

# Adverse Habits and Oral Mucosal Lesions in Prisoners of Lucknow

## Abstract

**Objectives:** Oral health is an integral part of general health. It has long been recognized that preventive oral care is important in the prevention of oral diseases, which also has significant impact on general health. The prisoners also deserve equal rights for their oral health attention. So this study was planned to assess the adverse habits and oral mucosal lesions of prisoners of Lucknow city.

**Basic research design:** This is a cross sectional survey, with a sample size of 1011 (826 males and 185 females) prisoners. Prisoners who were in the jail for more than 3 years have been included in this study.

**Results:** Almost all 98.6% inmates had adverse habits, exclusively use of tobacco (chewable + smoking). In male's gingival condition and oral sub mucous fibrosis was present in 79.2% inmates. In female inmates leukoplakia was present in 1.7%. Most common location for oral mucosal lesion was alveolar ridge/ gingiva-96.6% followed by buccal mucosa 40.9%.

**Conclusion:** This study found a high prevalence of tobacco use (chewable + smoking) and also high prevalence of oral mucosal lesions. A long term oral health education programme is required as a part of effective preventive dental programmes to increase in awareness of oral health among prisoners.

**Keywords:** Adverse habits; Oral mucosal lesions; Prisoners; HIV/AIDS;

## Research Article

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## Introduction

Oral health is an integral part of general health. It has long been recognized that preventive oral care is important in the prevention of oral diseases, which also has significant impact on general health [1-7]. Lower literacy rate and poor socioeconomic status together contribute to bad conditions of the oral health [8-11]. The situation in India is not different but showing the signs of improvement in health delivery system for general and oral health.

There are 1260 prisons in the country. In Uttar Pradesh there are 82 prisons. Total 3, 70,842 prisoners (Under trailer + convicted) were serving their sentences in the prison. In Uttar Pradesh about 80,000 (Under trailer + convicted) prisoners were serving their sentences in different prisons of the state [12].

Most of the prisoners are from poor socioeconomic group and owing to their low literacy rate they have inadequate knowledge about the general and oral health. Poor access to general and dental health services in prison further adds up to their plethora of health problems [2].

Studies [13] and [14] in 2003 done on the adverse habits of prisoners in prison revealed that the habit of smoking was higher in the prisoners when compared to their general counterparts

[13]. These adverse habits like smoking, pan chewing, pan masala and tobacco chewing are also related to various pre malignant lesions and conditions.

One of the most difficult issues facing prisons, are usages of illicit drugs in prison apart from various tobacco habits. This has become a major problem for many prisons, and the options for handling it were very much influenced by political and public attitudes, by sentencing policies, and by public health pressures arising mainly from the spread of HIV/AIDS. Prisons presented a unique opportunity to reduce the health problems associated with drug abuse and addiction while also giving some attention to the causes of offending behavior [15].

Some of the problems which could aggravate the prisoners general and oral health are; overcrowding and unhygienic facilities; older prison systems which are difficult to change because of traditions, circumstances, and public and political views; staff can be reluctant to adopt new ways of working, perhaps because they do not get the respect for the difficult public service they provide nor the training and other support so that they can develop the professionalism necessary for a modern prison service; resource restrictions persist because prison services seldom rate high priority in governments' spending; public attitudes remain at the best ambivalent, and there is a general lack of sympathy for a rehabilitative regime in prisons [15].

Various studies have been done on the general population oral health conditions. The issues of socially handicapped persons who are deprived of their due from the society is not addressed properly. Prisoners belong to socially handicapped groups who once being in the prison are sidelined by the society and profession.

In India and in most developing countries oral health status and treatment needs of various population groups have been assessed using the various methods. Very few studies have been published about the oral health status of prisoners in India.

The prisoners also deserve equal rights for their health attention. Keeping the above matter in consideration a specific oral health survey has been taken up on the inmates of prisoners of Lucknow prison in state of Uttar Pradesh to assess their adverse habits and oral mucosal lesions status so that needed treatment can be planned accordingly by concerned authorities.

