



RESEARCH ARTICLE

ORAL HEALTH STATUS AND TREATMENT NEEDS OF PRISONERS IN DISTRICT JAIL OF RAICHUR CITY, KARNATAKA – A CROSS SECTIONAL STUDY

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ABSTRACT

Background and objectives: The prison population is a unique and challenging one, with many health problems, including poor oral health. Dental diseases can reach epidemic proportions in the prison setting. The aim of the study was to assess the oral health status and treatment needs of prisoners in district jail of Raichur city, Karnataka.

Material and Methods: A cross sectional study was carried out on 102 prisoners (males were 98 and females were 04) in the district jail of Raichur. A specially designed questionnaire was used to assess the demographic variables and oral hygiene practices. A clinical examination was done according to WHO (World Health Organization) criteria 1997 and recorded using WHO Oral Health Assessment Form.

Results: The mean age of the study subjects was 29.9(± 9.74) years and the mean DT, MT, FT and DMFT was 1.59(±1.58), 0.52(±3.02), 0.05(±0.21) and 2.16 (±3.44) respectively. The prevalence of dental caries and periodontal disease was 76.5% and 93.1% respectively. The oral hygiene status was poor in 33.7% of the study subjects.

Conclusion: Poor oral hygiene, high prevalence of periodontal disease and dental caries are major public oral health problem among the prisoners, which require special attention and efforts from government and other organizations to meet their treatment needs.

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INTRODUCTION

Health is a fundamental right of every individual and oral health is an integral part of general health. Various factors are responsible for maintenance of good oral health. Socioeconomic status, occupation, education are playing major role in maintenance of good oral health (Dhanker et al., 2013). Our society consists of different group of people have different levels of perception and facilities to maintain good oral health. Different population groups have been assessed for oral health status in our country. Still many groups have been neglected; one such group is the prisoners (Uma and Hiremath, 2011). Prisoners make a special group of population as they are

different from other people in context of their "freedom of movement". The majority of prisoners are those who come from a context already shaped by social exclusion (Anup et al., 2014). The prisoner's area psychologically, socially, morally and economically affected group which makes them to neglect their general as well as oral health. It is generally acknowledged from extensive research that prisoners are vulnerable to a wide range of health problems, most commonly alcohol and drug abuse, smoking, chronic diseases, mental illness, psychosocial and psychiatric problems (Anup et al., 2014). Many prisoners enter prison with poor oral health requiring emergency treatment. This may be due to limited knowledge about good oral health practices. Substance misuse contributes to high levels of tooth decay and gum disease. Excessive alcohol consumption, particularly spirits, and tobacco use increase the prevalence and severity of periodontal disease and are by far the greatest risk factors for oral cancer

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(Anup *et al.*, 2014). The prison population is a unique and challenging one, with many health problems, including poor oral health. Dental diseases can reach epidemic proportions in the prison setting (Dayakar and Shivprasad, 2014). The prisoner's health is neglected due to poor availability of any health professional who wants to work in a prison. The lack of health concern, facilities, and expertise, leads to further deterioration in the health of inmates (Dayakar and Shivprasad, 2014). The prisoners in jail have a different lifestyle; routine dental care and daily oral hygiene are not in their regular component of life style. Now there is a growing recognition that there is a direct link between oral health and life- style related diseases such as heart disease, arthritis etc. This lack of attention in maintaining oral hygiene is reflected in their overall health status. An assessment of their oral health is required, as there is a need to be more attentive to oral health promotion of these prisoners as they will be re-turning to the general community (Anup *et al.*, 2014). Very few studies have been conducted in India regarding oral health status of prison inmates. Also there is no information about the oral health status and treatment need of prisoners of District Jail, Raichur. Considering all these reasons this study was carried out to assess the oral health status and treatment needs of prisoners of District Jail, Raichur.

Aim and Objectives of the study

1. To assess the oral health status and treatment needs of prisoners in district jail of Raichur city, Karnataka.
2. To assess the oral health practices and oral hygiene status of these prisoners.

