

ORAL HEALTH STATUS AND TREATMENT NEEDS OF PRISONERS OF DHARWAD, INDIA

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ABSTRACT:

Introduction: Prisoner is a person who is deprived of his/her liberty; even though they are deprived of their liberty they are not deprived of their right to maintain good general and oral health. Currently, one under researched area has been the oral health status of prisoners.

Aim: To assess the oral health status and treatment needs of prisoners in Dharwad district prisons.

Methodology: A total of 256 prisoners were examined from two different prisons of Dharwad district. A pro-forma was used to obtain data regarding socio-demographic characteristics, duration of stay in prison, previous dental treatment in prison and oral hygiene habits. The W.H.O. Oral Health Assessment Form (1997) was used to assess the oral health status of the study subjects.

Results: 88.28% of prisoners were males and were in the age group of 18-27 years. 47.27% of prisoners were imprisoned for less than 1 year. Prevalence of periodontal disease was 98.5% and dental caries was 82.42%. About 98% of the prisoners did not receive any kind of dental treatment in the prison. 67.19% of subjects needed one surface filling, 18.75% two surface filling, 10.55% pulp care, 31.64% extraction of teeth and 42.58% of study subjects needed replacement of missing teeth.

Conclusions: Prisoners were sharing disproportionate burden of oral diseases and there was no provision of oral health services in the prison, hence the study emphasizes the need for oral health programs to improve the oral health of prisoners.

Key words: prisoners, oral health, dental treatment in prison, treatment needs

INTRODUCTION:

Studies have been done on the oral health status of the Indian population in the past few years.^[1, 2] However, there have been very few studies on oral health status of prison population in India.^[3] Due to the lack of education, employment and also

due to the adverse impact of television serials, movies and urbanization the number of crimes are increasing day by day in the society, so the number of prisoners and they form a substantial section in the society. A prisoner is a person who is deprived of his/her liberty

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by virtue of judicial or other lawful process. Even though prisoners are deprived of their liberty they are not deprived of their right to maintain good general and oral health.

Prisoners come predominantly from the lower social classes with fewer education qualifications, less work experience and poor housing conditions than the general population. People from lower social class show a tendency towards irregular dental checkups and are more likely to visit dentist only when they are in pain. [4, 5] They are usually less likely to use preventive health services, but they are also more likely to practice health damaging behaviors such as smoking, drinking alcohol and recreational drug use which contribute to poor oral and general health. This highlights the oral health needs and level of untreated dental diseases of prisoners. [6]

Presently there is no standardized system for assessment and prioritization of the dental needs of prisoners and their dental needs do not appear to be met during their admission time. The reason for this could be limited mobility of prisoners within the prison system, the restricted number of dental sessions provided in prisons and perhaps the lack of flexibility due to security concerns. [7] It has been recognized that preventive oral care is important in the prevention of oral disease, which also has significant impacts on general health. An improvement in the oral health may play an integral role in improving the general health, adequate

instruction in proper care of the teeth and oral tissues is thus essential. [8, 9]

Currently, one under researched area has been the oral health status and dental epidemiological investigations of individuals in the prison environment; such studies are important in order to expand the level of our knowledge. Among the few studies that exist; it has been suggested that dental caries experience is significantly higher among inmates compared to non-prison groups of similar age and geographical area. [10]

It has been estimated that there are about 12,213 prisoners in 100 jails of Karnataka state [11] and approximately 700 prisoners in two sub-jails of Dharwad district. Since oral health information of such prisoners is scarce, the objective of present study was to assess the oral health status and treatment needs of prisoners in two prisons of Dharwad district.

MATERIAL AND METHODS:

The present study was conducted among the prisoners in two prisons of Dharwad district. All prisoners who were admitted into the prisons of Dharwad district during the period July 2009 to August 2010 were invited verbally to participate. Prisoners were unwilling to participate in the study unless dental treatment was offered. Accordingly, despite the bias that might be introduced, it was decided to modify the recruitment process and utilize a convenience sample of prisoners. In return they were provided with appropriate, basic dental treatment.

