Original Article

Assessment of oral health status and treatment needs of drug abusers in Bhubaneswar city: A cross-sectional study

ABSTRACT

Introduction: Oral health of drug abusers has received less attention. Drug users may also have special needs in relation to receiving dental care. Evaluation of the oral health status of drug abusers is important as in India, where the disease burden is enormous, and availability of curative treatment is quite inadequate, preventive approach shall prove to be better than curative treatment.

Aim: To determine the oral health status and treatment needs of drug abusers residing in rehabilitation centers in Bhubaneswar.

Materials and Methods: A cross-sectional study was conducted in the drug de-addiction cum rehabilitation centers in Bhubaneswar city, Odisha. A self-administered questionnaire was used to record oral health practices of the inmates and the type of drugs used by them in the past. Oral health was recorded using modified WHO 2013 pro forma. Mann–Whitney U-test and Kruskal–Wallis test were applied to find any significant differences between different variables in groups.

Results: All the participants were male and alcohol was the most commonly used drug, followed by tobacco and ganja. The horizontal brushing technique was the most widely used technique. Mean decayed, missing, and filled teeth (DMFT) score was recorded to be 1.48. Leukoplakia, acute necrotizing ulcerative gingivitis, candidiasis, and ulceration were among the few oral lesions found in the inmates. Around 67.66% of inmates exhibited erosion of the enamel surface, while 6.59% had signs of enamel fracture. Statistically, significant difference was found for the types of drugs used and DMFT score and type of drug used and dental erosion.

Conclusion: Oral health status of drug users is poor and needs immediate attention. Oral health education needs to be imparted among them. The government needs to enforce the establishment of dental clinics in these centers so that the oral health of these people can be taken care of.

Keywords: Drug, erosion, leukoplakia, oral health

INTRODUCTION

Drug abuse is a disorder characterized by repetitive drug use that results in social or economic distress and is often associated with medical problems. The term drug commonly refers to psychoactive/psychotropic drugs, which are agents that have the potential to affect the central nervous system and to temporarily alter the mood, behavior, perception, and cognition of an individual.[1] These drugs might be illicit or licit. Illicit drug is a psychoactive substance, the production, sale, or use of which is prohibited. On the other hand, a licit drug is a drug that is legally available by medical prescription in the jurisdiction in question, or, sometimes, a drug legally available without medical prescription.[2]

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According to the national survey on the extent and pattern of substance/drug use in India (national drug use survey) in 2019, alcohol is the most commonly used psychoactive substance. About 14.6% of the population (between 10 and 75 years of age) uses alcohol. Cannabis and opioids are the next commonly used substances in India.[3] There is a growing number of drug addicts in Odisha. In the State, 40% of kids use inhalants and <15% of children use heroin. The National Integrated Biological and Behavioural Surveillance 2014–2015 had revealed that children as young as 14 years of age start their first drug use in Odisha.[4] In Bhubaneswar, children involved in rag picking, shoe shining, working as coolies, working in shops and restaurants, roadside vending, cleaning, and washing utensils in hotels for their survival are often found as drug addicts.[4]

Medical complications of drug use that are relevant to dentistry include abscesses at injection sites, viral hepatitis, Human Immunodeficiency Virus, endocarditis, and anesthesia complications.[5] Oral health problems are among the most prevalent health problems associated with drug addiction.[6] Drug abuse has both direct and indirect consequences for oral health and can exacerbate oral problems indirectly through its adverse effects on the users' behavior and lifestyle. Drugs abused adversely affect the oral soft and hard tissues (dental caries, periodontitis) or may lead to potentially malignant states (leukoplakia, oral submucous fibrosis) or may predispose to oral infections (candidiasis, gingivitis) by compromising local immunity.[7]

The oral health of drug abusers has received less attention. Drug users may also have special needs in relation to receiving dental care. Evaluation of the oral health status of drug abusers is important as in India, where disease burden is enormous, and availability of curative treatment is quite inadequate, preventive approach shall prove to be better than curative treatment. Clinician's awareness level about the oral health status of drug users is very low owing to the unavailability of sufficient data related to the overall oral health status of drug abusers in our country. Information on the underlying pathological processes, signs, and symptoms of oral diseases associated with drug abuse may help clinicians to identify drug abusers from patient-reported symptoms and thus facilitate a more comprehensive and multidisciplinary prevention approach to the management of addictions. Thus, the present study was conducted to determine the oral health status and treatment needs of drug abusers residing in rehabilitation centers in Bhubaneswar.

