

Oral Health Status and Treatment Needs of Inmates in District Jail of Mathura City – A Cross Sectional Study

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ABSTRACT

OBJECTIVES: To assess the oral health status and treatment needs of inmates of, District Jail Mathura.

MATERIALS AND METHODS: A cross sectional study was carried out on the inmates (N=870) in the district jail of Mathura. Proforma related to general demographic information was filled by the examiner and the subjects were clinically examined using WHO 1997 “Oral Health Assessment Form

RESULTS: This study revealed that 92.5% of the inmates were male. 53.8% never visited the dentist & 87% never received any type of dental care during imprisonment. Prevalence of pro- mucosal lesion was 59.8%. Inmates had poor periodontal conditions and 79% inmates had dental caries with mean DMFT of 4.79.

CONCLUSION: Periodontal disease, mucosal lesions and dental caries are major public health problem among the inmates, which require special attention and efforts from government and other organizations to meet their treatment needs.

Keywords: Oral health status, Treatment needs, Jail, Inmates, Prosthesis

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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. Socio-economic status, occupation, education are playing major role in maintenance of good oral health. Access is one of the main barriers of health care delivery system which we want to overcome by primary health care. (1)

Each population group needs different approach for health care. One of the strategies in public health is to identify unique population groups, study their health problems and explore methods for health care. Prisoners make a special group of population as they are different from other people in context of their “freedom of movement”. (2)

The majority of prisoners are those who come from a context already shaped by social exclusion. Among other things, they are likely to be members of an ethnic minority, have limited education and a history of instability, unemployment or underemployment, substandard diet and housing conditions and inferior medical access. (2)

The prisoners are a 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. They are at a higher risk of violence among themselves, which results in

high chronic stress levels, which may deteriorate the physical and mental health. (3) Added to this the facilities available are not up to the satisfactory level and therefore the oral health status of prisoners is affected to a marked extent. (4)

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. (5)

The prison population is a unique and challenging one with many health problems, including poor oral health. The prisoners in jail have a different life style; 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 returning to the general community. (4)

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 inmates of District Jail, Mathura. Considering all these reasons this study was carried out to assess the oral health status and treatment needs of prisoners of District Jail, Mathura.

The present study is a cross-sectional study conducted to assess the Oral Health Status and Treatment needs of Inmates of District Jail, Mathura.

SOURCE OF DATA

Data was collected through a survey which included clinical examination and a questionnaire.

Study group

Those persons, who were sentenced (inmates), were included in the study group.

Information about study group

A total of 870 convicts of the jail aged 18-85 years were examined. Both male and female inmates were included in the study (Male = 805, Female = 65).

Inclusion criteria

- All the inmates who were willing to give the consent were included in the study.
- Inmates who were imprisoned for more than 1 year were included.

Exclusion criteria

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

Sampling methodology

Purposive sampling (6) – Purposively selecting the individuals for the study. The group of individuals who were actually available for the investigations (All the inmates).

Ethical Clearance

Before starting the study, ethical clearance was obtained from the ethical committee of K.D. Dental College, Mathura.

Official Permission

Prior permission was taken from the Superintendent of District Jail, Mathura, to conduct the study among all the inmates. Informed Consent:

Written consent was taken from the inmates before their participation in the study in order to prevent any inconvenience and to obtain their cooperation.

Proforma

The data was recorded on a modified WHO 1997 proforma, which included pre-tested validated questions regarding Education, Occupation, Period of Imprisonment, Oral Hygiene Practices and Dietary Habits, Oro-Mucosal Lesions, Dental Fluorosis, Community Periodontal Status, Dental Caries and Prosthetic Status according to the criteria of modified WHO 1997 proforma. (7)

Training and Calibration of the examiner: Before the starting of the survey, the guide calibrated the investigator regarding the WHO criteria for diagnosing the oral disease. The mean Kappa co-efficient values for intra-examiner reliability with respect to Kappa co-efficient of all the indices used in the WHO Oral Health Assessment format was 0.80.

Training of recording assistant

The examiner was assisted by a recording assistant who was trained to write codes clearly. The instructions were given to the assistant about how to record the data on the assessment form and other entries correctly.

Pilot study

Pilot study was carried before starting the main study to check feasibility of proforma. The data of the pilot study was not included in the main study and the necessary modifications were made in the final proforma.

