Original Article

Oral health status and treatment needs of substance abusers in Western Uttar Pradesh

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Abstract:

Background: Substance abuse has often associated with high caries, poor periodontal health, and altered functioning of the individual. The substance abuse may be natural or synthetic in origin, both causing deleterious effect on the oral and overall health of the individual. Aim: To assess the oral health status and treatment needs of substance abusers attending deaddiction centers in Western Uttar Pradesh. Materials and Methods: A cross-sectional study was conducted among 220 substance abusers from 6 randomly selected deaddiction centers. The subjects were divided into four groups: Group 1, alcohol (A); Group 2, nicotine (N); Group 3, alcohol + nicotine (AN); and Group 4, other drugs (O). A demographic record along with full-mouth examination was recorded based on the World Health Organization pro forma. Results: The overall results showed that out of the total participants, 144 had oral mucosal lesions. Alcohol group had significantly higher mean community periodontal index code 3 (pockets 4–5 mm) than the other groups (P < 0.05). The prevalence of decayed, missing, filled teeth (DMFT) was 83.33%, and the mean DMFT of the alcohol group was significantly higher than the other combinations group (P < 0.01). Conclusions: The oral health status of substance abusers was poor, with a large number of oral mucosal lesions. The dental caries status and periodontal status were the worst among the alcohol group.

Key words: Community periodontal index, decayed, missing, filled teeth index, dental fluorosis, oral health status, substance abusers

INTRODUCTION

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Substance abuse” is a disorder characterized by repetitive drug that results in physical, mental, spiritual, social, or economic distress and is often associated with medical problems. The use of dependence-producing substances has a hedonic effect and its habit is so insistent that it dominates the lifestyles of the individual and damages his or her quality of life or may even cause actual harm to the individual or the community.[1] Substance abuse has infiltrated all sociocultural and economic strata causing loss of productivity,[2] and the commonly abused drugs are narcotics, cannabis, stimulants, hallucinogens, and depressants.

Due to limited resources available for treatment there is need to develop services that can reach the maximum number of individuals and have maximum impact at lower cost. This could be achieved with broad community-based health-care services that can work with individuals in their own communities over longer period of time.[3]

The World Health Organization (WHO)[4] estimated that about 2 billion people worldwide consume alcoholic beverages and 76.3 million have diagnosable alcohol disorders and 2.3 million deaths (3.8%) are caused by alcohol and a loss of 69 million (4.5%) of disability-adjusted life years.[5] However, long-term consequences including liver damage, kidney damage, and hearing loss have been reported.[6–10]

Nowadays, drug abuse and drug dependence is showing an increasing trend. The problem has often been associated with the processes of urbanization and modernization. India is a developing country and in the phase of these processes and trends of drug abuse and dependence needs to be watched.[11] In India,
alcohol and cannabis were known drug abuse but now synthetic and psychotropic substance abuse are never.[12]

Tobacco is the most easily accessible addictive substance which contributes significantly as a major risk factor for oral diseases. India is the second largest consumer of tobacco products and the third largest producer of tobacco in the world. The prevalence of smoking in men is 19%, while among women is 2%. Whereas, the prevalence of tobacco use is 42.4% and 14.2% for men and women respectively.[13]

Psychological effects and the personality changes are evident in the abuser which may affect the patient/dentist relationship as they take a reduced interest in seeking and paying for dental care.[14] Previous studies demonstrated high caries prevalence, poor gingival health, poor motivation, and oral hygiene practices with drug abusers.[15-17] Very little research today addresses drug user’s oral health; however, there is a wealth of information on the epidemiology, medical complications, and needs of drug users.[15,12,16]

Hence, an attempt has been made to assess the oral health status and treatment needs of substance abusers in Western Uttar Pradesh (UP).

**MATERIALS AND METHODS**

A cross-sectional study was conducted to assess the oral health status and treatment needs of substance abusers in Western UP. The data were obtained from the abusers attending the deaddiction centers. A total of 220 patients, both male and females, varying from 15 to 65 years were included in the study.

**Inclusion criteria**

The subjects who were present on the day of examination and were willing to participate were included in the study. The subjects who were not willing to sign the consent, subjects suffering from medically compromised conditions, or subjects suffering from acute pain were not included in the study.

**Study design**

A cross-sectional study which included 220 patients, both male and females, was conducted in the deaddiction centers of Western UP to assess the oral health status and treatment needs of substance abusers.

