

# Substance Use Disorders: Its Influence on the Self-Perceived and Normative Oral Healthcare Needs in Adolescents and Young Adults Attending the University of Benin Teaching Hospital

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## ABSTRACT

**Background:** Substance use disorders (SUDs) significantly impact general and oral health, particularly among adolescents and young adults. While SUDs are associated with increased oral disease burden, there is limited data assessing both perceived and professionally evaluated (normative) oral healthcare needs in this population. The objective was to evaluate the influence of substance use disorders (SUD) on the perceived and normative needs for oral healthcare among adolescents and young adults receiving treatment for SUDs at the University of Benin Teaching Hospital, Benin City, Nigeria.

**Methods:** A hospital-based cross-sectional study was conducted among 51 participants aged 10–25 years diagnosed with SUDs using DSM-5 criteria. Data were collected using a semi-structured interviewer-administered questionnaire and clinical oral examinations assessing oral hygiene (OHI-S), periodontal status (CPITN), dental caries (DMFT), and mucosal lesions. Associations between substance use patterns, perceived oral health, and normative needs were analyzed using SPSS v23 with significance set at  $p < 0.05$ .

**Results:** The majority were males (86.3%) aged 20–25 years (94.1%), with cannabis being the most used substance (74.5%). While over half rated their oral health as good (56.9%) and felt they needed dental care (54.9%), 70.6% had never visited a dentist. Clinically, most had fair oral hygiene (51.0%), moderate periodontal treatment needs (88.2%), and 56.9% had no caries. A significant association was found between cannabis use and self-rated good oral health ( $p = 0.019$ ).

**Conclusion:** Most adolescents and young adults diagnosed with substance use disorders perceived their oral health needs as good, whereas their normative oral healthcare needs were mostly fair. Those in need of oral healthcare, such as scaling and polishing, and dental caries treatment had no perception of the need for treatment, especially those who had a recent history of

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## INTRODUCTION

Substance use disorders (SUDs) have been defined by the National Institute of Mental Health as “a

treatable mental disorder that affects a person’s brain and behaviour, leading to their inability to control their use of substances like legal or illegal

drugs, alcohol, or medications” (National Institute of Mental Health, 2024).

According to the 2021 United Nations World Drug Report, approximately 275 million people used drugs worldwide in the preceding year, with another 36 million persons diagnosed with substance use disorders globally (Onaolapo *et al.*, 2022). The term “use disorder” is relatively nascent and has been favoured in the Diagnostic and Statistical Manual of Mental Disorders-5 (DSM-5) over previously used terms such as “dependence”, “addiction”, and “abuse” (Rehm *et al.*, 2013). The current system of classification (DSM-5) unifies abuse and dependence into a single category that defines 11 diagnostic criteria and places severity on a continuous scale as mild (presence of any 2 or 3 criteria), moderate (presence of any 4 or 5 criteria) or severe (presence of 6 or more criteria) (Robinson and Adinoff, 2016).

In 2018, the United Nations Office on Drugs and Crime (*Drug Use in Nigeria*, 2018) estimated the past year prevalence of drug use (excluding alcohol) in Nigeria to be 14.4% or 14.3 million people aged between 15 and 64 years, with southern geopolitical zones exhibiting higher prevalence rates of drug use with 13.8–22% of the population than in 10–14.9% of the northern population. Several legal and illegal substances have been identified. A study reported 18 substances abused by secondary school students in Nigeria, with alcohol, Bhang/Cannabis/Indian hemp or Marijuana and tobacco being the most common. The less commonly used drugs include rohypnol, codeine and tramadol (Nabofa, 2021). SUDs impact human life directly and are associated with an increased risk of physical problems such as cardiac crisis, respiratory depression, liver cirrhosis, nephropathy, infectious diseases such as hepatitis, AIDS, and tuberculosis, and injury-associated disability (Shekarchizadeh *et al.*, 2013). They also coexist at high rates with other mental disorders, such as anxiety disorders, bipolar disorder, attention-deficit hyperactivity disorder (ADHD), psychotic illness, borderline personality disorder, and antisocial personality disorder (National Institutes on Drug Abuse, 2020).

In the oral cavity, SUDs have been associated with oral diseases such as generalized dental caries, periodontal diseases, mucosal dysplasia, xerostomia, bruxism, tooth wear lesions, and tooth loss. The exact nature and severity of the oral manifestations of SUDs depend on the substance(s) involved, such as opiates, cannabis, stimulants and others, which have various manifestations (Shekarchizadeh *et al.*, 2013). SUDs also exert indirect effects on the oral cavity,

including increased dietary sugar consumption, altered routine behaviours, self-neglect and failure to prioritize personal and professional dental care.

