

## Evaluation of the intentions towards, and success with tobacco-cessation among first-degree relatives of head & neck carcinoma patients

Dr. Vivekanand Satyawali<sup>1</sup>, Dr. Swaroop Revannasiddaiah<sup>\*2</sup>, Dr. Kailash Chandra Pandey<sup>3</sup>, Dr. Madhup Rastogi<sup>4</sup>

<sup>1</sup>Associate Professor, Department of Medicine, Government Medical College-Haldwani, District Nainital, PIN 263139, Uttarakhand, India

<sup>2</sup>Assistant Professor, Department of Radiotherapy, Government Medical College-Haldwani, District Nainital, PIN 263139, Uttarakhand, India

<sup>3</sup>Associate Professor, Department of Radiotherapy, Government Medical College-Haldwani, District Nainital, PIN 263139, Uttarakhand, India

<sup>4</sup>Professor, Department of Radiotherapy, Ram Manohar Lohia Institute of Medical Sciences, Vibhuti Khand, Gombi Nagar, PIN 226010, Lucknow, India

### \*Corresponding author

Dr. Swaroop  
Revannasiddaiah

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**Abstract:** Lack of awareness regarding the ill-effects of tobacco is often cited as the reason behind the widespread tobacco use in the community. This study was conducted to assess the intentions towards, and success with tobacco-cessation among first-degree relatives of head & neck squamous cell cancer (HNSCC) patients. During April 2015-January 2017 a total of 358 first-degree relatives of HNSCC patients were enrolled after ensuring awareness of tobacco-related harms. All respondents answered the first interview on the first-day, during which intentions, knowledge and attitudes towards tobacco-use were collected. A second interview was answered 3-months later, and data regarding success with tobacco-cessation, as well as reasons for failure were collected. Though 80.4% (n=288) respondents reported intentions of quitting tobacco during the first-interview, only 15.6% (n=56) were actually able to completely quit tobacco as assessed 3-months later during the second-interview. Long-term tobacco users were less likely to succeed than short-term users (12.5% vs. 26.6%, p=0.0041). Exclusive users of smoked tobacco were less likely to succeed than exclusive users of smokeless tobacco (13% vs. 25.4%, p=0.0235). As to the reasons for not being able to quit tobacco use, inability to curb craving was the most commonly reason reported (by 36.9%), while surprisingly the second commonest reason provided was that 28.4% reported as willing to accept risks of tobacco. Other reasons cited were 'peer pressure' (16.6%) and 'not being convinced with the risks' (11.3%). Only 47.7% of non-quitters were open to nicotine replacement therapy as an option. Even in a population with 100% awareness on the ill-effects of tobacco, the proportion of people quitting tobacco use is dismally low. This implies the need for more intense behavioral modification efforts, moving beyond the simple propagation of awareness about the ill-effects of tobacco use.

**Keywords:** Tobacco cessation, smoking, oral tobacco, smoking cessation, head & neck cancer.

## INTRODUCTION

Tobacco abuse is one of the commonest form of substance abuse in the society. Tobacco contains the psychoactive substance nicotine, owing to which psychological and physical dependence ensues. It is estimated that over a billion people worldwide are active users of tobacco. An estimated 1/3rd of the adult population of the world are tobacco users. An alarming 30% of the population of India above the age of 15 years are tobacco users[1,2].

Tobacco is used worldwide in two major forms- smoked tobacco and smokeless tobacco. Smoked tobacco is mainly in the form of cigarettes, cigars, beedis (traditional filterless cigarettes), and hookah (traditional pipe smoking). The commonest form of smokeless tobacco include guthka (dried tobacco leaves), pan masala (flavored product containing oral tobacco), and snuff (finely ground tobacco often in sachets). The use of tobacco is

associated with malignancies, and with non-malignant serious illnesses such as coronary heart disease, accelerated atherosclerosis, emphysema, and various others[3-8].

