

## Original Research Article

DOI: <http://dx.doi.org/10.18203/2394-6040.ijcmph20192835>

# Tobacco abuse and dental problems among sanitation workers of Allahabad city: a cross sectional study

Abdul M. M. Ansari<sup>1\*</sup>, Shiv Prakash<sup>1</sup>, Khurshid Parveen<sup>2</sup>, Deepak Anand<sup>1</sup>

Department of Community Medicine, <sup>1</sup>Motilal Nehru Medical College, Allahabad, <sup>2</sup>Government Medical College, Azamgarh, Uttar Pradesh, India

Received: 16 April 2019

Revised: 18 June 2019

Accepted: 20 June 2019

**\*Correspondence:**

Dr. Abdul M. M. Ansari,

E-mail: abdulspm33@gmail.com

**Copyright:** © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

## ABSTRACT

**Background:** ‘Sanitary labourers’ are known by different names such as ‘Health Labourers’, ‘Manual Scavengers’ garbage man, trash man etc. They are mainly involved in street cleaning, waste carrying, drainage and toilet cleaning in the cities. Intake of alcohol and tobacco products is prevalent to cope with the inhuman task of cleaning filthy sewage, and as a modality to forget their health problems. The aim of the present cross-sectional study was to find out the association of dental problems with tobacco abuse among the study population.

**Methods:** The study population included 610, 122 from each zone of Allahabad city through “Proportionate stratified random sampling”. The study subjects was interviewed and examined, Dental problems were assessed by taking history, doing a clinical examination, reviewing past medical records.

**Results:** Dental problems were found to be higher in prevalence among “exclusive smokers”, “combined abuser” and “exclusive tobacco” chewers as compared to “non abuser”. Dental caries were found to be higher in prevalence among the entire three abusers group as compared to “non abusers”. Missed teeth were found to higher in prevalence among “combined abuser” and “exclusive tobacco chewers” group as compared to “non abusers”. Enamel erosion was found to be higher among “exclusive tobacco chewers” group as compared to “non abusers”. All these finding were found to be statistically significant.

**Conclusions:** Dental problems were found to be more prevalent among tobacco abusers than non abusers.

**Keywords:** Sanitation workers, Dental problems, Tobacco abusers

## INTRODUCTION

Sanitary labourers’ are known by different names such as ‘Health Labourers’, ‘Manual Scavengers’ garbage man, trash man etc. They are mainly involved in street cleaning, waste carrying, drainage and toilet cleaning in the cities.<sup>1</sup> In developed countries, most of the process of street cleansing is mechanized. In a developing country, such as in India, with limited resources, most of the cleaning process in urban localities remains manual.<sup>2</sup> They collect garbage and remove it to proper disposal

areas such as dumps or landfills and make sure neighbourhoods, streets, and public areas stay clean.<sup>3</sup> While doing their duties they may make contact with raw human faces as some government sanitation workers clean septic tanks on part time basis with bare hand, brooms or metal scrapers.<sup>3</sup>

Despite of the laws some sanitation workers are engaged in different kind of illegal manual scavenging as reported by various news portals even from metro cities like Delhi and Chennai. Same kind of scavenging is also reported

from Allahabad especially during Kumbh Mela. Sanitation workers work in rotating shifts, nights, weekends, holidays and in all types of weathers.

Most sanitation workers have to work in such a hazardous and risky environment and most workers continue to work without appropriate treatment as they ignore their illness, and do not want to miss their wages or lose their job. Because of their hectic work sanitation workers are prone to various health hazards. Self-medication is common. Intake of alcohol and tobacco products is prevalent to cope with the inhuman task of cleaning filthy sewage, and as a modality to forget their health problems. Tobacco and alcohol are known health hazards so these workers are at increased risk for diseases and problems caused by these products.

Daily smoking was associated with increased use of sugar in tea or coffee, and with more frequent alcohol consumption.<sup>4</sup> There is strong evidence that tobacco use has numerous negative effects on oral health, for example, staining of teeth and dental restorations, reduction of the ability to smell and taste, development of oral diseases such as smokers palate, smokers melanosis, coated tongue, and, possibly, oral pre-cancer, oral cancer, oral candidosis, periodontal disease, implant failure and dental caries.<sup>5</sup>

Although many studies have been done to assess the dental problems among tobacco abuser both in India and abroad but such literature is scarce in India. Even such type of literature could not have found both in India and abroad, in the context of sanitation workers. Present study was done with the objective to find out the association of dental problems with tobacco abuse among the study population.

