

Impact of Visual Exposure to Personal Oral Condition on Tobacco Abstinence Intent

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Abstract

The association between tobacco consumption and oral cancer has been scientifically proven by studies across the globe. The health communication related to this has been intense and wide. Yet, its impact on this health risk behaviour appears to be suboptimal. One of the reasons could be the lack of power in the communication. When the communication is designed with an element of personal relevance, the threat appraisal is likely to be invoked, which in turn leads to motivating the person towards abstinence. Tobacco abstinence intent is influenced by multiple factors. Pictorial pack warnings are generic and may lead to avoidance of exposure to the warning. However, brief exposure to personal oral condition as against the generic pack warnings, could serve as an adjunct to persuasive communication strategies to enhance abstinence intent. The impact of exposure to personal oral condition on tobacco abstinence intent was studied on patients visiting a tertiary dental hospital in New Delhi, India. Results indicated that 35% of users were unaware of the risks and 77% did not practice oral self-examination. A close association between the exposure to pictures of one's own mouth and the intent to quit tobacco consumption was observed. About 85% individuals expressed abstinence intent, immediate post-test. Change in the policy of pictorial warnings and public health education on tobacco consumption are discussed. Self-oral examination, particularly by tobacco users is recommended as an adjunct.

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Tobacco misuse is known to cause adverse public health problems globally. Although the Global Adult Tobacco Survey (2016) reports a decline in tobacco use by six percentage points, a staggering 28% in India are known to use some form of tobacco. The impact of chewing and smoking tobacco on multiple organ systems including the oral cavity have been reported in literature for several decades. A multitude of factors influence the choice to use tobacco. Availability, access and affordability pivot communities towards continued use. Tobacco abstinence intent can be influenced by a well-informed and inclusive public health strategy. Pharmacological approaches to help in tobacco abstinence include nicotine-based lozenges, chewing gums, epidermal patches, prescription drugs including anti-depressants like Bupropion and Nicotinic Acetylcholine receptor agonists like Varenicline. The compliance to pharmacological alternatives is questionable, with availability and affordability (Sarma et al, 2017) playing a critical role for tobacco users in countries like India. Additionally, there is a tapering regimen that is necessary to achieve abstinence. The reason is simple. Tobacco consumption is an addiction or a habit that provides instant reward to the user. This behaviour can be weakened by designing intervention that either functions as a punishment for the health risk behaviour or as a substitute behaviour that is found to be more rewarding.

Ideally, the approach to educate has to target both the cognitive and the affective components of the user while integrating the components of reinforcement for inculcating the behaviour change. Health education measures such as Mouth self-examination can be hedged by targeted individual level approaches, while warning messages can be more intense to stimulate the vicarious effect.

Several approaches inappropriately based on some of the behaviors change theories have been tried and tested in small populations over the last few years. Some of these include

the measures based on the Health Belief Model (Rosenstock IM, 1974). Pictorial warnings, for instance, are carried on packs by the tobacco industry, but rely completely on the individual and interpersonal choices. Initiatives like these, where the tobacco industry is absolved of the responsibility to prevent product misuse, miss the public health education targets. (Balback ED et al, 2006).

The tobacco cessation strategy based on the transtheoretical or stages of change model (Ajzen I, 1991) is based on the concept that a tobacco user passes through several stages of behaviour change before successfully quitting smoking or tobacco chewing. However, support mechanisms are necessary to assist tobacco users along the quitting journey.

Bandura's Social Cognitive Theory (Bandura A, 1986) discusses about the physical environment which drives habit initiation. However, in India, there is a visible display of tobacco products in many convenience stores, on billboards, bus shelters, TV advertisements and through subtle ways in sports coverage, movies and public events.

In addition, addiction psychiatrists, dentists, medical doctors, health psychologists, frontline workers, school teachers and parents have the opportunity to intervene and disrupt addictive behavior in all age groups. Dental clinics are considered to be ideal settings to encourage abstinence from tobacco use since the dentist invariably examines the intraoral condition and hence has a chance to communicate to the patient, the damage that results from tobacco use. Additionally, all health professionals can provide brief intervention for tobacco cessation and these efforts can be synergized by building awareness about identifying a tobacco user, steps in the provision of brief intervention. Tobacco use cuts across various disciplines and building alliances between the professional associations of these disciplines enhances the cessation outcomes. (Venkatesh S, 2012).