The World Health Organization (WHO) has estimated that tobacco is the cause for 5.4 million deaths per year worldwide. Thus, tobacco use is considered to be the single most important preventable cause of mortality and morbidity worldwide [9]. Tobacco induced cancer is more common in the developing countries in comparison to developed countries[10].

Throughout the world, various efforts have been in place to discourage the use of tobacco. There has been brisk effort in the direction of enhancing knowledge about the ill-effects of tobacco use. There have been legal requirements of pictorial warnings upon all tobacco products regarding the potential lethality of tobacco, and there have been legal restrictions against the advertisement of tobacco products. Despite all these efforts, there is still indeed a very high prevalence of tobacco use in the society. Cessation efforts with regards to tobacco use is associated with a very low success rate, despite growing awareness of the ill-effects of tobacco [4,5,7].

This study was conducted in a very special population. This study included tobacco using first degree relatives of patients diagnosed with, and being treated with radiotherapy for smoking induced head and neck squamous cell carcinoma (HNSCC). It can be logically expected that the diagnosis of smoking induced malignancy in a patient would lead to self-introspection and cessation of tobacco use among the first-degree relatives.

## SUBJECTS AND METHODS

During the time span of April 2015-January 2017, a total of 240 patients of HNSCC were registered for treatment at the Department of Radiotherapy, Government Medical College- Haldwani, Uttarakhand, India. As part of the departmental protocol, on the day of initiation of treatment, all patients are as a rule, along with their accompanying relatives were provided with counseling in regards to cessation of tobacco and alcohol use.

A total of 526 first degree relatives of these patients were interviewed for active use of tobacco (smokeless or smoked form), of whom 358 persons answered as being active tobacco users. These 358 persons were provided with a brief interview (with questionnaire in table-1) on the first meeting, and a second interview (with questionnaire in table-2) was conducted three-months after the first interview. While the first interview mainly focused on assessing the

intentions of the respondents with regards to cessation of tobacco use, the second interview (conducted 3-months after the first interview) focused upon assessment of the respondents' success with regards to cessation of tobacco use.

Data was collected manually and entered into *Gnumeric 1.1* for the purpose of analytical interpretations. Wherever proportions were compared, the Fisher exact test was used, and the cut-off for significance for the two-tailed p value was placed at 0.05.

## RESULTS

Of the 526 interviewed first degree relatives of HNSCC patients, 358 persons responded as being active users of tobacco. Of these, 55.9% (n=200) answered as being exclusive users of smoked tobacco, 19.8% (n=71) answered as being exclusive users of smokeless tobacco, and 24.3% (n=87) answered as being users of both smokeless and smoked forms of tobacco. Of these 358 respondents, 77.1% (n=276) were male, and 22.9% (n=82) were female. As per duration of tobacco use, 77.9% (n=279) were long-term users, having answered as using tobacco for more than 10-years.

When asked about possessing knowledge of tobacco being a proven etiology for cancers and other serious illnesses, 74.1% (n=265) answered positively as being aware. When asked whether they are considering quitting tobacco use, given that their first degree relative has been diagnosed with HNSCC, 80.4% (n=288) responded as having intentions of quitting tobacco use. Further, 70.1% (n=251) respondents answered as having intentions of convincing other friends and relatives against the use of tobacco.

During the second interview, only 15.6% (n=56) of the respondents declared as having been completely successful in stopping tobacco use, while 38.5% (n=138) responded as having reduced tobacco use 'to an extent'. The largest proportion of respondents (45.9%; n=164) responded as continuing tobacco use unchanged.

Duration of tobacco use had a statistically significant bearing upon the likelihood of successful cessation of tobacco use. Respondents who reported as having used tobacco for a duration of less than 10 years were more likely to stop tobacco use in comparison to those who were using tobacco for a duration of more than 10 years (26.6% vs. 12.5%, p=0.0045). It was observed that exclusive smokers were less likely to successfully quit tobacco use in comparison to those exclusively using smokeless tobacco (13% vs. 25.4%, p=0.0235). Sex of the respondents did not have any bearing with regards to the likelihood of successful cessation of tobacco use, with the proportion of male

and female respondents having successfully quit tobacco use being at 15.2% vs. 17.1% respectively, with the difference not being statistically significant ( $p=0.7295$ ) (table-3).

