



Tobacco abuse and associated oral lesions among construction workers of Jaipur city

Jitender Solanki^{1*}, Sourabh Chakraborty²

¹ Phd Scholar, Department of public health, Maulana Azad University, Jodhpur, Rajasthan, India

² Visiting Faculty, Department of public health, Maulana Azad University, Jodhpur, Rajasthan, India

Abstract

Background: Tobacco use is a global epidemic and the problem is getting worse by every passing day. Controlling tobacco use should be a top priority especially in developing countries like India.

Material and Method: A cross sectional study was carried out to assess tobacco abuse and associated oral lesions among construction workers of Jaipur city. The present study covered almost all the construction sites in Jaipur city. A pre- designed and pre- tested performance was used to assess the oral lesions and conditions, periodontal diseases and oral hygiene practices. The data was analyzed using the SPSS statistical software 20.0 Version. The descriptive statistics included mean, standard deviation, frequency and percentages. The level of the significance for the present study was fixed at 5%.

Result: Maximum 322(40.3%) workers were of age 31-45 years. Majority of workers 676 (84.5%) were males. Among the total subjects 69 cleaned their teeth once, 18 cleaned their teeth twice and 713 study subjects never cleaned their teeth. Among 800 workers 438 (54.8%) of the workers had TMJ Disorders. Among Oral Mucosal conditions, 204 (25.5%) had leukoplakia, 71 (8.9%) had Lichen Planus. A total of 88 (11%) subjects had pocket depth of 6mm or more of CPI scores. Loss of Attachment shows that almost all the study subjects had loss of attachment.

Conclusions: Tobacco use is an important public health problem which needs to deal with at the earliest. People should be educated about the ill effects of tobacco use and oral cancer.

Keywords: smokers, tobacco chewers, cessation, intervention, construction, workers

Introduction

Tobacco appears to be as old as human civilization. Cultivation of the tobacco plant probably dates back 8000 years when two species of the plant, *Nicotiana rustica* and *Nicotiana tabacum*, were dispersed by American Indians through the southern and northern American continent ^[1] Christopher Columbus encountered tobacco during his first voyage ^[2] And subsequently trade into tobacco quickly flourished. Tobacco was introduced into India by Portuguese traders during AD 1600 ^[1].

Tobacco use is a global epidemic and the problem is getting worse rapidly by every passing day. There are 1.1 billion tobacco users and this number is expected to increase to 1.6 billion over the next two decades. ³According to the report of Global Adult Tobacco Survey, India (2016–2017), 42.4% of men 14.2% of women currently use tobacco (smoked and/ or smokeless tobacco) ^[4]. Male smoking rate is very high in Asian countries, with Indonesian men (76%) ranked as the world top smokers while about 20% of the Indian men actually ^[5].

Tobacco use in India is unique as compared to other countries, firstly diversity is in form of tobacco used (cigarette, “bidi” and smokeless forms), secondly scope for increased use among growing socioeconomically mobile populations, thirdly the role of multiple socioeconomic and cultural stratifiers (income, education, caste/tribe status, etc) as risk determinants ^[6].

Like other developing countries, the most susceptible time for initiating tobacco use in India is during adolescence and early adulthood, age’s 15-24 years ^[7].

The cyclical relationship between tobacco use among the poor and exacerbation of poverty due to tobacco related diseases is also well-documented ^[8, 9]. India is a low- and middle-income country (LMIC). Health expenditure is mostly out of individual’s pocket, and it also consequently exacerbates the poverty rates as socio-economic and health inequalities are rampant ^[10]. However, India’s expenditure on health sector has risen from 1.2% of GDP in 2013-14 to 1.4% in 2017-18 ¹¹ but it is not merely the government, but also the biomedical, economic, and geopolitical condition of the individual which plays vital role in order to avail the necessary treatment ^[12].

Once a product rolls off the manufacturing line, it needs a help to go to consumers, for this tobacco industry spends billions of dollars each year on sophisticated marketing mix like direct advertising, merchandising, sponsorship and several other methods ^[13, 14], which easily transmits the message of independence, dignity, healthfulness, social recognition and adventure seeking particularly among vulnerable groups of the society ^[13, 15].

