

Oral health determinants among female addicts in Iran

S. JALAL POURHASHEMI, MEHRDAD GHANE¹, HAJAR SHEKARCHIZADEH², AHMAD JAFARI

Abstract

Context: Addiction results in a range of health problems especially in the oral cavity. **Aims:** This study assessed the oral health status among women with a history of drug abuse in Tehran, Iran. **Settings and Design:** A cross-sectional study was conducted through structured interviews and clinical examinations of women at three rehabilitation centers in Tehran. **Materials and Methods:** Data on background characteristics, addiction history, knowledge, attitudes and behaviors, and oral health indices were collected. **Statistical Analysis Used:** We used MANOVA test and multiple logistic regression models to analyze the data. **Results:** We assessed 95 participants aged 37.88 ± 10.65 years. The most commonly reported drugs used prior to treatment were opiates (77.2%). The mean knowledge and attitude score among the patients was 80.83 ± 12.89 (37.5–100). Less than half of the dentate women reported tooth brushing as “rarely or never” (44.2%). Most of them (81.8%) had never used dental floss and 76.1% were daily smokers. The mean score of dental caries index (decayed, missed and filled teeth) of the participants was 20.2 ± 7.18 and 17 subjects were edentulous (17.9%). Factors such as age, drug type, duration of addiction, time of last dental visit, and frequency of brushing were associated with oral health status among these women. **Conclusions:** Women with a history of drug abuse in our study suffered from poor oral health. Although they had an acceptable level of knowledge and attitude toward oral health, their oral health, and hygiene was poor. These results call for more attention in designing and implementing oral health programs for addicts.

Keywords: Female, health behavior, oral health, substance-related disorders

Introduction

Addiction is among the most frequent and complicated health problems worldwide.^[1] Drug abuse and its consequences impose a heavy burden on individual and social health.^[2] According to the United Nations report, it is estimated that 167–315 million individuals worldwide used illegal drugs during the year 2011.^[3] Iran, located along the trade route of illegal drugs has one of the highest rates of drug addiction and 1.73% of the population has a dependency on illegal drugs.^[4,5]

Department of Pediatric Dentistry, School of Dentistry, Tehran University of Medical Sciences, ¹Department of Community Oral Health, School of Dentistry, Tehran University of Medical Sciences, Tehran, ²Department of Community Oral Health, School of Dentistry, Islamic Azad University, Isfahan (Khorasgan) Branch, Isfahan, Iran

Correspondence: Dr. Ahmad Jafari,
Department of Community Oral Health, School of Dentistry,
Tehran University of Medical Sciences,
North Karegar Ave. Hakim Cross, 1439955991, Tehran, Iran.
E-mail: ajafari@tums.ac.ir


Differences exist between men and women in terms of reasons for drug abuse, drug-related disorders, and access to treatment.^[6] Overall, addiction leads to more dangerous consequences among women. Studies have shown relatively high rates of social and psychological disorders among female addicts.^[7] Although little is known about status of drug abuse among women in Iran,^[8] it seems that the prevalence of drug abuse among Iranian women is increasing (9.6% of addicts' population in 2013).^[7,9]

Use of opioid drugs is associated with higher rates of dental caries and periodontal problems compared to that seen among the normal population.^[10] Drug abuse may result in decreased function of salivary glands and lead to dry and burning mouth, eating and taste disorders, mucosal infections, and periodontal diseases.^[11] In addition to its direct adverse effects on oral health, addiction exacerbates oral health problems indirectly through its detrimental effects on behavior and lifestyle.^[12,13] Poor oral self-care, tendency to eat sweet foods, unusual and poor nutrition habits, and irregular dental visits are prevalent among addicts and necessitate a comprehensive oral health promotion program.^[11,14-16]

This study investigated oral health status among women with a history of drug addiction in Tehran, Iran. Data obtained from this study can serve as a baseline for designing oral health promotion interventions based on the needs of female drug addicts.

Materials and Methods

This study was a cross-sectional study of women attending addiction treatment centers in Tehran, Iran. From all

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addiction treatment centers supervised by the State Welfare Organization, three were introduced by this organization as admitting just women. Two of these three centers were private residential centers, and one center was a drop-in center for addressing addiction symptoms delivering methadone maintenance treatment (MMT) as one of its services. Patients have to pay for the services they receive in private clinics, but the services in public centers, including daily food allowance and bath are provided free of charge. Thus, the type of the clinic (public/private) was considered as an index of socioeconomic status of the attending patients. This study was done as a census covering all the women attending the three centers from November 3 to December 17, 2013.