Persons who did not quit tobacco use ( $n=302$ ) were asked to answer a rather direct question probing the reason for their not being able to stop the use of tobacco. While 36.9% ( $n=132$ ) responded as being unable to curb craving, a surprisingly large proportion of respondents (28.4%;  $n=86$ ) answered as willing to

risk suffering the potential ill effects. A further 16.6% ( $n=50$ ) respondents reported peer pressure as the reason, and 11.3% ( $n=34$ ) responded as not being convinced about the risks associated with tobacco (table-4).

When the 302 respondents who were unable to quit tobacco were offered the option of nicotine replacement therapy to help with them quitting tobacco use, 47.7% ( $n=144$ ) respondents agreed to accept the same.

**Table-1: Questionnaire 1: answered on the day of registration**

1.	<b>What form of tobacco do you use?</b> a. Smokeless (masala/guthka/tambak) b. Smoking (cigarette/beedi/cigar/hukka) c. Both oral and smoked forms
2.	<b>For how long have you been actively using tobacco?</b> a. Less than 10 years b. More than 10 years
3.	<b>Do you know that tobacco is a proven etiology for cancers and many other serious diseases?</b> a. Yes b. No
4.	<b>Now that your patient has been diagnosed with a HNSCC which could be related to tobacco habits, would you consider quitting tobacco use?</b> a. Yes b. No
5.	<b>Your preferred mode of contact for another interview after 3 months would be:</b> a. Will arrive for a personal meeting b. Will prefer telephonic interview
6.	<b>Would you try to convince other relatives and friends of yours to consider stopping tobacco use?</b> a. Yes b. No

**Table-2: Questionnaire 2: Answered three months after questionnaire-1.**

1.	<b>How successful have you been in curbing tobacco use?</b> a. Totally stopped b. Reduced to an extent c. Continues unchanged
<i>[Further questions to be answered by those who chose options 'b' or 'c' for question 1]</i>	
2.	<b>What is the reason for you not being able to quit using tobacco despite having the intentions (choose a single, most appropriate answer):</b> a. Unable to curb craving (or) unable to concentrate on routine activities without tobacco b. Pressure from peers c. Not convinced about the risks d. Willing to risk suffering the potential ill effects
3.	<b>Would you still consider quitting tobacco use, if provided with proven remedies such as nicotine replacement therapies?</b> a. Yes b. No
4.	<b>Did you successfully convince any other tobacco user to quit using tobacco?</b> a. Yes b. No

**Table-3: Rates of complete tobacco cessation among sub-groups**

	Quit successfully	Did not quit	P value (Fisher exact, 2-tailed)
<b>Duration of tobacco use</b>			
< 10 years	21	58	0.0045
> 10 years	35	244	
<b>Form of tobacco use</b>			
Exclusive smoking	26	174	0.0235
Exclusive smokeless	18	53	
<b>Sex</b>			
Male	42	234	0.7295
Female	14	68	

**Table-4: Reason for not having quit using tobacco use, as answered during the time of the second interview:**

Answer	Number (%)
Unable to curb craving ( <i>or</i> ) unable to concentrate on routine activities without tobacco	132 (43.7%)
Pressure from peers	50 (16.6%)
Not convinced about the risks	34 (11.3%)
Willing to risk suffering the potential ill effects	86 (28.4%)

## DISCUSSION

Among developing countries, it is widely believed that the lack of awareness about tobacco as being the major reason for its widespread use in the society[11]. However, recently an overall improvement in literacy and the percolation of media based awareness efforts have largely sensitized the population regarding the harmful effects of tobacco[12]. Despite all of this, tobacco use however continues unabated.