## METHODS

It was a cross-sectional study conducted among the sanitation workers of urban Allahabad during the period September 2017 to September 2018. All those sanitation workers who were working in government set up and were willing to participate and co-operate were included in the study. Those sanitation workers who were working in private set up and not willing to participate were excluded from the study.

Sample size was calculated out to be 610. Proportionate stratified random sampling was done. 122 study subjects were selected from each zone of already divided 1-5 zone of Allahabad city by Allahabad Nagar Nigam.

Study population was divided into tobacco “abuser” and “non abuser”, abusers were further divided into three subgroups i.e. “exclusive smokers”, “combined abusers” and “exclusive tobacco chewer”. Those workers who had tried tobacco products once or twice in life, was taken as non abusers. Those workers who had tried only smoking at least one time daily or nearly every day over a period

of one month, was taken as “exclusive smokers” and those workers who had tried only tobacco chewing at least one time daily or nearly every day over a period of one month, was taken as “exclusive tobacco chewer”. Those workers who had tried both smoking and tobacco chewing at least one time daily or nearly every day over a period of one month or had taken at least one tobacco product for the above mentioned period and at the same time another product for the period less than that the above mentioned period, was considered as “combined abusers”.

### Method of data collection

Data was collected by house to house visits. Informed consent was taken from the study subject after explaining the purpose and objective of the study. Dental problems were assessed by taking history, doing a clinical examination, reviewing past medical records. The study subjects was interviewed and examined. The collected information was recorded on a pretested and pre-designed questionnaire.

### Statistical analysis

Data was collected and entered into data sheet of the statistical package for the social sciences (SPSS) version 12. Data was analyzed and statistically evaluated by using chi square.

## RESULTS

Table 1 shows that among the “exclusive smokers” majority i.e., 16 (55.17%) belong to the youngest age group i.e., 18-25 years, 12 (41.38%) to 25-40 year age group and only 1 (3.45%) to oldest age group i.e., 40-60 years. Among the “combined abuser majority” i.e., 36 (37.11%) belong to 18-25 years of age group followed by 32 (32.99%) to 40-60 years age group and 29 (29.90%) to 25-40 year age group while among the “exclusive tobacco chewers” majority i.e., 148 (43.91%) belong to 40-60 years age group after that 131 (38.87%) to 25-40 years age group and least i.e., 58 (17.22%) to youngest age group i.e., 18-25 years.

Among the “non abusers” majority i.e., 59 (40.14%) belong to youngest age group i.e., 18-25 years after that second majority i.e., 47 (31.97%) to next youngest age group i.e., 25-40 years and least i.e., 41 (27.89%) to oldest age group i.e., 40-60 years.

Table 1 shows that among the “exclusive smokers” majority 55.17% belong to the youngest age group i.e., 18-25 years, after that 41.38% to 25-40 years age group and least 3.45% to oldest age group i.e., 40-60 years whereas among “exclusive tobacco chewers” majority belong to oldest age group i.e., 40-60 years after that 38.87% to 25-40 years age group and least i.e., 58 (17.22%) to youngest age group i.e., 18-25 years. This clearly shows that smoking habit is increasing and

tobacco chewing habits is decreasing among the sanitation workers of younger age group and this is found to statistically significant ( $P<0.05$ ) (Table 1).

Table 2 show that “normal teeth” were found to be more prevalent among “non abusers” 94 (63.95%) as compared to “exclusive smokers” i.e., 12 (41.38) and were found to statistically significant ( $p<0.05$ ) where as missed teeth were found to be more prevalent among “non abusers” 6

(4.08%) as compared to “exclusive smokers” and found to be statistically significant ( $p<0.05$ ) as well. Caries were found to be more prevalent among “exclusive smokers” i.e., 15 (51.72%) as compared to “non abusers” i.e., 51 (34.69%) where as enamel erosion were more prevalent among “non abusers” i.e., 12 (8.16%) as compared to “exclusive smokers” i.e., 2 (0.69%) and none of the above finding was found to be statistically significant ( $p<0.05$ ) (Table 2).

**Table 1: Age wise distribution and association with the tobacco abusers and non abusers.**

Age groups (years)	Abusers							
	Exclusive smoker (n=29)		Combined abuser (n=97)		Exclusive tobacco chewer (n=337)		Non abuser (n=147)	
	N	%	N	%	N	%	N	%
<b>18-25</b>	16	55.17	36	37.11	58	17.22	59	40.14
<b>25-40</b>	12	41.38	29	29.90	131	38.87	47	31.97
<b>40-60</b>	1	3.45	32	32.99	148	43.91	41	27.89
<b>Total</b>	<b>29</b>	<b>100</b>	<b>97</b>	<b>100</b>	<b>337</b>	<b>100</b>	<b>147</b>	<b>100</b>

$\chi^2=39.54$  and  $p\leq 0.05$ .