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SUDs also tend to coexist with other mental health disorders, which further impairs individuals’ ability to engage in oral healthcare. Furthermore, individuals with SUDs may have a phobia for dentists, be unable to prioritize dental appointments owing to lifestyle as well as socioeconomic factors and may opt to self-medicate for dental pain in lieu of accessing professional dental services (Poudel *et al.*, 2023). The self-perceived need for oral healthcare is the subjective assessment of one’s own oral health status on the basis of what one recognizes as healthy (Lopes *et al.*, 2024). Studies that evaluate self-perceived need are lacking even if it can be used as a metric for oral health and drives self-care and professional dental care-seeking behaviour (Lopes *et al.*, 2024). Lima *et al.* (2012) identified two key variables that influence the self-perceived need for dental care: self-rated oral health status and access to information on how to avoid oral health problems, i.e., the level of oral health education. The self-perceived need of individuals with SUD has been observed to fluctuate and tends to be greater during periods of abstinence (Santos *et al.*, 2015).

Normative need is the need defined by the professional. A study by Dany *et al.* (2017) revealed a statistically significant difference between the normative need and self-perceived need for oral healthcare, which was greater than 31% in their study population, and attributed this difference to a low level of oral health education. While the prevalence of substance use disorders is high in southern Nigeria and seems to be increasing, especially among adolescents and young adults, there is a paucity of information on their oral healthcare needs assessed from the individual’s perspective as well as the professional’s perspective. Importantly, while managing adolescents and young adults with this disorder, they are treated holistically considering their general and oral health. This study aims to specifically evaluate the influence of substance use disorders on individuals’ perceived and normative needs for oral healthcare among adolescents and young adults receiving treatment for SUDs at the

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young adults receiving treatment for SUDs at the University of Benin Teaching Hospital, Benin city, Nigeria.

## MATERIALS AND METHODS

**Study location:** This study was carried out in the Department of Mental Health, University of Benin Teaching Hospital, Benin city, Nigeria.

**Study design:** This was a cross-sectional study.

**Study duration:** The study was carried out over a period of nine (9) months.

**Study population:** This study was carried out among adolescents and young adults diagnosed with substance use disorders using the DSM-5 diagnostic criteria and attending the Addiction Unit of the Department of Mental Health (clinics, wards including the emergency ward) University of Benin Teaching Hospital (UBTH), Benin city, Nigeria.

### Selection criteria

#### Inclusion criteria

- 1 Adolescents and young adults aged 10–25 years.
- 2 Participants whose parents/caregivers gave written informed consent and whose parents/caregivers gave their assent to participate in the study were younger than 18 years. Additionally, those above 18 years of age provided written informed consent.

#### Exclusion criteria

- Participants had chronic or other comorbid diseases that affect their oral health, such as chronic heart disease, renal failure or liver cirrhosis, or had been on medications such as phenytoin, nifedipine or cyclosporin for a prolonged period of time.

**Sample size determination and selection:** A convenient sample size was used, and all patients attending the Addiction Clinic of the Mental Health Clinic within the study period who consented to participate in the study were recruited. All consecutive adolescent and young adult patients attending the addiction unit of the Mental Health Department within the study period whose parents/caregivers or by themselves gave written informed consent to participate and assent were recruited for the study.

**Methodology:** All patients who attended the addiction unit of the Department of Mental Health and were managed for substance use disorder as diagnosed by a mental health physician according to the DSM-5 diagnostic criteria were recruited for the study. A semistructured interviewer administered a questionnaire to collect data from the study participants. The questionnaire collected data on (A) sociodemographics, age, gender,

ethnicity, religion, level of education, occupation and socioeconomic status. (B) Substance use history – This section was derived from the WHO Student Drug-Use Survey (Smart *et al.* 1980). (C) Self-perceived need for oral health care. (D) Normative need assessment following clinical examination.

Clinical examination was carried out to assess the normative need for health care for the study participants. This study assessed (a) periodontal health via the Oral Hygiene Index-Simplified (OHI-S) and the Community Periodontal Index of Treatment Needs (CPITN), (b) hard tissues via the Decayed Missing and Filled Teeth (DMFT) index and tooth wear lesions, and (c) oral mucosal health via the tongue, gingiva, floor of the mouth, palate, cheek, and alveolar mucosa for red or white lesions, pigmentation, indurations, ulcers and swellings.