MATERIALS AND METHODS

A descriptive cross-sectional study was conducted to assess the oral health status and treatment needs of prisoners in district jail of Raichur city, Karnataka.

Source of data: Data was collected through a survey which included clinical examination and a questionnaire.

Study group: Those persons, who were sentenced (prisoners), were included in the study group.

Information about study group: A total of 102 convicts of the jail aged 18-54 years were examined. Both male and female prisoners were included in the study (Male=98, Female=4).

Inclusion criteria: All the prisoners who were willing to give the consent were included in the study.

Exclusion criteria: The subjects who did not give their consent for oral examination were excluded.

Sampling methodology: Purposive sampling- Purposively selecting the individuals for the study. The group of individuals who were actually available for the investigations (All the prisoners)

Method of collection of data

Ethical Committee Clearance: The study protocol was approved by the Institutional Ethical Committee and Review board, Raichur.

Official Permission: The prior permission was obtained from the Superintendent of District Jail, Raichur, to conduct study among all the Prisoners.

Study Group Consent: The informed written permission was obtained from the study participants after explaining the nature of the study. The consent form was presented both in English and Kannada languages for easy understanding and convenience of the study participants. Prisoners unable to read the consent form were explained thoroughly by examiner and then consent was obtained.

Duration of data: All the data collected was recorded in proforma by a trained assistant. The data was collected over a period of 2 months from August to September 2014. Recording of data was done in the hospital of jail.

Questionnaire: A specially prepared structured questionnaire was interviewer-administered to the prisoners to know the demographic variables and oral hygiene practices. All the questions were explained individually in their local language and the answers were recorded by the examiner. Socioeconomic status was recorded using the Kuppaswamy scale (2012) (Ravi Kumar *et al.*, 2013).

Pilot Study: A pilot study was carried out before starting the main study to check the feasibility and applicability of the questionnaire and clinical examination. The necessary modifications and changes were made. The subjects who were examined in the pilot study were not included in the final study. Examiner calibration and reliability was assessed prior to the start of the study.

Clinical Examination: Prisoners were examined for oral health status, treatment needs and oral hygiene. Oral health status and treatment needs were assessed using WHO Oral Health Assessment Form (1997). Oral hygiene status was also recorded using Oral Hygiene Index-Simplified (OHI-S) and was recorded according to the criteria given by John C Greene and Jack R Vermillion in 1964.

Statistical Analysis: Data was analysed using SPSS V20.0 software package. Cohen's Kappa statistics was used to assess the examiner reliability. Descriptive statistics such as mean, standard deviation and percentage was used. Association was evaluated using chi-square. Any p-value less than 0.05 was considered as significant.

RESULTS

Demographic characteristics

Table 1: shows the demographic characteristics of the study subjects, a total of 102 study subjects were examined with a minimum age of 18 years and a maximum of 54 years. Mean age of the study subjects was 29.9(+ 9.74) years.

96.1% (98) were males and 3.9% (04) were females. Socioeconomic status was measured using Kuppaswamy scale (2012) revealed that majority of the study subjects belonged to Lower/Upper Lower class 76.4% (78). Educational qualification revealed that 56.9% (58) of the study subjects are illiterate.

Tables

1. Demographic characteristics of the study subjects

Variable	Number	Percentage
Gender		
Males	98	96.1
Females	04	3.9
Age group		
18-24	37	36.3
25-34	35	34.3
35-44	19	18.6
45-54	11	10.8
Socioeconomic status		
Upper	00	0.0
Upper Middle	07	6.9
Middle/Lower Middle	17	16.7
Lower/Upper Lower	78	76.4
Lower	00	0.0
Educational status		
Illiterate	58	56.9
Primary school	06	5.9
Secondary school	08	7.9
Higher school	15	14.7
Intermediate	12	11.7
Graduate or Post Graduate	03	2.9
Total	102	100.0

Oral hygiene practices

Out of 101 prisoners, 63(62.4%) prisoners used tooth brush to clean their teeth, 20(19.8%) prisoners used finger to clean their teeth and 18(17.8%) prisoners used neem stick to clean their teeth. In the present study, 61(73.5%) prisoners used tooth paste to clean their teeth, 12(14.5%) prisoners used tooth powder to clean their teeth and 10(12%) prisoners used charcoal to clean their teeth.