Two trained senior dental students filled out a questionnaire on individual characteristics, addiction history, oral health knowledge and attitude, and oral health behaviors (OHB) via a 20 min interview with the patients. Questions from a standard form routinely used in addiction surveys in the country,^[17] were used to collect data on individual characteristics and addiction history. Oral health part of the questionnaire was prepared based on previously designed and standardized questionnaires.^[18-20] OHB questions requested information on the frequency of brushing, flossing, and eating sugary snacks between main meals, cigarette smoking, and the time of last dental visit with 4–6 alternatives. The training of the examiners was done at the school of dentistry for oral health indices. At first, two examiners filled forms for 10 dental students and disagreed items were discussed. Then they visited each of the randomly selected 10 patients and repeated for five people. The both intra- and inter-examiner weighted kappa values of the two examiners, was higher than 0.90. Altogether, 93 individuals participated in the interview (response rate = 94%) with some un-answered questions by some of the participants.

After the interview, dental students conducted clinical examination to record dental caries index (decayed, missed, and filled teeth [DMFT]) and community periodontal index (CPI) of the patients. The examination was done using the World Health Organization's probe, headlight, and disposable dental mirror and explorer, whereas patients were seated on ordinary chairs.

The data were analyzed with the Statistical Package for Social Sciences (IBM, 2014). We used MANOVA test to analyze the association of individual characteristics, addiction history, and oral health knowledge and attitude and OHB with the components of DMFT (DT, MT, and FT). Maximum CPI scores were dichotomized based on the absence of periodontal pockets (maximum CPI scores of 1 and 2) and presence of periodontal pockets (maximum CPI scores of 3 and 4), and then were analyzed using simple and multiple logistic regression models.

Our Ethics Research Committee approved the study. We explained the aim and method of the study to all participants and assured them that the information will

remain confidential. Informed consents were obtained from all participants before data collection.

Results

Ninety-five women participated in the study; out of which, 65 women (68.4%) were from the public center, and 30 women (31.6%) were from the two private centers. The mean age of the participants was 37.88 ± 10.65 years. Less than one-quarter (23.7%) of the women was married and more than two-thirds (71%) were unemployed. The mean year of education was 8.03 ± 4.90 years [Table 1].

The most commonly abused drugs prior to treatment were reported to be opiates (opium, heroin, and norjizak) (77.2%), followed by methamphetamine (71.7%). The mean age at the onset of drug abuse was 22.3 ± 8.45 years, and the mean duration of addiction was 11.60 ± 8.40 years. Smoking was the most prevalent route of abuse (79.3%). Forty-one patients (44.08%) were in MMT [Table 2].

The mean knowledge and attitude score among the participants was 80.83 ± 12.89 (37.5–100). Most of the participants were aware of the role of tooth brushing in the prevention of dental caries (95.5%), and gum disease (93.2%). One-sixth (17.1%) of the respondents were unaware of the role of sugary foods in the development of dental caries. The majority of the participants were aware of the importance of regular dental visits for prevention of oral diseases (92.2%), relationship between addiction and oral health problems (97.8%), the effect of oral health problems on work and other aspects of life (86.5%), importance of preserving natural teeth (76.4%), and relationship between

Table 1: Background characteristic of women (n=93) attending rehabilitation centers in Tehran, Iran

Variables	Mean (±SD)/frequency (%)
Age	37.88 (±10.65)
Marital status	
Married	22 (23.7)
Single	14 (15.1)
Widow	16 (17.2)
Divorced	41 (44.1)
Education status	
Less than diploma	60 (66.7)
Diploma or higher	30 (33.3)
Job status	
Full time job	0 (0.0)
Part time job	6 (6.5)
Retired	0 (0.0)
Homemaker	19 (20.4)
Student	2 (2.2)
Unemployed	66 (71.0)

oral and systemic health problems (86.5%). However, about one-third of the women believed that oral diseases were less important than other diseases (33%) and dentures were less problematic than natural teeth (32.6%).

Less than half of the dentate women reported brushing “rarely or never” (44.2%). Most of them never used dental floss (81.8%). More than half of all participants reported eating sugary snacks/drinks between main meals more than three times a day (51.1%) and 76.1% were daily smokers. Less than one-third of the participants had visited a dentist during the previous year [Table 3]. The mean DMFT of the participants was 20.2 ± 8.17 with DT = 8.17, MT = 11.27, and FT = 0.75, and 17 subjects were edentulous (17.9%). Those attending the public center ($P = 0.03$), younger women ($P = 0.03$), and those with no dental visit in the previous year ($P = 0.01$) had significantly higher number of decayed teeth compared to others. Women attending the public center ($P = 0.03$), older women ($P < 0.001$), those being addicted for a longer period of time ($P < 0.001$), those who had dental visits in the previous year ($P = 0.003$) and those brushing their teeth less than once a day had higher number of missed teeth compared to others ($P = 0.001$). The frequency of noncarious filled teeth was significantly higher in women attending the

two private centers ($P = 0.02$) than those presenting to the public center [Table 4].