MATERIALS AND METHODS

A cross-sectional study was conducted in the drug de-addiction cum rehabilitation centers in Bhubaneswar city, Odisha. A list of 9 drug rehabilitation centers in Odisha was obtained from the Department of Social Security and Empowerment of Persons with Disabilities. Universal sampling technique was followed. All inhabitants of the de-addiction centers who volunteered and gave their consent were included in the study, while participants with mental health disabilities who were forbidden to participate in the study by their psychologists or counselors were excluded from the study.

A self-administered questionnaire was used to record oral health practices of the inmates and the type of drugs used by them in the past. The questionnaire was tested for its face validity and content validity in the department of Public health dentistry by the dental professionals, after which it was translated into the local language. It was then back-translated to English by another individual having knowledge of both the languages. The questionnaire was pilot tested on 10% of the study population. Item analysis was carried out to test for the internal consistency and reliability, and the Cronbach's alpha was found to be 0.76, which depicted acceptable reliability. Oral health was recorded using modified WHO 2013 pro forma. Data collection was carried out from October 2019 to November 2019.

The study subjects were briefed about the nature and purpose of the study, after which informed and written consent were obtained from the participants. Clinical examination using mouth mirror, explorer, and Community Periodontal Index of Treatment Needs probe was performed on a total of 167 inmates by the chief investigator in the presence of a recording assistant who was trained and calibrated in the department. Following the clinical examination, the subjects were asked to fill in the details of their oral hygiene and substance use in the questionnaire. One center was covered in each visit, where a maximum of 25 inmates were examined in a day.

Ethical clearance was obtained from the Institutional Ethics Committee, KIMS, KIIT University.

Statistical analysis
The collected data were analyzed using SPSS version 21.0 (IBM SPSS statistics for windows, version 21.0, Armonk, NY, USA: IBM Corp). Because the data did not follow a normal distribution, Mann–Whitney *U*-test and Kruskal–Wallis test were applied to find any significant differences between different variables in groups. The level of statistical significance was set at 0.05, with a confidence interval of 95%.

RESULTS

All the participants were males. Majority of the participants resided in the urban area and had spent ≥11 years but ≤15 years of their lives in school. Table 1 depicts the sociodemographic data of drug users.

Alcohol was the most commonly used drug by the inmates, followed by tobacco and ganja [Figure 1].

Majority of the participants used toothbrushes for cleaning their teeth, with horizontal technique being the most widely used technique. Most of them cleaned their teeth once daily and toothpaste was the most widely used medium. The oral health practices of the inmates are depicted in Figure 2.

The mean decayed, missing, and filled teeth (DMFT) score was recorded to be 1.48. 46.11% of inmates had pockets of depth 4 mm to 5 mm. Loss of attachment of 6 mm to 8 mm was found in 27.54% of the inmates. Ninety inmates didn't have any oral lesion present at the time of examination. Leukoplakia, acute necrotizing ulcerative gingivitis, candidiasis, and ulceration were among the few oral lesions found in the inmates. Oral health status of the drug users is depicted in Table 2.

Around 113 (67.66%) inmates exhibited erosion of the enamel surface, 27 (16.17%) exhibited dentinal erosion, while 27 (16.17%) inmates did not show any signs of erosion. None of the participants exhibited erosion, approximating pulp [Figure 3]. Majority of the inmates had no signs of any dental trauma and only 11 (6.59%) inmates had signs of enamel fracture at the time of examination [Figure 4].

Majority of the inmates didn't suffer from any forms of enamel fluorosis [Figure 5].

Statistically, significant difference was found between the two age groups of inmates and corruption perceptions index (CPI) score, loss of attachment, and dental erosion (0.04, 0.01, and 0.05, respectively). Furthermore, statistically significant difference was found for the types of drugs used and DMFT score and type of drug used and dental erosion (0.02 and 0.001, respectively) [Table 3].