The ethical clearance for the present study was obtained from the Institution Ethical Committee of SDM College of Dental Sciences and Hospital, Dharwad. The required official permission for the study was obtained from the Jail superintendent of the respective jails for examination of prisoners. Written informed consent from each study subject was taken after explaining the nature of the study. Examiner calibration was done before start of the survey, by using the WHO criteria for diagnosing the oral diseases. Subjects were selected, examined and were reexamined on successive days using the same diagnostic criteria.

The required data was collected and recorded using pro-forma which consisted of two parts; the 1st part was a questionnaire to obtain data regarding personal details (name, age, gender etc.) socio-demographic characteristics, duration of stay in the prison, previous dental treatment in prison and oral hygiene practices. Socioeconomic status of the prisoners was measured using Kuppaswamy's socioeconomic status scale. [12] Aforementioned information was collected by interview method. The second part was the W.H.O. 1997 Oral Health Assessment Form used to assess the oral health status, the criteria, and the recording instructions used for the survey followed those stated in the manual "Oral Health Surveys," 4th edition (W.H.O. 1997).

Dental clinical examinations were done under artificial light by means of plane

mouth mirror, explorer, and a periodontal ball-pointed probe.

STATISTICAL ANALYSIS:The data was entered into the computer (MS-Office, Excel) and subjected to statistical analysis using the statistical package-STATA 9.2. The associations between oral health status with age, gender and socio-economic status was assessed by using Chi-square test and Students t-test. The level of significance was set at 5% ($p < 0.05$).

RESULTS:

The study group consisted of 256 prisoners from two different jails in Dharwad district, out of which 226 (88.28%) were males and 30 (11.72%) were females with age group of 18 years and above. Among them, 164 (64.06%) were married, 88 (34.38%) were unmarried and 4 (1.56%) were widows. 84.77% of subjects were belonging to one particular religion and 172 (67.19%) subjects were belonging to upper middle class, 66 (25.78%) subjects to lower middle class and 18 (7.03%) subjects to upper lower class.

Duration of imprisonment: Majority of study subjects 121(47%) were imprisoned for less than 1 year.

Previous dental treatment in the prison: 253 (98%) subjects did not receive any kind of dental treatment in the prison.

Oral Hygiene Measures Practiced :Most of the study subjects 176 (68.75%) were using toothbrush, and 80 (31.25%) finger

for cleaning their teeth, 182 (71.09%) were using toothpaste, 51 (19.92%) were using toothpowder, and 23 (8.98%) were using charcoal for cleaning their teeth. Highest percentage of subjects who were using toothbrush and toothpaste were belonging to the age group of 18-27 years.

Smoking habits: Sixty one percent (157) subjects had no smoking habits, 47 (18.36%) were bidi smokers, 44 (17.19%) were cigarette smokers and 8(3.13%) were both bidi and cigarette smokers. 110 (42%) subjects had no chewing habits, 86 (33.59%) were tobacco-pan chewers, 35 (13.67%) were ghutka chewers, 25 (9.77%) were both tobacco-pan chewers and ghutka chewers.

Temperomandibular joint symptoms: Among the study subjects, 45 (17.58%) had TMJ clicking, 20 (7.81%) had TMJ tenderness and 3 (1.17%) had reduced jaw mobility.

Community Periodontal Index with age, gender and socioeconomic status: Among the study subjects, 5 (1.95%) subjects had healthy gingiva, 34 (13.28%) had bleeding on probing, 155 (60.55%) had calculus, 47 (18.36%) had probing pocket depth of 4-5 mm and 15 (5.86%) had probing pocket depth of 6 mm or more. Statistically significant association was found only between various age groups and Community Periodontal Index scores. (Table I)

Dental caries prevalence with age, gender and socioeconomic status: Eighty two percent (211) subjects had dental caries. Statistically significant association

was found only between dental caries prevalence and different age groups. (Table II)

Age wise comparison of caries experience among the study subjects:

The mean Decayed Missing Filled Tooth (DMFT) score was highest in the age group of 18-27 years (3.83) and lowest in the age group of 58 years and above (1.75). Statistically significant association was found only between various age groups and mean D component of DMFT score, overall DMFT score, and MDC score. (Table III)

Prosthetic status Among 256 study subjects, only 1 (0.39%) subject was wearing bridge in upper arch and 1 (0.39%) subject was wearing full prosthesis in the upper arch.