The ethical clearance was obtained from the Institutional Ethical Committee (EC/321). Written informed consent was obtained from the participants or their attendees before carrying out the examination, which was in accordance with the World Medical Association’s Declaration of Helsinki.[19]

**Method of collection of data**

Two hundred and twenty patients from 12 deaddiction centers in six zones of Western UP were randomly selected. The survey was conducted over a period of 4 months. The drug abuse of the participants was recorded and participants were divided into four groups: Group 1, alcohol abuse (A); Group 2, nicotine abuse (N); Group 3, alcohol with nicotine abuse (AN); and Group 4, other drug abuse such as over-the-counter drugs (O). They were then further clinically examined for oral health status. The groups were clinically examined and the data collected were recorded.

**Clinical examination**

The clinical examination was performed after seating the patient on the chair. The WHO oral health assessment form[20] was recorded by the examiner (Y. G). Demographic details of all the patients were noted by the same examiner using mouth mirror and CPI probe.

**Statistical evaluation**

Statistical analysis was done using SPSS software version 21.0. IBM Inc., Chicago, USA. Chi-square test was applied to find the association between various variables. The continuous variables were analyzed and expressed in descriptive statistics such as mean and standard deviation. The level of significance was set at 5% (P < 0.05) for all the observations.

**RESULTS**

Oral health status and treatment needs of substance abusers including males and females having age group of 15 to 65 years were divided into 4 groups: Group 1, alcohol abuse (A); Group 2, nicotine abuse (N); Group 3, alcohol with nicotine abuse (AN); and Group 4, other drug abuse (O), depending on the type of substance abuse.

Graph 1 shows the extraoral condition of the substance abusers. The Graph 1 demonstrates that among 220 participants, 145 (65.90%) had normal extraoral conditions, whereas only 75 (34.07%) had some form of extraoral findings. The most common findings were the ulceration, sores, erosion, and fissures along vermilion border, accounting to be in 11.36% of participants. The other findings were ulcerations/sores/erosions/fissures in the nose, cheek, and chin region; ulcerations/sores/erosions/fissures in the commissures; and enlarged lymph nodes of the head and neck region.

In Table 1, the distribution of dental fluorosis has been demonstrated. Among the substance abusers, 98 (44.54%) subjects had no fluorosis, 47 (21.36%) individuals had questionable fluorosis, 36 (16.36%) had very mild fluorosis,
21 (9.54%) had mild fluorosis, and 4 (1.81%) individuals had severe fluorosis. The maximum substance abusers showed normal dentition, i.e., no fluorosis belonged to the age group 15–25 years (6.81%), 26–35 years (25%), 46–55 years (6.81%), and 56–65 years (3.63%), whereas 36–45 years individuals were reported to demonstrate 25% out of 220 cases of very mild fluorosis.

Distribution of substance abusers based on CPI (modified) gingival bleeding and pocket scores is shown in Table 2. Out of the total, 35.45% demonstrated absence of gingival bleeding (Score 0), 19.54% had presence of gingival bleeding (Score 1); whereas abusers based on scores for pocket were 11.36% individuals with score 0, 22.27% individuals had score 1, 51.36% individuals had score 2. Among the 220 substance abusers, the distribution of CPI (modifies) for gingival bleeding score for age group 15–20 years, 26–35 years, 36–45 years, 46–55 years and 56–65 years was 9.09%, 11.36% and 4.54%, 0.09% and 4.54%, 2.27% and 3.63% cases of score 0 and 4.54%, 2.27% and 3.63% cases of score 1, respectively. Whereas, the distribution of CPI (modified) for pocket score for age group 15–20 years, 26–35 years, 36–45 years, 46–55 years, and 56–65 years was 2.72%, 4.54%, 2.72%, 0.9%, and 0.45% cases of score 0; 4.09%, 11.36%, 3.63%, 2.27%, and 0.9% cases of score 1 and 6.81%, 25%, 5.45%, 11.36% and 2.72% cases of score 2, respectively.

It was also seen that the alcohol group had mean CPI code 3 as well as code 4 significantly higher than all other groups (P < 0.05) [Table 3].