**Data analysis:** Data were analyzed via SPSS version 23. Descriptive statistics were performed to summarize demographic characteristics and the most prevalent substance abused among adolescents and young adults. The self-perceived and normative needs of the participants were compared. Inferential statistics, such as the chi-square test, were employed to examine associations between variables and participants' self-perceived and normative needs.  $P < 0.05$  was considered statistically significant.

**Ethical consideration:** Ethical approval was obtained from the Health Research and Ethics Committee of the University of Benin Teaching Hospital (ADM/E 22/A/VOL.VII/48311691). Written informed consent was obtained from the older participants (young adults >18 years), whereas written informed consent was obtained from parents/caregivers for those younger than 18 years of age; however, their assent was requested before recruitment in the study. The voluntary nature of the research was explained to the study participants and their right to withdraw consent/assent at any point during the study.

## RESULTS

### Sociodemographic characteristics and oral health assessment results of the study participants.

A total of 56 participants were reached, but only 51 provided consent and consent to participate in the study. The majority of the study participants were young adults aged 20–25 years (94.1%); the majority were also male (44; 86.3%), and more than half of the study population was of Edo origin (32; 62.7%). More than half of the study population also had a tertiary level of education (32 (62.7%)); most were unemployed (21 (41.2%)), and they

were predominantly of the Christian religion (48 (94.1%)); the majority were also seen as inpatients (39 (76.5%)) (Table 1).

The substance most commonly used by the study participants was cannabis (38, 74.5%), followed by opioids (25, 49.0%). The most favoured route of administration was inhalation (46, 90.0%), followed by the oral route (26, 51.0%). The majority had used these substances within the last 12 months—42 (82.4%)—and more than half first used substances at less than 19 years of age—26 (51.0%) (Table 2).

More than half of the study participants rated their oral health as good—29 (56.9%)—the majority had never visited the dentist—36 (70.6%); however, more than half felt that they needed dental care—28 (54.9%). Approximately half of the study participants had fair oral hygiene according to the simplified oral hygiene index (S-OHI) - 26 (51.0%) and a mean S-OHI score of  $2.322 \pm 1.0603$ , whereas the majority had a treatment need score of 2 according to the Community Periodontal Index of Treatment Needs (CPITN) - 45 (88.2%). More than half of the participants had no dental caries (29, 56.9%), abrasion was present in 17 (33.3%), and red lesions were present in 5 (9.8%) participants (Table 3).

#### ***Associations among substance use history, perceived needs and normative needs of the study participants***

The majority of the study participants who used cannabis (25 (65.8%)) rated their oral health as good, which was statistically significant ( $p=0.019$ ); the majority had never visited a dentist (28 (73.7%)); however, this was not statistically significant ( $p=0.476$ ), and more than half thought they had no need for dental care (21 (55.3%)), which was statistically significant ( $p=0.022$ ). Among those who also used tranquilizers, 7 (34.6%) rated their oral health as fair, which was statistically significant ( $p=0.007$ ); the majority had never visited a dentist -7 (63.6%), which was also statistically significant ( $p=0.020$ ).

More than half of the study participants who used the oral (15 (57.7%)) and inhalational (27 (58.5%)) routes rated their oral health as good; however, these differences were not statistically significant ( $p=0.206$  and  $0.290$ , respectively). The majority of those who used this route of administration also had never visited a dentist—19 (73.1%) orally and 33 (71.7%) inhalational and this difference was not statistically significant ( $p=0.385$  and  $0.498$ , respectively). More than half of those who used the oral route thought they needed dental care (14 (53.8%)), whereas more than half of those who used the inhalational route did not think they

needed oral care (26 (56.5%)); however, these differences were not statistically significant ( $p=0.264$  and  $0.647$ ), respectively.

Among the study participants who had used substances within the last 12 months, 25 (59.5%) rated their oral health as good, which was statistically significant ( $p=0.028$ ); more than half of the participants who had used substances within the past 12 months and one month had never visited a dentist (28 (66.7%) and 10 (58.8%), respectively); however, this difference was not statistically significant ( $p=0.220$  and  $0.422$ ), respectively. The majority of participants who had used substances in the previous month thought that they did not need oral care—13 (76.5%)—and this difference was statistically significant ( $p=0.039$ ). (Table 4).

More than half of the study participants who used tobacco had fair oral hygiene—13 (59.1%)—but this was not statistically significant ( $p=0.490$ ), whereas the majority of tobacco users—17 (77.3%) had a CPITN score of 2 and was also not statistically significant ( $p=0.073$ ). However, many of the tobacco users—14 (63.6%)—had dental caries, and this difference was statistically significant ( $p=0.021$ ). The majority of participants who used cocaine and its derivatives had a CPITN score of 2—16 (72.7%), and this difference was statistically significant ( $P=0.004$ ). Additionally, the majority of participants who used cocaine and its derivatives also had dental caries (16 (72.7%)), which was also statistically significant ( $P \leq 0.001$ ). More than half of the participants who had used substances in the previous month (9 (52.9%)) had fair oral hygiene according to the S-OHI, and this difference was statistically significant ( $P=0.038$ ) (Table 5).