**Table 2: Association of dental problems with non abusers and only smokers.**

Dental problems	Exclusive smoker (n=29)		Non abuser (n=147)		Chi square value and p value
	No	%	No	%	
<b>i) Normal</b>	12	41.38	94	63.95	$\chi^2=5.14$ , $p=0.023$
<b>ii) Caries</b>	15	51.72	51	34.69	$\chi^2=2.99$ , $p=0.08$
<b>iii) Enamel erosion</b>	2	0.69	12	8.16	$\chi^2=0.053$ , $p=0.81$
<b>iv) Missed teeth</b>	2	0.69	6	4.08	$\chi^2=15.9$ , $p=0.0001$

**Table 3: Association of dental problems with non abusers and both smokers and tobacco chewer.**

Dental problems	Combined abuser (n=97)		Non abuser (n=147)		Chi square value and p value
	No	%	No	%	
<b>i) Normal</b>	25	25.77	94	63.95	$\chi^2=34.08$ , $p=0.0001$
<b>ii) Caries</b>	72	74.23	51	34.69	$\chi^2=36.53$ , $p=0.0001$
<b>iii) Enamel hypoplasia</b>	6	6.18	02	1.36	$\chi^2=2.9$ , $p=0.08$
<b>iv) Enamel erosion</b>	4	4.12	12	8.16	$\chi^2=0.96$ , $p=0.32$
<b>v) Missed teeth</b>	16	16.49	6	4.08	$\chi^2=10.97$ , $p=0.0009$

**Table 4: Association of dental problems with non abusers and only tobacco chewer.**

Dental problems	Exclusive tobacco chewer (n=337)		Non abuser (n=147)		Chi square value and p value
	No	%	No	%	
<b>i) Normal</b>	91	27.00	94	63.95	$\chi^2=59.15$ , $p=0.0001$
<b>ii) Caries</b>	232	68.84	51	34.69	$\chi^2=49.15$ , $p=0.0001$
<b>iii) Enamel erosion</b>	54	16.02	12	8.16	$\chi^2=5.37$ , $p=0.02$
<b>iv) Missed teeth</b>	72	21.36	6	4.08	$\chi^2=22.61$ , $p=0.0001$

Table 3 show that “normal teeth” were found to be more prevalent among “non abusers” 94 (63.95%) as compared to “Combined abuser” i.e., 25 (25.77%) and were found to be statistically significant ( $p<0.05$ ) similarly both “caries” and “missed teeth” were found to be more

prevalent among “Combined user” i.e., 72 (74.23%) and 16 (16.49%) as compared to “non abusers” i.e., 51 (34.69%) and 6 (4.08%) respectively and were found to be statistically significant ( $p<0.05$ ) as well. “Enamel erosion” was found to be more prevalent among “non

abusers" i.e., 12 (8.16%) as compared to "Combined abuser" i.e., 4 (4.12%) but was not found to be statistically significant ( $p>0.05$ ) whereas "enamel hypoplasia" was found to be more prevalent among "Combined abuser" i.e., 6 (1.36%) as compared to "non abusers" i.e., 2 (1.36%) but was not found to be statistically significant ( $p>0.05$ ) as well (Table 3).

Table 4 show that "normal teeth" were found to be more prevalent among "non abusers" 94 (63.95%) as compared to "exclusive tobacco chewer" i.e., 91 (27%) and were found to be statistically significant ( $p<0.05$ ) similarly "caries", "enamel erosion" and "missed teeth" were found to be more prevalent among "exclusive tobacco chewer" i.e., 232 (68.84%), 54 (16.02%) and 72 (21.36%) as compared to "non abusers" i.e., 51 (34.69%), 12 (8.16%) and 6 (4.08%) respectively and were found to be statistically significant ( $p<0.05$ ) as well (Table 4).

## DISCUSSION

In the present study major tooth problem among sanitation workers were found to be dental caries which is most prevalent among "Combined abuser" subgroup i.e., 74.23% which is higher in comparison to both exclusive smoker and exclusive tobacco chewer subgroup both. Alkhatib et al reported that deleterious effect of tobacco was found to be more sever among combined user than single user.<sup>6</sup>

Prevalence of dental caries was higher among exclusive smokers as compared to non smokers i.e., 51.72% and 34.69% respectively, but this was not found to statistically significant. Chaitanya et al reported the positive correlation between dental caries and smoking whereas Veiga et al and many other reported that development of dental caries is a complex process.<sup>7,8</sup> Other factors like oral hygiene, age, and amount of sweetener present in the item, alcohol consumption, and knowledge and behavior regarding the dental health play roles as well.