Prosthetic needs in upper arch: 24 (9.38%) subjects needed single-unit prosthesis, 20 (7.81%) subjects needed multi-unit prosthesis, 1 (0.39%) subject needed combination of single and multi-unit prosthesis, and 6 (2.34%) subjects needed full prosthesis.

Prosthetic needs in lower arch: 31 (12.11%) subjects needed single-unit prosthesis, 21 (8.20%) subjects needed multi-unit prosthesis, and 6 (2.34%) subjects needed full prosthesis.

Distribution of study subjects according to the treatment needs: Most of the study subjects, 172 (67.19%) subjects needed one surface filling, 48 (18.75%) subjects needed two surfaces filling, 27 (10.55%) subjects needed pulp care, and

81 (31.64%) subjects needed extraction.(Graph I)

DISCUSSION:

Majority of studies on oral health status and treatment needs of prisoners were conducted in western countries. [13-17] Careful literature search revealed that, studies have been conducted on prisoners health status in India, but most of these studies focused on general health status of prisoners, [41, 42] and very few studies have been conducted on oral health status of prisoners, [3] implying that oral health is usually neglected. Since information is sparse, the objective of the present study was to assess the oral health status and treatment needs of prisoners.

The present study consisted of 256 prisoners, out of which 226 were males and 30 were females aged 18 years and above. The marked male predominance in the present study is consistent with findings obtained from previous study by Osborn M. [28] this leads to the assumption that more number of males were involved in criminal activities than females.

Socioeconomic status of the prisoners were measured by using Kuppaswamy's socioeconomic status scale.[12] According to this scale, highest number of subjects belonged to the upper middle class and lowest to the upper lower class, but studies conducted by Heidari E and Dickinson C [36] showed that, prisoners usually come from the lower socio economic class. Possible explanation for the highest number of prisoners who

were belonging to upper middle class in the present study is that some people who come from middle or upper middle class family are kind of half way between the losers and the lords of the earth, this drives them to have a certain set of ambitions and opinions to achieve, for which they may use short cuts, which ultimately land them in prison.

Greater part of the subjects did not receive any kind of previous dental treatment in the prison as there was no provision for providing dental treatment, like; lack of dental setup and absence of a Government appointed dentist in the prison. But, studies conducted by Mixson JM and Eplee HC, [16] Clare JH, [24] Osborn M., [28] highlights that, majority of the prisoners did receive dental treatment.

Oral hygiene measures practiced:

Majority of subjects cleaned their teeth with toothbrush and toothpaste and about 30% of subjects cleaned their teeth with finger by using toothpowder or charcoal. Highest percentage of subjects who cleaned their teeth with toothbrush and toothpaste belonged to the age group of 18-27 years. This leads to the observation that younger prisoners had better oral hygiene practice when compared to their older counterparts. Studies conducted by Nobile CG, [35] McGrath C, [25] Shi CF and Yan CK, [34] showed that majority of the prisoners cleaned their teeth twice a day with toothbrush and toothpaste.

Adverse habits: About 40-60% of study subjects had adverse habits of tobacco chewing or smoking, as tobacco chewing

is more prevalent in the general public of this region.

TMJ disorders: Among the study subjects, 17.58% of subjects had TMJ clicking, 7.81% of subjects had TMJ tenderness and 1.17% of subjects had reduced jaw mobility. This may be due to violence, psychological problems and stress level of the prisoners. Violence in prison settings has many causes; ethnic causes, or rivalries between gangs. The closed, overcrowded, living conditions can also lead to conflict between prisoners. The boring prison environment, lack of occupation of mind and body lead to accumulated frustration and tension in prisoners.