Details of clinical examination

Armamentarium used included PMT sets, WHO Probe, Disposable Gloves and Mouth Masks, Concentrated Sterilizing Solution, Kidney trays, Recording forms and Pen Torch.

Examination area

The investigator himself carried out the clinical examination throughout the study. The inmates were examined in the hospital of jail. Each subject was made to sit on a chair with examiner standing behind or in front of the chair and the examination was carried out using natural light. All the data was recorded by the recording assistant. The recording assistant was seated in front of the examiner, so that the codes being recorded were seen by the examiner.

Clinical examination

The clinical examination of all the subjects was done by the examiner himself and the data was recorded based on WHO standard criteria.

WHO Oral Health Assessment Form, 1997 (7) was used to collect data from each

subject. These forms have been designed to facilitate examination of all age groups for the assessment of prevalence of oral disease and treatment needs. Standard codes were used for all sections of the form with each code assigned to an oral condition. The codes range from 0 to 9.

Clinical assessment

In order to ensure that all conditions were detected and diagnosed, the clinical examination followed the order of the assessment form.

Referral

Those subjects who were suffering from pain or infection and who needed immediate attention or routine treatment were referred to civil hospital Mathura and those who required specialty treatment were referred to S.N. Medical College, Agra.

Statistical Analysis

The statistical procedure was carried out in 2 steps.

- Data compilation and presentation
- Statistical analysis

Data compilation and presentation

The data obtained was compiled systematically, transformed from a pre-coded proforma to a computer and a master table was prepared. The total data was distributed meaningfully and presented as individual tables along with graphs.

Statistical analysis

Descriptive statistical analysis has been carried out in the present study. Results on continuous measurements are presented on Mean ±SD (Min-Max) and results on categorical measurements are presented in Numbers (%). Significance is assessed at 5% level of significance. (p < 0.05). Chi square and ANOVA tests were used.

Statistical Software

The statistical software namely SPSS 17.0 was used for analysis of the data and Microsoft excel was used to generate results.

Results

A cross sectional descriptive survey was

conducted to assess the oral health status and treatment needs of inmates of District Jail, Mathura city, Uttar Pradesh, India. A total of 870 inmates were examined. The data was collected during the month of August to October 2012.

Distribution of study inmates according to gender

A total of 870 inmates were examined. Out of which 805 (92.5 %) were males and 65 (7.5 %) were females.

Distribution of study inmates according to age groups

The minimum subject age was 18 years while the maximum was 85 years. Majority of the study population i.e. 318(36.6%) belonged to 25 – 34 year and 203 (23.3%) belonged to 35 – 44years age group, with the remaining of 187(21.5%), 100(11.5%), 46(5.3%) and 16 (1.8%) belonging to the 18 – 24 years, 45 – 54 years, 55 – 64 years and 65 and above age groups respectively. Distribution of study population according to literacy status

The education level varied among the inmates with majority of them were illiterate 196 (22.5 %), inmates who studied till primary school were 177 (20.3%), who studied till high school were 168 (19.3%), those who studied till middle school were 160 (18.4%) and 130 (14.9%) were intermediates. On the other hand 3(0.3%) were professionals, 36 (4.1%) were graduates and post graduates.

Distribution of study inmates according to occupation

While questioning, it was found that majority of inmates examined belonged to farmer, shop owner group 226(26.0%), followed by unemployed 161(18.5%), unskilled worker 160(18.4%), Semi skilled workers 159 (18.3%), skilled workers 134 (15.4%). A total of 25(2.9%) and 5(0.6%) inmates were semi-professionals and professionals.

Distribution of study population according to Duration of Imprisonment

Out of 870 inmates, 374 (43%) were in

prison for less than 3 years, 283 (32.5%) for 3 – 6 years, 184 (21.1%) for 6 – 10 years and 29 (3.3%) for more than 10 years. Distribution of study population based on frequency of dental visits

It was found that 468 (53.8%) of the inmates had never visited dentist in their life time and 402 (46.2%) of them had made past dental visits for dental treatments and their problems.

Distribution of study population based on past dental care received

In total inmates, 399 (45.9%) received dental care in their life, whereas 471 (54.1%) never received any kind of treatment.

Distribution of study population based on Dental Care Received during Imprisonment

Among the study population 113 (13%) inmates received dental care during their stay in the prison.

