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Original Research Article

Drug addicts profile and associated factors in a southern Brazilian population

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Abstract

Objective: To investigate the drug addicts profile and associated factors in two southern Brazilian population. **Material and methods:** Data regarding sociodemographic characteristics, drug use and oral conditions were collected from 398 males admitted in two rehab hospitals, using a structured questionnaire and oral examination. **Results:** The mean age of the participants was 35 (± 9.6). The majority were white (63.6%), single (75.9%), employed (61.3%), had low schooling (68.6%) and received more than one Brazilian minimum wage (57.7%). The mean number of untreated decayed teeth was 4.6 (± 4.0), missing teeth, 4.3 (± 5.5) and filled teeth, 2.5 (± 3.1). The mean DMFT score was 11.4 (± 6.8). The most prevalent drugs consumed were tobacco (83.2%) followed by crack (81.2%) and alcohol (72.9%). **Conclusion:** The sociodemographic profile showed a population of young adults predominantly white, with low schooling, employed with reasonable income, and multi-drug users. Occurrence of decayed teeth and tooth loss was prevalent among them, reflecting on a precarious oral health.

Introduction

Alcohol, tobacco and illicit drugs are all risk factors that contribute to the global disease burden [30]. According to the Global Drug Survey 2021, there were a steady rise in the use of most drugs between 2015 to 2019 among younger people [18]. After, most drug use fell down with the onset of covid-19, and recently increased the use of ecstasy and cocaine, consistent with increased access to precursors, production, and supply for this market [19].

In Brazil, alcohol tops the list of the most used substances. Regular consumption of five or more doses of alcoholic beverages is considered to be prevalent in 16.5% of the population, approximately 25 million people aged 12 to 65 years [10]. *Cachaça* is a Brazilian sugarcane distilled spirit that presents an alcoholic strength between 38-48%, and acidic pH. It is the most consumed distilled beverage in this country [10].

About smoking, in the population aged equal or less20 years old, this habit decreased in Brazil between 1990 and 2017. However, a higher prevalence occurs in South and Southeast regions, such as Rio Grande do Sul, Paraná, Santa Catarina, and São Paulo [26]. Also, 15.4% are regular smokers of industrialized cigarettes, and 9.9% have experimented an illicit drug in their lifetime [26].

Globally, 0.3-0.5% of the world's population aged between 15-64 years, are cocaine and its derivates users [31]. Brazil houses the largest crack cocaine market in the world approximately one million people have already consumed this drug [1].

Multiple factors have been associated with substance abuse, including socioeconomic disadvantages [28], age, sex, low levels of education, geographic location [8, 33], familial risk factors, early drug initiation, and unstable family structures [21, 37].

Drug addicts have far worst oral health when compared to the general population [29]. Caries [36], decrease of salivary flow rates [4] and lower buffer capacity [6], dental erosion [9], and periodontal disease [5] are frequently associated with substance addiction. Behaviors habits that compromise oral health include cariogenic diets, inadequate oral hygiene, less frequent use of dental services and difficulty of accessing dental treatment [32].

Therefore, the aim of this study was to investigate the drug addicts profile and associated factors in two southern Brazilian population.

Material and methods

Ethical considerations

The Ethics Committee in Research of the Universidade Federal do Paraná approved this study under registration number CEP/SD 14.647.21. The participants signed an informed consent form.

Study design

A descriptive cross-sectional study was carried out with male drug users aged 18 and over, admitted for treatment in two hospitals care for rehabilitation: *Associação de Pesquisa e Tratamento do Alcoolismo e Associação San Julian* from the municipalities of Campo Largo and Piraquara, respectively, in the state of Paraná, Brazil. The study was carried out between December 2013 and July 2016. In order to be included in the study, the patients had to be users of psychoactive substances and able to answer the questionnaires questions.

Calibration

Calibration was carried out in accordance with the World Health Organization [37]. First a discussion about the diagnostic criteria for caries according to the decayed, missing and filled teeth (DMFT) index was carried out. After, the examiner calibration was done by a gold standard examiner and twenty individuals were examined using the DMFT index. These same patients were reexamined after a seven-day interval. Kappa values for inter and intra-agreement were 0.80 and 0.85 indicative of strong agreement.

Data collection and questionnaires

A calibrated examiner with reference to the DMFT index examined all teeth excluding the third molars, under natural light with ball-point probes and mirrors [37].