### Aim

To assess the adverse habits and oral mucosal lesions status of prisoners of Lucknow.

### Objectives

- To statistically present and evaluate the result of the adverse habits and oral mucosal lesions status of prisoners above population.
- To provide necessary information to the concerned jail authorities for planning a suitable programme to obtain optimal oral health in this population.
- To bring out the awareness about importance of attending this special group by dental profession.

### Methodology

The survey was conducted from August 2014 to January 2015 for a period of 6 months. There are three prisons in the Lucknow namely District prison, Model prison and Nari bandi nikanetan [12]. A cross sectional study was designed to evaluate the dentition status and treatment needs of prisoners of Lucknow city.

Nari bandi nikanetan houses only female prisoners, while District prison and Model prison houses only male prisoners. Prisoners who were in the jail for more than 3 years have been included in this study. There were about 4,000 prisoners in the district prison both convicted and under trial, out of which about 506 were more than three years in prison [12]. Total inmates who consented and presented on the day of examination from three prisons were - Out of 506 in District jail 460 male inmates, out of 500 prisoners in Model jail 366 male inmates, from 250 in Nari Bandi Niketan 185 female inmates consented for study. So the total sample of prisoners who consented for study was 1011 prisoners.

A pre designed world health organization (W.H.O.) oral health assessment form 1997 [16] proforma was used. A pilot study was conducted using the proforma on 20-25 prisoners to calibrate the examiner and to assess the reliability of the proforma.

Ethical clearance was obtained from the institution ethical committee of Sardar Patel post graduate institute of dental and

medical sciences, Lucknow. A written permission was obtained from the concerned prison authorities before the commencement of this survey. Oral and written consent was also obtained from the prisoners.

The survey form has two parts; the first part was the general information, which facilitates collection of patient's identification, demographic variables, educational status, marital status, their total years of sentences, there total years been in the jail, and adverse habits regarding use of tobacco or and other substance.

The second part consists of clinical assessment using world health organization (WHO) oral health assessment form 1997 [16] with for recording of the adverse habits and oral mucosal lesions status of prisoners. The kappa value of the intra examiner reliability was >0.8. The recorder in the study was also priorly trained in the department.

Any oral disease or pathological conditions observed during examination were informed to the subjects, and they were advised to seek treatment for the same. The matter of the individuals requiring emergency treatment was brought to the notice of the medical officer of the prison for needful attention.

Data was analyzed using SPSS software version 20. The values were represented in number, %. The c2 test was used to test the significant difference in proportions.

### Results

On the whole 1011 inmates belonged to the age range of 18-80 years, with the mean age of 37.3±11.8 (male: female; 35.1:46.8) years were included in the study. Male inmates (82%:826) were significantly higher in number ( $p < 0.001$ ) than female inmates (18%:185). The subjects were broadly divided into 6 age groups (15-24, 25-34, 35-44, 45-54, 55-64 and ≥64 years), majority of which (32.5%:329) belonged to 25-34 years, followed by 35-44 years (30.8%:311), 45-54 years (15.1%:153), 15-24 years (12.5%:126), ≥ 65 years (4.7%:48) and 55-64 years group (4.4%:44) (Table 1).

**Table1:** Age and gender wise distribution of inmates.

Age group	Inmates				Total	
	Male		Female		N	%
	N	%	N	%		
15-24 yrs	123	12.16	3	0.29	126	12.46
25-34yrs	298	29.47	31	3.06	329	32.54
35-44 yrs	252	24.92	59	5.83	311	30.76
45-54yrs	113	11.17	40	3.95	153	15.13
55-64yrs	31	3.06	13	1.28	44	4.35
≥65yrs	9	0.89	39	3.85	48	4.74
<b>Total</b>	826	81.7	185	18.29	1011	100
" $\chi^2$ "	176.04					
"p"	<0.001*					

\*Statically highly significant

Almost 98.6% of all inmates had tobacco use adverse habits (chewable and smoking). Significantly higher ( $p < 0.001$ ) proportion of inmates (56.3%:570) chewed tobacco than tobacco smokers (42.5%:429). Smoking was exclusively found among male inmates (42.2%:427) and was more common among 25-34 years age group (15.8%: 160) followed by 35-44 years (11.7%:118), 15-24 years (6.4%:65), 45-54 years (6.1%:62) and least common in males aged  $\geq 65$  years (0.7%:8). Similar distribution of male inmates with tobacco chewing habit was found across the age groups (Table 2).

