a part of the Government Medical College, Haldwani, Nainital (GMC HDW) and caters health services to hilly region of Kumaon, Uttarakhand and northern Uttar Pradesh; over the period of 2014 to 2018, it is estimated that about 70% (Departmental data) of all patient diagnosed with cancer had history of chronic tobacco use (be in form of smoked tobacco or chewed tobacco for more than 5 years).

This prompted us to analyze and evaluate factors which could have encouraged tobacco usage among patients confirmed to have tobacco associated malignancies. We also aim to utilize the collected data to analyze awareness, psychosocial and economic factors in relation to tobacco usage in the specific population. The collected data could in turn be utilized to frame further guideline pertaining to tobacco control and decrease in tobacco associated malignancies in the region.

Material and Methods

This research project was approved by Institute ethical committee, GMC HDW. The study design employed was observational cross-sectional type. Participants were eligible if they have been diagnosed with tobacco associated malignancies (HNSCC and carcinoma lung) with history of chronic tobacco use of least 5 years, aged between 18 to 80 years, who visited in outdoor patients department of SRCH&RI. Firstly participants were explained about the study and after due informed and written consent they were asked to read and fill questionnaire (2 pages, 29 items) which was available in both English and Hindi and was focused on demographic, socioeconomic and detailed tobacco consumption history of patients. In case of illiterate patients, a resident doctor/ medical staff assisted patients to read and understand the questionnaire. Patient refusing consent or withdrawal of consent, giving ambiguous history or self conflicting entries were excluded from the study. Patient's identity was concealed.

Sociodemographic information include name, age, sex, marital status, address, level of education, occupation, family size and monthly income. Clinical information includes height, weight, co-morbidity, type of malignancy or diagnosis and clinical stage. Tobacco consumption history include type of tobacco consumed (be it smoking, chewing or both), age of starting tobacco consumption, duration, daily expenses on tobacco, awareness of tobacco induced carcinogenesis, noticing pictorial health warning (PHW), factors which prevent them to quit tobacco, and tobacco consumed history of family members, friends and colleagues.

Data was analyzed using Base SAS version 9.4. Statistical analyses included descriptive statistics. We calculated frequencies for categorical data and mean and standard deviation (SDs) for continuous data.

Results

Of the 334 patients participated in the study; eight patients were nonsmokers, five patients consumed tobacco for less than five years and three patients were excluded due to ambiguous or self conflicting history. Of the remaining 318 patients included in the analysis, 286 (89.9%) were male and 32 (10.1%) were female. About one fourth patient had carcinoma lung (83, 26.1%) and remaining three forth had SCCHN. In SCCHN cancer of tongue was most common (64, 20%) sub site; followed by supra-glottis (38, 12%), buccal mucosa (20, 6.3%), glottis (15, 4.7%), floor of mouth (14, 4.4%), tonsil (14, 4.4%), secondary neck with primary unknown (13, 4.1%), infra-glottis (11, 3.5%), soft palate (10, 3.1%), alveolus (8, 2.5%), hard palate (7, 2.2%), epiglottis (6, 19%), nasopharynx (5, 1.6%) and lip (1.6%) were other sub sites. Age of patient's ranges from 25 years to 92 year with mean age ± SD was 57.9 ± 11.7 years. About half of the patients, 158 (49.7%) perusing treatment in our Institute were from Nainital district itself; followed by adjoining districts i.e. U.S. Nagar (41 patients, 12.9%), Almora (39 patients, 12.3%), Pithoragar (18 patients, 5.7%), Bageshwar (16 patients, 5%) and various others. Assessment of level of education showed that 49 patients (15.4%) could not read and write,165 patients (41.9%) went to school upto class 8, 55 patients (17.3%) went to high school, 43 (13.5%) were intermediate, 5 (1.6%) were graduate and only one was post graduate.

