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Epidemiological Profile of an Opioid Use Disorder Outpatient Clinic in Brazil

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Abstract

Introduction: This study represents the first clinical descriptive study on opioid use disorder (OUD) in Brazil.

Methods: This comparative cross-sectional study involved 314 adult patients at the Addiction Outpatient Clinic of Instituto Perdizes, São Paulo, from April 2023 to August 2024. Data were collected through interviews, using the validated Brazilian Portuguese version of the Addiction Severity Index (ASI-6) and the Structured Clinical Interview for DSM-5 (SCID). Statistical analysis included descriptive statistics, chi-square tests for categorical variables, and the Kruskal-Wallis test for continuous variables.

Results: Patients were evaluated and divided in two groups: OUD group (OUDG) with 45 (14.3%) and non-opioid use disorder group (NOUDG) with 269 (85,87%). In the OUDG, 26.7% were healthcare professionals ($p < 0.001$; 95%CI 3.34 - 7.92), and there was a high incidence of chronic pain (55.6%) ($p < 0.001$; 95%CI 2.60 - 4.13). Healthcare utilization was notably higher among OUD patients, with 73.3%

attending healthcare services in the past six months ($p < 0.001$; 95%CI 1.14 - 4.97). **Discussion:** Emerging data reveal a growing trend in opioid use in low- and middle-income countries, with Brazil witnessing a notable rise in opioid prescriptions. **Conclusion:** Developing effective preventive strategies for OUD is crucial to mitigating its significant public health risks. Chronic pain conditions and healthcare professionals may represent vulnerable groups with an elevated risk of developing OUD.

Keywords: opioid use disorder, substance use disorder, chronic pain, public health, Opioid Outpatient Clinic.

1. Introduction

Opioids constitute a group of drugs that have similar effects among them, ranging from natural opiate alkaloids derived from opium extracted from the poppy flower (*Papaver somniferum*), such as morphine, codeine, and thebaine, to semi-synthetic substances that have undergone some chemical modification, like heroin, hydrocodone, oxycodone, and buprenorphine[1]. This class also includes fully synthetic opioids, such as methadone, pethidine, tramadol, and fentanyl[2].

Despite their importance in pain treatment, opioids carry a significant risk of abuse, tolerance, and dependence[3]. Data on opioid use disorder (OUD) varies widely across regions, making accurate global estimates challenging. Approximately 26.8 million people worldwide suffer from OUD[3,4], which is linked to over 120,000 deaths annually[5]. This situation is worsened by the availability of potent drugs, such as fentanyl, exponentially increasing the number of fatal intoxications[4-6].

Brazil has been among the countries with limited access to prescription opioids[7], and its consumption remains low - accounting for less than 5% of the levels observed in G-20 nations[8,9]. This comparatively low consumption reflects barriers to access rather than a lower need for opioid analgesics. Structural challenges within the public health system, including limited funding, underdeveloped pain management infrastructure, and the insufficient integration of palliative care into routine services, have contributed to this restricted[10]. Furthermore, while Brazil has

historically served as a major transit route and market for cocaine, it has not played a comparable role in the trade of illicit opioids[11,12].

However, this situation varies by location and continues to evolve over time. In line with global trends, Brazil has experienced a notable increase in opioid consumption, particularly of prescription opioids[13]. A national drug survey revealed that approximately 2.9% of the Brazilian population reported lifetime non-medical use of prescription opioids. This prevalence is notably higher than crack use, which has been reported by 0.9% of the population over their lifetime[11]. Additionally, opioid sales in Brazil increased by 34.8% in 2020, rising from 44 to 56 prescriptions per 1,000 inhabitants[14]. This phenomenon parallels the global spread of opioid abuse worldwide and raises concerns on the potency raising of mortality rates[15].

Describing the characteristics of OUD becomes a challenge due to epidemiological differences amongst populations, in addition to regional and cultural specificities of location. In low-middle-income countries (LMICs) like Brazil, there is a lack of robust data in literature[16]. Thus, this work represents the first Brazilian clinical descriptive study on OUD in the country.

2. Material and Methods

A comparative cross-sectional study was conducted at the Addiction Outpatient Clinic of Instituto Perdizes, part of the Clinical Hospital of the University of São Paulo (IPER-HCFMUSP), between April 2023 and August 2024. The research was reviewed and approved by the Ethics and Research Committee of IPER-HCFMUSP under the number 33568520.4.0000.0068, ensuring that the study met all ethical and legal requirements. Patients did not receive financial compensation for participating in the study. This work is part of a broader research project on comorbidity in substance use disorders (SUD) individuals.

2.1. Participants

A total of 1,377 patients attended the IPER-HCFMUSP outpatient clinic during the study period. Of these, 314 adult patients met the eligibility criteria and agreed

to participate in the study by completing the structured interviews and validated questionnaires. The sample consisted of patients diagnosed with SUD, including opioid, alcohol, cannabis, cocaine/crack, amphetamines, hallucinogens, inhalants and other substances like nicotine, who sought treatment at our service. Participants were divided into two groups: those diagnosed with non-opioid disorders (alcohol, cannabis, cocaine/crack, amphetamines, hallucinogens, inhalants and other substances like nicotine), and those with OUD.