Periodontal status: Among the study subjects, 1.95% of subjects had healthy gingiva, 13.28% had bleeding on probing, 60.55% had calculus, and 24.22% had probing pocket depth of 4-5 mm or more. The high proportion of dental calculus seen in the present study subjects could be the result of poor oral hygiene practices and adverse oral habits among the prisoners. These findings were quite similar to the studies conducted by McGrath C, Cheung S and Linda C [25], and Heidari E, Dickinson C. [36]

Periodontal treatment needs: Treatment needs-1; only oral hygiene instructions was required for 13.28% of subjects, Treatment needs-2A; oral hygiene instructions and scaling was required for 60.55% of subjects, Treatment needs-2B; oral hygiene instructions, scaling and root planing was required for 18.36% of subjects, and Treatment needs-3; oral

hygiene instructions, scaling, root planing and complex periodontal treatment was required for 5.86% of subjects. Hence majority of the prisoners needed some form of periodontal care. These findings were quite similar to the studies conducted by Nobile CG [35], Barnes G P and Parker W A [14].

Dentition status: Among the study subjects, 82.42% of subjects had dental caries, with 3.26 as overall mean DMFT score. The overall mean DMFT score was markedly lower in the present study than the mean DMFT scores obtained in studies conducted by Hurlen B, Jacobsen N, [13] Naidoo S, Yengopal et al [30] Salive ME and Carolla JM [15], Mixson JM, and Eplee HC [16] and Osborn M, Butler T. [28] This may be due to variations in socio economic status, dietary habits like excessive consumption of refined sugars in the western countries.

Among the study subjects, the overall mean DMFT score was highest in the age group of 18-27 years (3.83) and lowest in the age group of 58 years and above (1.75). This may be due to the variations in dietary habits of younger individuals when compared to older individuals before imprisonment, like excessive consumption of soft and sticky food.

Dental treatment needs: Among the study subjects, 67.19% of subjects needed one surface filling, 18.75% two surface filling, 10.55% pulp care, and 31.64% of subjects needed extraction of teeth. These findings were quite similar to the study done by Nobile CG [35] where 61.95% of subjects required restorative

dental care and 33% required extraction

Prosthetic treatment needs: Even though 42.58% of study subjects required prosthetic replacement of missing teeth in both the arches, only 0.39% of subjects were wearing bridge and full prosthesis. This could be due to the poor dental awareness and due to the lack of previous dental treatment in the prison as there was no provision for providing dental treatment in the prison.

In the present study, dental and prosthetic needs of prisoners were relatively high, these findings were similar to the studies conducted by Jones C M, Woods K. [29] and Hiremath VP [3]. This highlights the need of dental services in prison, as improvement in oral health plays an important role in improving the general health. [8]

It is difficult to compare the prevalence of oral diseases and treatment needs of the present study subjects with epidemiological surveys done in several other countries as there is a difference in

of teeth.

the demographic characteristics of the study populations; including ethnicity, age, socioeconomic status, medical, and judicial systems of the various countries. As a result of such differences, results of the studies were expected to vary substantially.

CONCLUSION:

In conclusion, findings of the present study have highlighted the extent of oral health and treatment needs of prison population in Dharwad district prisons. This study has confirmed the needs for organized preventive and curative care for the prison population in Dharwad district prisons.

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TABLES:

Table I: Comparison of Community Periodontal Index with age with age, gender and socioeconomic status