Extra oral Examination and Temporomandibular Joint Assessment

The prisoners examined had normal extra oral appearance, and none of the prisoners examined had any symptoms of temporomandibular joint (TMJ) disorder, with no prisoners in the study showing signs of clicking and tenderness on palpation of TMJ.

Oral Mucosal Conditions

Among 102 prisoners 14(13.7%) of them had leukoplakia, 4 (3.9%) of them had Candidiasis and 4(3.9%) of them had abscess and 80 (78.5%) were free from oral mucosal condition. Out of 102 prisoners, 14(63.6%) prisoners had leukoplakia on buccal mucosa, 4 (18.2%) prisoners had candidiasis on tongue, 3 (13.6%) had abscess on alveolar ridges/gingiva and 1(4.6%) prisoners had abscess on buccal mucosa.

Dental Fluorosis

Among 102 prisoners, 54(52.9%) had free from dental fluorosis, 17(16.7%) had Questionable form of fluorosis, 17(16.7%) had very mild fluorosis, 11(10.8%) had mild fluorosis, 2(1.9%) had moderate fluorosis and 1(1%) prisoner was not recorded due to absence of teeth.

Periodontal condition

Periodontal condition was assessed using CPI (community periodontal index); the prevalence of periodontal disease was

93.1% only 5.9% of the prisoners had healthy periodontium. The mean number of sextants per person with healthy periodontium was 0.8, while with calculus it was 3.7.

Periodontal Loss of Attachment

2. Distribution of study subjects according to loss of attachment

Loss of attachment	Number	Percentage
0 mm	82	80.4
4-5 mm	15	14.7
6-8 mm	04	3.9
9-11 mm	00	0.0
12 mm or more	00	0.0
Excluded sextant	01	1.0
Not recorded	00	0.0
Total	102	100.0

The present study showed no periodontal loss of attachment in 82 (80.4%) of the prisoners (Table 2).

Dentition status and Treatment Needs

The prevalence of dental caries among prisoners was 76.5%. Table 3 and 4 shows mean number of teeth/person according to dentition status and treatment needs code.

3. Mean number of permanent teeth per person according to the dentition status code

Dentition status	Mean number of teeth per person
Sound	28.68
Decayed	1.58
Filled, with decay	0.00
Filled, no decay	0.04
Missing as a result of caries	0.50
Missing for any other reason	0.01
Fissure sealant	0.00
Bridge abutment, special crown/Veneer/ implant	0.00
Unerupted tooth	1.10
(crown)/Unexposed root	0.04
Trauma (fracture)	0.00
Not recorded	

Majority of the mean number of teeth per person is sound (28.68), and only 1.58 is the mean decayed teeth per person. (Table 3)

4. Mean number of teeth per person according to treatment required

Type of treatment	Mean number of teeth per person
One surface filling	0.97
Two surface filling	0.20
Pulp Care and restoration	0.30
Extraction	0.15
Need for other care	0.51

The mean DMFT/person in the present study was 2.16(+3.44), mean DT/person was 1.59(+1.58), mean MT/person was 0.52(+3.02), and mean FT/person was 0.05(+0.21).