#### ***Associations between perceived needs and normative needs***

More than half of the participants who perceived themselves as having good oral hygiene had fair oral hygiene—15 (51.7%) and 9 (31.0%) had poor oral hygiene; the majority had a CPITN score of 2—27 (93.1%), which was statistically significant ( $P=0.048$ ), and more than half had no caries—16 (55.2%). Half of those who had never visited a dentist had fair oral hygiene—18 (50.0%) ( $P=0.328$ ); the majority had a CPITN score of 2—33 (91.7%) ( $P=0.468$ ); and the majority had no caries—27 (75.0%), which was statistically significant ( $P \leq 0.001$ ). Among those who thought that they needed dental care, half - 14 (50.0%) had fair oral hygiene, the majority - 24 (85.7%) had a CPITN score of 2, and more than half - 15 (53.6%) had no caries present; however, these differences were not statistically significant ( $P=0.715$ ;  $0.678$ ;  $0.777$ )

Table 1: Sociodemographic characteristics of the study participants

Variables	N (%)
<b>Age groups</b>	
10-19	3 (5.9)
20-25	48 (94.1)
Total	51 (100.0)
<b>Gender</b>	
Male	44 (86.3)
Female	7 (13.7)
Total	51 (100.0)
<b>Ethnicity</b>	
Edo	32 (62.7)
Delta	12 (23.6)
Others	7 (13.7)
Total	51 (100.0)
<b>Educational status</b>	
Primary	1 (1.96)
Secondary	18 (35.3)
Tertiary	32 (62.7)
Total	51 (100.0)
<b>Occupational status</b>	
Unemployed	21 (41.2)
Unskilled	15 (29.4)
Semiskilled	12 (23.5)
Skilled	3 (5.9)
Total	51 (100.0)
<b>Religion</b>	
Christian	48 (94.1)
Muslim	2 (3.9)
Atheist	1 (2.0)
Total	51 (100.0)
<b>Participant location</b>	
Outpatient	7 (13.7)
Inpatient	39 (76.5)
Emergency unit	5 (9.8)
Total	102(100.0)

Table 2: Substance(s) used, route of administration, history of recent drug use, and age of prescription of drug use

Variables	N (%)
<b>Substances used*</b>	
Cannabis	38 (74.5)
Tobacco	22 (43.1)
Alcohol	23 (45.1)
Tranquilizers	11 (21.6)
Opioids	25 (49.0)
Amphetamines	11 (21.6)
Cocaine and its derivatives	22 (43.1)
Hallucinogens	1 (2.0)
<b>Route of administration*</b>	
Injection	3 (6.0)
Oral	26 (51.0)
Inhalational	46 (90.0)
Intranasal	0 (0.0)
<b>Recent drug use*</b>	
Used substance(s) in the last 12 months?	42 (82.4)
Used substance(s) in the last 30 days?	17 (33.3)
<b>Age group at first use</b>	
19 or less	26 (51.0)
20 or greater	25 (49.0)
Total	51 (100.0)

\*Multiple responses allowed

Table 3: Perceived needs and normative needs

Variables	N (%)
<b>Perceived needs</b>	
<b>How would you rate your oral health?</b>	
Good	29 (56.9)
Fair	14 (27.5)
Poor	8 (15.6)
Total	51 (100.0)
<b>When was your last dental visit?</b>	
Never visited	36 (70.6)
More than a year ago	11 (21.6)
Less than or equal to a year ago	4 (7.8)
Total	51 (100.0)
<b>Do you think you need dental care now?</b>	
Yes	28 (54.9)
No	21 (45.1)
Total	51 (100.0)
<b>Normative needs</b>	
<b>Simplified Oral Hygiene Index</b>	
Good (0.0-1.2)	9 (17.6)
Fair (>1.2 and ≤3.0)	26 (51.0)
Poor (>3.0)	16 (31.4)
Total	51 (100.0)
Mean S-OHI	2.322 ± 1.0603
Mean Calculus score	0.887 ± 0.6059
Mean Debris score	1.435 ± 0.57
<b>CPITN</b>	
1	6 (11.8)
2	45 (88.2)
Total	51 (100.0)
<b>Caries Experience</b>	
Caries present (DMFT ≥ 1)	22 (43.1)
No caries present (DMFT = 0)	29 (56.9)
Total	51 (100.0)
<b>Tooth Wear Lesions*</b>	
Attrition	15 (29.4)
Erosion	3 (5.9)
Abrasion	17 (33.3)
<b>Tongue Lesions*</b>	
Pigmented lesion(s)	1 (2.0)
Red lesion(s)	5 (9.8)

\*Multiple responses.