Considering all the above facts Tobacco control should be a top priority not merely as a health issue, but also as a poverty reduction mechanism ^[9]. Effective implementation of tobacco control policies provides an opportunity especially for India to fulfill its commitments to meet the goals–2030 agenda of Sustainability Development Goal of poverty reduction and good health ^[16].

Although India has played a leadership role in global tobacco control as the government of India enacted various legislations and comprehensive tobacco control measures, whereas small-scale preventative policies were introduced between 1975 and 2000 [17] more comprehensive strategies such as cigarette and other Tobacco Products Act (COTPA; addressing tobacco use in public places, tobacco advertising, and sale and packaging regulations) was introduced in 2003, and the Framework Convention of Tobacco Control (FCTC) brought into force in 2005 [18]. India also promotes various tobacco control strategies including increase pricing and taxation measures, smoke-free policies, tobacco product legislation, appropriate labeling of products (including health warnings), tobacco related education, prohibition of advertising and other promotion methods, provision of cessation programmes, control of illicit tobacco product trade, control of tobacco sale to/by minors, and support for alternative employment strategies for tobacco workers [19]. Also soon after committing to the FCTC, the Indian Government drew up a National Tobacco Control Program to help achieve its provisions. State and national-level monitoring and research activities regarding alternative livelihood options, establishment of tobacco product testing facilities and production of mass-media awareness campaigns is also being planned [18]. Despite of above mentioned efforts being taken, tobacco consumption is a major health issue globally, and in India, one-third of the population uses tobacco [19].

Hence the present study is an attempt to assess the Tobacco Abuse and Associated Oral Lesions among Construction Workers of Jaipur city

Materials and methods

The present cross sectional study was carried out to assess the tobacco abuse and associated oral lesions among construction workers in Jaipur city. All the 37 construction sites in Jaipur city situated in different locations were included into the study. Jaipur city was divided into 5 geographical zones – central, north, south, east and west. 5 different construction sites were selected randomly representing the 5 zones were included in the study. All the workers were informed about the study in the advance so as to attain maximum attendance. On the basis of exclusion and inclusion criteria, 800 factory workers were selected for the study.

Inclusion criterion

1. Current tobacco users present at the day of study.
2. Workers with at least 1 year left to serve.
3. Workers giving informed consent

Exclusion criteria

1. Inmates with acute mental illness (current suicidal ideation/actively psychotic) or mental retardation such that they could not provide informed consent.
2. Medically compromised inmates. (Like respiratory disorders)

Ethical clearance was obtained from the ethical committee of the institute, and the permission to conduct study was obtained from construction site heads where study was conducted. Oral examination of the study participant was carried out by single

investigator. Examiner was trained and calibrated in the Department of public health dentistry by a senior faculty member.

Examination and data collection

Global Tobacco Surveillance system and manual for tobacco cessation (2005) was used for data collection through pre-designed and pre-tested proforma which also included examinations of dental caries and periodontal diseases using dental caries index and community periodontal index and loss of attachment. Demographic and personal information of each study participant was also recorded.

Study setting

The workers were made to sit on a chair with examiner standing behind the chair. A table of instruments was placed within the easy reach of the examiner. The examiner examined the subject and called out the scores for each item of examination clearly and the recorder then entered it in the appropriate place in the proforma for each subject examined.

Statistical analysis

The data so collected was entered in the Microsoft Excel 2007 and analyzed using the SPSS statistical software 20.0 Version. The descriptive statistics included mean, standard deviation, frequency and percentages. The level of the significance for the present study was fixed at 5%.