Inclusion criteria included being over 18 years and meeting DSM-5 diagnostic criteria for any SUD. Exclusion criteria were acute intoxication or clinically decompensated conditions at the time of assessment, as well as insufficient linguistic proficiency to complete the interviews. The study used a convenience sample; no a priori sample size calculation was performed. Data were collected from all eligible patients who sought treatment and consented to participate during the study period. The number of refusals and incomplete assessments was not recorded.

2.2. Procedure

Interviews were conducted at the Outpatient Clinic SUD treatment unit at IPER-HCFMUSP. Sociodemographic data (gender, race, age, education level, marital status, income) and information related to OUD (chronic pain, profession, healthcare frequency attendance, psychiatric symptoms, referral to treatment, pension for a physical disability, severity of physical pain or discomfort) were collected by psychiatrists. Psychometric assessments were conducted by trained psychiatrists or psychologists.

2.3. Instruments

Addiction Severity Index (6th Edition – ASI-6)

The validated Brazilian Portuguese version of the Addiction Severity Index (6th Edition – ASI-6) was applied to all patients at the IPER. It is a robust and comprehensive instrument for assessing and stratifying substance disorder

prognosis used in several countries and has been translated and validated for Portuguese[17]. The ASI-6 is a semi-structured interview that gathers information about general health status, employment situation, alcohol and drug use, legal problems, family and social relationships, and psychological status. Its first version was developed in 1980 by McLellan et al. and has been widely used since to assist in determining treatment plans for addictions[18].

The selected participants identified in this questionnaire had "Primary Drug Problems" (D34A) divided into two groups: as the use of heroin, methadone, or other opioids and the other substances abuse (Alcohol; Cannabis; Sedatives/Hypnotics/Tranquilizers; Cocaine/Crack; Amphetamines; Hallucinogen; Inhalants; Other Substances - nicotine included). The variables selected for the study included: Gender (G8); Date of Birth (G9); Which race/color do you identify with? (G10); What is your marital status? (G12); How were you referred for treatment? Other chronic problems or illness (M15); Rating of severity of physical pain or discomfort past 30 days (M22); Healthcare frequency attendance last 6 months (M26); In the last 6 months, how much money did you earn? (E18); In the last 30 days, how much money did you earn? (E20); What is the highest level of education you have completed? (E1); What is the last grade or year you completed? (E3); What is your current main employment situation? (E10); What type of work do you do (main job)? (E12); Primary Drug Problems (D34A); Experienced serious depression, sadness, hopelessness, loss of interest, difficulty with daily functioning? (P9A); Experienced serious anxiety/tension— were uptight, unreasonably worried, unable to feel relaxed? (P10A).

The epidemiological profile of these patients was built based on the following variables: race/color, gender, age group, opioid types, income, education, marital status, referral to treatment, comorbidities (specific chronic pain), and professions.

Structured Clinical Interview for DSM-5 (SCID)

The Brazilian version of the Structured Clinical Interview for DSM-5 (SCID) was used for all patients. This semi-structured interview provides diagnoses based on the DSM-5 and is widely used in clinical and research settings. In this study, we applied only the SUD-specific sections (modules E14 to E36), which focus on the diagnostic criteria for substance-related and addictive disorders. Although practical and the SCID requires the clinical judgment of the interviewer in interpreting patient responses, underscoring the importance of expertise in psychopathology and familiarity with DSM-5[19]. Its primary goal is to support diagnostic assessment through a structured yet flexible format[20].

Data analysis

Descriptive statistics of the main variables (including mean and standard deviation) were performed. Data distribution was examined for normality. As most continuous variables did not follow a normal distribution, non-parametric tests were used. The chi-square test was used to compare categorical variables, and the Kruskal-Wallis test was applied for continuous variables. All statistical hypotheses were two-tailed, and the significance level adopted was 5%. Odds ratios with 95% confidence intervals were calculated. The IBM SPSS Statistics, version 18 (or later) was used to perform all analyses.

3. Results

A total of 314 patients were evaluated at IPER HCFMUSP and categorized into two groups: opioid use disorder (OUDG) and non-opioid use disorder (NOUDG). In the OUDG, there were 45 patients (14.3%). Of these, 8 (17.8%) were methadone users, 1 (2.2%) was heroin user, and 36 (80%) used other opioids, including morphine, oxycodone, fentanyl, dolantin, and tramadol. In the NOUDG group, there were 269 patients (85.7%), and the primary substances that prompted participants to seek treatment were cocaine/crack (123; 45.7%), followed by alcohol (73; 27.1%),

cannabis (11; 4.1%), hallucinogens (6; 2.2%), and other substances, including nicotine (7; 2.6%); (see Table 1).