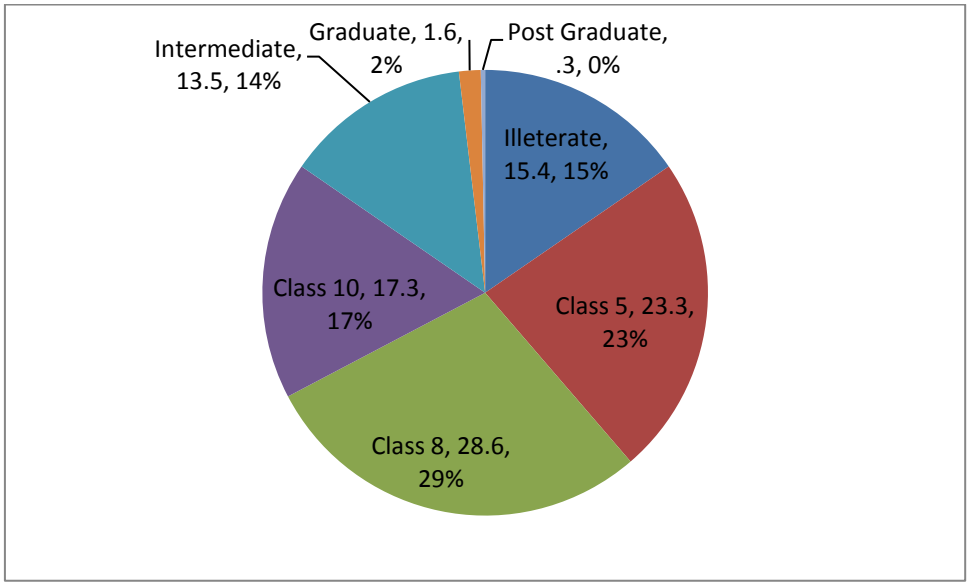

Figure 1: Level of education of patients

Median family size was 6, ranging from 2 to 10. Mean monthly income of family was 4662 INR and per capita income was 844 INR only. Mean weight and height of male patients were 57.1 kg and 166.1 cm respectively (BMI 20.69) and for females it was 50.9 kg and 158.9 cm respectively (BMI 20.15). Most of the patients were married (306, 96.3%) and commonly accompanied by their spouse. Agricultural is the most common (169 53.1%) source of income followed by private jobs (54, 17.0%), daily wedges workers (46, 14.5%), retired government employee (9, 2.8%), government employee (5, 1.6%) and 3 patients had some other profession. All 32 females were homemakers.

About four fifth of patients (255, 80.2%) were consuming exclusively smoked tobacco, 33 (10.4%) patients consumed chewed only and remaining 30 (9.4%) used both.