Result

The present study was conducted to assess the tobacco abuse and associated oral lesions among construction workers in Jaipur city. There were 317 (39.6%) subjects of the age group of 15-30 years, 322(40.3%) workers of the age group of 31-45 years, 125(15.6%) workers of the age group of 46-60 years and 36(4.5%) of the age group of 61 and above years. Gender wise distribution shows that out of 800 workers 676 (84.5%) were males and 124 (15.5%) were females. 181 (22.6%) workers were working from past 1 month-1 year, 373 (46.6%) were working from 1-3 years and 246 (30.8%) were working from past 4-6 years table 1.

On assessing the oral hygiene status from a total of 800 study subjects, 69 study subjects brushed their teeth with toothpaste, 24 study subjects cleaned their teeth with finger and toothpaste, 114 subjects used indigenous methods for cleaning their teeth and 536 never cleaned their teeth respectively. Out of total subjects, 69 study subjects cleaned their teeth once, 18 cleaned their teeth twice and 713 study subjects never cleaned their teeth. (Table 2) On assessing the dental diseases, intraoral and extra-oral conditions 22 subjects had (2.8%) had ulcerations, sores. TMJ assessment shows that 438 (54.8%) workers were having TMJ Disorders. Among Oral Mucosal conditions, 204 (25.5%) had leukoplakia, 71 (8.9%) had Lichen Planus, 25 (3.1%) had Ulceration, 2 (0.3%) had Acute necrotizing gingivitis 77 (9.6%) had other condition. When the periodontal status was assessed it was found that 364 (45.5%) subjects had calculus, 137 (17.1%) subjects had shallow pocket depth of (4-5mm) and 88 (11%) subjects had deep pocket depth of (6mm or more). When the Loss of Attachment was assessed it was found that 214 (26.8%) subjects had 0-3mm of loss of attachment, 18 (2.3%) subjects had 4-5mm of loss of attachment, 3 (0.4%) subjects had 6-8mm of loss of attachment and 6 (0.8%) subjects had 9-11 mm of loss of attachment. (Table- 3)

Table 1: Distribution of workers according to age, gender and duration of stay at construction sites

| Characteristics | No. of workers (n) | Percentage (%) |
|-----------------------------|--------------------|----------------|
| Age | | |
| 15-30 Years | 317 | 39.6 % |
| 31-45 Years | 322 | 40.3 % |
| 46-60 Years | 125 | 15.6% |
| 61 and above | 36 | 4.5 % |
| Gender | | |
| Male | 676 | 84.5% |
| Female | 124 | 15.5% |
| Duration of Stay in Factory | | |
| 1month - 1Year | 181 | 22.6 % |
| 1-3 Years | 373 | 46.6 % |
| 4-6 Years | 246 | 30.8 % |

Table 2: Distribution of workers according to their oral hygiene practice

| Oral hygiene practice | No. of workers (n) | Percentage (%) |
|--------------------------|--------------------|----------------|
| Type | | |
| Toothbrush + Toothpaste | 69 | 8.6 % |
| Toothbrush + Toothpowder | 19 | 2.4 % |
| Finger + Toothpaste | 24 | 3.0 % |
| Finger + Toothpowder | 26 | 3.3 % |
| Indegenous means | 114 | 14.3 % |
| Other | 12 | 1.1 % |
| No Brushing | 536 | 67 % |
| Frequency of Brushing | | |
| No brushing | 713 | 89.1 % |
| Once | 69 | 8.6 % |
| Twice | 18 | 2.3 % |