Prosthetic Status and prosthetic Needs

In the present study, none of the prisoners had prosthesis in the upper and lower jaw. In the present study, 90(88.2%) prisoners required no prosthetic needed in the upper jaw, 8(7.8%)

required one-unit prosthesis, 3(3%) required multi unit prosthesis, 1(1%) required full prosthesis. In the present study, 87(85.3%) prisoners required no prosthetic needed in the lower jaw, 10 (9.8%) required one-unit prosthesis, 3(2.9%) required multi unit prosthesis, 1(1%) required combination of one-and/or multi unit prosthesis 1(1%) required full prosthesis.

education. The prevalence of dental caries was high in the present study with only 23.5% of the prisoners are free from dental caries. The high prevalence (76.5%) of dental caries in the present study is comparable to studies carried out in inmates in District Jail of Mathura City (79%) (Dhanker *et al.*, 2013), in District Jail of Jaipur City (78.7%) (Anup *et al.*,

Table 5. Association between Age group and periodontal condition in study subjects

Age Group	Healthy n (%)	Bleeding n (%)	Calculus n (%)	Pocket 4-5mm n (%)	Pocket >6mm n (%)	Excluded sextant n (%)	Total n (%)
18-24	6(16.2)	2(5.4)	29(78.4)	0(0.0)	0(0.0)	0(0.0)	37(100)
25-34	0(0.0)	0(0.0)	25(71.4)	10(28.6)	0(0.0)	0(0.0)	35(100)
35-44	0(0.0)	0(0.0)	1(5.3)	7(36.8)	11(57.9)	0(0.0)	19(100)
45-54	0(0.0)	0(0.0)	0(0.0)	2(18.2)	8(72.7)	1(9.1)	11(100)
Total	6(5.9)	2(2.0)	55(53.9)	19(18.6)	19(18.6)	1(9.1)	102(100)

$\chi^2 = 67.661$, $df=2$, $p < 0.001$, Statistically significant.

Dentofacial Anomalies (Dental Aesthetic Index)

In the present study of the 102 prisoners, 84(82.3%) of prisoners had no abnormality or minor malocclusion, 15(14.7%) of prisoners had definite malocclusion, 2(2%) of prisoners had severe malocclusion and 1(1%) of labourers had very severe or handicapping malocclusion.

Oral Hygiene Status (Oral Hygiene index-simplified)

The oral hygiene status in the present study was assessed using Oral Hygiene Index-Simplified, Based on oral hygiene index - simplified criteria, 101 prisoners were examined for OHI-S. Among 101 prisoners, 12(11.9%) had good oral hygiene, 55(54.4%) had fair oral hygiene, and 34 (33.7 %) had poor oral hygiene.

Age group and Community Periodontal Index

Table 5. Association between Age group and periodontal condition in study subjects, shows statistically significant association between age group and periodontal condition of the prisoners was seen ($p < 0.05$).

Periodontal condition

The prevalence of deep pocket was found to be high among 45 years above age group (72.7%) as compared to 35-44 years age group (57.9%). In the age group of 35-44 years, the shallow pocket was found to be (36.8%). In the age group of 18-24 years, the calculus was found to be (78.4%). The association between periodontal disease and age group was found to be statistically significant ($p < 0.001$).

DISCUSSION

The present study was conducted to assess the oral health status and treatment needs of prisoners in district jail of Raichur city, Karnataka. In the present study, prisoners of age ranged between 18-54 years, with mean age of 29.9 years constituted the study subjects. The distribution of subjects by gender showed that the study population slightly comprised of more number of males (96.1%) than females (3.9%), which was almost similar to the study carried out in Nigerian (Akaji and Folaranmi, 2013) and in Enugu (Akaji and Ashiwaju, 2014). 76.4% of the prisoners belong to the upper lower socio-economic class as per Kuppuswamy scale (2011). Illiterate prisoners were 56.9%. This shows lack of minimum primary