The mean S-OHI = 2.322 ± 1.0603. The mean calculus score = 0.887 ± 0.6059. Mean Debris score = 1.435 ± 0.5

## DISCUSSION

The effects of substance use on general health and oral health have been well documented in numerous studies (D'Amore *et al.*, 2011; Shekarchizadeh *et al.*, 2013; John *et al.*, 2023); however, its effects on perceived oral healthcare needs are scarce. A previous study pointed out that affected individuals prioritize oral health with more effort directed toward drug/substance acquisition (Shekarchizadeh *et al.*, 2013).

### ***Sociodemographic characteristics and oral health assessment results of the study participants.***

This study revealed that the participants were predominantly male (86.3%) and young adults

aged 20–25 years (94.1%), with cannabis, tobacco, and opioids being the most commonly abused substances, which was comparable to the findings of other studies (*Drug Use in Nigeria*, 2018; Nabofa, 2021; Jatau *et al.*, 2021;). However, there was a greater prevalence of the use of cocaine and its derivatives, e.g., cracks (43.1%), in this study than in previously documented studies (Nabofa, 2021; Ajibola *et al.*, 2023;), which may be due to the increasing prevalence of substance abuse in Nigeria, increasing the quest for more substances to abuse as well and increasing access to these substances.

Table 4: Substance(s) Used, Route of Administration, History of Recent Drug Use, and Age at First Use vs Perceived Needs

Substance(s) used	How will you rate your oral health?					PERCEIVED NEEDS When was your last dental visit?					Do you think you need dental care now?			
	Good	Fair	Poor	Total	p value	Never	>1 year	≤1year	Total	p value	Yes	No	Total	p value*
	Cannabis	25(65.8)	10(26.3)	3(7.9)	38(100)	0.019	28(73.7)	8(21.1)	2(5.3)	38(100)	0.476	17(44.7)	21(55.3)	38(100)
Tobacco	11(50.0)	5(22.7)	6(27.3)	22(100)	0.139	13(59.1)	7(31.8)	2(9.1)	22(100)	0.261	12(54.5)	10(45.5)	22(100)	1.000
Alcohol	14(60.9)	8(34.8)	1(4.3)	23(100)	0.112	17(73.9)	3(13.0)	3(13.0)	23(100)	0.232	14(60.9)	9(39.1)	23(100)	0.573
Tranquilizers	4(36.4)	7(36.4)	0(0.0)	11(100)	0.007	7(63.6)	1(9.1)	3(27.3)	11(100)	0.020	7(63.6)	4(36.4)	11(100)	0.734
Opioids	14(56.0)	9(36.0)	2(8.0)	25(100)	0.206	15(60.0)	7(28.0)	3(12.0)	25(100)	0.247	16(64.0)	9(36.0)	25(100)	0.264
Amphetamines	5(45.5)	4(34.4)	2(18.2)	11(100)	0.676	7(63.6)	3(27.3)	1(9.1)	11(100)	0.846	8(72.7)	3(27.3)	11(100)	0.305
Cocaine and its derivatives	10(45.5)	6(27.3)	6(27.3)	22(100)	0.123	12(54.5)	7(31.8)	3(13.6)	22(100)	0.084	15(68.2)	7(31.8)	22(100)	0.155
Hallucinogens	1(100.0)	0(0.0)	0(0.0)	1(100)	0.679	0(0.0)	1(100.0)	0(0.0)	1(100)	0.157	0(0.0)	1(100)	1(100)	0.451
Route of Administration														
Injection	3(100)	0(0.0)	0(0.0)	3(100)	0.298	2(66.7)	1(33.3)	0(0.0)	3(100)	0.794	2(66.7)	1(33.3)	3(100)	1.000
Oral	15(57.7)	9(34.6)	2(7.7)	26(100)	0.206	19(73.1)	4(15.4)	3(11.5)	26(100)	0.385	12(46.2)	14(53.8)	26(100)	0.264
Inhalational	27(58.5)	13(28.3)	6(13.0)	46(100)	0.290	33(71.7)	9(19.6)	4(8.7)	46(100)	0.498	26(56.5)	20(43.5)	46(100)	0.647
Intranasal	0(0.0)	0(0.0)	0(0.0)	0(0.0)	-	0(0.0)	0(0.0)	0(0.0)	0(0.0)	-	0(0.0)	0(0.0)	0(0.0)	-
Recent drug use														
Last 12 months	25(59.5)	13(31.0)	4(9.5)	42(100)	0.028	28(66.7)	11(26.2)	3(7.1)	42(100)	0.220	23(54.8)	19(45.2)	42(100)	1.000
Last 1 month	9(52.9)	7(41.2)	1(5.9)	17(100)	0.184	10(58.8)	5(29.4)	2(11.8)	17(100)	0.422	13(76.5)	4(23.5)	17(100)	0.039
Age at first use														
19 or less	14(53.8)	7(26.9)	5(19.2)	26(100)	0.773	19(73.1)	5(19.2)	2(7.7)	26(100)	0.913	17(65.4)	9(34.6)	26(100)	0.164
20 or greater	15(60.0)	7(28.0)	3(12.0)	25(100)		17(68.0)	6(24.0)	2(8.0)	25(100)		11(44.0)	14(56.0)	25(100)	