A structured questionnaire was administered to all the participants by a trained examiner in a face-to-face interview. The questionnaire included sociodemographic data such as: age, marital status, years of schooling, gainful employment status, monthly household income and self-reported health problems. Oral health condition and habits data were also collected and included: brushing of teeth and frequency, use of toothpaste and dental floss, self-perceived tooth mobility and metallic taste, dental visits, procedure done at last dental consultation and high sugar intake frequency. To evaluate the addiction, closed questions were asked regarding of type(s) of drug(s) consumed, frequency, the amount consumed daily and how long they make use of the drug(s).

Data analysis

Descriptive analysis of the data was done using Stata/SE 14.1, Stata Corp LP, USA. The variables were analyzed according to their frequency and percentage distribution.

Sociodemographic variables were dichotomized as follows: ethnicity: white or nonwhite marital status: married/civil union or single, gainful employment: yes or no; years of schooling (<8 or ≥8); monthly household income (minimum salary was considered to be US$ 275.00, <1 or ≥1).

Oral health habits and conditions were classified as follows: brushing of teeth; use of toothpaste; use of dental floss; self-perceived tooth mobility or loose teeth; self-perceived metallic taste; dental visit at least once in their lifetime were dichotomized: yes or no; motive for last dental consultation: resolution of pain, aesthetic purposes and other reasons.

Drug habits were dichotomized as follows: use of crack, alcohol, tobacco, marijuana, cocaine, LSD, ecstasy and oxy: yes or no and history of drug related crimes: yes or no. Initiation age of tobacco, alcohol and crack, years of drug use and daily quantity of crack, alcohol, tobacco and marijuana consumption were dichotomized according to their means and standard deviations (SD) were determined. Frequency of use of alcohol, tobacco and marijuana was dichotomized as: 1 or 2 or ≥ 3 times/day; while frequency of cocaine, LSD and ecstasy use was classified as: weekly or daily consumption. Heavy drinking was classified as five or more drinks per day on each of 5 or more days (2). Preferred types of alcoholic beverages were classified as: beer, vodka, wine, *cachaça* (Brazilian sugarcane hard liquor) or more than one type of liquor (no real preference).

Means and SD were determined for the DMFT index and its components.

The mean age of the participants was determined, and they were placed into the age group closest to their mean, 35-44 years old to allow for comparison with results from the National Survey of Oral Health [12]. Participants were asked how many times per day they brushed their teeth and consumed high in sugar foods, the frequencies were then dichotomized by the median scores.

Results

The study was comprised of 398 males drug addicts in rehabilitation with a mean age and standard deviation of 35 ± 9.6 years old, respectively. Table I shows the sociodemographic characteristics of the sample and shows the oral health habits and the distribution of the DMFT scores. The reasons of patients for their last dental visit were for pain (40.1%), aesthetic purposes (39.8%) and others such as orthodontic treatment and checkups (20.1%). Daily consumption of foods with high sugar content was considered to be high. Participants had a mean and standard deviation of 23.6 ± 5.6 teeth of the 28 teeth examined.

Table I – Sociodemographic and oral characteristics of drug addicts in rehabilitation (n=398), Campo Largo and Piraquara, Paraná, Brazil, 2016

Sociodemographic and oral characteristics		
Variables		**n (%)**
Ethnicity	White / Nonwhite	253 (63.6) / 145 (36.4)
Marital status	Single / Married or civil union	302 (75.9) / 96 (24.1)
Gainful employment	Yes / No	244 (61.3) / 154 (38.7)
Years of schooling	<8 / ≥8	273 (68.6) / 125 (31.4)
Monthly source of income*	≤1 / >1	168 (42.3) / 230 (57.7)
Self-reported health problems	Yes / No	119 (29.9) / 279 (70.1)
Brushing of teeth	Yes / No	378 (95.0) / 20 (5.0)
Tooth brushing frequency	≤ 3 / > 3	121 (32.0) / 277 (68.0)
Use of toothpaste	Yes / No	376 (94.5)/ 22 (5.5)
Use of dental floss	Yes / No	62 (15.6) / 336 (84.4)
Metallic taste	Yes / No	114 (28.6) / 284 (71.4)
Tooth mobility	Yes / No	134 (33.7) / 264 (66.3)
Dental visit	Yes / No	369 (92.7) / 29 (7.3)
Daily high sugar foods intake	≤ 3 / > 3	263 (66.1) / 135 (33.9
Decayed teeth	Mean ± SD	4.60 ± 4.00
Missing teeth	Mean ± SD	4.30 ± 5.50
Filled teeth	Mean ± SD	2.50 ± 3.10
DMFT index	Mean ± SD	11.40 ± 6.80

