

Oral Health and Quality of Life of Addicts in Brazilian Population

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ABSTRACT

Aim and objective: This study aimed to investigate the impact of oral health on the quality of life of drug addicts in rehabilitation.

Materials and methods: A total of 398 male individuals admitted to two drug rehabilitation centers between 2013 and 2016 responded to a structured questionnaire including sociodemographic, oral health habits, and drug usage variables. Respondents were also examined for dental caries. Oral health-related quality of life was measured using the Oral Health Impact Profile, in short-form, the OHIP-14. Descriptive statistical analysis, Mann–Whitney test, univariate and multiple Poisson regression with robust variance were performed using Stata/SE 14.1.

Results: The mean severity score was 22.8 (SD = 13.2). The prevalence of worse impact (higher OHIP-14 scores) was 84.9%. In the univariate analysis, <8 years of schooling, no brushing teeth, self-perceived metallic taste, self-perceived tooth mobility, use of lysergic acid diethylamide (LSD) and oxy, missing teeth, and DMFT score >10 were associated with a negative outcome ($p < 0.05$). After adjustment, remained independently associated low schooling ($p = 0.021$) and self-perceived metallic taste ($p < 0.001$).

Conclusion: Drug users perceived negatively the impacts of oral health-related quality of life.

Clinical significance: Drug addicts have poor oral health and quality of life. Thus, public health strategies for the rehabilitation of these individuals should account for the biopsychosocial aspects.

Keywords: Drug addicts, Oral health, Quality of life.

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INTRODUCTION

One in every 20 adults between the ages of 15 years and 64 years (over a quarter of a billion) have used at least one illicit drug in 2014.¹ Consequentially, there is a significant burden on public health systems where health care and prevention of drug addiction is concerned.¹

Drug addicts have far worse oral health compared to that of the general population.^{2–4} Addicts tend to allocate lower priority to their oral hygiene; their primary concern is to supply their drug dependence.⁵ Unsatisfactory oral health is usually reported by individuals with substance dependence.²

It is important to account for patient outcome measures because of the importance of knowing an individual's outlook of their own general and oral health statuses.⁶ This plays a role in public health, enabling direct health strategies to provide for treatment and rehabilitation. Such data are obtained based on oral health-related quality of life (OHRQoL) through so-called sociodental indicators.⁷ In this context, the short version of the Oral Health Impact Profile (OHIP-14) estimates the negative consequences of oral disorders and relates them to quality of life through the evaluation of discomfort, dysfunction, and disability that stem from these disorders.⁸ This instrument has already been implemented recently in research on drug addiction.^{9,10}

Other relevant factors, such as age,¹¹ demographic factors,¹² and use of freebase cocaine, have been shown to influence OHRQoL. Oral health conditions, such as, tooth loss,^{11,13} periodontitis,^{14,15} edentulism,¹⁶ and the use and type of dentures¹⁶ confer negative impacts on OHRQoL. Additionally, the use of the OHIP-14 in different populations has shown that socioeconomic conditions,^{17,18} tooth loss,¹⁵ and caries (decayed, missing, and filled teeth—DMFT index scores)¹⁹ are significantly associated with the impact.

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Despite the number of investigations regarding OHRQoL, there is a paucity of information regarding the oral health of drug addicts and the impact this has on their quality of life. Understanding the OHRQoL of these often-marginalized individuals could be useful for the planning and implementation of public health policies for these populations.

Therefore, this study aimed to investigate the impact of OHRQoL of drug addicts in rehabilitation at two locations in the state of Paraná, Brazil.

MATERIALS AND METHODS

Ethical Considerations

This study was approved by the ethics committee of the Universidade Federal do Paraná under number 1.464.721 and

was conducted according to the Declaration of Helsinki. Written informed consent was obtained from all the participants in this study.

Study Design

This cross-sectional study was conducted at the Instituto de Pesquisa e Tratamento do Alcoolismo (IPTA) in the city of Campo Largo and at the Associação de San Julian in the city of Piraquara, both psychiatric hospitals located in the state of Paraná, Brazil. Data were collected from December 2013 to July 2016. These facilities only permit the admittance of male drug addicts; convenience sampling was performed, which resulted in the participation of 421 men. To be included in the study, the individuals were required to be users of psychoactive substances, aged 18 years or older, and able to respond to the questions included in the questionnaires. They underwent 48 hours of detoxification before the participation. Ultimately, 23 patients were eliminated from the study for either being younger than 18 years or having incomplete questionnaires, resulting in a final sample size of 398 individuals.