Table 4 shows the distribution of oral tissues health, including dentition status and oral mucosal lesions. Among the total substance abusers, the dentition status was as follows: 14.09% had sound teeth, 10.45% had caries, 11.36% had filled w/caries (filled with caries), 12.27% had filled teeth, 12.27% had filled teeth with no caries, 11.81% had missing due to caries, 7.72% had missing for any another reason, 8.18% had fissure sealant, 9.09% had fixed dental prosthesis/crown abutment, veneer, implant, 9.09% had unerupted, and 5.90% had not recorded. The distribution of substance abusers based on oral mucous lesion shows that 28 (12.72%) had no abnormal condition, 29 (13.81%) had malignant tumor, 25 (11.36%) had leukoplakia, 25 (11.36%) had lichen planus, 23 (10.45%) had ulceration, 20 (9.09%) had acute necrotizing ulcerative gingivitis, 22 (10%) had candidiasis, 19 (8.63%) had abscess, 9 (4.09%) had other conditions, and 10 (4.54%) had not recorded.

The distribution of substance abusers based on mean treatment of one surface filling, two surface filling, two or more surface filling, pulp care, and extraction score per person is shown in Table 5. The mean treatment need of one surface filling score per person for 15–25 years was 1.68 ± 0.86, 26–35 years was 1.24 ± 1.03, 36–45 years was 1.77 ± 0.77, 46–55 years was 2.01 ± 0.42, and 56–65 years was 0.80 ± 0.81. Whereas, the mean treatment need of two or more surfaces filling score per person different age groups was 1.05 ± 0.94 (15–25 years), 0.68 ± 0.80 (26–35 years), 0.67 ± 0.84 (36–45 years), 1.51 ± 1.14 (46–55 years), and 0.73 ± 0.85 (56–65 years). The mean treatment pulp care and restoration score per person for 15–25 years was 0.58 ± 0.82, 26–35 years was 0.45 ± 0.77, 36–45 years was 0.38 ± 0.69, 46–55 years was 0.94 ± 0.90, and 56–65 years was 0.64 ± 0.87; however, the mean treatment extraction scores per person were 0.35 ± 0.70, 0.09 ± 0.33, 0.06 ± 0.33, 0.82 ± 0.90, and 0.19 ± 0.57 for the age groups 15–25 years, 26–35 years, 36–45 years, 46–55 years, and 56–65 years, respectively.

There was statistically significant difference (P < 0.001) noted among substance abusers on mean treatment need per person in relation to age for one surface filling scores, two or more surface filling scores, pulp care scores, and extraction scores. Details of subjects reporting loss of attachment, dental erosion, dental trauma and treatment urgency is described in [Table 6].

**DISCUSSION**

In India, substance abuse has been a traditional activity with the use of charas and bhang right from ancient times. Alcohol abuse and tobacco use is a very common practice among the monarchs of India. However, in the recent decades, an increase in drug abuse in various segments of the society has risen alarmingly, with a recent report showing that 11.35 million Indians were addicted to drugs.[21]

Tobacco smoking is an aggregating factor for periodontal diseases and is also known to be the most common etiology for oral cancer. However, the oral diseases such as dental caries, traumatized teeth, periodontal diseases, oral cancer, recurrent oral ulceration, and oral carcinomas are most commonly reported to be with alcohol abusers.[1,2]

Without baseline data regarding the oral health status of the population of India, comparisons between addicts and nonaddicts are extremely difficult as well as within the different group of addicts. Different studies have used alternative methods such as community periodontal index (PI) of treatment needs index and Russell’s PI to assess periodontal status, but the data obtained are not comparable.[1,22]

The present cross-sectional study was conducted with the objective to determine the oral health status and treatment needs of substance abusers, who were attending the deaddiction centers in western UP. A total

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### Table 1: Distribution of dental fluorosis among different age groups

| Age (years) | Normal | Questionable | Very mild | Mild | Moderate | Severe | Exclude |
|------------|--------|--------------|-----------|------|----------|--------|---------|
| 15-25      | 15     | 5            | 3         | 2    | 0        | 0      | 0       |
| 26-35      | 55     | 25           | 5         | 5    | 10       | 0      | 0       |
| 36-45      | 15     | 10           | 15        | 0    | 3        | 2      | 0       |
| 46-55      | 15     | 5            | 10        | 14   | 0        | 0      | 1       |
| 56-65      | 8      | 2            | 3         | 0    | 0        | 2      | 0       |
| Total      | 98     | 47           | 36        | 21   | 13       | 4      | 1       |
The present study demonstrated that the overall prevalence of periodontal diseases was found to be 81.7%. CPI modified score 0 (Healthy) was observed among 11.36% of the subjects. The presence of calculus was the major finding (51.36%), followed by gingival bleeding (22.27%) among the subjects. There was a significant condition ($P < 0.001$) between periodontal status and age. Most of the subjects from younger age groups were having bleeding from gums and calculus, while pockets were more common among old subjects. The results were in accordance with Pilinová et al.,[16] Bhaskar et al.,[17] and Pourhashemi et al.[23] that the overall periodontal health was poor among the abusers.