Other conditions (Gingival conditions and OSMF) were present in significantly higher ( $p < 0.001$ ) proportion 79.2% (801) among inmates as compared to ulceration (25.4%:257), leukoplakia (17.9%:181), abscess (0.9%:7), lichenplanus (0.4%:5) and malignant tumour (0.09%:1). Other conditions were most commonly present in 25-34 years (27.3%:277) followed by 35-44 years (26.8%:271), 45-54 years (11.4%:116), 15-24 years (9.2%:94), 55-64 years (3.3%:34) and  $\geq 65$  years group (0.8%:9).

Ulceration was most commonly present in 25-34 years (9.1%:93) followed by 35-44 years (6.8%:69), 15-24 years (5.6%:57), 45-54 years (3%:31), 55-64 years (0.5%:6) and  $\geq 65$  years group (0.09%:1). Leukoplakia was most commonly present in 35-44 years group (6.5%:66) followed by 25-34 years (5.9%:60), 45-54 years (2.4%:25), 15-24 years (1.4%:15), 55-64 years (1.3%:14) and  $\geq 65$  years group (0.09%:1). Condition like abscess (0.6%:7), Lichenplanus (0.4%:5) and malignant tumour (0.09%:1) were present in less than 1% inmates (Table 3).

Leukoplakia was present in 1.7% [17] female inmates and was almost equally distributed among all age groups (non significant,  $p = 0.39$ ) except 15-24 years age group in which it was absent. Other condition (Gingival condition and OSMF) was present in 17.4 % (176) inmates. Most common age group for other condition was 35-44 years (5.7%:58) followed by 45-54 years (4.1%:42),  $\geq 65$  years (3.3%:33), 25-34 years (2.7%:28) and 25-34 years group (1.4%:15) (Table 4).

**Table 2:** Age and gender wise distribution of inmates according to adverse habits.

Age Group	Adverse Habits- N (%)							
	Smoking		Chewing Tobacco		Smoking + Chewing Tobacco		Alcohol	
	Male	Female	Male	Female	Male	Female	Male	Female
15-24 yrs	65(6.42)	0	84(8.30)	0	50(4.94)	0	0	0
25-34yrs	160(15.82)	0	193(19.09)	8(0.79)	113(11.17)	0	0	0
35-44 yrs	118(11.67)	2(0.19)	166(16.41)	8(0.79)	86(8.50)	2(0.19)	0	0
45-54yrs	62(6.13)	0	64(6.33)	9(0.89)	42(4.15)	0	0	0
55-64yrs	15(1.48)	0	19(1.87)	5(0.49)	12(1.18)	0	0	0
$\geq 65$ yrs	7(0.69)	0	6(0.59)	8(0.79)	4(0.39)	0	0	0
<b>Total</b>	427(42.23)	2(0.19)	532(52.62)	38(3.75)	307(30.36)	2(0.19)	0	0
" $\chi^2$ "	95.81							
"p"	<0.001*							

\*Statically highly significant

Most common location for the oral mucosal lesion was alveolar ridge /gingiva 96.6% (977) followed by buccal mucosa (40.9%:414), alveolar sulcus (11.8%:120), lips (4.6%:47), tongue (0.39%:4), hard/soft palate (0.19%:2) and Commisures (0.09%:1). Leukoplakia was most commonly (16.8%:170) present on buccal mucosa, followed by (2.5%:26) alveolar sulcus. Lichenplanus (0.49%:5) was present in buccal mucosa. Ulceration was most commonly (13.3%:135) present on buccal mucosa followed by (7.6%:77) sulcus, (3.9%:40) lips, (0.29%:3) tongue and hard/soft palate (0.09%:1). In other condition the Oral sub mucous fibrosis (10.28%:104) was present on buccal mucosa followed by (1.6%:17) sulcus, and lips (0.49%:5). In other conditions gingival recession was present in (96.6%:977) of the inmates (Table 5).