Calibration

Calibration was performed in two steps in accordance with the World Health Organization recommendations for oral health surveys.²⁰ Firstly, diagnostic criteria for caries according to the DMFT index were discussed. Secondly, examiner calibration was performed by a “gold-standard” examiner. The DMFT index scores of 20 individuals were determined on the first day and after seven days. Kappa values for inter- and intra-examiner agreement ranged between 0.80 and 0.85.

Data Collection and Analysis

The dependent variable, the OHIP-14 translated and validated for Brazilian Portuguese,^{21,22} was determined by a trained examiner. The OHIP-14 is a questionnaire that consists of seven dimensions with two questions each that evaluate functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability, and handicap (8). Participants responded in reference to six months before rehabilitation, on a scale of 0 to 4 (0 = never, 1 = hardly ever, 2 = occasionally, 3 = fairly often, 4 = very often). The OHIP-14 scores were classified as indicating the presence of impact if there was at least one report of “fairly often” or “often” or absence of impact if all reports were of “never”, “hardly ever”, and “occasionally”. To verify the prevalence of impacts, the percentage of “fairly often” or “very often” responses were calculated.²³

In addition, a structured questionnaire was administered to all the participants by a trained examiner in a face-to-face interview including sociodemographic data, such as, age (in years) dichotomized by the mean (<35 or ≥35), race/skin color [white or non-white (Afro-descendants, natives, Asians, or mixed)], marital status [married or single (unmarried, divorced, or widowed)], schooling (in years) (<8 or ≥8), employment status (employed or unemployed), residential status (alone or not alone), monthly household income categorized by the mean (considering the minimum Brazilian wage of US\$ 275.00, <1 or ≥1 minimum wage), self-reported health problems (yes or no), and involvement in drug-related crimes (yes or no).

Oral health habits and conditions data included teeth brushing habits dichotomized by the median (yes or no) and frequency (in times a day) (>3 or ≤3), use of toothpaste (yes or no) and dental floss (yes or no), tooth mobility/loss (yes or no), self-perceived tooth mobility (yes or no) and metallic taste (yes or no), dental

visits at least once in their lifetime (yes or no), and daily high-sugar food consumption frequency dichotomized by the median (≤3 or >3 times per day). Data regarding drug consumption were dichotomized (yes or no) as follows: use of crack, alcohol, tobacco, marijuana, cocaine, lysergic acid diethylamide (LSD), ecstasy, and oxy.

For oral examinations, a calibrated researcher collected data based on DMFT index scores and periodontal conditions.²⁰ Means and standard deviations (SD) were determined for the DMFT index and its components.

Analysis of the data was conducted using Stata/SE 14.1 (Stata Corp. LP, USA), starting with the descriptive. To evaluate the association between the presence/absence of impact, number of DMFT and the DMFT index score, the Mann–Whitney *U* test was used. The associations with significance of *p* < 0.05 were considered statistically significant. Then, Poisson univariate regression was performed to the associations between the sociodemographic, oral health conditions and habits, and drug consumption and the dependent variables relating to the self-reported oral health impact on the quality of life. Those variables with *p* < 0.10 were included in the Poisson multivariate regression model with robust variance. A receiver-operating characteristic (ROC) curve was constructed to determine the DMFT score that best discriminated between cases with and without impact.

RESULTS

The mean age of the participants was 35 ± 9.6 years, and they were predominantly white (63.6%), single (75.9%), with <8 years of education (68.6%), employed (61.3%), and with a household income of more than one monthly minimum wage (57.7%). The most common drug used among those listed in the study was tobacco (83.2%), closely followed by a crack (81.2%).

Table 1 shows the mean severity scores and prevalence for each item of the OHIP-14. The mean severity score of the sample was 22.8 (SD = 13.2). The prevalence of negative impact in the sample was 84.9%. The items that had the greatest prevalence of impact were psychological discomfort and psychological disability (69.1 and 61.1%, respectively). Within these categories, the questions that had the most impact were “Have you been self-conscious because of your teeth or mouth?” (63.3%) and “Have you been a bit embarrassed because of problems with your teeth or mouth?” (58.0%). Meanwhile, social disability (73.4%) and functional limitation (68.5%) had the most reports with the absence of impact.