Table 3: Distribution of workers according to dental diseases and conditions

| Dental diseases and conditions | No. of workers (n) | Percentage (%) |
|---|--------------------|----------------|
| Extraoral condition | | |
| Normal extra oral appearance | 718 | 89.8% |
| Ulcerations sores, erosions fissures (vermillion border) | 22 | 2.8 % |
| Enlarged lymph nodes (head and neck) | 02 | 0.3 % |
| Other swellings of face and jaw | 58 | 7.3 % |
| TMJ Assessment | | |
| Absent | 362 | 45.3 % |
| Present | 438 | 54.8 % |
| Oral Mucosal Condition | | |
| No abnormal condition | 421 | 52.6 % |
| Leukoplakia | 204 | 25.5 % |
| Lichen Planus | 71 | 8.9 % |
| Ulceration (aphthous, herpetic, traumatic) | 25 | 3.1 % |
| Acute necrotizing gingivitis | 2 | 0.3 % |
| Other condition | 77 | 9.6 % |
| CPI | | |
| Healthy | 216 | 27.0 % |
| Bleeding | 95 | 11.9 % |
| Calculus | 364 | 45.5 % |
| Pocket 4-5mm | 137 | 17.1 % |
| Pocket 6mm or more | 88 | 11 % |
| Excluded | 00 | 0 % |
| Not Recorded | 00 | 0 % |
| LOA | | |
| 0-3 mm | 214 | 26.8 % |
| 4-5 mm cement enamel junction (CEJ) within black band | 18 | 2.3 % |
| 6-8 mm(CEJ between upper limit of black bandand 8.5 mm ring) | 3 | 0.4 % |
| 9-11 mm (CEJ between 8.5 mm and 11.5 mm rings) | 6 | 0.8 % |

Discussion

The present study was conducted to assess the tobacco abuse and associated oral lesions among construction workers in Jaipur city. Various other factors such as environmental, occupational, dietary, pathologic and oral hygiene practices affect the oral health of an individual. The overall prevalence of tobacco use (smoking form) in our study was 20.9 % which is lower than that in Karnataka (29.6%), Uttar Pradesh (34.6%),^[20] and as well as national average of 30.2%.²¹ In our study, prevalence of tobacco use was 84.5% among men which is higher than reported by Sinha *et al.* (71%),²² Gupta *et al.* (52.6%),²³ National Family Health Survey (NFHS)-3 report (61.1%),²⁴ and in rural area of UP (51%)^[20]. In our study, prevalence of tobacco use was 15.5% among women which is again higher as compared to rural area of

UP (9.2%)^[20]; but lower as compared to Maharashtra (15%-20%)^[20] and also reported by Gupta *et al.* (17.7%)^[23]. The prevalence of cleaning teeth by using brush and toothpaste was very low as compared to no brushing status which can lead to further destruction of soft tissues as well as other oral structures. The prevalence of oral soft tissue lesions in our study was 47.4%, which is more than reported by Saraswathi *et al.* (4.1%)^[24, 25]. In our study, the most common oral lesion was lichen planus, leukoplakia followed by oral submucous fibrosis (OSMF) which is in contrast with the study by Saraswathi *et al.*^[25]. In our study, most of the workers were using smokeless form of tobacco as compared to the smoking form. The hypothesis that tobacco usage would manifest a higher prevalence of oral health problems than those who have never used tobacco was supported

for most of the indicators used in this study. These findings are consistent with previous clinical research that suggests that tobacco use is associated with both the prevalence and severity of periodontal disease.^{1,15,16} In an analysis of the effect of smoking on overall periodontal disease rates in the United States, it was estimated that 41.9% of periodontitis cases were attributable to current smoking and 10.9% were attributable to former smoking^[26]. These findings reinforce the view that avoidance or cessation of smoking may result in substantial improvements in oral health status. In addition, smokeless tobacco use is shown to cause a variety of periodontal diseases such as recession of gums and oral mucosal lesions, many of which are precancerous, finding was supported by PC Gupta (2001)²⁷.