Age and Community Periodontal Index											
Age	HG	%	BOP	%	CAL	%	PPD 4-5 mm	%	PPD ≥6mm	%	Total
18-27	1	1	21	20.4	71	68.9	9	8.7	1	1	103
28-37	1	1.6	9	14.5	37	59.7	15	24.2	0	0	62
38-47	0	0	1	2.8	19	52.8	11	30.6	5	13.9	36
48-57	1	3.2	2	6.5	16	51.6	8	25.8	4	12.9	31
≥58	2	8.3	1	4.2	12	50	4	16.7	5	20.8	24
Total	5	1.95	34	13.28	155	60.55	47	18.36	15	5.86	256
Chi-square Test: 52.3265 df = 16 P=0.0001 (S)											
Gender and Community Periodontal Index											
Gender	HG	%	BOP	%	CAL	%	PPD 4-5 mm	%	PPD ≥6mm	%	Total
Male	4	1.77	30	13.27	134	59.29	45	19.91	13	5.75	226
Female	1	3.33	4	13.33	21	70	2	6.67	2	6.67	30
Total	5	1.95	34	13.28	155	60.55	47	18.36	15	5.86	256
Chi-square Test: 5.57491 df = 8 p=0.69472 (NS)											
Socioeconomic status and Community Periodontal Index											
UMC	HG	%	BOP	%	CAL	%	PPD 4-5 mm	%	PPD ≥6mm	%	Total
UMC	1	0.58	25	14.53	103	59.88	32	18.6	11	6.4	172
LMC	3	4.55	7	10.61	43	65.15	10	15.15	3	4.55	66
ULC	1	5.56	2	11.11	9	50	5	27.78	1	5.56	18
Total	5	1.95	34	13.28	155	60.55	47	18.36	15	5.86	256
Chi-square Test: 7.84814 df = 8 p=0.44847 (NS)											

* (p<0.05)

[Abbreviations: HG-Healthy gingiva, BOP-Bleeding on probing, CAL-Calculus, PPD-Probing pocket depth, S-Significant, NS-Non significant, UMC-Upper middle class, LMC-Lower middle class, ULC-Upper lower class]

Table II: Comparison of dental caries prevalence with age gender and socioeconomic status

Age and dental caries prevalence					
Age	Present	%	Absent	%	Total
18-27	93	90.29	10	9.71	103
28-37	55	88.71	7	11.29	62
38-47	27	75.00	9	25.00	36
48-57	23	74.19	8	25.81	31
≥58	13	54.17	11	45.83	24
Total	211	82.42	45	17.58	256
Chi-square Test: 22.1368 df = 4 p=0.00019 (S)					
Gender and dental caries prevalence					
Male	183	80.97	43	19.03	226
Female	28	93.33	2	6.67	30
Total	211	82.42	45	17.58	256
Chi-square Test: 2.79257 df = 1 p=0.09471 (NS)					
Socioeconomic status and dental caries prevalence					
UMC	145	84.30	27	15.70	172
LMC	54	81.82	12	18.18	66
ULC	12	66.67	6	33.33	18
Total	211	82.42	45	17.58	256
Chi-square Test: 3.52034 df = 2 p=0.17203 (NS)					

*(p<0.05)

[Abbreviations: S-Significant, NS-Non significant, UMC-Upper middle class, LMC-Lower middle class, ULC-Upper lower class]

Table III: Age wise comparison of caries experience among the study subjects

Age	Decayed		Missing		Filled		DMFT		MDC	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
18-27	3.40	2.32	0.30	0.87	0.14	0.92	3.83	2.66	0.11	0.64
28-37	3.19	2.63	0.40	0.90	0.05	0.28	3.65	3.01	0.16	0.52
38-47	2.31	2.62	0.47	1.28	0.03	0.17	2.81	2.88	0.19	0.75
48-57	1.77	2.00	0.48	0.72	0.00	0.00	2.26	2.10	3.26	7.81
≥58	1.08	2.41	0.67	1.58	0.00	0.00	1.75	2.69	6.63	9.60
Total	2.78	2.52	0.41	1.01	0.07	0.60	3.26	2.80	1.13	4.47
F-value	6.7879		0.7612		0.5531		4.6046		16.5724	
	0.0000 (S)		0.5514 (NS)		0.6969 (NS)		0.0013 (S)		0.0000 (S)	

[Abbreviations: DMFT-Decayed Missing Filled Tooth, MDC-Missing for reasons other than dental caries, SD-Standard deviation, S-Significant, NS-Non significant]

GRAPH:

Graph I: Distribution of study subjects according to the treatment needs