The mean age was similar between the two groups, with the OUDG showing a slightly higher average (40.59 years; ±SD 11.75) compared to the NOUDG (39.44 years; ±SD 11.70); (see Table 2, item 2.1). Race and marital status distributions were also comparable between groups (see Table 2, items 2.2 and 2.4). In terms of income, 57.8% in the OUDG earned two minimum wages or less, compared to 66.5% in the NOUDG, though this difference was not statistically significant (p = 0.063; 95% CI 0.76–2.76); (see Table 2, item 2.5). The OUDG showed 18 (40%) with a higher education degree and 2 (4.4%) holding a master's degree or higher. In contrast, in the NOUDG, 35 (13.1%) reported having completed elementary education, 154 (57.2%) had completed high school, and 73 (27.1%) held a higher education degree, with statistical significance (p = 0.009); (see Table 2, item 2.6). Regarding clinical comorbidities, participants in OUDG reported a broad range of medical comorbidities. The most prevalent conditions included hypertension (20.0%), chronic respiratory problems (15.6%), epilepsy or seizures (13.3%), and hepatitis (8.9%). HIV, tuberculosis, cirrhosis, cancer, and kidney disease were reported less frequently (2.2–6.7%). The prevalence of chronic pain showed a significant difference between the groups ($p < 0.001$; 95%CI 43.15-260.62), with 20 individuals (44.4%) in the OUDG reporting chronic pain; (see Table 2, item 2.7).

Psychiatric symptoms were prevalent in both groups, with markedly higher rates among participants in the OUDG. In this group, 86.7% reported symptoms of depression in the past 30 days, and 82.2% reported significant anxiety or tension, both significantly higher than in the NOUDG ($p = 0.002$ and $p < 0.001$, respectively); (see Table 2, items 2.10 and 2.11). Additionally, 55.6% of OUDG participants endorsed cognitive difficulties, and 37.8% reported a history of suicidal ideation. Emotional regulation problems were also common, including difficulty controlling temper (26.7%) and aggressive behavior (24.4%). A substantial proportion reported trauma-related experiences, with 40.0% reporting physical abuse and 24.4%

disclosing a history of sexual abuse. These findings suggest a high prevalence of mood and trauma-related disorders in this population.

In the OUDG, 12 participants (26.66%) were healthcare professionals, compared only 4 participants (1.5%) in the NOUDG, with a significant difference ($p < 0.001$; 95%CI 3.34–7.92); (see Table 2, item 2.8). Healthcare service attendance over the past six months also differed markedly between groups: 73.3% of OUDG participants reported attending healthcare services during this period, compared to 13.4% of those in the NOUDG ($p < 0.001$; 95% CI 1.14–4.97; see Table 2, item 2.9). Referral patterns further reflected this divergence. In the OUDG, most participants (55.6%) were referred by health institutions or professionals, whereas in the NOUDG, the majority (61.3%) were self-referred or referred by a family member or friend. Only 14.9% of NOUDG participants were referred by a healthcare source—a statistically significant difference ($p < 0.001$; see Table 2, item 2.12).Regarding pension benefits for a physical disability, the OUDG reported a significantly higher rate (17 participants; 37.8%) compared to the NOUDG ($p < 0.001$; see Table 2, item 2.13). Self-reported ratings of physical disability or discomfort experienced in the past 30 dayswere also notably higher in the OUDG, with 40.0% rating their discomfort as "extremely". Only 17.8% of participants in this group reported no physical discomfort - a substantially smaller proportion compared to the NOUDG ($p < 0.001$; see Table 2, item 2.14).

Table 1. Substance Use Disorders in IPER HCFMUSP

NOUDG n (%)		
01 - Alcohol	73	27.1
02 - Cannabis	11	4.1
03 - Sedatives/Hypnotics/Tranquilizers	7	2.6
04 - Cocaine/Crack	123	45.7
05 - Amphetamines	4	1.5
06 - Hallucinogens	6	2.2
10 - Inhalants	2	0.7
11 - Other Substances (nicotine included)	7	2.6

12 - None		2	0.7
	Total	269	100.0
OUDG n (%)			
07 - Heroin		1	2.2
08 - Methadone		8	17.8
09 - Other Opioids		36	80.0
	Morphine	13	36.1
	Fentanyl	8	22.3
	Tramadol	4	11.1
	Oxycodone	4	11.1
	Codein	3	8.3
	Dolantin	3	8.3
	Opium tincture	1	2.8
	Total	45	100.0