The dentity status varies between our study and the previous studies by Mateos-Moreno et al.[24] and Bhaskar et al.[11]

The study conducted by Rooban et al.[17] reported at least on oral mucosal lesion in 49% of the drug abusers whereas in present study drug abusers had leukoplakia and ulceration is 11.36% and 10.45% abusers respectively. Our study reported 96 lesions constituting 22.5%, which may be due to the association with the increased permeability of basal layers of the mucosa in alcoholics as well as the action of the various metabolites of other drugs such as tobacco and cannabis.\[1,25]\n
It was reported that treatment needs of study subjects were as follows: 65 teeth require one surface fillings at the age of 15-25 years, 54 teeth require two surface fillings at the age of 15-25 years, 48 teeth required pulp care and restoration and 42 teeth were indicated for extractions which is not in accordance with the study by Bhaskar et al.[11]

Recommendations

A multisectorial initiative is required, involving Health and Medical Education Department and dental community to highlight the issue of poor oral health and its detrimental consequences on quality of life of substance abusers. Nongovernment organizations should be encouraged to provide the abusers with a constant source of dental health education. A timely referral and management of substance abusers with oral problems would reduce the burden of oral diseases. However, efforts must be established early in life to avoid deleterious oral habits and continually reinforced through constant vigilance by both professionals and parents.

CONCLUSION

The oral health status of the substance abusers is poor with a high prevalence of oral mucosal lesions and the dental caries status and periodontal status was the worst among the alcohol group. Therefore, appropriate preventive measures such as periodic dental health education and dental checkup as well as regulatory measures should be implemented. A vocational rehabilitation must be financed and supported at all De-addiction centres such as training in tailoring or computer courses to reintegrate the dead addicted persons into social mainstream. It is suggested that all DDCs should be supervised periodically by government authorities.

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Nil.
Table 4: Distribution of oral tissues health among different age groups

| Age groups (years) | 15-25 | 26-35 | 36-45 | 46-55 | 56-65 |
|-------------------|-------|-------|-------|-------|-------|
| Dentition status  |       |       |       |       |       |
| Sound             | 6     | 5     | 7     | 5     | 8     |
| Carious           | 4     | 6     | 5     | 6     | 2     |
| Filled with caries| 3     | 7     | 6     | 4     | 5     |
| Filled, no caries | 5     | 6     | 10    | 2     | 4     |
| Missing due to caries | 7   | 9     | 6     | 2     | 2     |
| Missing for to any other reason | 5 | 9     | 3     | 0     | 0     |
| Fissure sealant   | 8     | 5     | 4     | 0     | 1     |
| Fixed dental prosthesis/crown abutment, veneer, implant | 4 | 6     | 3     | 1     | 6     |
| Unerupted         | 6     | 8     | 6     | 0     | 0     |
| Not recorded       | 2     | 4     | 5     | 0     | 2     |
| Oral mucous lesions|     |       |       |       |       |
| No abnormal condition | 10 | 8     | 6     | 2     | 2     |
| Malignant tumor    | 8     | 11    | 4     | 3     | 3     |
| Leukoplakia        | 6     | 10    | 3     | 4     | 2     |
| Lichen planus      | 9     | 9     | 5     | 2     | 0     |
| Ulceration         | 5     | 7     | 7     | 3     | 1     |
| Acute Necrotizing Ulcerative Gingivitis | 3 | 4     | 5     | 6     | 2     |
| Candidiasis        | 4     | 7     | 8     | 3     | 0     |
| Abscess            | 6     | 8     | 4     | 1     | 0     |
| Other condition    | 7     | 6     | 6     | 0     | 0     |
| Not recorded       | 2     | 5     | 2     | 1     | 0     |

