

# Tobacco Consumption and Premalignant Lesions among Police Personnel in Mumbai, Maharashtra, India

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## ABSTRACT

**Aims and objectives:** Indian judiciary plays an important part in the community both as law enforcers and as role model for appropriate behavior. Despite this, investigation reveals that they consume a higher level of tobacco. The health hazards of tobacco consumption among police officers of Mumbai and the strength of its association with premalignant lesions with regard to frequency of consumption were intended to be studied.

**Settings and design:** Clinical oral examination was performed by the experts and a questionnaire was filled by the police personnel. After the screening procedure, findings of habit mongers were recorded.

**Materials and methods:** A cross-sectional camp approach with multiphasic screening of the police officers was adopted in the study. Two random police units with 200 police personnel were selected for the study. Structured closed-ended questionnaire was filled by them. It was followed by clinical oral examination by expert for screening and identification of precancerous lesions.

**Statistical analysis:** Mean percentage proportion was used for data analysis.

**Results:** Remarkable cause for tobacco consumption is occupational stress and the fact that policemen are burdened with mental stress beyond imagination. Among the study of total chewing population, the association between tobacco chewers and the ones who are not with regard to development of premalignant lesions was significant.

**Conclusion:** A significant association was found between the factors causing premalignant lesions and the frequency of tobacco consumption. Periodic health consultations and promotion of hazards of tobacco consumption play an important role in restraining these policemen from such "flavored addictive carcinogens."

**Keywords:** Carcinogens, Police, Premalignant lesion, Survey, Tobacco.

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## INTRODUCTION

Police officers together with other communities help the society to improve the quality of life and maintain law and order in the country.<sup>1</sup> Despite patriotism, studies have shown that they may consume tobacco at rates higher than the general population.<sup>2</sup>

The most important factor is occupational stress.<sup>3</sup> Occupational stress is of major concern, as it comes with lot of mental stress.<sup>4</sup> Police officers are always wearing bullets on them, which is of major concern.<sup>5</sup> Their work environment is also highly stressful with constant political pressure, threats, encounters, exposure to brutality, and death.<sup>5</sup>

There are multiple factors causing stress among police officers, such as overtime, odd shift working hours, and break-free night shifts, which provoke them to consume tobacco and alcohol. Tobacco is a paramount community health burden of morbidity, disability, mortality, and community costs.<sup>6</sup> Previous Indian research has shown that India has the highest incidence of oral cancer and the primary cause for it is tobacco.<sup>7</sup>

Oral diseases are the major public health problem.<sup>8</sup> Among them, oral cancer is at the top of the list. Oral cancer is the 6th most common cancer (350,000 new cases and 128,000 deaths annually)<sup>9</sup>; 33% of the world's oral cancer is found in India with a high rate of premalignant lesions<sup>10</sup>; 43% of deaths are due to tobacco use and alcohol consumption.<sup>11</sup> Early diagnosis can help in timely treatment and cure of oral cancers.<sup>12</sup>

Tobacco is one of the most important causes for the development of oral premalignant and malignant lesions.<sup>13</sup> Visible changes in the oral mucosa, usually in the form of white, red, or red and white patches, are the antecedents for almost all the oral malignancies.<sup>14</sup> Potent malignant oral lesions, such as oral erythroplakia, oral submucous fibrosis, oral leukoplakia, and oral lichen planus are associated with high-risk factors, such as chewing and smoking tobacco.<sup>13</sup> In recent years, various

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commercial preparations, such as pan masala and gutkha are more commonly available in India and in many parts of Asia.<sup>13</sup> These products contain areca nut and tobacco which is the most common cause of oral precancerous and cancerous lesions.<sup>13</sup> The researchers have noticed that smoking and chewing of tobacco and betel quid act synergistically in oral carcinogenesis and that people with mixed habits form a substantially high-risk population.<sup>12</sup> "An evidence is essential for the intervention as it's an important and necessary component to help police deal with the stressors and their health".<sup>5</sup>

As hardly any research on occupational problems of police leading to increased tobacco consumption and its relation to oral precancerous lesions is conducted as far as our knowledge, we hope to address the issues that arise from this research.

## MATERIALS AND METHODS

Study participants' data for this study were collected in 2013 and in early 2014 through clinical examinations during a camp at the Bandra Kurla Police Station and Dindoshi Police Station. Mumbai is geographically divided into 24 wards.