DISCUSSION

Majority of the inmates in the present study belonged to the age group 18–30 years. All the inmates were males. McGrath and Chan had reported that out of the total drug inmates, 112 were men and 7 women aged between 15 and 25 years.[8] Unemployed inmates were found to be the maximum drug

Table 1: Sociodemographic profile of drug abusers

Sociodemographic variables	*n* (%)
Age (years)	
≤18	4 (2.40)
>18 and ≤30	77 (46.10)
>30 and ≤40	56 (33.53)
>40 and ≤50	20 (11.98)
>50	10 (5.99)
Occupation	
Professional	17 (10.18)
Semi-professional	12 (7.19)
Clerical	45 (26.95)
Skilled	12 (7.19)
Semi-skilled	5 (2.99)
Unskilled	11 (6.59)
Unemployed	65 (38.92)
Years in school	
≥16 and ≤20	34 (20.37)
≥11 and ≤15	81 (48.5)
≥6 and ≤10	42 (25.15)
≥5	10 (5.99)
Location	
Urban	127 (76.05)
Peri-urban	40 (23.95)
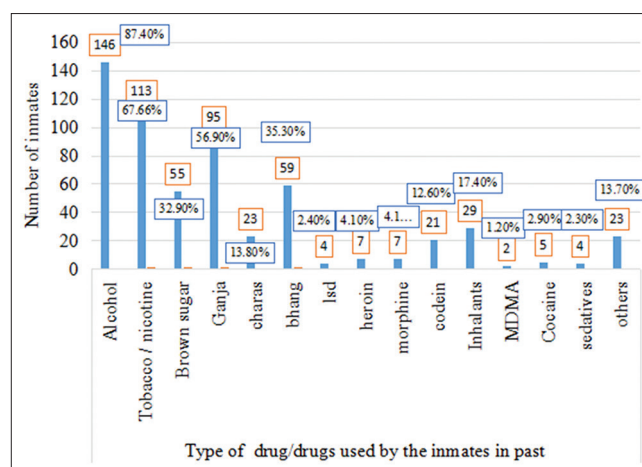
Figure 1: Type of drugs used by the inmates in the past

users. Around 48.5% had spent more than or equal to 11 years to 15 years in school in the present study. Adedigba *et al*. reported that the majority of the subjects belonged to the age group 21–30 and secondary education was the highest level of education.[9] Majority of the inmates in the present study belonged to the urban areas.

Alcohol was the most widely abused drug and the use of polydrug was more common among the inmates. This was in agreement with the findings of Adedigba *et al*., where alcohol was the widely used drug.[9] However, this was in contrast to the findings by McGrath and Chan where all the inmates were polydrug users and the most widely used drug was methamphetamine (speed).[8]
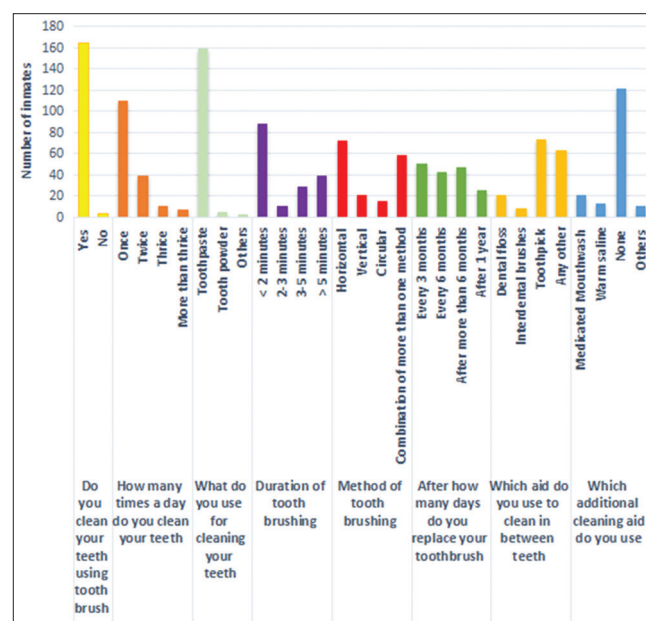
Table 2: Oral health status of drug abusers

