

Dental Caries Status and Treatment Needs in a Prison Setting at Ferozpur City

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ABSTRACT

BACKGROUND: The present survey was carried out to assess the dental caries status and treatment needs among the jail inmates, which would be helpful in planning suitable oral health care services in a prison setting.

METHODS: A descriptive cross-sectional study was performed on a population of 338 prisoners (males-256, females-82) in the Central Jail, Ferozpur, India. Clinical data were recorded using WHO Oral Health Assessment Form (1997) for assessing dental health status. The data were analyzed using the SPSS version 15.0 with Student's t-test and ANOVA test.

RESULTS: The prevalence of dental caries was 92.6% with a higher prevalence among female inmates. The mean scores of decayed missing filled teeth (DMFT) increased with advancing age. Around 24.3% of the inmates had root caries and the most common required dental procedure was restorations along with extraction.

CONCLUSION: The prison population had high prevalence of dental caries and regular dental care should be provided to this community to improve their dental health status.

Keywords: Dental caries; Treatment needs; Jail inmates

INTRODUCTION

Prisons in India are often overcrowded, stressful, hostile and sometimes violent areas in which individuals from generally poor communities, certain ethnic backgrounds, and minorities are overrepresented. Many prisoners are unemployed before being sentenced and come from communities with a high level of social exclusion. Their lifestyles are more likely to put them at risk of ill health [1]. The numbers of prisoners have dramatically increased over the last two decades. Several factors have contributed to this, including poverty, migration, violence and the fact that increased incarceration is often politically expedient [2]. Prisoners tend to have poorer physical, mental and social health than the general population. The socio economic class from which these inmates and pre-trial detainees originate have a poor oral hygiene and poor dietary choices [3]. With an increase in the number of sentenced

offenders, the demand on prison dental services has continued to increase. Prisoners' dental health needs are comparatively high compared with the population outside prison, and providing appropriate dental services is an essential part of prison health services [4]. Tooth decay or dental caries is the most common chronic disease in correctional facilities [5].

Primary care is the foundation of prison health services. The commitment of dentists and the dental team is central to the future of dentistry within the prison service. Due to lack of baseline data, it is virtually impossible to determine the prevalence of dental caries in this community. Therefore, the goal of this study was to provide baseline data on prevalence of dental caries among prison inmates in an Indian jail.

METHODS

Simple random sampling method was used to select 338 inmates from the Ferozpur Central

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Jail who underwent an Oral Health Survey developed by the Department of Public Health Dentistry of Genesis Institute of Dental Sciences and Research, in January 2013. The standard deviation age of the inmates was 33.5 ± 3.3 years.

Official permission: An official permission was obtained from the institute before beginning the survey. The purpose of the study was informed and explained to the prisoners and a written informed consent was obtained from all participants.

Pilot study: A pilot study was performed on 20 subjects to determine the appropriateness and feasibility of the survey. It helped to determine sample size and to evaluate the required time period to assess each subject. The prevalence of dental caries in the pilot study was 83%. The intra examiner and inter examiner reliability was assessed using weighted kappa statistics, which was 88% and 92% for DMFT, respectively.

Oral examination: The examiners conducted oral examinations using a standardized protocol following the guidelines described by the WHO Oral Health Assessment Form (1997) [6]. Dental caries status was measured as the number of DMFT score 1 (decayed) and 2 (filled with secondary decay) in dentition status was considered as decayed teeth, score 3 as filled teeth and score 4 as missing teeth. Dental caries experience was averaged over the whole sample and expressed as mean DMFT.

Methodology: The oral examination of the participants was conducted under natural day light. The examination of dental caries was made using explorer and a mouth mirror (Type III examination) and about 12-14 inmates were screened per day.

Statistical analysis: We used Statistical Package for the Social Sciences version 15.0 for the analysis of the data. Data comparisons were performed by applying Student's t-test and ANOVA test to determine the statistically significant difference between the groups. A difference was considered to be statistically significant if $p < 0.05$.

RESULTS

The prevalence of DMFT was 89.8%, of which decayed teeth (DT) were present in 92.6% prisoners; missing teeth (MT) in 25.4% and filled teeth (FT) in 19.5%.

The standard deviation number of decayed teeth per person was 3.08 ± 2.04 , mean number of missing teeth per person was 0.28 ± 0.65 and mean number of filled teeth per person was 0.19 ± 0.53 . Overall, DMFT among the prisoners was 0.93 ± 0.27 . When compared by gender, female prisoners had higher number of decayed and filled teeth whereas male inmates had higher number of missing teeth, as shown in Table 1. There was a significant difference for DT component in all four age groups, with more common prevalence of caries in older inmates. Similarly, mean score of missing teeth was higher among older age groups, whereas FT component was mostly seen among younger age groups. Overall, DMFT scores increased with advancing age which was 0.87 ± 0.29 among 20 to 29 year age group and 0.96 ± 0.28 among inmates older than 50 years (Table 2).

The overall prevalence of root caries in the study population was 24.3% and it ranged from a maximum frequency of 32.5% among 30-39 years age group to minimum frequency of 17.7% among 20-29 years age group as mentioned in Table 3.