Regarding CPI, bleeding sextants comprised 32.5% of all examinable sextants followed by sextants with shallow pockets (4–5 mm) (29.1%). Maximum CPI score among 48.5% of the subjects was the score corresponded to shallow pockets, followed by calculus (26.5%). Healthy periodontium defined by maximum CPI score zero was only found among 2.9% of the participants. According to the logistic regression model, none of the factors was significantly associated with periodontal health among the participants [Table 5].

Discussion

The present study investigated oral health and its determinants among women with a history of drug abuse. With regard to the scarcity of studies in the field of oral health among addicts, the present study was designed to determine its status and the related risk factors in Tehran, Iran. The cross-sectional design of the current study, however, limited drawing a conclusion on definite effects of the risk factors studied. Moreover, this study did not cover the drug-dependent women who were not in withdrawal.

Although most of the participants had an acceptable level of knowledge and attitude toward oral health, their OHB

Table 2: Drug abuse history of women (n=93) attending rehabilitation centers in Tehran, Iran

Variables	Mean (±SD)/ Frequency (%)
Age of starting drug abuse (years)	22.30 (±8.45)
Duration of addiction (years)	11.60 (±8.40)
Drug of abuse prior to treatment	
Opium	52 (56.5)
Heroin	48 (52.2)
Crystalline Heroin	34 (37.0)
Norjizak	3 (3.3)
Metamphetamine	66 (71.7)
Cannabis	23 (25.0)
Alcohol	21 (22.8)
Cocaine	6 (6.5)
Tranquilizers	8 (8.7)
Other drugs	4 (4.3)
Opiates (opium, heroin, norjizak)	71 (77.2)
Stimulants (metamphetamine, cocaine)	66 (71.7)
Number of abused drugs	2.88 (2.06)
One drug	31 (33.7)
More than one drug	61 (66.3)
Route of drug abuse	
Smoking	73 (79.3)
Snorting (sniffing)	13 (14.1)
Oral route	19 (20.7)
Injection	10 (10.9)

Table 3: Oral health behaviors among women (n=93) attending rehabilitation centers in Tehran, Iran

Variables	Mean (±SD)/Frequency (%)
Tooth brushing*	
Rarely or never	34 (44)
Less than once a day	12 (16)
At least once a day	31 (40)
Flossing *	
Rarely or never	72 (94)
At least once a week	0 (0)
At least once a day	5 (7)
Eating sugary snacks/ drinks between main meals	
Two times a day or more	54 (58)
Once a day	11 (12)
Sometimes or rarely	27 (29)
Cigarette smoking	
At least once a day	70 (76)
Less than once a day	1 (1)
Never or quitted	21 (23)
Time of last dental visit	
More than one year ago	63 (68.5)
Previous year	29 (31.5)

* only among dentate participants (N=77)

Table 4: Factors associated with the three components of DMFT among women (n=93) attending rehabilitation centers in Tehran, Iran

DMFT components	Variables (reference group)	B coefficient	Std. error	P value*
Decayed teeth (DT)	Type of clinic (private)	3.94	1.83	0.03
	Age	-0.18	0.07	0.03
	Use of stimulants (users)	-2.14	1.64	0.20
	Duration of addiction (10 years or more)	2.81	1.59	0.08
	Time of the last dental visit (more than one year ago)	-4.44	1.67	0.01
	Tooth brushing (less than once a day)	0.14	1.59	0.93
Missed teeth (MT)	Type of clinic (private)	4.23	1.91	0.03
	Age	0.35	0.08	<0.001
	Use of stimulants (users)	-2.15	1.72	0.21
	Duration of addiction (10 years or more)	-7.05	1.66	<0.001
	Time of the last dental visit (more than one year)	5.36	1.74	0.003
	Tooth brushing (rarely or never)	-5.64	1.66	0.001
Filled teeth (FT)	Type of clinic (private)	-1.18	0.51	0.02
	Age	0.03	0.02	0.18
	Use of stimulants (users)	0.28	0.46	0.53
	Duration of addiction (10 years or more)	0.38	0.44	0.39
	Time of the last dental visit (more than one year)	0.86	0.46	0.07
	Tooth brushing (rarely or never)	0.74	0.44	0.10

*MANOVA test

was poor. As high as 60% of the dentate women did not brush their teeth on a daily basis; this is rather similar to the trend observed among in-treatment addicts in Iran and India.^[20,21] Other studies in Scotland, China, England, and the Netherlands, however, have reported more favorable brushing frequencies among addicts.^[22-25] Similar to other reports from Iran and some other countries, a great majority of the women in our study did not use dental floss and most of them reported having sugary products between meals.^[20,22,26] Almost 70% of subjects had not been by a dentist during the previous year. This is similar to the results of a study on addicts in Scotland.^[22] Dental attendance among women in our study was much worse than that among the Iranian general population,^[27] addicts in Iran^[20] and some other studies.^[15,28]