p value of <0.05(5%) is considered significant      p value columns tagged with \*: Fisher's Exact Test (Two-sided)      p value: Pearson Chi-Square (Two-sided)

**Associations among substance use history, perceived needs and normative needs of the study participants**

This study revealed that more than half (54.9%) of the respondents claimed that they needed oral health care, which is similar to the 53.4% reported by the general population (Adunola *et al.*, 2019). However, this is in contrast to another study that reported a greater proportion (91.5%) of perceived need for oral healthcare among substance users (Santos *et al.*, 2015); this might be the result of oral healthcare being incorporated during inpatient/institutionalized management. Furthermore, a statistically significant proportion (76.5%) of individuals who felt that they did not need oral healthcare had used substances within the previous month (p=0.038) and thus may have experienced an altered sense of self and health. Some studies have documented a definite link between impaired decision making, concept formation, and planning in cannabis users even after 3+ weeks of abstinence (Crean *et al.*, 2011). Our study did not reveal any significant relationship between the route of substance use and the measured perceived and normative oral health care needs. The findings across various routes of drug administration were more or less the same. However, reports from other

studies suggest otherwise, particularly in the realm of normative oral healthcare needs. One study conducted in India reported a lower oral health-related quality of life (OHRQoL) among inhalational drug users, particularly over a long period of time (Sharma *et al.*, 2018). Our equivocal findings may be a result of the difficulty in isolating a single route of substance consumption because most substance users make use of combined routes (Amiri & Shekarchizadeh, 2021). The type of substance used had a statistically significant effect on the perceived need for oral healthcare and the perception of present oral health. Cannabis, one of the most commonly used drugs in Nigeria and worldwide (Ortiz-Peregrina *et al.*, 2021; *Drug Use in Nigeria*, 2018) when used acutely, has been shown to lower motivation (Skumlien *et al.*, 2024). Other studies on the nonacute effects of cannabis use on motivation might explain the observed statistically significant (p=0.022) high proportion (55.3%) of cannabis users who did not feel that they needed oral care (Skumlien *et al.*, 2024). Other factors include shared antecedents with cannabis use, such as genetic and environmental factors (Bourque & Potvin, 2021).

Table 5: Substance(s) Used, Route of Administration, History of Recent Drug Use, and Age at First Use vs Normative Needs