	Drug users (*n*=167)
DMFT, mean±SD (range)	1.48±2.17 (0-16)
Decayed teeth, mean±SD (range)	1.2±1.99 (0-16)
Missing teeth, mean±SD (range)	0.14±1.56 (0-4)
Filled teeth, MEAN±SD (range)	0.08±4.74 (0-4)
Periodontal status	
CPI highest score, *n* (%)	
Healthy periodontium	76 (45.51)
Bleeding only	8 (4.79)
Shallow pocket (4 mm-5 mm)	77 (46.11)
Deep pocket (≥6 mm)	6 (3.59)
LOA highest score (mm), *n* (%)	
0-3	62 (37.12)
4-5	37 (22.15)
6-8	46 (27.54)
9-12	19 (11.38)
≥12	3 (1.80)
Oral mucosal lesions, *n* (%)	
No abnormal condition	90 (53.89)
Malignant tumor (oral cancer)	0
Leukoplakia	23 (13.77)
Lichen planus	2 (1.19)
Ulceration	16 (9.58)
Acute necrotizing ulcerative gingivitis	13 (7.78)
Candidiasis	9 (5.38)
Abscess	2 (1.19)
Other condition	12 (7.18)
Presence of denture, *n* (%)	
Upper arch	
No denture	165 (98.80)
Partial denture	2 (1.20)
Lower arch	
No denture	164 (98.20)
Partial denture	3 (1.80)
Prosthetic needs, *n* (%)	
Upper arch	
No prosthesis needed	160 (95.81)
Need for 1 unit prosthesis	2 (1.20)
Need for multi-unit prosthesis	3 (1.80)
Need for a combination of 1 and/multi-unit prosthesis	2 (1.20)
Lower arch	
No prosthesis needed	154 (92.22)
Need for 1 unit prosthesis	6 (3.59)
Need for multi-unit prosthesis	3 (1.80)
Need for a combination of 1 and/multi-unit prosthesis	4 (2.40)
Intervention urgency, *n* (%)	
No treatment required	3 (1.80)
Preventive or routine treatment needed	9 (5.39)
Prompt treatment (including scaling) needed	104 (62.28)
Immediate treatment (urgent) needed	49 (29.34)
Referred for comprehensive evaluation or medical/dental treatment (systemic condition)	2 (1.20)

SD: Standard deviation, DMFT: Decayed, missing, and filled teeth, CPI: Corruption perceptions index, LOA: Loss of attachment

Around 98.20% of inmates brushed their teeth using toothbrush and 65.86% cleaned their teeth once daily. Rooban *et al.* reported a similar finding where the maximum drug abusers brushed their teeth once daily.[10] Hossain *et al.* reported that in their study, the drug addicts followed an incorrect frequency (once/three/more than three times a day) of teeth cleaning.[11] Toothpaste was most commonly used for cleaning teeth. Around 52.69% of inmates brushed their teeth for <2 min and horizontal brushing technique being the most commonly used technique of tooth brushing. Most of them replaced their toothbrush in every 6 months. The toothpick was the most commonly used interdental cleaning aid and around 73.05% of inmates did not use any mouth rinse or warm saline for oral prophylaxis. Ye *et al.* reported that 70.99% of participants brushed their teeth at most once a day, while only 29.01% brushed their teeth twice or more often a day and 75.31% brushed for 1–2 min.[12] Only 38.27% of participants in their study rinsed their mouths with tap water after every meal.[12]

The mean DMFT score was found to be 1.48, with mean decayed, missing, and filled teeth (FT) score being 1.2, 0.14, and 0.08, respectively. Ye *et al.* reported the mean decayed teeth, missing teeth (MT), FT and DMFT scores in the former meth abuse population were 2.72 ± 2.78, 3.07 ± 3.94, 0.33 ± 1.03, and 6.13 ± 5.20.[12] Gupta *et al.* in a similar study reported that mean decayed, filled and MT scores were 2.49, 0.98, and 0.01, respectively, while the mean DMFT score was found to be 3.48.[13] Around 46.11% of inmates had shallow pockets and nearly equal number of inmates had healthy periodontium. This may be attributed to the fact that the majority of the inmates belonged to the younger age group, were well educated and


Figure 2: Oral health practices among drug abusers

Table 3: Association between demographic variables and type of drug abused with various oral health status components