Table 1: Mean score and prevalence of impact for OHIP-14 items of drug addicts in rehabilitation, Paraná, Brazil, 2016 (n = 398)

| OHIP-14 items | Mean (SD)* | Prevalence, n (%)† |
|--------------------------|-------------|--------------------|
| Functional limitation | 2.5 (2.4) | 128 (32.5) |
| Physical pain | 3.9 (2.5) | 193 (48.5) |
| Psychological discomfort | 5.0 (2.6) | 275 (69.1) |
| Physical disability | 2.8 (2.7) | 143 (35.9) |
| Psychological disability | 3.7 (2.5) | 243 (61.1) |
| Social disability | 2.2 (2.5) | 106 (26.6) |
| Handicap | 2.8 (2.5) | 165 (41.5) |
| Total OHIP | 22.8 (13.2) | 338 (84.9) |

*Sum of scored responses (potential range 0–28 for 7 items and 0–56 for 14 items)

†Proportion of respondents reporting one or more items “fairly often” or “very often”

SD, standard deviation



Table 2 shows the DMFT scores and components associated with worse self-perception of impact. The values for missing teeth with presence of impact were statistically significant [$n = 338$, 4.5 ($SD = 5.5$), $p = 0.027$]. The mean DMFT score was 11.7 ($SD = 6.8$), which was also statistically significant ($p = 0.013$).

In univariate analysis, the independent variables that were associated with the presence of impact were <8 years of schooling ($p = 0.028$), no teeth brushing habits ($p = 0.034$), self-perceived metallic taste ($p < 0.001$), tooth mobility/loss ($p = 0.020$), use of LSD ($p = 0.059$) and oxy ($p = 0.007$), and DMFT score >10 ($p = 0.016$) (Table 3). The variables that were significant in univariate analysis

were included in multivariate regression. At this stage, the variables that were independently associated with worse impact were <8 years of education ($p = 0.021$) and self-perceived metallic taste ($p < 0.001$) (Table 4).

DISCUSSION

This study investigated the OHRQoL of institutionalized drug addicts in southern Brazil. Low schooling and a self-perceived metallic taste in the mouth were independently associated with worse impact.

Table 2: Prevalence of decayed, missing and filled teeth and impact in oral health-related quality of life in drug addicts in rehabilitation, Paraná, Brazil, 2016 ($n = 338$)

| Variable | Impact | n | Mean | Median | Min | Max | SD | p value* |
|---------------|----------|-----|------|--------|-----|-----|-----|--------------|
| Decayed teeth | Absence | 60 | 3.7 | 3 | 0 | 11 | 3.2 | 0.102 |
| | Presence | 338 | 4.7 | 4 | 0 | 21 | 4.1 | |
| Missing teeth | Absence | 60 | 3.5 | 1 | 0 | 23 | 5.7 | 0.027 |
| | Presence | 338 | 4.5 | 2 | 0 | 25 | 5.5 | |
| Filled teeth | Absence | 60 | 2.3 | 1 | 0 | 11 | 3.0 | 0.445 |
| | Presence | 338 | 2.5 | 1 | 0 | 15 | 3.1 | |
| DMFT | Absence | 60 | 9.5 | 8 | 0 | 28 | 6.4 | 0.013 |
| | Presence | 338 | 11.7 | 10.5 | 0 | 28 | 6.8 | |

*Mann-Whitney test
 Bold values are statistically significant ($p < 0.05$)
 SD, standard deviation

Table 3: Impact distribution, prevalence, and unadjusted prevalence ratio (PR) according to individual variables in drug addicts, Paraná, Brazil, 2016 ($n = 398$)