Table 5: Distribution of treatment needs among different age groups

| Treatment type                        | n   | Mean  | SD    | SE    | F     | P     |
|---------------------------------------|-----|-------|-------|-------|-------|-------|
| One surface filling (years)           |     |       |       |       |       |       |
| 15-25                                 | 65  | 1.6802| 0.8659| 0.06167| 51.271| <0.001|
| 26-35                                 | 50  | 1.2435| 1.03026| 0.03397| 39.649| <0.001|
| 36-45                                 | 45  | 1.7789| 0.77201| 0.04502| 16.575| <0.001|
| 46-55                                 | 35  | 2.0149| 0.42710| 0.02333| 0.9463| 0.39006|
| 56-65                                 | 25  | 0.8088| 0.81511| 0.09885| 0.3723| 0.54326|
| Total                                 | 220 | 7.5263| 3.91007| 2.07337|      |       |
| Two surface filling (years)           |     |       |       |       |       |       |
| 15-25                                 | 54  | 1.0558| 0.94865| 0.06759| 39.649| <0.001|
| 26-35                                 | 68  | 0.8680| 0.80900| 0.02667| 0.9441| 0.33338|
| 36-45                                 | 33  | 0.6769| 0.84721| 0.04914| 0.6283| 0.43338|
| 46-55                                 | 43  | 1.5164| 1.14732| 0.06268| 0.3723| 0.54326|
| 56-65                                 | 22  | 0.7353| 0.85724| 0.10396| 0.3723| 0.54326|
| Total                                 | 220 | 4.6724| 4.60942| 0.87443|      |       |
| Pulp care and restoration (years)     |     |       |       |       |       |       |
| 15-25                                 | 48  | 0.5838| 0.82644| 0.05888| 16.575| <0.001|
| 26-35                                 | 37  | 0.4543| 0.77928| 0.02569| 0.3723| 0.54326|
| 36-45                                 | 28  | 0.3844| 0.69510| 0.04054| 0.3723| 0.54326|
| 46-55                                 | 58  | 0.9463| 0.90414| 0.04940| 0.3723| 0.54326|
| 56-65                                 | 49  | 0.6471| 0.87698| 0.10635| 0.3723| 0.54326|
| Total                                 | 220 | 3.0159| 4.08194| 0.28086|      |       |
| Extraction (years)                    |     |       |       |       |       |       |
| 15-25                                 | 42  | 0.3503| 0.70288| 0.05008| 76.351| <0.001|
| 26-35                                 | 34  | 0.0902| 0.33235| 0.01096| 0.3723| 0.54326|
| 36-45                                 | 26  | 0.0680| 0.33376| 0.01947| 0.3723| 0.54326|
| 46-55                                 | 67  | 0.8293| 0.90011| 0.04918| 0.3723| 0.54326|
| 56-65                                 | 51  | 0.1912| 0.57969| 0.07030| 0.3723| 0.54326|
| Total                                 | 220 | 1.529 | 2.8487 | 0.19999| 3.00  |       |

<0.05 – Statistically significant; >0.05 – Statistically nonsignificant. n = Number of cases; F – Value of ANOVA; P – level of significance; SD – Standard deviation; SE – Standard error

Table 6: Distribution of study subjects

| LOA (mm) | 0-3 mm | 4-5 mm | 6-8 mm | 9-11 mm | Total |
|----------|--------|--------|--------|--------|-------|
| Number of cases | 147    | 44     | 18     | 11     | 220   |

Contd...
Table 6: Contd...

|                | No sign of erosion | Enamel lesion | Dentinal lesion | Pulp involvement | Total |
|----------------|--------------------|---------------|-----------------|------------------|-------|
| Number of cases| 49                 | 72            | 42              | 57               | 220   |

| Number of cases | No sign of injury | Treated injury | Enamel fracture only | Enamel and dentine fracture | Pulp involvement | Tooth missing due to trauma | Total |
|-----------------|-------------------|----------------|---------------------|-----------------------------|------------------|-----------------------------|-------|
| 20              | 24                | 55             | 34                  | 41                          | 46               | 220                         |

| Treatment urgency | No treatment needed | Preventive or routine treatment needed | Prompt treatment needed | Immediate treatment needed due to pain or infection of dental or oral origin | Referred for comprehensive evaluation or medical treatment | Total |
|-------------------|---------------------|----------------------------------------|-------------------------|-----------------------------------------------------------------|----------------------------------------------------------|-------|
| Number of cases   | 11                  | 22                                      | 118                     | 47                                                              | 22                                                       | 220   |

LOA – Loss of attachment

Conflicts of interest
There are no conflicts of interest.

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