Prevalence of Periodontal Diseases and Oral Hygiene Practices among Drug Addicted Inmates

Karanprakash Singh[1], Shikha Baghi Bhandari[2], Chitra Anandani[3], Pinaka Pani[4], Shivani Kansal[5], Harshvardhan Chaudhary[6]

[1]Senior lecturer, Genesis Institute of Dental Sciences and Research, Ferozepur, India. [2]Reader, Genesis Institute of Dental Sciences and Research, Ferozepur, India. [3]Senior lecturer, College of Dental Sciences & Research Centre, Ahmedabad, India. [4]Reader, Genesis Institute of Dental Sciences and Research, Ferozepur, India. [5]Lecturer, Genesis Institute of Dental Sciences and Research, Ferozepur, India. [6]Senior lecturer, College of Dental Sciences & Research Centre, Ahmedabad, India.

Abstract

Purpose: Inspite of high prevalence of dental problems, limited studies have been conducted among prisoners. Therefore the present study aimed to assess the relation of periodontitis with respect to different factors among this population.

Methods: The study sample consisting of 192 drug addict male subjects with mean age of 39.46 ± 2.28 years. A self administered structured questionnaire validated through a pilot survey, using WHO Oral Health Assessment Form (1997) was prepared. Periodontal status was assessed by using CPI probe. Chi-square and ANOVA test were used to find the significance of difference at p value < 0.05.

Results: The information gathered regarding oral hygiene practices showed that most of the subjects (36.60%) used finger and powder to maintain their oral hygiene. The overall prevalence of periodontal diseases was high with common occurrence of shallow and deep pockets. Karl Pearson's correlation also showed a linear relationship of age with periodontal diseases (CPI & LOA).

Conclusion: There is an attentive need of oral health care programmes as the standard of periodontal health observed among inmates is low, and eventually the respondents will be returning to the community.

Key Words: Periodontitis, Treatment needs, Adverse habits, Inmates

Introduction

Oral health is integral to general health and is one of the valuable assets not only for an individual but also for the social system. Despite great achievements in the oral health of populations globally, problems still remain in many communities around the world, particularly among the disadvantaged and socially marginalized groups (WHO oral health report 2003) [1]. Prisoners constitute one of the disadvantaged group as these people are solitary confined for long duration and hence are socially and economically deprived from the community. Prison population is unique and challenging with many oral health problems. Dental diseases can reach epidemic proportions in the prison setting [2].

The inmate population in India has increased faster over the years as there has been shift towards a more penalizing response to crime, resulting in longer sentences. The National Crime Bureau Report in 2010 suggested that the number of prisoners in the country is estimated to be 3,68,998 whereas capacity in jails is 3,20,450 [3].

Hence the overcrowding, violence and isolation may have an impact on both general as well as oral health status of inmates [4]. Furthermore most of them had been already involved in adverse habits like drug addiction and developed mental health problems due to its withdrawal symptoms. Drug abuse results in various individual and social consequences and takes a heavy toll in terms of severe health complications [5]. It also modifies the behaviour and lifestyle of the person. Moreover factors like nutritional status, tobacco consumption, poor oral hygiene, stress, negligible dental visits are linked to a wide range of periodontal diseases forming the fundamental basis of the common risk factor [6].

Psychological factors are also considered as the most common cause of development of parafunctional habits like bruxism; nail biting, tongue thrusting etc. which in turn can affect the periodontium. Hence inmates are more vulnerable to periodontal diseases due to the above mentioned factors [7]. Various studies have been done on the oral health conditions of the general population [8,9]. But limited data published regarding oral health status of prisoners [10], may be due to lack of dental staff in the prison setting. Hence this study has been done to assess the prevalence of periodontal diseases among this population.

Methodology

Study population

An epidemiological survey was conducted from January to March 2013 at Central Jail of Ferozepur, India. The total study population of the jail was around 1170 and around 210 were in the de addiction Centre. Those who agreed to participate in the survey and had been involved with habits like alcoholism, tobacco consumption, drug addiction were taken in the study. Prisoners who were uncooperative and were suffering from other systemic disorders like cardiovascular problems were excluded. Hence the study comprised of 192 male inmates aged above 25 years from the de addiction Centre in Jail with a response rate of 92%.

The mean age was 39.46 ± 2.28. Official permission was obtained from the Head of the Institute and jail authorities before conducting the study and a written informed consent was obtained from all the participants.

Proforma

A self administered structured questionnaire validated through

Corresponding author: Dr. Karanprakash Singh, Public Health Dentistry, Genesis Institute of Dental Sciences and Research, Ferozepur, India; e-mail: drkarankahlon@gmail.com

a pilot survey, consisting of 3 sections:

(1) Information regarding general demographic variables;

(2) Questions regarding oral hygiene practices;

(3) Assessment of the periodontal status using WHO Oral Health Assessment Form (1997) [11].