Physiological and anatomical changes in the oral cavity can be shown to the visitors of a dental facility, coupled with chairside education on the harms of use. Preventive strategies can be advocated at individual and family level through brief interventions in a dental clinic. Practice of Mouth self-examination (MSE) was known to reduce incidence of and mortality from oral cancer. The feasibility and effect were measured (Sankaranarayana et al, 1993, 1995). Oral visual Examination by trained health workers and MSE can help in early detection and play a role in prevention of oral cancer and potentially malignant oral lesions. The additional benefit of these practices is early detection of risk behaviours like tobacco misuse. Digital technologies including mobile apps, videos on self-examination, mass media and several other approaches, along with effective community engagement could facilitate efforts to tackle the low levels of awareness of the harmful effects of smokeless tobacco and areca-nut products (Kharbanda OP 2019).

Pictorial warnings on smoking and smokeless tobacco products attempt to educate the public about harms of tobacco use and elicit fear/ aggravation about the possible health outcomes. Over the years, graphic warnings evolved from the graphic sign of a crab, a scorpion, an image of chest x-ray of a smoker, to the current version which is the image of a tumor in the mouth, infected lungs, tumor in the cheek (Oswal KC, 2011). The size of pictorial warning has been enlarged to cover 85% of the package in 2017. Additionally, in 2020, new images were added to the specified health warnings through an Amendment to the third rule of the under the subsection Packaging and Labelling of the Cigarettes and other Tobacco Products (Packaging and Labelling) Rules, 2008.

Although the focus of these efforts is to help tobacco users to work on their addiction with fear appeals like images of negative health outcomes, the extent to which a tobacco user responds or reacts to these pictures is debatable. In a paper that evaluated the effectiveness of graphic warnings, authors (Oswal et al, 2011) reported that ‘the mandated

pictorial warnings do not serve the desired purpose since they are not properly understood.’ The results of this survey indicate that radiological images and the images of a crab/scorpion are not found to be relevant in meeting the objective of invoking an intent to abstain. Tobacco manufacturers do not use images of diseased lungs and it was found that public would prefer messages in local languages. Uses of visual representations carry the message of severity and susceptibility. Internalizing the same, triggers the fear in the person that paves the path for quitting the health risk behaviour. Protection Motivation Theory of Health Behaviour advocates the desirable impact on health risk behaviour by creating motivation with a combination of fear induction, self-efficacy and response efficacy. Mass media, including television commercials and radio jingles also base health education on Protection Motivation Theory (PMT), wherein, realistic stories about tobacco users’ lives, the and the dangers associated with tobacco use are highlighted. There has been proven effectiveness of these campaigns (Durkin, 2012), particularly, consistent exposure to negative health effect messages. These campaigns are known to change the attitudes and beliefs about smoking, increase the attempts to quit and reduce the prevalence of adult smoking. Application of the PMT for achieving behavior change has been explored in the areas of outpatient rehabilitation (Ali et al; 2018) and chronic disease management e.g. promotion of physical activity in diabetics (Grindley, 2008).

The present study is an attempt to apply an intervention model that aims to personalize the perception of severity and susceptibility of the consequences of tobacco consumption and thereby invoke an intent to quit.

Method

Objective

To examine the impact of exposure to personal oral condition on tobacco abstinence intent in a subset of patients visiting a tertiary dental hospital in New Delhi, India.

Hypothesis

Visual exposure to personal oral condition, through self-examination in the mirror or using photographs on a mobile device, has an impact on the intent to abstain from tobacco among patients with a potentially malignant oral lesion and those with a normal mucosa.

Design

This is a cross-sectional control group intervention study. The intervention group were exposed to the visual photographs of their oral condition followed by standard oral health education while the control group were provided standard oral health education without the visual exposure of their oral condition. Tobacco abstinence intent of both the groups were studied following the intervention and the standard procedure.

Sample

The total sample consisted of 277 men and women. They were divided into study group and control group. The study group consisted of 100 individuals who agreed to respond to the PETAIQ and the control group had 177 individuals. 89% were men and 11% women. The patients who were referred to the tobacco counseling clinic from the department of oral diagnosis during April and May 2018 were selected for this research, following convenience sampling.

Inclusion criteria

- Individuals reporting current tobacco use, with an active lesion in the oral cavity.
- Individuals willing to receive brief behavioral intervention (standard intervention as per hospital protocol) to facilitate abstinence from tobacco.
- Individuals willing to participate in the study by signing informed consent

Exclusion criteria

- Individuals not willing to receive the standard intervention for tobacco cessation.

- Individuals who are current tobacco users but without any mucosal changes in the oral cavity.

The Tool:

1. Post Exposure Tobacco Abstinence Intent Questionnaire (PETAIQ): This is a 17-item questionnaire designed for the purpose of the present study. It measures six components- self-examination and action; fear, anger and worry; intention to quit; exaggeration and manipulation; knowledge; relevance and role of the government.