Table 2. Epidemiological Profile in IPER HCFMUSP

Characteristics		**OUDG**	**NOUDG**	***p* (95%CI)**
2.1. Age (Mean SD ±)		40.59 (11.75)	39.44 (11.70)	
2.2. Race n (%)				0.734
	1- Black (not Hisp)	9 (20)	52 (19.3)	
	2- White (not Hisp)	24 (53.3)	150 (55.8)	
	3- Asian/Pacific	2 (4.4)	3 (1.1)	
	4- Mixed-race	10 (22.2)	59 (21.9)	
	5- Indigenous	0	2 (0.8)	
	Total	45 (100)	269 (100)	
2.3. Gender n (%)				< 0.001 (1.78 - 6.78)
	Male	24 (53.4)	213 (79.2)	
	Female	20 (44.4)	51 (19)	
	Other	1 (2.2)	5 (1.8)	
	Total	45 (100)	269 (100)	
2.4. Marital Status n (%)				0.229
	1- Married	11 (24.4)	41 (15.2)	
	2- Living as married	5 (11.1)	24 (8.9)	
	3- Widower	8 (17.8)	5 (1.9)	
	4- Divorced	5 (11.1)	33 (12.3)	
	5- Separated	16 (35.6)	17 (6.3)	

6- Single	45 (100)	148 (55)	
Total		269 (100)	
2.5. Income n (%)			0.063 (0.76-2.76)
< 2 minimum wages	26 (57.8)	179 (66.5)	
> 2 minimum wages	19 (42.2)	90 (33.5)	
Total	45 (100)	269 (100)	
2.6. Education Level n (%)			0.009
1- Elementary School or None	5 (11.1)	35 (13.1)	
2- High School	20 (44.5)	154 (57.2)	
3- Higher Education	18 (40)	73 (27.1)	
5- Master's Degree or higher	2 (4.4)	7 (2.6)	
Total	45 (100)	269 (100)	
2.7. Chronic pain n (%)			< 0.001 (2.60-4.13)
No	20 (44.4)	268 (99.6)	
Yes	25 (55.6)	1 (0.4)	
Total	45 (100)	269 (100)	
Fibromyalgia	8		
Sickle cell disease	5		
Chronic non-specific pain	6		
Herniated disc	3		
Low back pain	3		
2.8. Healthcare Professionals n (%)			< 0.001 (3.34-7.92)
No	33 (73.3)	265 (98.5)	
Yes	12 (26.7)	4 (1.5)	
Total	45 (100	269 (100)	
2.9. Healthcare frequency attendance in 6 months n (%)			< 0.001 (1.14-4.97)
No	33 (73.3)	233 (86.6)	
Yes	12 (26.7)	36 (13.4)	
Total	45 (100)	269 (100)	
2.10. Experienced serious depression n (%)			0.002 (1.57-4.07)
No	6 (13.3)	100 (37.2)	
Yes	39 (86.7)	169 (62.8)	
Total	45 (100)	269 (100)	
2.11. Experienced serious anxiety/tension n (%)			< 0.001 (2.72-6.22)
No	8 (17.8)	136 (50.6)	
Yes	37 (82.2)	133 (49.4)	
Total	45 (100)	269 (100)	
2.12. Referral n (%)			< 0.001
1- By themselves, spouse, family, or friend	10 (22.2)	165 (61.3)	

2- Institution or person related to alcohol and drug treatment	8 (17.8)	59 (21.9)	
3- Health institution or health professional	25 (55.6)	40 (14.9)	
5- Word or an employment assistance program	1 (2.2)	1 (0.4)	
6- Referral through the penalty system or judge	0	1 (0.4)	
Total	45 (100)	269 (100)	
2.13. Pension for a physical disability n (%)			< 0.001
No	28 (62.2)	249 (92.6)	
Yes	17 (37.8)	8 (3)	
Total	45 (100)	269 (100)	
2.14. Rating severity of physical pain or discomfort n (%)			< 0.001
0- Not at all	8 (17.8)	153 (64.3)	
1- Slightly	2 (4.4)	21 (7.9)	
2- Moderately	8 (17.8)	35 (13)	
3- Considerably	9 (20)	24 (8.9)	
4- Extremely	18 (40)	16 (5.9)	
Total	45 (100)	269 (100)	