Prevalence of dental caries were found to higher both among "Combined abuser" and "exclusive tobacco chewer" subgroup i.e., 74.23% and 68.84% respectively in comparison to non user i.e., 34.69% and this is found to be statistically significant. Krishna et al reported that ST consumers are at a higher risk of experiencing dental caries when compared to nontobacco consumers".<sup>9</sup> Though the results of this study are inclined in favor of ST as a potential risk factor for dental caries, there are certain studies which contradict it.

Prevalence of enamel erosion was found to higher among "exclusive tobacco chewer" and lower among both "exclusive smoker" and "Combined abuser" subgroup i.e., 16.02%, 0.69% and 4.12% respectively as compared to non abusers i.e., 8.16%. The association of enamel erosion between "exclusive smoker" and "non user" and

"Combined abuser" and non user were not found to be statistically significant whereas between "exclusive tobacco chewer" and non user were found to be statistically significant. Rooban et al reported higher tooth decay among smoker and alcohol abusers.<sup>10</sup> This finding is comparable to last one but contradict previous two. This may be due to different study setting, different sample size or due to other factors affecting it like oral hygiene.

Majority of the sanitation workers were tobacco abuser. Among them, younger generation like to abuse "smoking" whereas older age group "tobacco chewing". Among the "non abuser" majority belong to younger age group and proportion of "non abuser" decreases with increasing age. Dental problems were more prevalent among tobacco abuser irrespective of abusing categories except "missed teeth". In the present study major tooth problem among sanitation workers were found to be dental caries. It is found to be associated with tobacco chewing, and smoking seems to be a synergistic factor in dental caries causation. Other problems were missed teeth and dental erosion. Smoking exerted some protective effect on both these conditions.

## ACKNOWLEDGEMENTS

We would like to thank Dr. Shiv Prakash Professor and head of department of Community Medicine, M.L.N. Medical College, Allahabad. Dr. Khursheed Parveen Professor, Department of community medicine, G.M.C. Medical College, Azamgarh. Dr. Gyan Prakash Assistant professor, Department of community medicine, M.L.N. Medical College, Allahabad. Dr. Deepak Anand Assistant professor, Department of community medicine, M.L.N. Medical College, Allahabad.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: The study was approved by the Institutional Ethics Committee*

## REFERENCES

1. Mannapperuma N, Basnayake BFA. Institutional and Regulatory Framework for Waste Management in the Western Province of Sri Lanka, International Conference on Sustainable Solid Waste Management, 2007;83-89.
2. Tiwari RR. Occupational health hazards in sewage and sanitary workers. Indian J Occup Environ Med. 2008;21:112-5.
3. Sharan R. A study of women workers employed in industrial and nonindustrial organizations in Kanpur city, Asian Journal of Research in Social Sciences and Humanities. 2005;2(4):48-56.
4. Dangi J, Kinnunen TH, Zavras AI. Challenges in global improvement of oral cancer outcomes: Findings from rural Northern India. Tob Induc Dis. 2012;10:5.

5. Reibel J. Tobacco and oral diseases. Update on the evidence, with recommendations. *Med Princ Pract.* 2003;12(Suppl 1):22-32.
6. Alkhatib MN, Holt DR, Bedi R. Smoking and tooth discoloration. *BMC Public Health.* 2005;5:27.
7. Chaitanya NC, Boringi M, Madathanapalle R. The prevalence of dental caries in smoker and smokeless tobacco chewer. *Dent Hypotheses.* 2018;9:36-40.
8. Veiga N, Aries D, Douglas F, Dental caries: a review. *J Dent Oral Health.* 2016;ISSN:2369-4475.
9. Laskhari PK, Sukla A. Prevalence of dental caries among smokeless tobacco chewer in dakshina kannada district population: a cross sectional study. *OHDM.* 2016;15:6.
10. Rooban T, Vidya KM, Joshua E. Tooth decay in alcohol and tobacco abuser. *J Oral Maxillofac Pathol.* 2011;15(1):14-21.

**Cite this article as:** Ansari AMM, Prakash S, Parveen K, Anand D. Tobacco abuse and dental problems among sanitation workers of Allahabad city: a cross sectional study. *Int J Community Med Public Health* 2019;6:2967-71.