* Brazilian minimum wage = US$ 230.00. Note: SD – standard deviation

Table II shows the distribution of drug habits in the sample, regarding type, length of time, quantity and frequency of drug use. The most commonly used drugs related in the study were tobacco initiated in early adolescence (14 ± 4.3 years old), closely followed by alcohol (14.6 ± 4.0) and by crack cocaine during early adulthood years (22.3 ± 8.4). A higher average of years of heavy drinking (11.83 ± 10) was observed and alcohol drinkers preferred to drink more than one type of beverage (53.1%) and *cachaça* (27.1%) as opposed to beer, vodka or wine. An average consumption of 16.7 rocks per day was also observed, considering that one rock weighs approximately 0.25 grams [13] hence, they smoked an average of 4.18 grams/day of crack cocaine. A little over half of the participants used marijuana and cocaine. On the other hand, LSD, oxy and ecstasy were the least frequent substances used and their consumption was reserved mostly for weekly and not daily use.

Table II – Drug habits of drug addicts in rehabilitation (n=398), Campo Largo and Piraquara, Paraná, Brazil, 2016

Drugs	Frequency						
	n (%)	Years	n (%)	Days	n (%)	Consumption/day	n (%)
Tobacco							
Yes	331 (83.2)	< 11.3	165 (49.8)	1 or 2 times	28 (8.4)	< 18.3 cigarettes	130 (39.3)
		≥ 11.3	166 (50.2)	≥ 3 times	303 (91.6)	≥ 18.3 cigarettes	201 (60.7)
		Mean ± SD	19 ± 9.6			Mean ± SD	18.3 ± 11.3
No	67 (16.8)						
Alcohol							
Yes	292 (72.9)	< 18.9	145 (49.7)	< 1.9 liters	158 (54.1)	1 or 2 times	101 (34.6)
		≥ 18.9	147 (50.3)	≥ 1.9 liters	134 (45.9)	≥ 3 times	191 (65.4)
		Mean ± SD	18.9 ± 9.6	M ± SD	1.9 ± 1.5		
No	108 (27.1)						
Marijuana							
Yes	212 (53.4)	< 14.2	120 (56.6)	1 or 2 times	58 (27.4)	1 or 2 cigarettes	46 (21.7)
		≥ 14.2	92 (43.4)	≥ 3 times	154 (72.6)	≥ 3 cigarettes	166 (78.3)
		Mean ± SD	14.2 ± 8.7				
No	186 (46.6)						
Crack							
Yes	323 (81.2)	< 11.3	178 (55.1)	No data	No data	< 16.7 rocks	212 (65.5)
		≥ 11.3	145 (44.9)	No data	No data	≥ 16.7 rocks	111 (34.5)
		Mean ± SD	11.3 ± 7.1			Mean ± SD	16.7 ± 23.7
No	75 (18.8)						
Cocaine	n (%)	Weekly		Daily			
Yes	204 (51.3)	123 (60.9)		79 (39.1)			
No	194 (48.7)						
Ecstasy							
Yes	23 (5.8)	19 (86.4)		3 (13.6)			
No	375 (94.2)						

To be continued...

Continuation of table II

Drugs			Frequency				
	n (%)	Years	n (%)	Days	n (%)	Consumption/day	n (%)
LSD							
Yes	40 (10.1)	No frequency		No frequency			
No	358 (89.9)						
Oxy							
Yes	24 (6.0)	No frequency		No frequency			
No	374 (94.0)						
Drug-related crimes							
Yes	226 (56.8)						
No	172 (43.2)						

Note: SD – standard deviation

Discussion

This study intended to investigate the drug addicts profile and associated factors in two southern Brazilian population. The results revealed some similar characteristics among the investigated to be discussed.

The most common drugs used amongst the participants in this study was tobacco, followed by alcohol. The mean age of initiation of tobacco use was the same for alcohol, both with an earlier onset than in the general population. In Brazil 65.0% of all male adult drinkers began the habit of alcohol consumption at 18 years or older, while the smoking habit started one year before [24]. The persistent smoking of tobacco is associated with long-term of drug abuse [7, 25]. In addition, early initiation use of alcohol is associated with later alcohol misuse [22]. Hence, the escalation during adolescence in the use of cigarettes and alcohol contributes to an illicit drug abuse [20] and acts like a precursor for illegal substance dependence in young adults [11].