Examination

The oral examination of the subjects was conducted under natural day light using standard explorers, mouth mirrors and CPI probes which took on an average 5 to 6 minutes to complete the examination (Type III Examination). The intra-examiner reliability for various recordings ranged from 0.90 to 0.96. Proper sterilization was maintained during the examination.

Data analysis

The Statistical software namely SPSS version 16.0 was used for the analysis of the data. Chi-square and ANOVA test were used to find the significance of difference among different age groups at p value <0.05. Karl Pearson's correlation was used to assess the relationship of age with periodontal diseases.

Results

A total of 192 drug addicted inmates participated in the survey and were categorized into three groups depending on their age. The information gathered regarding oral hygiene practices among the participants showed that 30.30% subjects used tooth brush with tooth paste, 36.60% used finger and powder, and 28.70% used chew sticks whereas 4.40% infrequently cleaned their teeth (*Figure 1*).

The overall mean number of sextants for bleeding component was 1.68 ± 1.549, that of calculus 1.59 ± 1.625, for shallow pockets (4-5 mm) 0.92 ± 1.156 and for deep pockets (6mm or more) 0.30 ± 0.682. The distribution of mean number of sextants according to age groups showed that as the age advances bleeding scores declines whereas calculus and pocket formation increases significantly (*Table 1*).

Similarly, a significant difference with highest Loss of attachment was observed in different age groups. Maximum number of subjects between the age group of 25-34 years (77.10%) had no loss of attachment. Loss of attachment of 4-5 mm was seen more among 35-44 year age group i.e. 19.40% whereas loss of attachment of 6-8mm, 9-11mm and 12 mm or more were found more in the oldest age group (≥45 years) i.e. (25.00%), (14.30%) and (3.60%) respectively (*Figure 2*). *Table 2* shows a linear relationship of age with Community Periodontal Index (CPI) and Loss of Attachment (LOA) using Karl Pearson's correlation coefficient (p = 0.000).

Discussion

Epidemiological studies have shown that aggressive or early-onset periodontitis might affect less than 1% of the most upper class populations but can be more common in lower socioeconomic groups [12].

The current study population is mostly from the lower socioeconomic group which is deprived from the society. So their isolated environment makes them more depressed which affect the systemic as well as oral health of the body and problems like periodontitis become more prevalent. This study is the first to present information about periodontal health among drug addicted inmates.

The majority of the participants belonged to age group of 25-34 years with overall mean age of all the subjects was 39.46 ± 2.28 years and the observations were similar to other studies done by Reddy et al. (2012), Brijender et al. (2006) and Jagadeesan et al. in 2003 [13].

Almost all the participants in the present study had been involved in the adverse habits such as substance use and tobacco consumption. However the prevalence of drug or alcohol consumption found to be approximately 70% among inmates in Canada [14]. Heidari et al. found its usage in 83% of remand prisoners in London [15]. The higher prevalence of adverse habits in the present data could be due to the selected sample as it was taken from the de addiction Centre from the jail. Other reason could be of unwillingness to report about drug addiction when surveyed.

According to oral hygiene behaviour, most of the prisoners used finger & powder (36.6%) which is comparable to Punitha et al. study in 2011 among rural children. The similarity could be because of lower level of knowledge in young age especially in rural regions [8]. The percentage of chew stick users was 28.7% which was much lower than Bhat et al study among tribal community [9]. It could be due to less availability of sticks in the jail premises. And twigs of the arak tree (S.persica) had been used for centuries as oral hygiene tools. So the tribal population is still having the same attitude towards oral health [16]. But it was also observed that the participants do oral hygiene practices only for namesake as most of them are illiterate and show little concern for cleanliness.

The jail inmates showed pocket formation of 4-5 mm and 6mm or more as 0.92 ± 1.156 and 0.30 ± 0.682 respectively. Where as Singh et al found higher scores of mean sextants among prisoners at Lucknow jail in 2012. It could be due to more prevalence of adverse habits among people residing in Lucknow area than the present study locality [10].

However other study conducted by Jain et al (2009) has shown higher score for 4-5 mm pockets and lower for 6 mm or more pockets [17]. Similarly many studies have shown lower scores than the present findings [18-20], which may be due to many factors as the inmates had experienced many adverse substances. And the withdrawal symptoms increase the stress level that affects periodontal health.