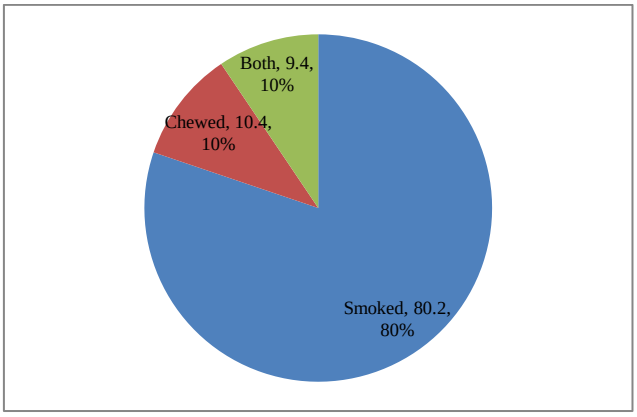

Figure 2: Type of tobacco used in smoked, chewed form or both

Of the 22 frequent cigarette smokers, median number of cigarette smoked per day was five, about half (12, 54.5%) of them used filtered cigarette. Mean duration of cigarette consumption was 26 years. Of the 285 frequent beedi smokers, median number of beedi smoked per day was fifteen; Mean duration of beedi smoked was 24 years. Of the 56 tobacco chewers (masala, gutkha or paan), median number of packets or units consumed per day was fifteen; Mean duration of beedi smoked was 16 years. Nine patients accepted history of consumption of other form of tobacco use. We were indeed surprising to find that only about one fourth of patients (73, 23%) consider their tobacco consumption habit a financial burden on them despite having a very low per capita income (844 INR per month). The mean daily expense on tobacco was 18.6 INR. The other family members of about three forth (219, 70%) patients used to consume tobacco in any form. Every four out of five (249, 78.3%) patients have ever noticed a PHW and about half of (143, 45%) patients have PHW on the tobacco product they consumed.

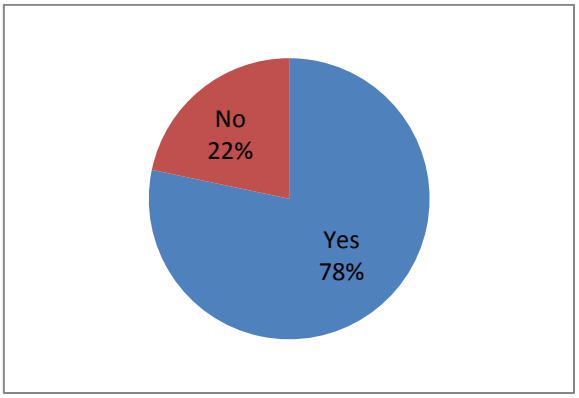

Figure 3: Pictorial health warning ever noticed by tobacco consumers in this study

A lot of patients (269, 84.6%) were well aware of the carcinogenic effect of tobacco still they continued tobacco consumption. In 70% (222) of patients tobacco consumption decreased in five years from the diagnosis of cancer. The most common cause of continuation of tobacco consumption was addition to tobacco (238, 74.8%), followed by management of stress (34, 10.7%), to relieve tiredness (26, 8.4%), to allay anxiety and to pass time and boredom (8, 2.5% each) and 4 patients had other explanations.

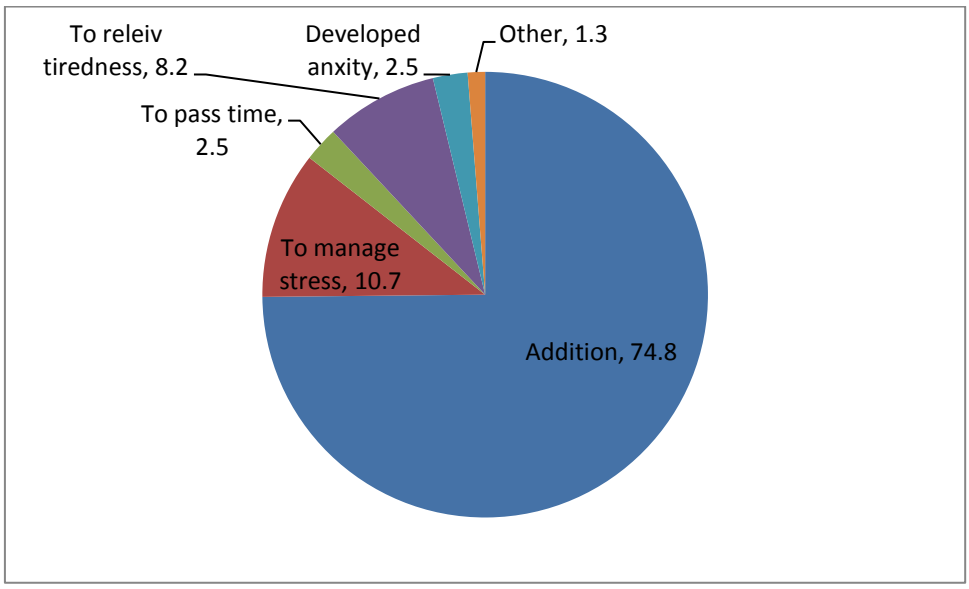

Figure 4: Factors contributing to continue tobacco consumption to the point of carcinogenesis