Distribution of the study population based on Oral Hygiene Aids Used

Majority of the study inmates used finger with toothpaste or powder i.e. 373 (42.9 %), 302 (34.7%) used toothbrush with toothpaste/powder and 157 (18%) used neem stick/ datoon to clean their teeth, whereas 38 (4.4%) inmates did not use any aid to clean their teeth.

Prevalence of TMJ Disorders

Out of 870 inmates, 554 (63.7 %) inmates were suffering with problems regarding Temporo - mandibular joint disorder. (Table 1)

Out of 870 inmates, 342(39.4%) reported clicking sound at TMJ, 102(11.7%) reported tenderness at TMJ while opening the mouth and 110(12.6%) inmates were not able to open their mouth more than 30 mm. Whereas 316 (36.3%) were free from TMJ problem. (Table 1)

Prevalence of Oral Mucosal Lesions

The overall prevalence of Oro-mucosal lesions was 520(59.8%), 350(40.2%) of the inmates had no abnormal condition fol-

Table 1: Distribution of Study Population According To TMJ Sign and Symptoms

TMJ Symptoms	Number Of Inmates (N)	Percentage (%)
Absent	316	36.3%
Present	554	63.7%
Total	870	100%
TMJ Signs	Number Of Inmates	Percentage (%)
No Signs	316	36.3%
Clicking	342	39.4%
Tenderness	102	11.7%
Reduction In Opening (<30mm)	110	12.6%
Total	870	100%

lowed by 271(31.1%) with Leukoplakia, 156(17.9%) with ulceration, 31(3.6%) with lichen planus, 35(4%) with candidiasis, 25(2.9%) with acute necrotizing gingivitis, whereas 2(0.2%) were having abscess. (Table 2)

Prevalence of Dental Fluorosis among study population (Dean’s Fluorosis Index)

Among all the inmates (n=870) examined, none was free from dental fluorosis. Mild fluorosis among 510 (58.6%) and moderate fluorosis were present among 242(27.8%) inmates followed by very mild fluorosis among 69(7.9%) and severe fluorosis among 37 (4.3%) inmates.

Periodontal Status (CPI) of the study population according to Duration of Imprisonment

It was found that 222 (59.3%) inmates who had been imprisoned for 1 to 3 years had calculus, 93(24.8%) had shallow pockets, 42(11.2%) had deep pockets and 13(3.4%) were having bleeding on probing.

It was observed that, among the inmates imprisoned for 3 - 6 years, only 3(1.06%) inmates had bleeding on probing with majority having calculus 131 (46.2%), shallow pockets among 82(28.9%) and 65(22.9%) inmates were having deep pockets.

In the inmates imprisoned for 6 – 10years, 76(41.3%) showed the presence of calculus deposits, followed by 53(28.8%), 50(27.1%) inmates exhibiting shallow pockets, deep pockets respectively.

Among inmates imprisoned for more than 10 years, only 4(13.7%) showed presence of calculus deposit, followed by 10(34.4%) and 13(44.8%) inmates exhibiting shallow pockets and deep pockets respectively.

A significant difference in CPI scores (p < 0.05) were observed among the inmates with respect to period of imprisonment (Table 3).

Distribution of loss of attachment scores according to Duration of Imprisonment

Inmates 27((7.2%), 53(14.1%), 106(28.3%) imprisoned for period for 1-3years showed the loss of attachment of 9-12mm, 6-8mm and 4-5mm respectively.

Inmates 26(9.1%), 50(17.6%), 103(36.3%) imprisoned for 3 – 6 years showed loss of attachment of 9-12mm, 6-8mm and 4-5mm respectively.

Around 184 inmates which were imprisoned for 6-10years, among them only 4(2.1%) showed loss of attachment of more than 12mm, 20(10.8%), 45(24.4%) inmates showed loss of attachment of 9-12mm, 6-8mm respectively.

Only 2(6.8%) inmates which were imprisoned for more than 10years showed loss of attachment of 9-12mm, 10(34.4%), 15(51.7%) inmates showed loss of attachment of 6-8mm, 4-5mm respectively.

There was highly statistically significant differences in loss of attachment scores between the inmates imprisoned for different period of imprisonment (p = 0.000) (Table 3).