Regarding loss of attachment, 19.40% of the population in the present study suffered from loss of attachment of 4-5 mm followed by 13.90% having 6-8 mm and 5.60% having 9-11mm. These findings are more than those conducted by Bali RK et al. (2003) among Indian population of similar age

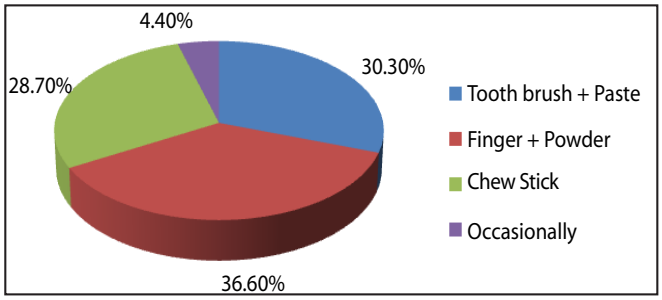
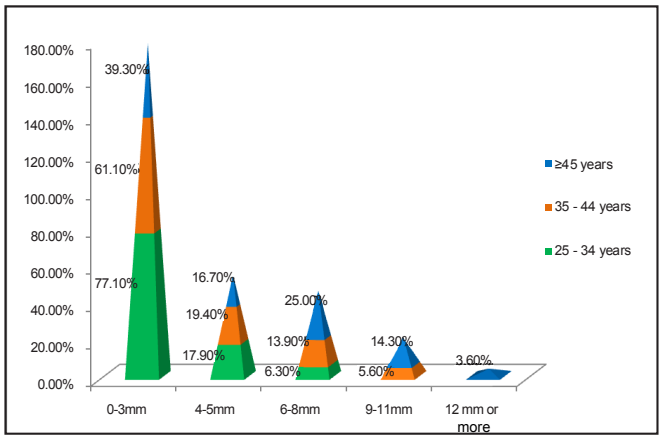


Figure 1. *Distribution of study population according to oral hygiene practices.*

Table 1. *Distribution of mean number of sextants affected by periodontal disease according to age groups using ANOVA test.*

Age groups	No	Bleeding		Calculus		Pocket (4-5mm)		Pocket (6mm or more)	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
25 – 34 years	75	2.15	1.774	1.08	1.318	0.40	0.610	0.08	0.279
35 – 44 years	63	1.42	1.339	2.06	1.866	0.72	0.974	0.33	0.632
≥ 45 years	54	1.21	1.166	1.86	1.580	2.07	1.303	0.64	1.026
Total	192	1.68	1.549	1.59	1.625	0.92	1.156	0.30	0.682
F value		**4.182**		**4.449**		**29.191**		**6.601**	
P value		**0.018***		**0.014***		**0.000***		**0.002***	



χ 2 = 18.540, df =15, p = 0.018 (*significant)*

Figure 2. *Distribution of study population with highest percentage of Loss of Attachment according to age groups.*

Table 2. *Correlation of age with Community Periodontal Index (CPI) and Loss of Attachment (LOA).*
** Correlation is significant at the 0.01 level (2-tailed)*

	Age	Code CPI	Code LOA
Pearson Correlation	1	0.400(*)	0.321(*)
Sig. (2-tailed)		0.000	0.000

group (35 to 44) years, which could be because of poor quality of life among this community [21]. Overall loss of attachment in this study was more than Singh SK et al findings [10]. It could be due to habit of using chew sticks among the subjects that leads to recession.

According to Reddy et al 66.3% of inmates had poor oral hygiene status; 39.3% had a CPI score of 2 and 48.6% had a CPI score of 3 or 4; 30.1% of inmates had a loss of attachment (LOA) score of 1 or 2 (more than 4 mm) and 1.7% of inmates had a score of 4 [22].

Moreover, high correlation has been documented between age and the progression of periodontal disease, in which the greatest pocket depth scores were in the older prisoners. [15]. This possibility may be due to ignorance of dental care as people think that any how teeth will become loose with advancing age [9].

Additionally, all the negative factors of health lead to malnutrition and making them more susceptible for infections. Moreover, a high percentage of the study population accounted dependency on drugs, and this may impact on oral health as a result of the high levels of dental anxiety, and avoidance of dental treatment reported amongst drug users. This susceptibility coupled with poor oral hygiene, leads to a higher prevalence of periodontal diseases which has been well documented in other studies also [22-26].

Conclusion

The results of the present study emphasized a need for special attention from government sector and other health organizations to meet the basic oral health needs of this community as high prevalence of periodontitis was observed which ultimately showed positive correlation with lack of oral hygiene practices, deprivation of social life, and poor nutrition and overall quality of life in the jail setting. Also oral health care programmes should be organized for prisoners in order to educate them regarding proper oral hygiene practices.

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