## Discussion

The prison population is unique and challenging one with many health problems including poor oral health. Prisoners have greater oral health needs than the general population [1,2].

Regarding the prevalence of adverse habits in inmates, almost all inmates 98.6% most of which were males with 4% females used some form of tobacco. About 56.3% of them chewed tobacco while 42.5% were tobacco smokers.

Most of the studies assessing tobacco use, reported a higher percentage of tobacco smokers. For example, smoking was found in 70% of inmates in the study by Patricia et al. [17], among 78% of

inmates in the study by Hartwig et al. [13], among 69% of inmates in the study by Karen LC [20]. However a very low percentage of smokers 10% were found in the study by Cheung et al. [6].

The reason for higher proportion of tobacco chewers in the study could be that the chewing of tobacco is highly prevalent in south East Asian region especially in countries like India, Srilanka, Bangladesh etc. [18].

**Table 3:** Age wise distribution of Male inmates according to oral mucosal condition.

Age Group	Oral mucosal condition - N (%)							
	1= Malignant Tumour	2= Leukoplakia	3= Lichenplanus	4= Ulceration (aphthous, Herpetic, Traumatic)	5= ANUG	6= Candidiasis	7= Abscess	8= Other condition
15-24 yrs	1(0.09)	15(1.48)	2(0.19)	57(5.63)	0	0	1(0.09)	94(9.29)
25-34yrs	0	60(5.93)	1(0.09)	93(9.19)	0	0	1(0.09)	277(27.39)
35-44 yrs	0	66(6.52)	2(0.19)	69(6.82)	0	0	0	271(26.80)
45-54yrs	0	25(2.47)	0	31(3.06)	0	0	2(0.19)	116(11.47)
55-64yrs	0	14(1.38)	0	6(0.59)	0	0	0	34(3.36)
≥65yrs	0	1(0.09)	0	1(0.09)	0	0	3(0.29)	9(0.89)
<b>Total</b>	1(0.09)	181(17.90)	5(0.49)	257(25.42)	0	0	7(0.69)	801(79.22)
" $\chi^2$ "	156.32							
"p"	<0.001*							

\*statistically highly significant

**Table 4:** Age wise distribution of female inmates according to oral mucosal condition.

Age group	Oral mucosal condition - N (%)							
	1= Malignant tumour	2= Leukoplakia	3= Lichenplanus	4= Ulceration (Aphthous, Herpetic, Traumatic)	5= ANUG	6= Candidiasis	7= Abscess	8= Other condition
15-24 yrs	0	0	0	0	0	0	0	0
25-34yrs	0	2(0.19)	0	0	0	0	0	28(2.76)
35-44 yrs	0	7(0.69)	0	0	0	0	0	58(5.73)
45-54yrs	0	2(0.19)	0	0	0	0	0	42(4.15)
55-64yrs	0	2(0.19)	0	0	0	0	0	15(1.48)
≥65yrs	0	5 (0.49)	0	0	0	0	0	33(3.26)
<b>Total</b>	0	18(1.78)	0	0	0	0	0	176(17.40)
" $\chi^2$ "	10.51							
"p"	0.39							