Prevalence of dental caries among the study population

Out of 870 inmates, 185(21.3%) inmates were free from dental caries. Six hundred and ninety five (78.7%) inmates were suf-

Table 2: Prevalence of Oro- Mucosal Lesions Among the Study Population

Oral Mucosal Lesion	Number Of Inmates (N)	Percentage (%)
No Abnormal Condition	350	40.2 %
Malignant Tumour	00%	00 %
Leukoplakia	271	31.1 %
Lichen Planus	31	3.6 %
Ulceration	156	17.9 %
Acute Necrotizing Gingivitis	25	2.9 %
Candidiasis	35	4.0 %
Abscess	2	0.2 %
Other Conditions	00	00 %
Total	870	100 %
Normal Inmates	Total Inmates	Inmates With Lesions
350	870	870 – 350 = 520 (59.8%)

Table 3: Periodontal status (CPI) of the Study Population According to Duration of Imprisonment

CPI score	Duration of imprisonment (years)				Total
	1-3	3-6	6-10	>10	
0= healthy	0%	0%	0%	0%	00%
1=bleeding	13 (3.4%)	3(1.06%)	0%	0%	16(1.8%)
2=calculus	222(59.3%)	131(46.2%)	76(41.3%)	4(13.7%)	433(49.8%)
3= 4-5mm pocket	93(24.8%)	82(28.9%)	53(28.8%)	10(34.4%)	238(27.4%)
4=pocket6mm or more	42(11.2%)	65(22.9%)	50(27.1%)	13(44.8%)	170(19.5%)
5=excluded	4(1.06%)	2(0.7%)	5(2.7%)	2(6.8%)	13(1.5%)
Total	374(100%)	283(100%)	184(100%)	29(100%)	870(100%)

LOA score	Duration of imprisonment (years)				Total
	1-3	3-6	6-10	>10	
0= 0-3mm	183(48.9%)	103(36.3%)	46(25%)	0%	332(38.2%)
1= 4-5mm	106(28.3%)	103(36.3%)	62(33.6%)	15(51.7%)	286(32.9%)
2= 6-8mm	53(14.1%)	50(17.6%)	45(24.4%)	10(34.4%)	158(18.2%)
3= 9-12mm	27(7.2%)	26(9.1%)	20(10.8%)	2(6.8%)	75(8.6%)
4= >12mm	1(0.26%)	0%	4(2.1%)	0%	5(0.6%)
5= excluded	4(1.06%)	1(0.3%)	7(3.8%)	2(6.8%)	14(1.6%)
Total	374(100%)	283(100%)	184(100%)	29(100%)	870(100%)

fering from dental caries. Inmates 156(17.9%), 150(17.2%), 135(15.5%), 89(10.2%), 48(5.5%) were having caries in their 3, 4, 2, 5, and 6 teeth respectively. (Table 4).

Prevalence of dental caries according to Period of Imprisonment

Two hundred and eighty one (75.2%) inmates imprisoned for 1 -3 years were suf-

fering from caries, followed by 232(82%), 151(82.1%), 21(72.5%), inmates imprisoned for 3-6years, 6-10years, more than 10 years were affected by caries respectively (Figure 1).

Prevalence of teeth with trauma among the study population

Out of 870 inmates, 215(24.7%) inmates were having broken teeth because of

trauma. One hundred six (12.2%) inmates were having 1 traumatic tooth, 95(10.9%) inmates were having 2 teeth broken. Eleven (1.3%), one (0.1%) and two (0.2%) inmates were having 3, 4, 5 traumatic teeth.

Distribution of study population according to Prosthetic Need

In maxillary arch 147(16.9%) inmates needed one unit prosthesis, 127(14.6%) inmates were in need of multi unit prosthesis, 96(11%) needed combination of one and /or multi unit prosthesis, and 15(1.7%) needed full prosthesis. In mandibular arch, the prosthetic need of the inmates were 128(14.7%) for one unit prosthesis, 113(13%) for multi unit prosthesis, 149(17.1%) for combination of one and /or multi unit prosthesis, and 14(1.6%) had need for full prosthesis (Figure 2).

Distribution of study population according to need for Immediate Care

A total of 286 (32.9%) inmates were having life threatening conditions, and needed immediate attention and referral (Figure 3).