| Variable | Presence of impact | n (%) | p value* | PR (CI 95%) |
|---|--------------------|------------|--------------|------------------|
| Age (in years) | | | | |
| ≥ 35 | 153 (86.0) | 178 (44.7) | 0.603 | 1 |
| < 35 | 185 (84.1) | 220 (55.3) | | 1.02 (0.94–1.11) |
| Race/skin color | | | | |
| White | 216 (85.4) | 253 (63.6) | 0.743 | 1 |
| Non-white | 122 (84.1) | 145 (36.4) | | 0.99 (0.90–1.08) |
| Marital status | | | | |
| Married | 83 (86.5) | 96 (24.1) | | 1 |
| Single | 255 (84.4) | 302 (75.9) | 0.617 | 0.98 (0.89–1.07) |
| Schooling (in years) | | | | |
| ≥ 8 | 98 (78.4) | 125 (31.4) | | 1 |
| < 8 | 240 (87.9) | 273 (68.6) | 0.028 | 1.12 (1.01–1.24) |
| Employment status | | | | |
| Employed | 204 (83.6) | 244 (61.3) | | 1 |
| Unemployed | 134 (87) | 154 (38.7) | 0.343 | 1.04 (0.96–1.13) |
| Residential status | | | | |
| Not alone | 259 (86.0) | 301 (75.6) | 0.306 | 1 |
| Alone | 79 (81.4) | 97 (24.4) | | 0.95 (0.85–1.05) |
| Household income (in the minimum wage) [†] | | | | |
| > 1 | 196 (85.6) | 229 (57.7) | 0.651 | 1 |
| ≤ 1 | 141 (83.9) | 168 (42.3) | | 0.98 (0.90–1.07) |
| Health problem | | | | |
| No | 233 (83.5) | 279 (70.1) | 0.198 | 1 |
| Yes | 105 (88.2) | 119 (29.9) | | 1.06 (0.97–1.15) |
| Drug-related crimes | | | | |
| No | 140 (81.4) | 172 (43.2) | 0.096 | 1 |
| Yes | 198 (87.6) | 226 (56.8) | | 1.08 (0.99–1.17) |

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| Variable | Presence of impact | n (%) | p value* | PR (CI 95%) |
|---|--------------------|------------|------------------|------------------|
| Brushing teeth | | | | |
| Yes | 319 (84.4) | 378 (95.0) | 0.034 | 1 |
| No | 19 (95.0) | 20 (5.0) | | 1.13 (1.01–1.26) |
| Frequency of toothbrushing (in times a day) | | | | |
| >3 | 222 (86.4) | 257 (68.0) | 0.147 | 1 |
| ≤3 | 97 (80.2) | 121 (32.0) | | 1.08 (0.97–1.19) |
| Use of toothpaste | | | | |
| Yes | 318 (84.6) | 376 (94.5) | 0.309 | 1 |
| No | 20 (90.9) | 22 (5.5) | | 1.07 (0.94–1.24) |
| Use of dental floss | | | | |
| Yes | 54 (87.1) | 62 (15.6) | 0.580 | 1 |
| No | 284 (84.5) | 336 (84.4) | | 0.97 (0.87–1.08) |
| Self-perceived metallic taste | | | | |
| No | 230 (81) | 284 (71.4) | <0.001 | 1 |
| Yes | 108 (94.7) | 114 (28.6) | | 1.17 (1.09–1.26) |
| Tooth mobility/tooth loss | | | | |
| No | 314 (85.1) | 369 (92.7) | 0.020 | 1 |
| Yes | 217 (82.2) | 264 (66.3) | | 1.10 (1.02–1.19) |
| Dental visit (at least once in a lifetime) | | | | |
| Yes | 121 (90.3) | 134 (33.7) | 0.750 | 1 |
| No | 24 (82.8) | 29 (7.3) | | 0.97 (0.82–1.15) |
| Daily high sugar food intake (times a day) | | | | |
| ≤3 | 222 (84.4) | 263 (66.1) | 0.684 | 1 |
| >3 | 116 (85.9) | 135 (33.9) | | 1.02 (0.93–1.11) |
| Use of crack | | | | |
| No | 62 (82.7) | 75 (18.8) | 0.566 | 1 |
| Yes | 276 (85.4) | 323 (81.2) | | 1.03 (0.92–1.16) |
| Use of alcohol | | | | |
| No | 90 (83.3) | 108 (27.1) | 0.600 | 1 |
| Yes | 248 (85.5) | 290 (72.9) | | 1.03 (0.93–1.13) |
| Use of tobacco | | | | |
| No | 52 (77.6) | 67 (16.8) | 0.121 | 1 |
| Yes | 286 (86.4) | 331 (83.2) | | 1.11 (0.97–1.27) |
| Use of marijuana | | | | |
| No | 152 (82.2) | 185 (46.6) | 0.163 | 1 |
| Yes | 185 (87.3) | 212 (53.4) | | 1.06 (0.98–1.16) |
| Use of cocaine | | | | |
| No | 163 (84.0) | 194 (48.7) | 0.624 | 1 |
| Yes | 175 (85.8) | 204 (51.3) | | 1.02 (0.94–1.11) |
| Use of LSD | | | | |
| No | 301 (84.1) | 358 (89.9) | 0.059 | 1 |
| Yes | 37 (92.5) | 40 (10.1) | | 1.10 (1.00–1.21) |
| Use of ecstasy | | | | |
| No | 319 (85.1) | 375 (94.2) | 0.765 | 1 |
| Yes | 19 (82.6) | 23 (5.8) | | 0.97 (0.80–1.18) |
| Use of oxy | | | | |
| No | 315 (84.2) | 374 (94.0) | 0.007 | 1 |
| Yes | 23 (95.8) | 24 (6.0) | | 1.14 (1.04–1.25) |
| DMFT | | | | |
| ≤10 | 169 (80.9) | 209 (52.5) | 0.016 | 1 |
| >10 | 169 (89.4) | 189 (47.5) | | 1.11 (1.02–1.20) |