±SD Standard Deviation

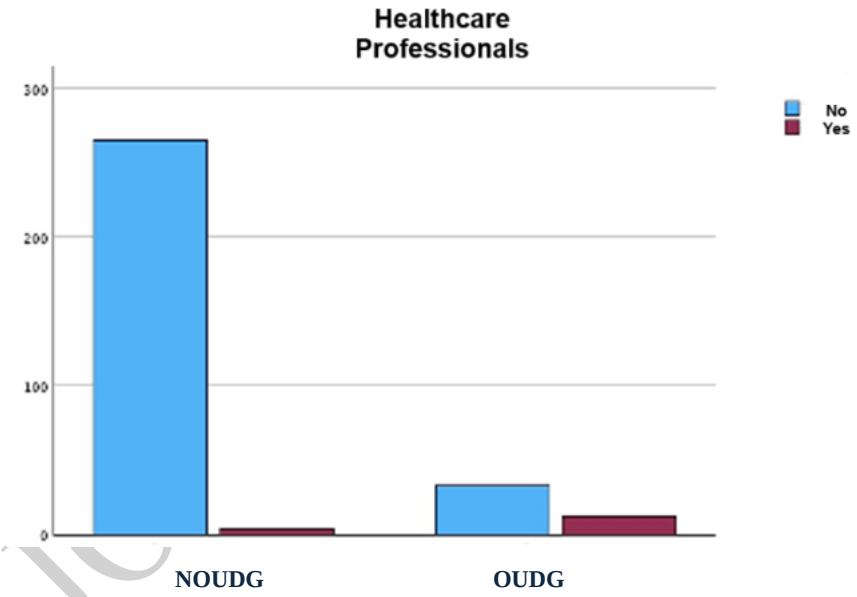

Fig 1. Healthcare professionals' prevalence.

4. Discussion

The Opioid Outpatient Clinic at IPER HCFMUSP is an Outpatient Clinic in the Brazilian public health system dedicated exclusively to the care in OUD. It integrates a multidisciplinary team of psychiatrists, anesthesiologists, pain specialists, psychologists, nurses, occupational therapists, and nursing technicians. It is characterized as an Outpatient Clinic within a university-linked hospital, focusing on education, assistance, research, and the development of expertise in this field in Brazil. The program is designed to provide multidisciplinary support, focusing not only on the treatment of OUD but also on the associated psychiatric disorders and chronic pain.

While it was initially believed that the opioid crisis had not yet replicated globally or followed the patterns observed in high-income countries in the short term, recent data highlight the growing burden of OUD in LMICs, such as Brazil. This increase is reflected in the rise of disability-adjusted life-years (DALYs) associated with OUD[16] and the significant growth in opioid consumption in Brazil between 2009 and 2015, with sales jumping from 8 to 44 per 1,000 inhabitants — a 465% increase[13].

Our findings offer clinical insight into this emerging epidemic, revealing a complex and vulnerable OUD population, marked by high rates of psychiatric and trauma-related comorbidities. In our sample, symptoms of depression and anxiety were highly prevalent, along with cognitive complaints, emotional dysregulation, suicidal ideation, and histories of physical and sexual abuse. These results align with existing literature that demonstrates a strong association between OUD, mood disorders, and trauma-related experiences[22,23]. Together, they underscore the critical need for trauma-informed and integrated psychiatric care within OUD treatment settings.

However, describing the specific characteristics of the Brazilian population becomes a challenge due to the lack of robust data, and epidemiological heterogeneity, as well as the regional and cultural specificities of each place. Unlike the United States, where OUD represents the main public health issue related to

drug use[21], in Brazil, economically disadvantaged areas and ethnic minority populations experience a higher prevalence of crack use disorder[24,25].

A key factor in understanding the opioid epidemic is the correlation between rising prescription rates and the subsequent increase in morbidity and mortality related to OUD[26]. Pain has also been recognized as a significant clinical and public health issue, particularly in the early stages of the epidemic, when it was often inadequately addressed[27]. More recently, although opioid prescriptions and overdose deaths have declined, the overall number of deaths has risen since 2014, largely due to fentanyl overdoses, which has become the leading cause of accidental death in the USA[28]. The elevated prevalence of physical discomfort and disability pensions among OUD patients reinforces the well-established relationship between chronic pain and opioid use. Inappropriate prescribing for non-indicated conditions may contribute to the development of OUD.

A study exploring the latent traits of OUD among frequent nonmedical prescription opioid (NMUPO) users revealed the existence of heterogeneous NMUPO classes, highlighting the potential for different groups to benefit from tailored interventions. This is particularly relevant in the Brazilian context, where SUD is strongly influenced by social and cultural factors[29]. As a result, it is estimated that the epidemiological profile of OUD in Brazil may be quite distinct, as access to medical opioids is more restricted to individuals with better healthcare access or more favorable economic conditions, and more related to opioid prescriptions instead of recreational use. This indicates that differences in usage patterns may be influenced by the availability of drugs and opioid medications, suggesting that additional social factors may affect prevalence rates[24,30,31]. In contrast to regions where heroin or fentanyl predominate, our sample was characterized primarily by prescription opioid use, pointing to an epidemiological pattern shaped by healthcare infrastructure, socioeconomic disparities, and clinical practice.

The overrepresentation of healthcare professionals in the OUDG may be related to both increased access to prescription opioids and occupational stressors, as described in previous studies. This population may be particularly vulnerable to

the development of OUD due to their routine exposure to controlled substances and the emotional demands of clinical practice[32]. The significant representation of this group in our sample underscores the urgent need for targeted preventive strategies, mental health support, and workplace interventions aimed at reducing OUD risk among healthcare workers.The OUD imposes substantial costs on healthcare systems, not only due to medication expenses but also because of increased hospital admissions, outpatient visits, and the strain on other services. For instance, a comparative study revealed that individuals with OUD incur an average monthly healthcare expenditure of $1,102, compared to just $211 for those without OUD[33]. The higher rate of healthcare service utilization and institutional referrals in the OUDG may indicate more frequent medical comorbidities or better access to formal care pathways. By implementing preventive measures, we could avoid the mistakes observed in other nations and mitigate the devastating effects of the opioid epidemic.