Table 4: Prevalence of Dental Caries Among the Study Population

Number of teeth affected by caries	Number of inmates (N)	Percentage (%) (N)
0	185	21.3%
1	85	9.8%
2	135	15.5%
3	156	17.9%
4	150	17.2%
5	89	10.2%
6	48	5.5%
7	15	1.7%
8	0	00%
9	6	0.7%
10	1	0.1%
Total	870	100%

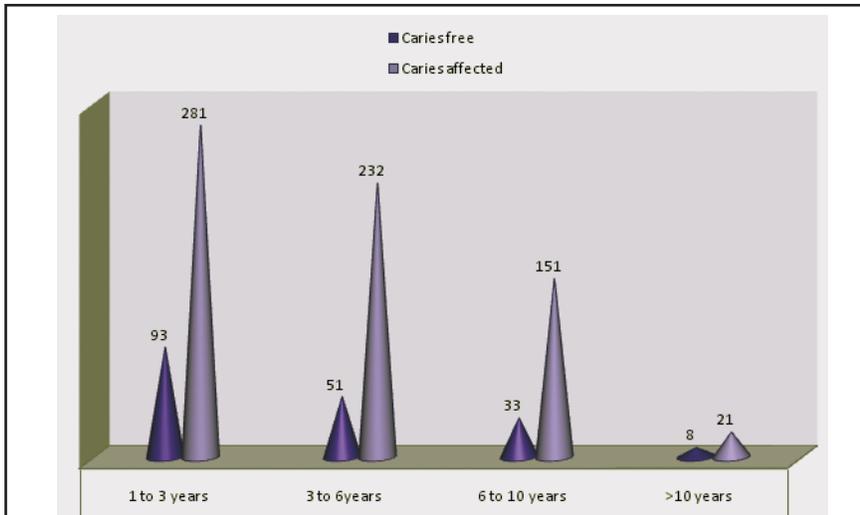


Figure 1: Prevalence of Dental Caries According to Period of Imprisonment

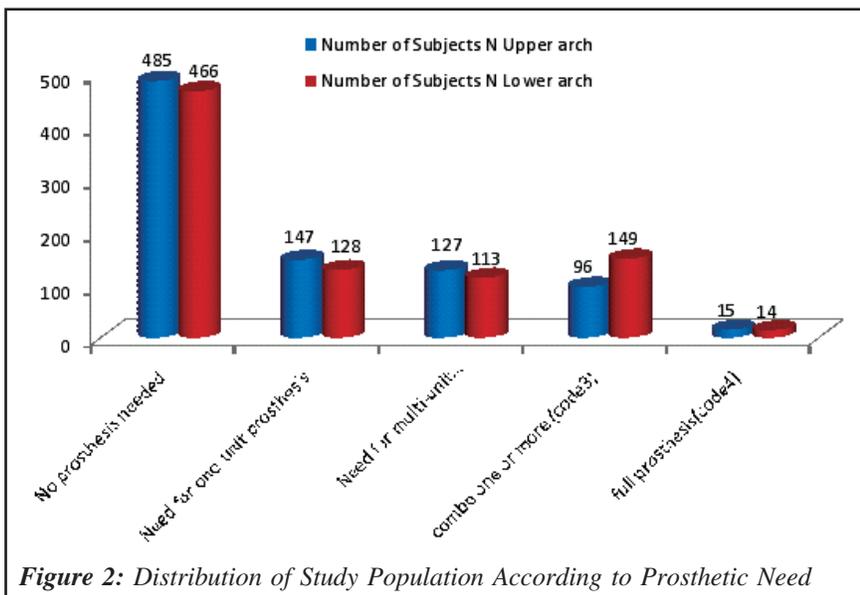


Figure 2: Distribution of Study Population According to Prosthetic Need

Distribution of study population according to treatment needs

Out of 870 inmates, 413(47.5%) and 476(54.7%) inmates need one surface and two surface restoration of decayed tooth. Whereas 256(29.4%), 355(40.8%), 460(52.9%) inmates need pulp care, extraction, and prosthetic replacement respectively (Figure 4).

DISCUSSION

The prison population is a unique and challenging one with many problems, including poor health. Dental diseases can reach epidemic proportions in the prison settings.

The purpose of the present study was to assess the oral health status of the prisoners in the District Jail of Mathura. In particular, their oral health was assessed and specific attention was paid towards their level of unmet dental treatment needs.

The heterogeneity of population was studied and methods of assessment precluded simple generalization, but the pattern appeared to be that the oral health status of inmates was poor.

Demographic Details

Majority of the inmates were illiterate 196(22.5%) and were unemployed or farm-

ers. These findings were in contrast with prison inmates of Central Prison Bangalore by Dr. Uma SR et al. 2011, (8) where majority of prison inmates 764 (58.4%) had achieved more than secondary education. Findings reported regarding education status of Remand Prisoners in Brixton, London (2) and on Institutionalized Older People in North-East Brazil (9) were similar to the present study.