Two police stations were arbitrarily selected from two wards of Mumbai, based on the approval from the police authority. A cross-sectional camp approach with multiphasic screening of the police officers was adopted in the study. Two random police units with average police personnel of almost 265 personnel were selected for the study.

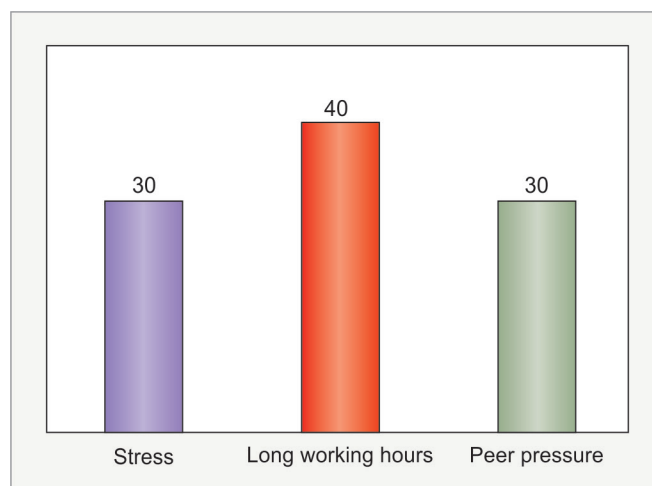
All the individuals were made a part of this study only after their informed consent. Intraoral examination was conducted and questionnaires were filled only after obtaining written consent from every police officer in their own language. Standardized, interviewer-based, closed-ended questionnaire was used to collect the data regarding the chewing habits of the study participants.<sup>15</sup> Participants with positive habit were questioned for the frequency of the habit in number per day and duration of the habit in years.<sup>16</sup> The type of lesion in the cases was decided based on a careful observation of the oral cavity. The data were coded and entered into Excel format for analysis.

Mean percentage proportion was used for data analysis.

## RESULTS

The following data were collected on the day of the camp.

Tobacco consumption was seen in both males and females. The ratio obtained at both the police stations is noted in Graph 1. It was observed that males consumed more tobacco compared with females. Among the tobacco



Graph 1: Reason for tobacco use

consumers, there was a handful lot who were examined positive for premalignant lesions and needed to cease the habit immediately. Through a questionnaire, every tobacco consumer was asked the reason behind the heavy consumption of tobacco. Most of them answered it to be stress and high work pressure.

Inference: Out of the 265 police personnel screened, 58 regular tobacco users were found (21.88%). Out of the 58 tobacco users, 18 were found with positive premalignant lesions (31.03%). The reason for tobacco use was voted to be the long working hours demanded by the profession (40%).

## DISCUSSION

This main idea of this study was to assess the role of tobacco in the development of oral precancerous lesions among the Mumbai police personnel.<sup>19</sup> Data were collected using a pretested questionnaire by a trained and calibrated person.<sup>19</sup> An adequate sample size was the backbone of the study which helped to improve the accuracy of the study findings.<sup>19</sup> Also, the study populations were clinically examined.<sup>19</sup> The face-to-face interview helped to minimize incomplete submission and clarification of the questionnaire was done on the spot if any difficulties were encountered.<sup>19</sup> In this study, 265 police personnel including 147 at Bandra Kurla complex and 118 at Dindoshi police station were screened. The results of our survey were startling (Table 1).

Out of the 265 officers screened, 58 were regular tobacco users (21.88%). Among the 28 tobacco users at Bandra Kurla complex, five were found positive with the premalignant lesions, and among 30 positive tobacco users at Dindoshi, 13 were found positive for premalignant lesions; 31% (31.03%) of the policemen with a habit of chewing tobacco were found to have precancerous lesions in their mouth.