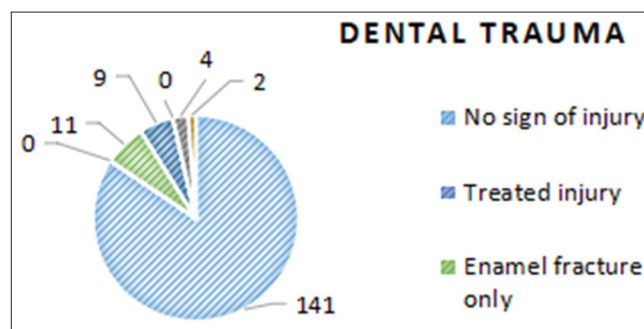| Demographic variables and drug abused	Oral health status			
	DMFT	CPI score	Loss of attachment	Dental erosion
Age (years)				
<30	0.12[+]	0.04*,[+]	0.01*,[+]	0.05*,[+]
>30				
Years in school				
≤10	0.39[+]	0.25[+]	0.38[+]	0.91[+]
>10				
Occupation				
Rank less than or equal to skilled worker	0.63[+]	0.9[+]	0.61[+]	0.41[+]
Rank greater than a skilled worker				
Location				
Urban	0.82[+]	0.09[+]	0.68[+]	0.07[+]
Peri-urban				
Drug used				
Alcohol	0.02*,[¥]	0.71[¥]	0.04*,[¥]	0.001*,[¥]
Tobacco				
Ganja				
Bhang				
Brown sugar				
Others				

*Significant at $P<0.05$, [+]Mann–Whitney *U*-test, [¥]Kruskal–Wallis test. DMFT: Decayed, missing, and filled teeth, CPI: Corruption perceptions index
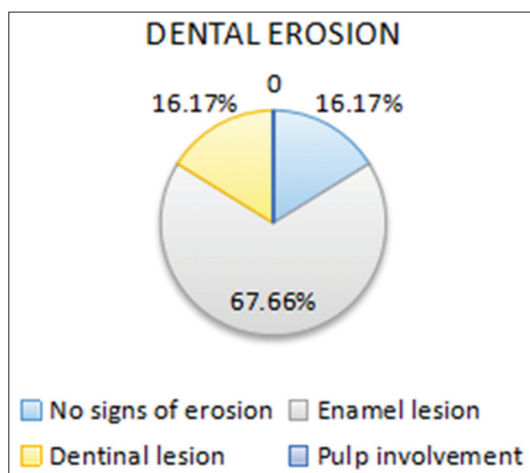
Figure 3: Depicts the status of dental erosion among the inmates

Figure 4: Depicts the status of dental trauma among the inmates

had awareness regarding oral hygiene. However, the poor periodontal status is because most of these inmates were ignorant toward oral health care, especially during their period of drug abuse. Gupta *et al*. reported that 44% of participants had shallow pocket and 34% had loss of attachment (0–3 mm), which was similar to the finding of the present study.[13]

Enamel erosion was the most common form of erosion found, while 84.43% showed no signs of dental trauma. Age was found to have an association with CPI score, loss of attachment, and dental erosion. DMFT score and dental erosion were found to be associated with the type of drugs used.[14] Opiates, marijuana, and cocaine have been found to be affecting periodontal health and also lead to dental caries[15] Drugs such as alcohol, hallucinogens cause xerostomia, which is another etiological factor for higher caries occurrence.[15]

Majority of the inmates did not have any forms of fluorosis. Majority of the inmates did not have any prosthesis in their upper or lower arches; however, few inmates required prosthesis in their upper or lower arches. Ye T *et al*. reported that the total overall rate of dental prosthetic restoration was 8.54%.[12]

Around 62.28% of inmates required prompt treatment as an intervention.

The study had both strengths and limitations. As self-administered questionnaire was used, the chances of interviewer's bias were eliminated. The first limitation was the less sample size. Second, the duration of drug abuse in the past and the duration of their stay in de-addiction centers
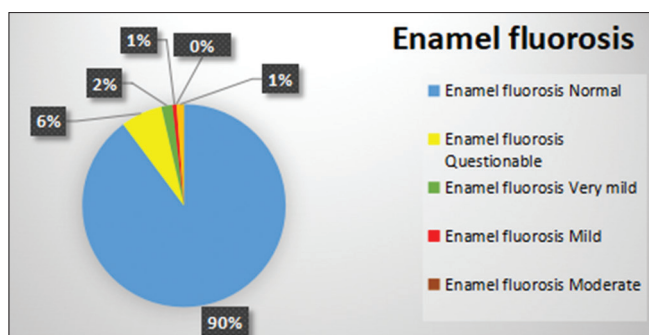
Figure 5: Depicts the status of dental fluorosis among the inmates

were different, which may affect the results. The mind-set of the inmates in the de-addiction phase would have greatly influenced their reporting.

CONCLUSION

The oral health status of drug users is poor and needs immediate attention. Oral health education needs to be imparted among drug users. The government needs to enforce the establishment of dental clinics in these centers so that the oral health of these people can be taken care of.

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Nil.

Conflicts of interest
There are no conflicts of interest.

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