Scoring:

All the responses were coded and entered into Microsoft Excel 2007. The responses on the 5-point Likert scale were given the scores 1-5 from negative to positive (strongly disagree to strongly agree).

2. Visual photographs of Oral Condition: These are the soft copies of the instantly taken photographs of the oral pictures of the participants captured in the smart phones

Procedure

This research study was conducted by the department of Dental Public Health in collaboration with the department of Oral Diagnosis. As per standard protocol, Brief behavioral intervention is provided to all the individuals who report tobacco use during the oral diagnosis. The dental public health expert provides advise on steps to practice abstinence from all forms of tobacco, measures to avoid switching between different tobacco forms and information on harms associated with tobacco during this interaction.

The behavioural intervention as standard protocol aims at enhancing self-efficacy and response efficacy. In addition to this, the study group was exposed to the pictures of their oral condition taken on the spot using the mobile phones. The objective of this was to combine threat perception with the behavioural intervention aimed at inculcating motivation for abstinence. Thus, the design followed the basic principle of Protection Motivation Theory.

The patients referred by the department of oral diagnosis for tobacco counseling during April and May 2018 were explained about the study and their willingness was sought. Those willing to sign the informed consent were included in the sample.

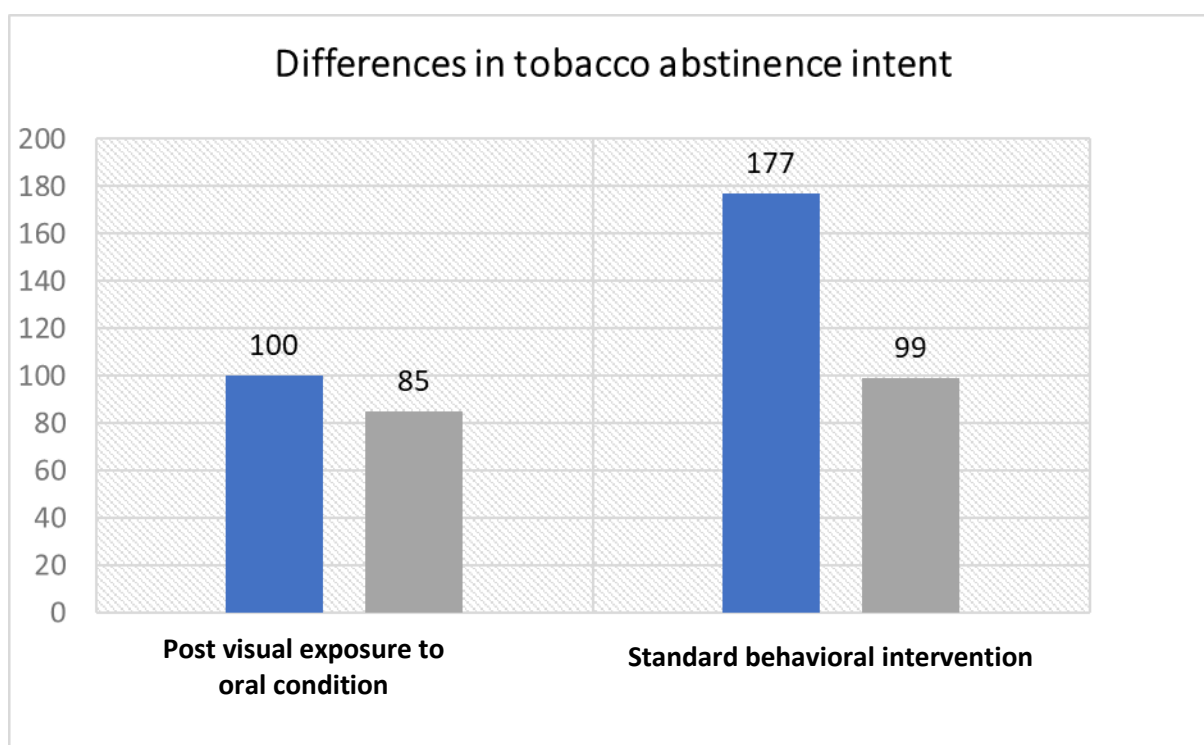
Following a convenience sampling, all the individuals reporting during April- May 2018 were included in the study. Out of the 277 individuals, 100 individuals, consented for photograph of their mouth and to respond to the questionnaire. They constituted the study group. The others who consented to participate in the study by responding to the questionnaire but did not want the photographs of their mouth constituted the Control group. All the participants had their oral cavity examined. The photographs of oral cavity were taken for the study group using the mobile phone. The study group was exposed to the pictures of their oral condition followed by the standard behavioural intervention. The control group was provided the behavioural intervention. Soon after the intervention, both the groups were administered the PETAIQ. The sessions were held individually for the patients.