education. The prevalence of dental caries was high in the present study with only 23.5% of the prisoners are free from dental caries. The high prevalence (76.5%) of dental caries in the present study is comparable to studies carried out in inmates in District Jail of Mathura City (79%) (Dhanker *et al.*, 2013), in District Jail of Jaipur City (78.7%) (Anup *et al.*, 2014) and in prisoners of Lucknow (77.8%) (Singh *et al.*, 2014), but the findings are higher than the prevalence of dental caries among study carried out in prison inmates in Benn city, Nigeria (45%) (Braithmoh *et al.*, 2011), the inmates of central prison, Bangalore (60.7%) (Uma and Hiremath, 2011), prisoners in Enugu (67%) (Akaji and Ashiwaju, 2014). This prevalence of dental caries in the present study is due to the fact that dental caries is a multifactorial disease might be due to poor oral health knowledge and practices among the study population, as the prisoners belonging to the Lower/Upper Lower socio-economic status group. The prevalence of periodontal disease was high in the present study with only 6.9% of the prisoners having healthy periodontium. The high prevalence (93.1%) of periodontal disease in the present study is comparable to studies carried out in Mangalore district prison (97.5%) (Dayakar *et al.*, 2014), Bangalore (95.1%) (Uma and Hiremath, 2011), but the findings are higher than the prevalence of periodontal disease among study carried out in prisoners of Benn city (46%) (Braithmoh *et al.*, 2011). This could be due to the poor oral hygiene status, study participants are illiterate and belonging to the Lower socio-economic status group. Also it could be due to lack of knowledge about the competent practices of good oral hygiene measures as in the present study.

Conclusion

The results of the current study indicate that the prisoners of Raichur jail had high prevalence of periodontal disease and dental caries. It creates alarming need to focus on these risk groups with special emphasis on the factors which are contributing to the poor oral health status. A thorough understanding of the oral health problems of this population and a planned, coordinated, interdisciplinary approach involving a team of specialists between medical, dental and social care sectors is necessary to create oral health awareness, to develop oral health policies and to provide basic oral health services, to reduce the disease burden on this underserved segments of the population.

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REFERENCES

Akaji EA. and Ashiwaju MO. 2014. Oral Health Status of a Sample of Prisoners in Enugu: A Disadvantaged

- Population. *Annals of Medical and Health Sciences Research*, 4(4): 650-653.
- Akaji EA. and Folaranmi N. 2013. Tobacco use and oral health of inmates in a Nigerian prison. *Nigerian Journal of Clinical Practice*, 16 (4):473-477.
- Anup N, Biswas G, Vishnani P, Tambi S, Acharaya S, Kumawat H. 2014. Oral Health Status and Treatment Needs Of Inmates in District Jail of Jaipur City – A Cross Sectional Study. *Journal of Nursing and Health Science*, 3(3): 22-31.
- Braimoh O. B, Sofola O.O. and Okeigbemen SA. 2011. Caries and Periodontal health status of prison inmates in Benin City, Nigeria. *International Journal of Biomedical and Health Sciences*, 7(3): 137-145.
- Dayakar MM, Shivprasad.D, Pai.PG. 2014. Assessment of periodontal health status among prison inmates: A cross-sectional survey. *Journal of Indian Society of Periodontology*, 18(1): 74-77.
- Dhanker K, Ingle NA, Kaur N, Gupta R. 2013. Oral Health Status and Treatment Needs of Inmates in District Jail of Mathura City – A Cross Sectional Study. *J Oral Health Comm Dent.*, 7(1): 24-32.
- Greene J. C. and J. R. Vermillion, 1964. “The simplified oral hygiene index”, *Journal of the American Dental Association*, 68: 7-13.
- Ravi Kumar BP, Dudala SR, Rao AR. 2013. Kuppuswamy’s Socio-Economic Status Scale –A Revision Of Economic Parameter For 2012. *International Journal of Research & Development of Health*, Jan.1(1): 2-4.
- Singh SK , Saha S , Jagannath GV, Singh P. 2014. Dentition Status and Treatment Needs in Prisoners of Lucknow - A Cross Sectional Study. *Indian Journal of Contemporary Dentistry*, 2(1):158-162.
- Uma S.R. and Hiremath S.S. 2011. Oral Health Care for Inmates of Central Prison, Bangalore - An Institutionalized Approach. *Journal of the Indian Association of Public Health Dentistry*, 17(1):1-4.
- World Health Organization, 1997. Oral Health Surveys-Basic Methods, World Health Organization, Geneva, Switzerland, 4th edition.