The DMFT of the examined women was 20.2 with the M component comprising a main portion of it. A study in Scotland on patients of a MMT center reported a DMFT of 22, which is more than what we found.^[22] However, other studies on drug-dependent prisoners, those in MMT, alcoholics, and those attending residential withdrawal centers reported lower DMFT scores than ours.^[21-24,26,29,30] Moreover, the DMFT score among our subjects was higher than that among the general population; a national survey on 35–44-year-old adults in Iran reported a DMFT of 11.0 (DT = 2.6, MT = 6.3, FT = 1.8). In the afore-mentioned study, the DMFT index and its F component were higher among women (11.3 and 2.1, respectively) compared to those among men.^[31]

Table 5: Factors associated with presence of periodontal pocket among women (n=68) attending rehabilitation centers in Tehran, Iran by a logistic regression model

Variables (reference group)	Odds ratio	95% confidence interval	P value
Use of stimulants (not users)	1.36	0.37-5.04	0.64
Use of opiates (not users)	0.20	0.03-1.07	0.06
Age (<15 years)	2.43	0.68-8.62	0.17
Duration of addiction (<10 years)	2.24	0.62-8.02	0.21
Times of last dental visit (previous year)	2.54	0.75-8.62	0.13

In our study, factors such as the type of clinic attended by the patients, age, duration of addiction, time of last dental visit, and brushing frequency were associated with the components of DMFT. The DMFT index, being lower among women than men, showed a direct correlation with alcohol consumption. The DMFT index was also higher among those adding more sugar to their hot drinks, those with fewer dental visits, and those receiving methadone for a longer period of time. In the afore-mentioned study, the amount of methadone received by the patients was not associated with the DMFT index, but a longer duration of methadone therapy related to poorer oral health.^[22] In a study conducted in Italy on alcoholic patients, the DMFT score of 10 or higher was associated with female sex, age, and duration of addiction to alcohol.^[29] In a Chinese study, the DMFT index was associated with duration of heroin use and level of education^[30] In another study, the

DMFS index was correlated with age among Dutch addicts.^[25] In general, it may be stated that higher prevalence of dental caries among addicts compared to the general population may be attributed to the direct effects of drug abuse or the withdrawal treatment (such as methadone), as well as the indirect effects of addiction such as poor socioeconomic status, unhealthy lifestyles, poor oral self-care, sugar consumption, and risky behaviors.

Shallow periodontal pocket, with 48.5% prevalence, was the most frequently recorded maximum CPI score in our study. In an Indian study, maximum CPI scores corresponding to bleeding, shallow pocket, and deep pocket were reported in 42%, 44% and 12% of drug addicts, respectively.^[21] In a study on 20–59-year-old patients with a history of heroin use who were receiving MMT in China, gingival bleeding, calculus, shallow pocket, and deep pocket were observed among 95.55%, 96.63%, 30.34% and 2.70% of subjects, respectively.^[23] CPI scores of 0, 1, 2, 3, and 4 were observed among 9.2%, 14.5%, 39.5%, 36.8% and 0% of alcoholic addicts attending a rehabilitation center in Italy.^[29] Other studies have also reported compromised periodontal health among addicts compared to healthy controls.^[32,33] In an Iranian national survey, the most frequent maximum CPI scores among women were those related to calculus (44%), shallow pocket (41%), deep pocket (8%), bleeding (5%), and healthy periodontium (2%), showing a more favorable status especially regarding the presence of periodontal pocket among normal population compared to patients.^[31]

In the logistic regression model, none of the factors was significantly associated with periodontal health among the participants. This may be attributed to the multi-factorial nature of addiction and its adverse effects making it difficult to differentiate independent effects of related risk factors. Moreover, we had to exclude a number of samples from periodontal examination due to the presence of less than two teeth in examined sextants. In a study by Thomson *et al.*, although cigarette smoking was strongly associated with the periodontal disease among addicts, cannabis use also showed an independent association with the disease. The study came to the conclusion that deeper breath when snorting cannabis and longer absorption time of this drug make the user susceptible to periodontal disease.^[34] Route of drug use, and sex have also been noted as other factors affecting the periodontal health of addicts.^[30]

Women with a history of drug abuse in our study suffered from poor oral health. Although they had acceptable knowledge and attitude toward oral health, their OHB was poor. Factors such as the type of clinic attended by the patients, type of abused drug, age, duration of addiction, time of last dental visit, and brushing frequency were associated with oral health among these women. The results call for designing and implementing oral health promotion programs for female addicts in Iran.

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