We noticed a unique opportunity to evaluate a very special population of tobacco-users, who being first-degree relatives of HNSCC would be expected to have a first-hand revelation as to the potentially devastating effects of tobacco use. Rational thought would lead one to assume that a tobacco user would be motivated to quit tobacco use after the diagnosis of a tobacco induced malignancy in a relative. Thus, this study was designed so as to elucidate the intention to quit, and then, also to assess the success-ratio with regards to tobacco-cessation among first-degree relatives of patients diagnosed with, and being treated with radiotherapy for HNSCC. We only included relatives of patients with p16-negative HNSCC, so as to avoid including relatives of smoking non-related (HPV induced) HNSCC.

There have in the past too been instances where published research has indicated that increased awareness about the ill-effects of tobacco does not necessarily lead to increased rates of tobacco-cessation. A study by Halawany *et al.* evaluated the impact of the awareness of ill-effects of tobacco use upon tobacco cessation. The large study involved a rather highly sensitized population, that of dental students from India,

Saudi Arabia, the United Arab Emirates and Yemen. They too felt that higher awareness did not lead to a positive impact upon cessation [13].

The depiction of pictorial warnings upon the packaging of tobacco products are mandated by law in India. However, tobacco use in the community continues unabated. Oswal *et al.* postulated that these warnings are ineffective since they are often not properly understood [14]. Karinagannanavar *et al.* in their study involving 600 persons analyzed the impact of pictorial warnings upon tobacco usage. Even though 72.5% of the respondents had reported awareness about the pictorial warnings, a disappointingly low 14.5% of the respondents had given a thought, or tried to reduce or quit tobacco use[15].

There was a statistically very significant difference in the likelihood of successful quitting with regards to the duration of tobacco use. Respondents who were long term tobacco users (using tobacco for more than 10 years) were far less likely to be successful at tobacco-cessation in comparison to tobacco users who were using tobacco for less than 10 years (26.6% vs. 12.5%,  $p=0.0045$ ). This is in concurrence with prior studies, which indicate that long-term users are more steadfast with their habits[16].

There was also a significant difference with regards to the form of tobacco use. Respondents who were using exclusively smoked forms of tobacco were less likely to quit tobacco use in comparison to those using exclusively smokeless forms of tobacco (13% vs. 25.4%,  $p=0.0235$ ). This is in contrast to a prior report published by Sarkar *et al* who found users of smokeless

tobacco to be less successful in quitting than users of smoked tobacco[17]. Nevertheless, control of guthka use is paramount in importance if the burden of oral cancers are to be reduced in developing and under-developed countries[18]. Smokeless tobacco tends to be less expensive than smoked tobacco in general [19].

In a study similar to ours, albeit with a different methodology, the investigators assessed tobacco cessation among first-degree relatives of HNSCC patients being treated with surgery. It is notable that the study by too denoted a low percentage of tobacco-cessation, with only 16.5% of the first-degree relatives having been successful in completely quitting tobacco use[1].

Effective anti-tobacco legislations and the placing of legal restrictions against the use of, and the sale of tobacco products could be the need of the hour. Legislations banning the use of tobacco are likely to be met with resistance. However, in the interest of reducing large loads of morbidity and mortality in the society, strict laws against the use of tobacco, and measures such as heavy taxation of tobacco products may help check the use of tobacco products. Imposing financial measures could be effective, given that majority of the users are often from the poorer sections of the society. After-all, it has been shown (WHO report, 1997) that every 10% increase in the cost of tobacco will reduce the consumption by 2-8% [20].

## CONCLUSION

In concluding, our results imply that mere education about the risks, and raising awareness will not be enough to weed out the use of tobacco from the society. More intense behavioral modification efforts must be put in place, since it is now evident that a significant proportion of tobacco users are indeed aware of the potential ill effects. Studies are required to elucidate the psychological make-up of these non-quitters despite awareness of ill-effects of tobacco. As our study noticed that specific sub-groups of tobacco users (such as long term users, and those using smoked tobacco) were less likely to achieve tobacco-cessation than people using smokeless forms of tobacco, future community interventional efforts towards tobacco-cessation may thus have to place extra-emphasis upon these sub-groups.

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