Substance(s) used	NORMATIVE NEEDS												
	OHI-S rating					CPITN				Positive (DMFT ≥ 1)	Caries experience Negative (DMFT = 0)		p value*
	Good	Fair	Poor	Total	p value	1	2	Total	p value*		Total	p value*	
Cannabis	7(18.4)	20(52.6)	11(28.9)	38(100)	0.815	5(13.2)	33(86.8)	38(100)	1.000	17(44.7)	21(55.3)	38(100)	0.755
Tobacco	4(18.2)	13(59.1)	5(22.7)	22(100)	0.490	5(22.7)	17(77.3)	22(100)	0.073	14(63.6)	8(36.4)	22(100)	0.021
Alcohol	5(21.7)	9(39.1)	9(39.1)	23(100)	0.308	3(13.0)	20(87.0)	23(100)	1.000	12(52.2)	11(47.8)	23(100)	0.269
Tranquilizers	3(27.3)	3(27.3)	5(45.5)	11(100)	0.205	3(27.3)	8(72.7)	11(100)	0.106	7(63.6)	4(36.4)	11(100)	0.173
Opioids	4(16.0)	10(40.0)	11(44.0)	25(100)	0.155	1(4.0)	24(96.0)	25(100)	0.191	12(48.0)	13(52.0)	25(100)	0.577
Amphetamines	3(27.3)	4(36.4)	4(36.4)	11(100)	0.488	3(27.3)	8(72.7)	11(100)	0.106	5(45.5)	6(54.5)	11(100)	1.000
Cocaine and its derivatives	5(22.7)	11(50.0)	6(27.3)	22(100)	0.677	6(27.3)	16(72.7)	22(100)	0.004	16(72.7)	6(27.3)	22(100)	<0.001
Hallucinogens	0(0.0)	0(0.0)	1(100)	1(100)	0.328	0(0.0)	1(100)	1(100)	1.000	0(0.0)	1(100)	1(100)	1.000
Route of Administration													
Injection	1(33.3)	0(0.0)	2(66.7)	3(100)	0.189	0(0.0)	3(100)	3(100)	1.000	1(33.3)	2(66.7)	3(100)	1.000
Oral	5(19.2)	11(42.3)	10(38.5)	26(100)	0.426	3(11.5)	23(88.5)	26(100)	1.000	12(46.2)	14(53.8)	26(100)	0.779
Inhalational	8(17.4)	23(50.0)	13(32.6)	46(100)	0.846	6(13.0)	40(87.0)	46(100)	1.000	20(43.5)	26(56.5)	46(100)	1.000
Intranasal	0(0.0)	0(0.0)	0(0.0)	0(0.0)	-	0(0.0)	0(0.0)	0(0.0)	-	0(0.0)	0(0.0)	0(0.0)	-
Recent drug use													
Last 12 months	9(21.4)	19(45.2)	14(33.3)	42(100)	0.153	5(11.9)	37(88.1)	42(100)	1.000	21(50.0)	21(50.0)	42(100)	0.060
Last 1 month	0(0.0)	9(52.9)	8(47.1)	17(100)	0.038	1(5.9)	16(94.1)	17(100)	0.650	7(41.2)	10(58.8)	17(100)	1.000
Age at first use													
19 or less	2(7.7)	16(61.5)	8(30.8)	26(100)	0.126	3(11.5)	23(88.5)	26(100)	1.000	10(38.5)	16(61.5)	26(100)	0.577
20 or greater	7(28.0)	10(40.0)	8(32.0)	25(100)		3(12.0)	22(88.0)	25(100)		12(48.0)	13(52.0)	25(100)	
<i>p value of &lt;0.05(5%) is considered significant p value columns tagged with *: Fisher's Exact Test (Two-sided) p value: Pearson Chi-Square (Two-sided)</i>													

Table 6: Perceived needs vs normative needs

PERCEIVED NEEDS	NORMATIVE NEEDS												
	OHI-S rating					CPITN				Caries Experience			p value
	Good	Fair	Poor	Total	p value	1	2	Total	p value	Positive (DMFT ≥ 1)	Negative (DMFT = 0)	Total	
How will you rate your oral health?													
Good	5(17.2)	15(51.7)	9(31.0)	29(100)	0.130	2(6.9)	27(93.1)	29(100)	0.048	13(44.8)	16(55.2)	29(100)	0.933
Fair	1(7.1)	6(42.9)	7(50.0)	14(100)		1(7.1)	13(92.9)	14(100)		6(42.9)	8(57.1)	14(100)	
Poor	3(37.5)	5(62.5)	0(0.0)	8(100)		3(37.5)	5(62.5)	8(100)		3(37.5)	5(62.5)	8(100)	
When was your last dental visit?													
Never	5(13.9)	18(50.0)	13(36.1)	36(100)	0.328	3(8.3)	33(91.7)	36(100)	0.468	9(25.0)	27(75.0)	36(100)	<0.001
>1 year	4(36.4)	5(45.5)	2(18.2)	11(100)		2(18.2)	9(81.8)	11(100)		10(90.9)	1(9.1)	11(100)	
≤1 year	0(0.0)	3(75.0)	1(25.0)	4(100)		1(25.0)	3(75.0)	4(100)		3(75.0)	1(25.0)	4(100)	
Do you think you need dental care now?													
Yes	6(21.4)	14(50.0)	8(28.6)	28(100)	0.715	4(14.3)	24(85.7)	28(100)	0.678*	13(46.4)	15(53.6)	28(100)	0.777*
No	3(13.0)	12(52.2)	8(34.8)	23(100)		2(8.7)	21(91.3)	23(100)		9(39.1)	14(60.9)	23(100)	
<i>p value of &lt;0.05(5%) is considered significant p value cells tagged with *: Fisher's Exact Test (Two-sided) p value: Pearson Chi-Square (Two-sided)</i>													