Of the 338 inmates examined: 36.7% subjects required one surface filling, 30.8% subjects required two or more surface fillings, 8.4% subjects required crown, 0.4% subjects required veneer / laminate, 38.4% subjects required pulp

Table 1: Distribution of mean DT, MT, FT and DMFT according to gender (Student's t-test)

| Charact-eristics | Sex | No | Mean | SD | P-value |
|------------------|--------|-----|------|------|---------|
| Decayed teeth | Male | 256 | 2.83 | 1.63 | 0.046 |
| | Female | 82 | 3.92 | 2.44 | |
| | Total | 338 | 3.08 | 2.04 | |
| Missing teeth | Male | 256 | 0.39 | 0.72 | 0.016 |
| | Female | 82 | 0.16 | 0.35 | |
| | Total | 338 | 0.28 | 0.65 | |
| Filled teeth | Male | 256 | 0.16 | 0.48 | 0.047 |
| | Female | 82 | 0.29 | 0.51 | |
| | Total | 338 | 0.19 | 0.53 | |
| DMFT | Male | 256 | 0.92 | 0.29 | 0.178 |
| | Female | 82 | 0.97 | 0.28 | |
| | Total | 338 | 0.93 | 0.27 | |

Table 2: Distribution of mean DT, MT, FT and DMFT according to age (ANOVA test)

| Characteristics | Age groups | No | Mean | SD | p-value |
|-----------------|------------|-----|------|------|---------|
| Decayed teeth | 20-29 | 124 | 2.74 | 1.53 | <0.001 |
| | 30-39 | 83 | 2.24 | 1.15 | |
| | 40-49 | 63 | 3.13 | 1.15 | |
| | ≥50 | 68 | 3.64 | 2.63 | |
| Missing teeth | 20-29 | 124 | 0.15 | 0.69 | 0.18 |
| | 30-39 | 83 | 0.22 | 0.79 | |
| | 40-49 | 63 | 0.35 | 0.67 | |
| | ≥50 | 68 | 0.36 | 0.45 | |
| Filled teeth | 20-29 | 124 | 0.22 | 0.53 | 0.37 |
| | 30-39 | 83 | 0.20 | 0.40 | |
| | 40-49 | 63 | 0.13 | 0.34 | |
| | ≥50 | 68 | 0.31 | 0.54 | |
| DMFT | 20-29 | 124 | 0.87 | 0.29 | 0.51 |
| | 30-39 | 83 | 0.91 | 0.29 | |
| | 40-49 | 63 | 0.94 | 0.34 | |
| | ≥50 | 68 | 0.96 | 0.28 | |

care and restoration, 18.9% subjects required other procedures like removal partial dentures and fixed partial dentures and most of the participants (44.3%) required extractions.

DISCUSSION

Primary oral health care is the most effective element of health care in any public health system (WHO 1978) [6] and should be available to every prisoner [7]. As prisoners require most dental health care procedures, it is important to give priority to such cases in order to prevent further complications.

The present study showed the prevalence of dental caries in the jail inmates of Ferozpur as 92.6% which was similar to the study conducted by Reddy et al in Karnataka inmates [8]. Clare [9] observed that there was a substantial reduction in dental caries among prisoners who

had been in prison continuously for three years due to the availability of dental health services to them that facilitated the restoration of decayed teeth, extraction of mobile teeth, etc.

The number of missing teeth observed was less in the present study, which was in contrast to the study by Reddy et al where they observed more number of extractions which might be due to fewer facilities available for the conservation of teeth [8]. In the present study, females had higher number of decayed and filled teeth and the results were comparable with Reddy et al [8] study among life-imprisoned inmates in central jails of Karnataka and Heng et al among female inmates in 2002 [10]. As females had higher number of decayed teeth, the chances of restoration were more among them as observed in these studies [8, 10].

In the present study, we found comparatively lesser prevalence of DMFT than other studies in prison premises [11, 12], which can be attributed to the differences in diet pattern among the inmates in the different regions. However, prevalence was higher than in the general population in other areas [13, 14]. It is observed in previous data that most inmates were less educated, unemployed, and from lower social classes [15], and it is generally recognized that people from lower social classes have lower use of preventive dental services [16]. Similar results were obtained by Reddy et al in central jails of Karnataka and other UK prison studies [8, 17, 18]. However, Mixson et al, 1990 and Salive et al, 1989 reported a higher number of missing teeth in their study among prisoners, reflecting a previous dental trauma [19, 20].

The present study observed restoration as the most common treatment need whether it is one surface or two surface followed by extraction. These perceived needs were more than that of the general population and were consistent with the findings of Heidari et al study among remand prisoners in Brixton [5].

However, Reddy et al had shown higher unmet treatment needs as 48.1% of prisoners needed one surface filling, 39.5% required two or more surface fillings and 62.1% needed extraction [8]. The reason why more inmates required complex treatments compared with present data may be due to the absence of regular prison dental services.

The provision of dental health care services in prison premises is a frustrating experience for dentists and presents many difficulties, including concerns about threats to personal safety and inability to move freely [21].

Table 3: Prevalence of root caries among study population

| Age in years | No. of persons examined | Prevalence of root caries | |
|--------------|-------------------------|---------------------------|-------|
| | | No | % |
| 20-29 | 124 | 22 | 17.7% |
| 30-39 | 83 | 27 | 32.5% |
| 40-49 | 63 | 14 | 22.2% |
| ≥50 | 68 | 19 | 27.9% |
| Total | 338 | 82 | 24.3% |

CONCLUSION

The oral health status of the prisoners in the present study was poor as compared with the general population in different areas. The inmates had a higher prevalence of decay and fewer filled teeth which indicate less availability of dental procedures. Prisons may provide a prime opportunity to treat individuals with limited access healthcare and to address inequality in health by means of specific health interventions.

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