Crack use is associated with multiple-drug use [14, 15]. There was a prevalence of crack users with high daily consumption of crack stones in the present study. Crack dependence is predominantly frequent among disadvantaged young people, single and especially those of the male gender, unemployment, with low levels of education, low income, history of legal and criminal problems [15, 39]. Here, most of the drug users was admitted to the hospital due to crack dependence however, they use very frequently alcohol, tobacco and marijuana.

The population described was predominantly white, single, eight years of schooling or less, employed before admissions, and with reasoble income (greater than one Brazilian minimum wage).

Crack use was associated with the occurrence of periodontitis [5]. Metallic taste and tooth mobility was reported by approximately one-third of the respondents, probably related to the occurrence of periodontitis. They may have periodontitis, but this was not assessed, and this is a limitation.

Generally, drug addicts visit the dentist for palliative care and are less likely to adhere to follow up sessions [27]. The findings of this study corroborate with this as most participants reported that their last dental visit was for the resolution of pain.

Individuals in the age group 35-44 presented a higher mean DMFT score (17.56). However, it should be considered that edentulous were included in this national survey and missing teeth was the component that weighted the most, additionally a total of 32 teeth were examined [20]. In this study, all the participants were dentate and only 28 teeth were examined, as third molars were excluded. Other studies have reported higher mean DMFT scores in samples of drug addicts [27]. These studies, however, consisted primarily of heroin users, drugs that have been proven to be very detrimental to oral health [29]. Additionally, the majority of the participants of this study brushed their teeth frequently while admitted as inpatients and had a scheduled routine. This could have accounted for lower mean DMFT scores in comparison to other studies of oral health in drug

addicts. It is important to consider that on average the participants were young, and the tendency is for oral health to worsen with age. Successive relapses of drug addicts often lead to frequent admissions to the hospitals, but this alone is not enough to prevent the deterioration of oral health.

Decayed teeth accounted for a major part of the DMFT index, followed by missing teeth. Occurrence of tooth loss was significantly higher among crack cocaine users due to caries [3]. This shows that drug addicts need dental treatment [16]. There is an association between drug use, hyposalivation, increased consumption of sugars and oral diseases [4, 6]. This study showed that drug addicts had a high daily rate of consumption of high in sugar foods (sweets and sugary drinks); this may be one of the factors that attributed to the presence of decayed teeth in the study. This result is comparable to other [34], where the majority of the drug addicts in treatment consumed sugary snacks more than 3 times per day. Cariogenic diets and lack of use of dental floss could explain the high average of untreated caries in this study, which was considerably greater than the age group 35-44 for southern Brazilians in the National Oral Health Survey [12].

The average duration of marijuana use was 14 years, smoked multiple times per day. Importantly, cannabis have effects lasting between 1–6 hours after use [35]. The chronic use of this drug may cause xerostomia, which leads to an increase in caries [23] which could account for the presence of untreated caries in this study. Furthermore, low salivary flow, acidic pH and lower buffer capacity of stimulated saliva were found to be significantly associated with drug use [4, 6].

The participants of this study smoked 18 tobacco cigarettes per day for an average of 19 years and also consumed an average of two liters per day of alcohol. Lifetime use and frequency of tobacco and alcohol were found to be related to severe dental diseases [29] and could therefore be related to the high average of untreated caries and missing teeth seen in this study.

While this study presents important information, some limitations should be considered. The results therefore cannot be extrapolated to the general population of drug addicts who are not institutionalized. The majority of the participants were multi-drug users, as a result the effects of any particular drug on oral health could not be observed. Instead, it is possible to infer that the cumulative effect of different drugs is detrimental to oral health, this is valuable information as most drug addicts use multiple substances. Additionally, as this study was based on self-reported responses that were not confirmed by information present in the participants' medical files, it is likely to be liable to social desirability and memory biases.

The sociodemographic profile showed a population of young adults predominantly white, with low levels of schooling, employed with monthly source of income and multi-drug users. Occurrence of decayed teeth and tooth loss was prevalent among drug users and have precarious oral health. The findings of the study indicate the importance of investing in education and efficient strategies on the prevention and recovery of drug users. Effective engagement in the prevention and treatment of oral diseases could be carried out within hospitals to supply this demand.

Acknowledgements

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