Results

The preliminary results are presented in simple percentages. About 51% of the individuals in the study group reported with systemic conditions including diabetes and hypertension. Close to one-third (27%) of the individuals in the study group mentioned that they 'ever noticed' the pack warnings. About 49% individuals examined only teeth during mouth self-examination. Less than 1% in the study population examined their mucosa, the site where the potentially malignant lesions occur. 48% of the study population agreed that the picture of their mouth generated a fear in them. In the study group, 20% of the participants agreed that a picture of their mouth was a reflection that the condition is bad because they used tobacco. About 93% of the individuals in the study group agreed that they heard about the harmful effects of tobacco use multiple times. In the study population, 35% of the individuals reported that they were not aware of the harmful effects of tobacco, until

they initiated its use. About 22% of the individuals felt that harsh pictures of pictorial warnings on tobacco packs are for heavy tobacco users and not for them. The intent for tobacco abstinence in this group was compared with 177 individuals who received brief behavioral intervention to motivate tobacco users, as per standard protocol.

The difference between the two groups with respect to tobacco abstinence intent is presented in the graph below. Post visual exposure to the photograph of their oral condition, 85% of the individuals expressed the intent to abstain from tobacco; among the individuals who received the standard procedure, 56% expressed the intent to abstain.



Only 23% of the individuals were aware of self-examination of the mouth for identifying oral conditions including tooth decay, gum disease and any changes in the oral mucosa. Ninety percent of this population examined only teeth and gums and did not notice changes in the mucosa of the oral cavity.

Implications and limitations

The findings in this study demonstrate that anger, aggravation and fear experiences as a result of visual exposure to personal oral condition had a stronger influence on tobacco abstinence intent. Some of the non-specific components including the role of government in tobacco cessation, awareness of the harms of tobacco use, intention to quit before the individual experiences harm and relevance of pictorial warnings to tobacco users are likely to be less important.

Several approaches are followed in dental hospitals/clinics. The 5A's: Ask, Advise, Assess, Assist and Arrange; and 5R's: Risk, Reward, Relevance, Repetition, Roadblocks approach is most commonly advocated by health professionals, as recommended by the World Health Organization (WHO, 2014). In addition, there is an mCessation helpline powered by the Ministry of Health and Family Welfare with personalized advise, SMS services and monitoring, with experts from NIMHANS Bengaluru providing expert advice to tobacco users through the toll-free helpline. (Gopinath et al, 2018).

Some studies (Hall et al, 2017) discuss development of the 'Reactance to Health Warnings Scale (RHWS) to serve as adjuncts to development of pictorial warnings or persuasive messages. The responses to this scale were evaluated in two subsets of smokers in the US in which one set was exposed to pack warnings on cigarette packs that individuals carried for four weeks and the other groups were exposed to messages and pictorial warnings briefly. It was found that the brief RHWS predicted perceived message effectiveness, quit intentions, avoidance of the warnings. The overall reliability score of this score was 0.77 and the authors explain that such brief scales can serve as an adjunct to pictorial warnings and augment public support to the policy on pictorial warnings/ persuasive messages (Hall et al, 2018)

In a recent study which analyzed the reasons as to why pictorial warnings work (Brewer NT et al, 2019), it was found that pictorial warning increased attention to, reactions to and social interactions about cigarette pack warnings but changed no belief or attitude about smoking. Additionally, pictorial warnings led increased avoidance of warnings, which was associated with greater quit attempts. Reactions to personal oral condition, briefly, during the chair-side interaction, particularly fear and anger, could have an impact on abstinence intent.

The Post Exposure Tobacco Abstinence Intent Questionnaire (PETAIQ) can further be developed into a scale by testing the questionnaire on a larger population, with standard options for responses. The findings in the study group provide preliminary evidence that the picture of the personal oral condition triggers an intent to abstain from tobacco in a larger proportion of the population compared to the standard pictorial warnings that the control group was exposed to. Additionally, the elements of a standard pictorial warning are not relatable to a larger group of the population even though the pictures generate fear. This study however has several limitations. We only measured immediate intent.

Lack of follow up stands as a significant limitation in this research. Sparing the responses after brief exposure to their oral condition, data of the follow-up interactions have not been analyzed to understand patterns of continued abstinence.

Additionally, the components that explain variability must be tested further, on a larger sample, in order to achieve higher reliability and develop a standardized scale of perceived effectiveness to visual exposure to personal oral condition in order to serve as an adjunct to the interventions that are in place in tertiary dental hospital.

Exposure to personal oral condition, as against generalized pictorial warnings, may serve as an efficient means to communicate with tobacco users and encourage abstinence intent. Future studies in this domain will help in generating evidence to inform action.

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