Bold values are statistically significant, $p < 0.05$

*Poisson univariate regression

†Minimum Brazilian wage = US\$ 275.00

CI, confidence interval

Table 4: Multivariate analysis of significant variables in the univariate analysis of drug addicts, Paraná, Brazil, 2016 (n = 398)

| Variable | Classification of risk | p value* | PR (CI 95%) |
|-------------------------------|------------------------|------------------|------------------|
| Schooling (in years) | <8 | 0.021 | 1.13 (1.02–1.25) |
| Brushing teeth | No | 0.051 | 1.11 (1.00–1.24) |
| Self-perceived metallic taste | Yes | <0.001 | 1.16 (1.08–1.24) |
| Tooth mobility/tooth loss | Yes | 0.058 | 1.08 (1.00–1.16) |
| Use of LSD | Yes | 0.050 | 1.12 (1.00–1.25) |
| Use of oxy | Yes | 0.105 | 1.10 (0.98–1.23) |
| Drug-related crimes | Yes | 0.185 | 1.06 (0.97–1.15) |
| DMFT | >10 | 0.058 | 1.08 (1.00–1.17) |

Bold values are statistically significant, $p < 0.05$

*Poisson univariate regression

PR, prevalence ratio; CI, confidence interval

The OHIP-14, the instrument selected herein, has been previously used in the search to evaluate the OHRQoL of subjects in different populations,^{11,13–15,17,18,24–26} including in drug addicts.^{9,10,27} It is translated and validated for Brazilian Portuguese²¹ and its psychometric properties have also been investigated.²²

Knowing that higher OHIP-14 scores indicate worse OHRQoL,⁸ the mean score obtained in this study (22.8) was considered to be substantially high. In a study of drug users from Amsterdam, the sample presented a higher mean OHIP-14 score (40.6)²⁷ than that in this study. In addition, in severely addicted patients in the same city who participated in a study to evaluate the effect of dental treatment on OHRQoL, the mean total score of the impact was 37.1.⁹

In the general adult population, the values are not so impactful, such as in adults from the United Kingdom (UK) (5.1) Australia (7.4),¹¹ and the United States of America (USA) (2.81).²⁵ The prevalence of impact in this study (84.9%) was also considerably greater than those obtained in the USA (15.3%),²⁴ Australia (15.7%) (25), and the UK (15.9%).²⁴ Considering other Brazilian studies, the severity and prevalence in this study were also higher than those obtained in rural Amazon residents (14.03 and 70.3%, respectively),²⁶ adults from São Paulo (10.21 and 48.1%, respectively),¹³ and elderly individuals from southern Brazil (9.1 and 47.7%, respectively).²⁴ Although comparisons are being made with the general population, it is notable that the values in Brazilian samples surpass those in samples of other countries. These results illustrate how perceptions of oral health are subjective and related to certain habits, such as, substance abuse. It is well known that drug usage confers a negative impact on the quality of life,²⁷ as confirmed in this study, and this could be attributed to the significant association of tooth mobility/loss and a self-perceived metallic taste in the mouth with the presence of impact, as identified in this study.