Regarding overdose deaths in Brazil, 76.72% lack specific information about the substances involved. Among the identified cases, cocaine accounted for 47.12%, and opioids only 5.36%, highlighting a relatively small opioid involvement[34]. Nonetheless, the risk of cocaine contamination with fentanyl in the country poses a serious threat regarding the safety and quality control of illicit drugs, creating a dangerous environment for users who may unknowingly consume lethal[35].

The first-line treatment for OUD primarily involves a combination of medications for OUD (MOUD)—such as methadone, buprenorphine, and naltrexone—with psychosocial interventions[6,7]. Effective implementation of this approach requires specialized expertise to manage these treatments appropriately. Nonetheless, the introduction of MOUD significantly enhances the overall quality of life for patients[36], who typically experience a lower one when compared to the general population[37]. Equally important is the need to reduce unnecessary opioid prescriptions, particularly for chronic pain conditions like fibromyalgia, where opioids are not indicated and can even worsen symptoms[38].

Specialized services like the IPER HCFMUSP Outpatient Clinic play a crucial role in facilitating earlier diagnosis and timely initiation of MOUD. This approach reduces

the risk of overdoses, improves patient outcomes, and enhances the overall efficiency of OUD management. Moreover, it provides a valuable platform for generating clinical and epidemiological data in a region where such information is still limited. A key strength of this study lies in its use of validated assessment tools and the inclusion of a real-world clinical population in Brazil—contributing novel data to the international literature on OUD in LMICs. Future research should aim to replicate these results in multicenter or longitudinal designs, with larger samples and a deeper investigation of psychiatric and medical comorbidities. These efforts are essential to inform public health strategies and adapt treatment approaches to the unique challenges of the Brazilian opioid landscape.

Implications for Public Policy and Practice

This study highlights key vulnerabilities in the Brazilian opioid landscape and underscores the need for coordinated public health strategies to mitigate the growing burden of OUD. Our findings point to the importance of expanding access to specialized outpatient services like the multidisciplinary model implemented at the IPER HCFMUSP Outpatient Clinic, which integrates psychiatry, pain management, and psychosocial support. Replicating this model in other regions of Brazil could facilitate timely and comprehensive care for individuals with OUD.

Given the predominance of prescription opioid use observed in our sample, integrating national prescription monitoring systems and expanding continuing medical education on safe prescribing practices —particularly in the management of chronic pain —should be considered essential public health priorities. Moreover, preventive strategies should also be developed for high-risk groups, notably healthcare professionals and individuals with chronic pain, who were disproportionately represented in the OUD group. These measures may include targeted screening, early intervention, and tailored educational efforts.

Although OUD prevalence remains relatively low in Brazil compared to other countries, this should not lead to complacency. Strengthening epidemiological surveillance and investing in public education campaigns are critical to promoting

informed, data-driven responses and reducing stigma around treatment-seeking. Finally, increasing access to evidence-based pharmacological treatments —such as methadone, buprenorphine, and naltrexone—requires not only policy support but also professional training to ensure their appropriate and effective use in clinical practice. Collectively, these strategies may support Brazil in anticipating and addressing opioid-related challenges through evidence-informed, context-specific interventions.

5. Conclusion

In summary, the Opioid Outpatient Clinic at IPER HCFMUSP is dedicated to OUD providing multidisciplinary care and integrating education, research, and clinical expertise. While Brazil's opioid landscape differs from other countries, with limited access to medical opioids and a focus on crack use in disadvantaged areas, rising opioid consumption and risks like fentanyl contamination highlight the need for proactive care. OUD patients significantly burden healthcare systems, increasing costs through higher rates of hospital admissions, outpatient visits, and prolonged treatment needs. Our study suggests that healthcare professionals, probably due to their proximity and frequent handling of opioids, may have an increased risk of developing OUD, highlighting the importance of targeted preventive measures for this group. Chronic pain conditions in patients may further complicate prognostics, as inappropriate opioid prescribing in these cases can increase the risk of developing OUD. Comprehensive treatment, including MOUD and psychosocial support, is essential to improve patient outcomes, reduce healthcare costs, and address co-occurring conditions.