Oral Hygiene Practices

The jail authorities do not provide oral cleaning materials to the inmates, therefore large proportion of 373(42.9%) of the inmates used finger and tooth paste/powder and 302(34.7%) used tooth brush and toothpaste/toothpowder for cleaning their teeth in this study. This shows that they are least concerned about their oral health. The present findings are not similar to the study conducted by Nobile CGA et al(10) which stated that 96% of the population in their study used tooth brush and tooth paste. M. Osborn et al in 2003 (11) observed that 86% of the subjects brushed their teeth using tooth brush and tooth paste. Present study results are quite similar to results reported by Luciene Ribeiro Gaiao et al, 2009 (9) where only 53% study population uses toothbrush as a cleaning aid. This pattern of brushing habit reported is due to study being conducted among older population where most of the study samples were edentulous.

Past dental visits and care

402(46.2%) inmates in our study had visited the dentist out of which 399(45.9%) had received care. Study findings were in accordance with the studies conducted by Nobile CGA et al [2007] (10) (39.15%), Bansal V et al [2010] (12) (36.8%), Osborn M et al [2003] (11) (62%). A study conducted by Jones et al[2002] (13) among Scottish prisons, also revealed the same result i.e. 58.5% prisoners visited the dental surgeon. The reason for the visit in our study may be because of frequent treatment camps being organized in the hospital within the jail premises.