**Table 5:** Distribution of inmates according to location of the oral mucosal conditions.

	Location									
	0= Vermilion border	1= Commisures	2= Lips	3= Sulci	4= Buccal mucosa	5= Floor of the mouth	6= Tongue	7= Hard/ soft palate	8= Alveolar ridge/ gingiva	9= Not recorded
<b>0= No abnormal condition</b>	0	0	0	0	0	0	0	0	0	0
<b>1= Malignant tumour</b>	0	0	0	0	0	0	1(0.09)	0	0	0
<b>2= Leukoplakia</b>	0	0	2 (0.19)	26 (2.57)	170 (16.81)	0	0	1 (0.09)	0	0
<b>3= Lichenplanus</b>	0	0	0	0	5 (0.49)	0	0	0	0	0
<b>4= Ulceration (aphthous, herpetic, traumatic)</b>	0	0	40 (3.95)	77 (7.61)	135 (13.35)	0	3(0.29)	1 (0.09)	0	0
<b>5= Acute necrotizing gingivitis</b>	0	1(0.09)	0	0	0	0	0	0	0	0
<b>6= Candidiasis</b>	0	0	0	0	0	0	0	0	0	0
<b>7= Abscess</b>	0	0	0	0	0	0	0	0	0	0
<b>8= Other condition</b>	0	0	5 (0.49)	17 (1.68)	104 (10.28)	0	0	0	977 (96.63)	0
<b>9= Not recorded</b>	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	1(0.09)	47 (4.68)	120 (11.86)	414 (40.94)	0	4(0.39)	2(0.19)	977 (96.63)	0

Life style diseases are closely related to oral disease and it is important to consider the wider social determinants of health when looking at treatment options [1]. Also it has been found that after mental health and substance abuse, the most common health problems affecting prisoners are smoking and dental health issues [14].

Most common location for oral mucosal conditions was alveolar ridge or gingiva 96.6% followed by buccal mucosa 40.9%, alveolar sulcus 11.8%, lip 4.6%, tongue 0.4%, hard/ soft palate 0.2% and Commisures 0.1%. About 19.6% of the inmates had leukoplakia, 10.3% of the inmates had oral sub mucous fibrosis, 0.4% of the inmates had Lichenplanus and one case 0.1% reportedly had malignant tumor (carcinoma of the tongue).

A probable explanation for the higher prevalence of leukoplakia and oral sub mucous fibrosis could be that there was a higher prevalence of tobacco smoking and chewing habits among the inmates [19].

A notable finding of the study was that most of the inmates 28% with oral mucosal lesions reported chewing tobacco,

followed by those smoking 14.4% exclusively males and a mixed habit of smoking and chewing tobacco 12.8%.

On the whole the study findings suggest that the overall various oral mucosal lesions were prevalent in higher percentage. With higher prevalence of tobacco (both by males and females) and higher percentage of oral mucosal lesions. This could be due to poor knowledge and perceptions about oral health among these inmates. Understanding what influences oral health perception can direct services to improve oral health [1].

The health status of inmates in the prison system is not routinely incorporated into data and reports that summarize the state of the nation's health. Yet the number of imprisoned persons is already high, and further increases are expected, if current policies remain in place [20].

W.H.O. in its report on health in prison project, infer that prisons were not only good settings for health promotion, but the opportunities provided by prisons, if taken, could contribute in a worthwhile way to general public health. There was a complete agreement that the public health importance of prisoner health

was sadly neglected throughout world and that a W.H.O. network would be of a great value in the exchange of ideas and in developing guidelines for tackling the common problems facing prisons [15].

Prison service in all parts of world have inherited old, often badly planned and maintained institutions that are in themselves bad for health [15]. It could be said that the prison service in India is no way different. Public ignorance of what prisons are trying to do and political ambivalence about what changes to make leave prison staff with one of the most difficult public services to provide. To emphasize this aspect in 2003, the annual meeting held in Russia made the WHO Moscow Declaration: "prisons health as part of public health" and this important statement was send to government of all countries [21].

### Conclusion

This study found a high prevalence of adverse habits and oral mucosal lesion among the prison population. There is an urgent need for the development of a basic oral health care package that should be offered to all inmates as eventually many of them will be returning to the community. The incarceration period is an ideal opportunity to educate this group in good oral health care practices and provide the necessary treatment.

### Suggestions and Recommendation

- a. It is important to include oral health in initiatives design to promote health in general as many of the main factors that can lead to poor oral health are also common factors for other diseases.
- b. Smoking cessation programmes appropriate to the prison environment should be developed and implemented.
- c. A long term oral health education programme is required as a part of effective preventive dental programmes to increase in awareness of oral health among prisoners.

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