Limitations and Strengths

The main limitations of this study are its cross-sectional design, which makes it impossible to determine causal inferences, and the relative sample size of individuals with OUD in our outpatient population. A small sample may reduce the generalizability of findings and limit the ability to detect statistically significant

differences between groups. However, a post hoc power analysis was conducted for the chi-square test comparing the proportion of healthcare professionals between the OUDG and NOUDG groups ($\chi^2 = 45.47$, df = 1, $p < 0.001$). The effect size (Cohen's w) was 0.38, and the achieved statistical power was approximately 99.99%, indicating that the sample was adequate to detect the observed difference. Additionally, potential selection bias should be considered, as the participants were recruited from a single specialized outpatient clinic within the public healthcare system. This recruitment strategy may affect the external validity of the findings, as it may not reflect the broader population of individuals SUD in Brazil. It is also important to note that the profile of our sample was predominantly composed of individuals with a history of prescription opioid use. This differs from other regions where recreational opioid use (such as heroin or fentanyl obtained illicitly) is more prevalent. As a result, caution should be exercised when comparing our findings with studies from countries or settings where non-medical opioid use is more common. Future studies with larger and more diverse samples are recommended to confirm and expand on these findings.

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6. References

1. World Health Organization. Community management of opioid overdose [Internet]. Geneva: WHO; 2014 [cited 2023 Sept 21]. Available from: https://www.who.int/publications/i/item/community-management-of-opioid-overdose
2. Cruz SL, Paz-Ramos MI, Hernandez-Mendoza A, Carranza-Aguilar CJ. Opioid Effects and Classification. In: Cruz, S.L. (eds) Opioids. Springer, Cham; 2022 [cited 2023 Sept 21]. p. 149-74.
3. Volkow ND, McLellan AT. Opioid Abuse in Chronic Pain—Misconceptions and Mitigation Strategies. N Engl J Med. 2016; 374:1253-63.

4. Strang J, Volkow ND, Degenhardt L, Hickman M, Johnson K, Koob GF, et al. Opioid use disorder. Nat Rev Dis Primers. 2020;6:3.
5. Chang HY, Kharrazi H, Bodycombe D, Weiner JP, Alexander GC. Healthcare costs and utilization associated with high-risk prescription opioid use: a retrospective cohort study. BMC Med. 2018;16:69.
6. Han Y, Yan W, Zheng Y, Khan MZ, Yuan K, Lu L. The rising crisis of illicit fentanyl use, overdose, and potential therapeutic strategies. Transl Psychiatry. 2019;9:282.
7. Seya MJ, Gelders SFAM, Achara OU, Milani B, Scholten WK. A First Comparison Between the Consumption of and the Need for Opioid Analgesics at Country, Regional, and Global Levels. J Pain Palliat Care Pharmacother. 2011;25:6-18.
8. Degenhardt L, Grebely J, Stone J, Hickman M, Vickerman P, Marshall BDL, et al. Global patterns of opioid use and dependence: Harms to populations, interventions, and future action. Lancet. 2019;394:1560-79.
9. Maia LO, Daldegan-Bueno D, Fischer B. Opioid use, regulation, and harms in Brazil: a comprehensive narrative overview of available data and indicators. Subst Abuse Treat Prev Policy. 2021;16:1-10.
10. Ribeiro JM, Moreira MR, Bastos FI, Inglez-Dias A, Fernandes FMB. Acesso aos serviços de atenção em álcool, crack e outras drogas – o caso do município do Rio de Janeiro, Brasil. Cien Saude Colet. 2016;21:71-81.
11. Bastos FI, Vasconcellos MTL, De Boni RB, Reis NB, Coutinho CFS. III Levantamento Nacional sobre o uso de drogas pela população brasileira. Rio de Janeiro. Fiocruz. 2017;4:79-85.
12. Bastos FI, Krawczyk N. Reports of rising use of fentanyl in contemporary Brazil is of concern, but a US-like crisis may still be averted. Lancet Reg Health Am. 2023;23.
13. Krawczyk N, Greene MC, Zorzanelli R, Bastos FI. Rising Trends of Prescription Opioid Sales in Contemporary Brazil, 2009–2015. Am J Public Health. 2018;108:666-8.
14. Krawczyk N, Silva PLN, De Boni RB, Mota J, Vasconcellos M, Bertoni N, et al. Non-medical use of opioid analgesics in contemporary Brazil: Findings from the 2015 Brazilian National Household Survey on Substance Use. Glob Public Health. 2020;15:299-306.
15. Correia I, Meziat-Filho N, Furlan AD, Saragiotto B, Reis FJJ. Are we missing the opioid consumption in low- and middle-income countries? Scand J Pain. 2024;24:1.
16. Castaldelli-Maia JM, Wang YP, Brunoni AR, Faro A, Guimarães RA, Lucchetti G, et al. Burden of disease due to amphetamines, cannabis, cocaine, and opioid use disorders in South America, 1990–2019: a systematic analysis of the Global Burden of Disease Study 2019. Lancet Psychiatry. 2023;10:85-97.
17. Kessler F, Cacciola J, Alterman A, Faller S, Souza-Formigoni ML, Cruz MS, Brasiliano S, Pechansky F. Psychometric properties of the sixth version of the Addiction Severity Index (ASI-6) in Brazil. Braz J Psychiatry. 2012;34(1):24-33.