Oral Mucosal Lesions

The prevalence of oral-mucosal lesions has

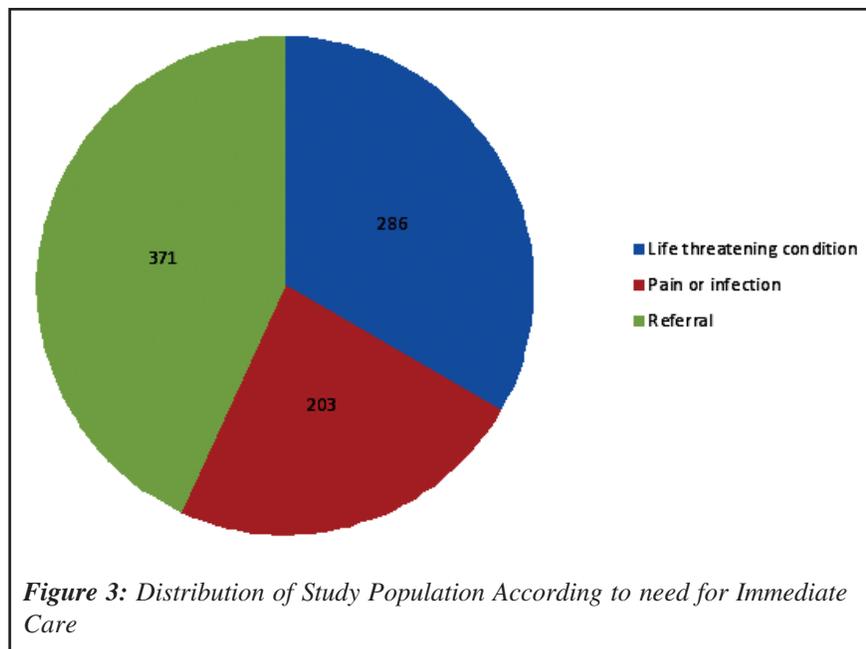


Figure 3: Distribution of Study Population According to need for Immediate Care

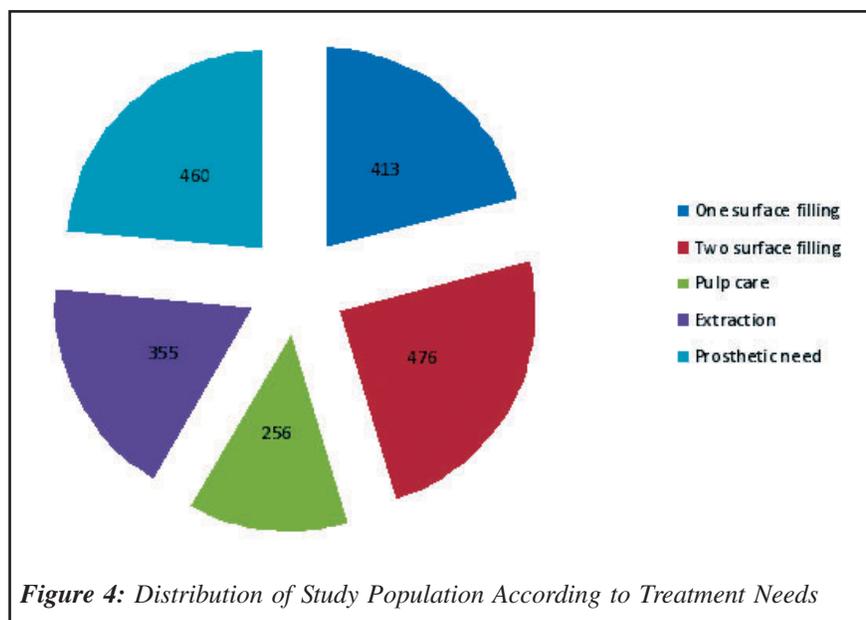


Figure 4: Distribution of Study Population According to Treatment Needs

variation among the inmates. The overall prevalence of oral-mucosal lesions among the inmates of our study was 59.8%. The results of the present study are high compared to the study conducted by *Uma SR and Hiremath SS [2011]* (8) in Karnataka in India. The prevalence of oral-mucosal lesion was 12% in that study. In our study, the most common mucosal lesions were leukoplakia(31.1%). This result is higher comparable to study conducted by *Veera Reddy [2012]* (14) in which the prevalence

of leukoplakia was 1.1%. This might be because of excessive use of tobacco in the Mathura jail, to overcome the stress.

In our study, the prevalence of white lesions were leukoplakia (31.1%) and lichen planus (3.6%), it was in accordance with the study conducted by *Uma SR and Hiremath SS [2011]*. (8) Oro-mucosal conditions and diseases may be caused by local diseases, systemic diseases, drug related reactions or life style factors such as consump-

tion of tobacco, betel chew or alcohol [*Harris CK, 2004*], (15) also other factors trauma, affects of medication and oral and denture hygiene [*Jainkittivong A, 2002*] (16) also play a role in the causation. Periodontal Status (CPI):

It was observed that none of the inmates in the study population had healthy periodontal condition. This was in accordance with the findings by *McGrath C [2002]* (17) and *James H Clare [2002]*. (18) Whereas, *Nobile CGA et al [2007]* (10) found that 10.5% of the study sample had healthy sextants in a study conducted at Italy.

It was observed that 49.8% of the study sample had a CPI score of 2, which was not in agreement with the results obtained by *Barnes GP et al [1987]* (19) who found that 32% of the study subjects had a CPI score of 2. In other study done by *McGrath [200]* (17) among the prisoners in Hong Kong detection centre; periodontal health of prisoner’s was assessed. The majority, 25.5% had a highest CPI score of two. Formation of calculus may be attributed to various factors like negligence of oral health, improper brushing techniques and unavailability of oral hygiene aids [*Uma SR, Hiremath SS, 2011*]. (8)

Approximately 27.4% and 19.5% of inmates had a CPI score of 3 and 4 respectively with gingival pockets 4-5mm and > 6mm. These findings were not in accordance with the study done by *McGrath [2002]* (17) who found that CPI scores of three and four were recorded for 12.27% and 6.13% subjects respectively. In a study conducted by *Cobert et al [2001]*, (20) in Southern China, subjects underwent periodontal examination; few (<1%) had healthy periodontal conditions in the absence of calculus. Most subjects in all age groups scored either calculus (61%) or shallow pockets (34%), and only a small proportion were recorded as having deep pockets (5%). In a study conducted on institutionalized elderly in Hong Kong by *Lo et al [2004]*. (21) The percentage of subjects with CPI scores were 1% (CPI-0), 2% (CPI-1), 41% (CPI-2), 37% (CPI-3) and 20% (CPI-4) respectively.

This may be attributed to a lack of oral health maintenance and also the various types of stressors experienced by the inmates. It proves the fact that these inmates need thorough oral hygiene care by the dental professionals along with good dental health education to improve the existing situation.

Loss of Attachment

In the present study 38.2% of the study population had a loss of attachment score of 0 (0- 3mm). and 32.9% of the inmates had a score of 4-5mm, loss of attachment i.e. code 1. Our study results are not similar to a study conducted by *Thakare V et al [2010]* (22) among institutionalized individuals where she demonstrated that 11.53% of the study subjects had a score of 0 and 64.42% scored 1 in loss of attachment.