References

1. Annalakshmi T. Health Assessment in Women Beedi Rollers in Melapalayam, Tirunelveli. Ph.D Thesis, Manonmaniam Sundaranar University, Tirunelveli, Tamil Nadu, India, 2013. Available from: https://shodhganga.inflibnet.ac.in/bitstream/10603/36794/1/01_title.pdf.
2. The First Reference to Smoking Tobacco, 2015. Available from: <https://www.historyhit.com/columbus-makes-first-reference-smoking-tobacco>.
3. Tobacco statistics and facts; 2017. Available from Indian statistics, 2017-2018. <http://ash.org/programs/tobacco-statistics-facts>.
4. Global Adult Tobacco Survey (GATS2) India, 20016-2017. Available from: <http://mohfw.nic.in/WriteReadData/1892s/1455618937GATS%20India.pdf>
5. Data leads. Asia's smoking addiction, 2015. available from: Asian smoking addiction <http://nationmultimedia.com/asian-smoking-addiction-the-nation>.
6. Bhan N, Karan A, Srivastava S, Selvaraj S, Subramanian SV, Millett C, *et al*. Have Socioeconomic Inequalities in Tobacco Use in India Increased Over Time? Trends From the National Sample Surveys (2000–2012) Nicotine & Tobacco Research. Oxford J nicotine and tobacco research. 2016; 18(8):1711-1718
7. Alpesh S Patel, Raman D. A cross section study on tobacco consumption practice in school going adolescent male of Jamnagar city, Gujarat, India. Int J Community Med Public Health. 2018; 5(3):933-938.
8. Mohan P, Harry A, Lando Panneer S. Assessment of Tobacco Consumption and Control in Indian Journal of clinical Medicine. 2018; 9(1):1-8.
9. Nath S. Poverty reduction and livelihoods promotion; 2019. Available from: UNDP in India. www.in.undp.org.
10. Subramanian SV, Leland K, Ackerson M, Subramanyam A, Kavita S. Health inequalities in India: the axes of stratification. *Brow J World Aff*. 2008; 14:127-138.
11. MOHFW. National health policy; 2017. Available from: <https://mohfw.gov.in/documents/policy>.
12. US NCI and WHO. The economics of tobacco and tobacco control. National Cancer Institute; 2016. Available from: <http://cancercontrol.cancer.gov/brp/tcrb/monographs/21/index.html>.
13. WHO Report on the Global Tobacco Epidemic, 2013: Enforcing bans on tobacco advertising, promotion and sponsorship, 2013. Available from: https://www.who.int/tobacco/global_report/2013/en/.
14. The tobacco Atlas 6th edition. Available from: <http://www.tobaccoatlas.org>, 2018.
15. Jha P, Chaloupka F. The economics of global tobacco control *BMJ*. 2000; 5(321):358-361.
16. IIPS. Global Adult Tobacco Survey India, 2009-2010. New Delhi, India: Ministry of Health and Family Welfare, Government of India, 2010.
17. Tobacco Control Legal Consortium's law synopsis, Global Tobacco Control: What the U.S. Can Learn from Other Countries. Available from: <http://www.publichealthlawcenter.org>.
18. Kaur J, Jain DC. Control policies in India: implementation and challenges. *Indian J Public health*. 2011; 55:220-207.
19. Public Health Foundation of India. Short-term courses on tobacco control, 2013 brochure. Available from http://www.phfi.org/images/institute/stcbrochure_2013_final.pdf
20. Chandrashekhar T Sreeramareddy, PV Kishore, Jagadish Paudel, Ritesh G Menezes. Prevalence and correlates of tobacco use amongst junior collegiate in twin cities of western Nepal: A cross-sectional, questionnaire-based survey, *Bio Med Central Public Health*, 2008.
21. GATS India Report 2009-2010, The Global Adult Tobacco Survey (GATS) India, Ministry of Health and Family Welfare, Government of India, New Delhi, 2009-2010.
22. American Lung Association. Smoking statistics pamphlet. New York: Smoke free Educational Services, Inc, 1992.
23. Hser YI, Anglin D, Powers K. A 24-year follow up of California narcotics addicts. *Arch Gen Psychiatry*. 1993; 50:577-584.
24. Frosch DL, Shoptaw S, Nahom D, Jarvik ME. Association between tobacco smoking and illicit drug use among methadone maintained opiate dependent individuals, *Exp Clin Psycho pharmacol*. 2000; 8:97-103.
25. Mackay J, Eriksen M (2002). The tobacco atlas. Geneva: World Health Organization.
26. Tobacco Smoke and Involuntary Smoking. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans. IARC. 2004; 83:1452.
27. Thun MJ, De Lancey JO, Center MM. The global burden of cancer: priorities for prevention. *Carcinogenesis*. 2010; 31:100-10.