18. McLellan AT, Luborsky L, Woody GE, O'Brien CP. An Improved Diagnostic Evaluation Instrument for Substance Abuse Patients. J Nerv Ment Dis. 1980;168:26-33.
19. Shabani A, Masoumian S, Zamirinejad S, Hejri M, Pirmorad T, Yaghmaeezadeh H. Psychometric properties of Structured Clinical Interview for DSM-5 Disorders-Clinician Version (SCID-5-CV). Brain Behav. 2021;11:5.
20. First MB, Williams JB, Karg RS, Spitzer RL, organizators. User's guide for the SCID-5-CV Structured Clinical Interview for DSM-5 disorders. 1. ed. Arlington (VA): Am Psychiatr Publ Inc.; 2016. 176 p.
21. Blanco C, Volkow ND. Management of opioid use disorder in the USA: present status and future directions. Lancet. 2019;393:1760-72.
22. De Filippis S, Martinotti G, Nicoletti F, Mastrostefano A, Trovini G, Pugliese A, et al. Major depression in comorbidity with substance use disorders: Patients' features and clinical-neurobiological rationale of antidepressant treatments. Curr Neuropharmacol. 2024;23(3):256-275.
23. Kendurkar A, Wilson J, Sunderland M, Dunlop A, Hayes C, Marel C, Mills KL. Is post-traumatic stress disorder a risk factor for development of opioid use disorder among individuals with chronic non-cancer pain? A systematic review. Br J Pain. 2024;18(1):70-81.
24. Miguel AQC, Simões V, Yamauchi R, Madruga CS, da Silva CJ, Laranjeira RR, et al. Sociodemographic and clinical profile of crack cocaine treatment-seeking individuals living in 'Crackland', Brazil. J Bras Psiquiatr. 2022;71:50-5.
25. United Nations Office on Drugs and Crime (UNODC). World drug report 2021 [Internet]. Vienna: United Nations; 2021 [cited 2023 Sept 21]. Available from: https://www.unodc.org/unodc/en/data-and-analysis/wdr2021.html
26. Gomes T, Mamdani MM, Dhalla IA, Cornish S, Paterson JM, Juurlink DN. The burden of premature opioid-related mortality. Addiction. 2014;109:1482-8.
27. Compton WM, Jones CM, Baldwin GT. Relationship between Nonmedical Prescription-Opioid Use and Heroin Use. N Engl J Med. 2016;374:154-63.
28. Centers for Disease Control and Prevention (CDC). Overdose death rates: Data trends and demographics. Natl Cent Health Stat. 2024.
29. Castaldelli-Maia JM, Andrade LH, Keyes KM, Cerdá M, Pilowsky DJ, Martins SS. Exploring the latent trait of opioid use disorder criteria among frequent nonmedical prescription opioid users. J Psychiatr Res. 2016;80:79-86.
30. Belzak L, Halverson J. The opioid crisis in Canada: a national perspective. Health Promot Chronic Dis Prev Can. 2018;38:224-33.
31. Zajacova A, Grol-Prokopczyk H, Limani M, Schwarz C, Gilron I. Prevalence and correlates of prescription opioid use among US adults, 2019–2020. PLoS One. 2023;18:e0282536.
32. Wright EL, McGuiness T, Moneyham LD, Schumacher JE, Zwerling A, Stullenbarger NEN. Opioid abuse among nurse anesthetists and anesthesiologists. AANA J. 2012;80:120-8.

33. Miron O, Barda N, Balicer R, Kor A, Lev-Ran S. Association of opioid use disorder with healthcare utilization and cost in a public health system. Addiction. 2022;117:2880-6.
34. Bianco MCM, Tardelli VS, Brooks ER, Areco KCN, Tardelli AO, Bandiera-Paiva P, et al. Drug overdose deaths in Brazil between 2000 and 2020: an analysis of sociodemographics and intentionality. Braz J Psychiatry. 2023;45:1-8.
35. Centro de Informação e Assistência Toxicológica de Campinas (CIATox-Campinas). Alerta toxicológico sobre abuso de novas substâncias psicoativas contendo fentanil [Internet]. Campinas: CIATox-Campinas; 2023 [cited 2024 Jul 7]. Available from: https://www.fcf.unicamp.br/ciatox-fentanil-na-rmc/
36. Golan OK, Totaram R, Perry E, Fortson K, Rivera-Atilano R, Entress R, et al. Systematic review and meta-analysis of changes in quality of life following initiation of buprenorphine for opioid use disorder. Drug Alcohol Depend. 2022;235:109445.
37. De Maeyer J, Vanderplasschen W, Broekaert E. Quality of life among opiate-dependent individuals: A review of the literature. Int J Drug Policy. 2010;21:364-80.
38. Hall OT, Teater J, Entrup P, Deaner M, Bryan C, Harte SE, et al. Fibromyalgia predicts increased odds of pain-related addiction exacerbation among individuals with pain and opioid use disorder. Pain. 2023;164:1801-9.