The probable reason for poor periodontal health might be associated with oral hygiene practices among the prison inmates and the education attainment among the prison inmates was poor. Majority of prisoners were not educated.

Caries Prevalence

Dental caries experience was measured as the number of decayed, missing or filled permanent teeth (DMFT) using the WHO Dentition Status and Treatment Need.

The prevalence of dental caries in our study was 78.7% with the mean DMFT of 4.79. *Nobile CGA et al [2007]* (25) observed a mean DMFT score of 9.8 and the caries prevalence of 91.2% which is not in accordance to present study. Present study results are also not similar to other studies conducted by *ME Salive and Carolla JM [1989]* (23) where the prevalence of caries was found to be 95%. Study conducted by *Naidoo S et al [2005]* (24) reported a mean DMFT of 15.45 which was very high compared to the present study. In the study by *MA Cunningham et al [1985]* (25) they reported a mean DMFT of 10.53 and *Victor Badner [1994]* (26) in his study obtained a mean DMFT of 9.9. *McGrath C [2002]* (17) reported a mean DMFT of 22.5. In study conducted by *E. Heidari et al [2007]* (2)

among Brixton prisoners, they had a mean DMFT of 14.2. *Hiremath V P [2009]* (27) reported mean DMFT of 5.22 which was in accordance with the results of the present study. This prevalence of dental caries in the present population is due to the fact that dental caries is a multi-factorial disease influenced by many factors including life-style factors, type of diet, lack of oral hygiene measures and cultural factors before coming to the jail. Inmates depend on prison authorities to arrange dental care. The high prevalence due to the fact that untreated dental decay is greater in prison population [*Lars Moller et al, 2007*]. (28) The high prevalence may be attributed to the low utilization of preventive and therapeutic dental services and inadequate dental personnel for the prison inmates.

Treatment Need

In the present study 44.3% inmates need prosthesis in the maxillary arch and 46.4% inmates need prosthesis in mandibular arch which was not in contrast to study done by *Uma SR and Hiremath SS [2011]*. (8) Among the inmates it was observed that 14.6% in maxillary and 13% in mandibular arch need more than one tooth replacement, while 1.7% and 1.6% required complete denture in maxillary and mandibular arch respectively. This can be due to high incidence of caries and periodontal disease. With increasing age, attitudes towards oral health and their care seeking behaviors and the limited options of treatment modalities [*Smith. J. M, 1980*]. (29)

In our study 78.7% inmates required restorations, 29.4% required pulp care whereas 40.8% inmates needed extraction of grossly decayed teeth. In results reported by Scottish prison's Dental Health Survey by *Jones et al [2002]*, (30) where 31% inmate's needs restorative care and 28.8% required endodontic treatments and in another study conducted by *Heidari et al [2007]* (2) in HMP Brixton, London reported very high need for restorative care among prisoners was reported. These findings were found to be in accordance to the present study.

In the present study, it was found that 286(32.9%) inmates were suffering from

life threatening conditions like leukoplakia etc and required referral to the hospital having dental settings as they required urgent treatment.

Prisoners have significantly greater oral health needs than the general population. Many prisoners are unemployed before being sentenced and come from communities with a high level of social exploitation. The demand for prison dental services has continued to increase in last few decades, especially because the numbers of inmates have increased and hence, there is the need to be more responsive to their clinical needs.

The normative needs should be converted into a demand for dental care which involves rising the perceived need. To lead a good quality of general health it is necessary to have good oral health which is contributory to the general health of the individual. It is necessary to improve the health of the inmates since they are available during the incarcerated period as stated by *T Marshall [2001]*. (31)

LIMITATIONS OF THE STUDY

- The major limitation of the study was its cross sectional nature, which limited our ability to relate the time pattern with the risk factors and their complications.
- More refined and informational results could be obtained if the present study inference would be compared with non prisoner population, questioned and examined by the same codes and criteria.

CONCLUSION

Providing access to appropriate dental care for the underserved segments of the population is a complex problem that will not be solved easily. Preventive measures to improve dental care and provision of dental health education are very much necessary to ensure optimum oral health among the inmates. It is imperative that the specific barriers to care for each group are identified and understood.

The results of the current study indicate

that the inmates of Mathura Jail had high prevalence of dental caries, oral mucosal lesions, poor periodontal status and varying degrees of dental fluorosis. 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.

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