Of the seven dimensions included in the OHIP-14, those that had the greatest impact in this study were psychological discomfort and disability, followed by physical pain. Similarly, a study performed on drug addicts in Amsterdam also revealed the highest prevalence of impact in these subcategories. Therefore, drug addicts primarily report adverse psychological impacts of oral health on their quality of life. Antoniazzi et al.,¹⁰ based on domain analysis, concluded that functional limitation and psychological discomfort were associated with the use of illicit drugs in young adults.

Regarding sociodemographic and socioeconomic factors, a study that evaluated the OHRQoL of Brazilian drug addicts with a similar mean age (37 years)²⁸ did not reveal significant associations

between low schooling and outcomes. However, Antoniazzi et al.¹⁰ investigated the impact of the use of crack and other illicit drugs on OHRQoL in 106 young adults at a public treatment center. The authors examined dental caries and periodontal disease, and the outcome was the OHIP-14. In the analysis, after adjustments for sex, age, education level, income, smoking habits, dental caries, and periodontal disease, the outcomes did not change. Another investigation about the association between denture status, demographic factors, and OHRQoL revealed that age and education level did not influence outcomes.¹² In contrast, in the present study, low schooling (<8 years) was associated with a worse perception of the impact, even independently in the multivariate analysis.

In Iranian drug addicts, low educational levels are significantly associated with poor oral hygiene.⁵ In the present study, no teeth brushing showed an association with the presence of impact in univariate analysis, however, when adjusted for multivariate analysis it was not significant. It is possible to deduce that low schooling affects OHRQoL because they are related to poor oral health habits. For example, there are indications in the literature that the mother's level of education is associated with a higher frequency of toothbrushing.²⁹

Studies performed in the general population have shown that tooth loss is significantly associated with an impact on OHRQoL.^{11,13,15,23} Based on the findings of this study, tooth loss also impacted the OHRQoL of drug addicts.

Individuals who experienced a metallic taste in the mouth (dysgeusia) were more likely to have worse OHRQoL. This is comprehensive, as taste is an essential component of an individual's general sense of well-being and quality of life.³⁰ Common causes of dysgeusia are dental appliances, such as, dental fillings and prostheses; dental procedures, such as, root canals treatments and extractions; aging; medication; and oral infections, such as, periodontitis.³¹ These are plausible motives to explain the association found in drug addicts, especially medication and periodontitis. Some medications that have been demonstrated to be associated with dysgeusia are antidepressants and antimanic drugs,^{30,31} which are commonly administered in rehabilitation treatment. It is also possible that periodontitis, for example, an infected periodontal pocket, could cause the self-perceived metallic taste, even though periodontal evaluation was not performed in this study. It has been demonstrated that periodontitis exerts an influence on OHRQoL.^{14,15}

Regarding caries experience, DMFT is considered a predictor for OHRQoL.¹⁹ A cross-sectional study of users of specific substances evaluated the impact of oral health conditions and socioeconomic status on quality of life, and the authors found a mean DMFT index score of 13.0,²⁸ higher than that found in the present study (11.7). Another DMFT score of addicts found in the literature was 9.8.⁴ In this analysis, the mean DMFT score was statistically significant in univariate analysis. Cury et al.,³ based on the findings of a sample of 40 men who were addicted to crack/cocaine, concluded that the addiction was associated with a greater decayed teeth index score and lower filled and missing teeth index scores.

While the results of this study present significant findings regarding the OHRQoL of drug addicts, some limitations should be considered. Due to the transversal study design, the associations determined cannot be considered as causative factors.

Results should not be extrapolated to the entire population, gender was a limitation of the study carried out only in men. Additionally, as the OHIP-14 is based on self-reported responses, the results may be susceptible to social desirability and memory

biases. However, the design of this study allowed for insight into the OHRQoL of drug addicts. This is an area that has not yet been explored to great extent in the current literature, despite the growing problem that substance abuse poses for public health, as it affects millions of individuals both directly and indirectly causing health, societal, and economic consequences.

CONCLUSION

The findings of this study showed that low schooling and self-perceived metallic taste were independently associated with worse OHRQoL of drug addicts. Therefore, public health strategies for the rehabilitation of these individuals should account for the biopsychosocial aspect of drug addicts, aim to reduce inequity, and include dental treatment as a part of the health care offered to drug addicts under rehabilitation.

CLINICAL SIGNIFICANCE

Drug addicts have poor oral health and quality of life. Thus, public health strategies for the rehabilitation of these individuals should account for the biopsychosocial aspects.

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