According to current WHO data, there has been a decline in tobacco use globally in individuals aged 15 and older, with a prevalence of 21.7% in 2020 from 23.9% in 2015 and a projected prevalence of 19.8% by the end of 2025 (World Health Organization, 2024). Our study, however, exceeded the global prevalence, with a prevalence of 43.1% among the study participants. These individuals had statistically significant ( $p=0.021$ ) caries experience, with 63.6% having a DMFT score  $> 0$ . A Nigerian systematic review and meta-analysis on the prevalence of caries reported a much lower pooled prevalence of dental caries in the general population of Nigerian adolescents (23.0%) (Afolabi *et al.*, 2024). Our study is therefore in line with other studies that have shown a higher prevalence of dental caries among tobacco users, with heavy use and tobacco chewing being more strongly associated with its use (Beklen *et al.*, 2022; Doddawad *et al.*, 2022; Andayasari *et al.*, 2023). The use of cocaine and its derivatives, particularly smoked crack cocaine, can increase the risk of dental caries. Our study revealed a statistically significant relationship ( $p\leq 0.001$ ) between cocaine (and crack cocaine) use and a DMFT score  $> 0$ . This could be a result of rubbing cocaine cut with sugar on the gums and, inadvertently, the teeth, which is common among intranasal cocaine users (Brand *et al.*, 2008). The increased prevalence of smoked crack cocaine could be explained by multiple factors, including hyposalivation, poor oral hygiene, reduced salivary pH, difficulty accessing dental care and poor dental-seeking behaviour (Antoniazzi *et al.*, 2021).

#### **Associations between perceived needs and normative needs**

When evaluated, normative oral healthcare needs can provide a point of reference by which comparisons with perceived needs can be made, and conclusions can be drawn on the effect of substance use on the basis of the degree of overlap between them. This study evaluated normative need on the basis of three major criteria: oral hygiene measured via the simplified oral hygiene index (OHI-s) (Greene & Vermillion, 1964); periodontal health assessed via the community periodontal index for treatment need (Cutress *et al.*, 1987); and the caries burden assessed via the DMFT index (Palmer *et al.*, 1938) modified by the WHO. (Anaise, 1984). It also considers the prevalence of soft tissue lesions by colour and site, e.g., the presence of red or white lesions on the tongue.

On the basis of these normative criteria once again, our initial hypothesis was that objective oral health criteria would be much worse than those of the

general population. This was in fact not the case. Most participants fell into the "fair" category (51.0%) of the OHI-s index, with a mean score of  $2.322 \pm 1.0633$ , which is similar to the findings among adolescents in a tertiary dental center in another study, which reported a mean OHI-s of  $2.24 \pm 1.05$  (Ogunsuji *et al.*, 2021). However, more than half of the individuals who reported good oral hygiene had fair oral hygiene (51.7%) and a CPITN score of 2 (93.1%), which meant that they had at least one intraoral plaque retentive factor, especially calculus, which was statistically significant ( $p=0.048$ ), and 31.0% of those who self-reported good oral health had poor oral hygiene. More than half of this group (55.2%) did not have any caries burden. This study also noted that the individuals (44.8%) who had self-reported good oral hygiene had dental caries experience either active decay or filled tooth or tooth loss due to caries. These findings may also reflect the altered insights and self-monitoring observed in individuals with SUD (Maracic & Moeller, 2021).

This study cannot be generalized to individuals with substance use disorders, as one of its limitations is its small sample size, resulting from a very low turnout for professional management of substance use disorders in Nigeria, despite its increasing prevalence exceeding the global average (James *et al.*, 2019). However, it highlights important trends in the interplay between substance use, perceived oral health needs, and objective oral health status. Further research with larger samples is necessary to explore these relationships more comprehensively. Additionally, oral health assessment and treatment are recommended for individuals being managed for substance use disorders, as this will be beneficial for their overall wellbeing. Further research with larger cohorts is recommended to validate the findings of this study and to provide deeper insights into the long-term effects of substance use on oral health.

#### **CONCLUSION**

This study revealed that most adolescents and young adults diagnosed with substance use disorders perceived their oral health needs as good, whereas their normative oral healthcare needs were mostly fair. Those in need of oral healthcare, such as scaling and polishing, and dental caries treatment had no perception of the need for treatment, especially those who had a recent history of substance use.

There is a need for targeted oral health interventions among individuals with substance use disorders, with a particular focus on early

screening, education, and the integration of dental care within substance use treatment programs, increased awareness and accessibility, emphasizing the need for specific strategies to improve oral health outcomes in this population.

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#### Conflicts of interest

The authors declare that they have no conflicts of interest.

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