**Table 1:** Distribution of participants and tobacco use status among the police

	<i>Bandra Kurla complex</i>	<i>Dindoshi</i>	<i>Total</i>
Date of camp	June 28, 2013	March 22, 2014	
No. of subjects examined	147	118	265
Total no. of tobacco users	28	30	58
Male:female ratio of tobacco users	27:1	9:1	
Presence of premalignant lesions among tobacco users	5	13	18
Reason for consumption	High stress levels	High stress levels	Stress

Various researches have shown a strong connection between tobacco consumption and development of oral precancerous lesions.<sup>19</sup> In the present study also, tobacco was found as a strong factor for the development of oral premalignant lesions.<sup>19</sup> Tobacco contains more than 60 known carcinogens.<sup>19</sup>

Long-term tobacco consumption is responsible for causing acceleratory inflammation, leading to atrophic and hypertrophic changes in the oral mucosa.<sup>19</sup> Smoked and smokeless are the two forms of tobacco mainly used.<sup>17</sup> Smoked tobacco mainly includes bidis, cigarettes, hookah, cigar, chillum, etc., while the smokeless form includes gutkha, paan masala, mishri, betel nut, snuff, jarda, mawa, gul, dentobac, tapkir, gudaku, timbur, etc.<sup>18</sup> Both these forms are easily available, as the government has permitted to sell them.

Many past researches have mentioned that many carcinogenic agents like tobacco and supari, lime, and some unknown flavoring agents are present in gutkha.<sup>7</sup> Chewing areca nut shows strong connection to the development of oral premalignant lesions.<sup>19</sup> There are multiple adverse effects of chewing areca nut.<sup>19</sup> Some carcinogenic nitrosamines like 3-methylnitrosamino propionaldehyde (MNPA), 3-methylnitrosamino propionitrile, N-nitroso guvacine, and N-nitroso guvacoline.<sup>19</sup> The MNPA found in areca nut breaks single strands of deoxyribonucleic acid (DNA) and causes DNA-protein crosslinks.<sup>19</sup> Police personnel keep those ingredients in their buccal mucosa for longer period (mainly due to stress of long working hours) and chew it.

This leads to induration of oral mucosa depending on the amount and time of chewing, causing irreversible damage to the oral mucosal cells, leading to malignancy.<sup>7</sup> The reason why police officers consume tobacco at high rates is complex.<sup>2</sup> Physiological changes due to shift work, such as disrupted sleep patterns, circadian rhythms may contribute to elevated tobacco patterns among police, as shift work is known to be a common risk factor for tobacco consumption over diversity of occupations.<sup>2</sup>

However, stress is most likely to be a contributor for excess tobacco consumption within law enforcement.<sup>2</sup> Smoking/chewing tobacco may be used either deliberately or inadvertently as high stress-coping mechanism within law enforcement.<sup>2</sup> Most of them started chewing tobacco under peer pressure, claiming that it helps them to stay awake during back-to-back shifts.

When we counseled them about the development of premalignant lesions, they agreed to quit tobacco consumption. But a regular follow-up was required. A two-month follow-up was done among the personnel with positive lesions. Most of them had quit tobacco. Regular health check-ups and tobacco cessation counseling could only help these officers to quit the habit.

## CONCLUSION

Policemen are under constant stress of working for long hours without proper rest and that too at odd hours.<sup>20</sup> Hence, the police officers consume tobacco under the perception that it acts as caffeine and helps them to stay alert, especially during night shifts. Occupational hazards are different in different countries. Indian population consists of a mix of educated, literate, and illiterate individuals.

By this study, we realized that even though many police personnel were graduates, they still pursued harmful habits just to get past their day or due to high stress levels when on duty. Difficulty in detaching from the habit was observed by many too. This cessation can be brought about by definite patient motivation and patient education.

This not only helps to cease the habit but brings about awareness among those who come across these police personnel. Workplace health promotion represents an ideal method for the growth of healthy institutional policy.<sup>2</sup> From both an institutional and personal point of view, workplace health promotion is an ideal strategy for meeting the occupational health challenges of excess tobacco consumption among police.<sup>2</sup>

Given the significant and well-documented relationship between stress and excess tobacco consumption, the recognition and control of stress is paramount within law enforcement.<sup>2</sup> Because of multifaceted nature of police stress, health awareness programs should emphasize on stress reduction at both institutional and individual levels.<sup>2</sup>

Examples of promoting tobacco-free lifestyle strategies may include reducing overtime, making administrative processes more efficient, and allowing intermittent rest breaks for those on night shift and double shifts.<sup>2</sup> Psych consults (counseling) and interpersonal support may help to help recognize causes of and the ways to reduce tobacco consumption.<sup>2</sup>

Promoting other social events at sports clubs and gymnasium may help to destress the police officers from

their tedious work environment. To get things straight, governments will need to place a greater emphasis on the occupational health of police officers and the law enforcement agencies in which they work.<sup>2</sup>

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