Every four out of five (265, 83.3%) patients ever attempted to quit tobacco but only one out of twenty five (12, 3.8%) could ever quit. Addition to tobacco was the most common cause to restart tobacco (233, 70%), followed by management of stress (17, 5.3%), withdrawal syndrome (9, 2.8%) and request by friends (4, 1.3%). Almost all the patients close relatives and friends used to smoke tobacco (312, 98.1%). Nine out of ten patients (294, 92.5%) also consumed alcohol concomitantly. All patients (318) unanimously accepted to inspire others to quit and abstain from tobacco consumption.

Discussion

To the best of our knowledge this is the first detailed study focused to find factors contributing to tobacco usage among cancer patients to the point of carcinogenesis. In this region of Kumaon, 89.6% of patients used tobacco in smoked form and as long as 25 years. The amount of beedis consumed was as high as 15 beedis per day. Purchasing tobacco was not a financial burden for 23% of patients as it is very cheap and easy availability. About more than half (55%) of patients have no PHW in tobacco product they consumed. The cheap availability and absence of PHW in tobacco products can be explained by its local production in unorganized small scale industries in Kuman. Addition to tobacco was the most common cause (74.8%) to continue tobacco consumption to the point of carcinogenesis, despite knowing (84.6%) the carcinogenic effects of tobacco. Management of stress (10.7%), to relieve tiredness (8.4%), to allay anxiety and to pass time and boredom (2.5%) were other most common causes of tobacco consumption. Addition to tobacco was again the most common cause to restart tobacco consumption after quitting once. Accompanying tobacco users is (98.1%) strongly associated with continuous tobacco uses.

Conclusion

Despite high level of awareness of tobacco induced carcinogenesis, PHW and even willing to quit tobacco; patients still continues to consume tobacco to the point of carcinogenesis, this indicates strict implementation of existing laws, new legislation and even gradual cessation of all kind of tobacco production.

References

1. Bhawna G (2013). Burden of smoked and smokeless tobacco consumption in India - results from the Global adult Tobacco Survey India (GATS-India)- 2009-2010. Asian Pac J Cancer Prev, 14, 3323-9.
2. Hoffmann D, Hoffmann I and El-Bayoumy K. (2001). Chem. Res. Toxicol., 14, 767 – 790.
3. Marron M, Boffetta P, Zhang Z-F, et al. Cessation of alcohol drinking, tobacco smoking and the reversal of head and neck cancer risk. International Journal of Epidemiology. 2010;39(1):182-196. doi:10.1093/ije/dyp291.
4. National Centre for Disease Informatics and Research; National Cancer Registry Programme (NCDIR) (Indian Council of Medical Research) Hospital based Cancer Registry 2012 to 2014 report.
5. Pandey KC, Revannasiddaiah S, Pant NK, Bhatt HC. Stage-wise presentation of non-metastatic head and neck cancer: an analysis of patients from the Kumaon hills of India. Asian Pac J Cancer Prev. 2014;15(12):4957-61.
6. Pant NK, Pandey KC, Madabhavi I, Pandey V, Revannasiddaiah S. Evaluation of the knowledge and perceptions with regards to pictorial health warnings on tobacco products among tobacco users diagnosed with head and neck carcinoma: a study from the Kumaon Hills of India. Asian Pac J Cancer Prev. 2014;15(18):7891-5
7. Petros WP, Younis IR, Ford JN, Weed SA. Effects of Tobacco Smoking & Nicotine on Cancer Treatment. Pharmacotherapy. 2012;32(10):10.1002/j.1875-

9114.2012.01117. doi:10.1002/j.1875-9114.2012.01117.

8. Sanner T, Grimsrud TK. Nicotine: Carcinogenicity and Effects on Response to Cancer Treatment A Review. Frontiers in Oncology. 2015;5:196. doi:10.3389/fonc.2015.00196.