Original Article

Pattern of Comorbidity, Problem among Drug users Undergoing Inpatient Rehabilitation at a Tertiary Hospital in Nigeria

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Abstract

Background: Despite the recognition of problem drug use as a significant public health issue, little is known about the pattern of comorbidity in people with substance use disorders (SUD) in Nigeria. **Aim:** This study evaluated comorbidity and associated clinico-demographic factors of problem drug use at a tertiary hospital in Lagos, Nigeria. **Materials and Methods:** The study participants consisted of 83 inpatients admitted over a period of one year into the drug rehabilitation ward of Lagos University Teaching Hospital (LUTH), Lagos, Nigeria. A retrospective review of their case notes was done to extract relevant data in line with the study objectives. The participants included in the study had diagnoses of harmful use or dependence syndrome. Data analyses were done using Statistical Package for Social Sciences (SPSS-17). **Results:** Problem drug users (PDU) were mostly males 77/83 (92.8%), single 77/83 (92.8%) and unemployed 46/83(55.4%). Majority 59/83(71.1%) abused multiple substances, with cannabis use disorder diagnosed in sixty-one participants. Close to half of PDU 39/83(47.0%) commenced drug use in late adolescence. Mental comorbidity occurred in (46/83)55.4% of PDU, majorly (42/46) among those with cannabis use disorder. Of those with mental comorbidity, schizophrenia was associated with cannabis use disorder ($p=0.02$), and not with opioid or other stimulants use disorders ($p<0.01$, $p=0.03$ respectively). Somatic comorbidity occurred in 19.2% (16/83) of participants, and sickle cell disease accounted for one-quarter (4/16) of them. Of those with somatic comorbidity, (6/16) was diagnosed with opioid use disorder, while all participants with comorbid sickle cell disease (4/4) abused opioids. **Conclusions:** Findings in this study suggest the need to be cognizant of potential mental and somatic comorbidity among those with SUD, and provide guidance for future hypothesis-driven research.

Keywords: Inpatient rehabilitation, Nigeria, Comorbidity, Problem drug users

Introduction

Globally, drug abuse is of public health concern, exacting significant toll on human lives and productivity. An estimated 183,000 drug related deaths were reported in 2012 corresponding to a mortality rate of 40.0 per million in the global population of those aged 15– 65 years. In the same report, it is estimated that 324 million people (3.5-7% of the world's population) have used an illicit drug [1]. In a similar trend, global surveys indicate considerable comorbidity of substance use disorders with other mental illnesses [1]. Comorbidity is when two or more disorders or illnesses occur in the same person simultaneously or sequentially. This usage 'comorbidity' also applies to interactions between illnesses that affect the course and prognosis of these coexisting disorders [2]. According to a US survey, 4% of its adult population met the criteria for both a mental illness and substance use disorders (SUD) [3]. A global mental health facility survey also found varied patterns of somatic comorbidities based on types of psychoactive substances abused [4]. The occurrence of comorbidity with SUD has been shown to make diagnosis of either condition problematic, linked with poorer compliance to treatment, worsen prognosis, and associated with an overall increase in morbidity and mortality [5].

The available information from a local study showed variations in demographics and drug use trend across recent decades, thereby highlighting the need for continuous research and monitoring in order to adapt treatments and prevention policies to current realities [6]. However, reliable and informative data about problem drug use in Nigeria is scanty [1]. In particular, only few local studies have focused on comorbidity, especially other physical illnesses that could coexist with and worsen the prognosis of problem drug use. These gaps provided the impetus for conducting this study, which aimed at examining comorbidity, and associated clinico-demographic factors among inpatients with SUD at a tertiary treatment facility in Lagos, Nigeria.

Materials and Methods

This retrospective study was carried out at the psychiatric/drug rehabilitation ward of Lagos University Teaching Hospital

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(LUTH) in Lagos, Nigeria. Information on the study group was retrieved from individual case folders of consecutively admitted adult inpatients with diagnoses of mental and behavioral disorders due to psychoactive substance use based on the World Health Organization (WHO), International Classification of Diseases, (ICD-10) clinical diagnostic criteria [7]. between the period of March 2013 and February 2014. The problem drug users (PDU) also met the criteria for harmful use or dependence syndrome. The study sample size of 83 was estimated (using G-power 3.1 software) [7,8] to be sufficient to detect medium effect size of 0.35 [3]. based on previous work, with alpha = 0.05, power = 0.8 and an addition of 10% to accommodate for missing data.

Information on case folders showed that diagnoses of substance use disorders (SUD) were made initially by psychiatry residents using the ICD-10 [9]. diagnostic criteria. These diagnoses were subsequently affirmed by unit consultant psychiatrists during ward rounds. The diagnoses of harmful drug use were made using clinical history obtained from PDU or significant others, and clinical presentation of signs and symptoms of drug use based on the set diagnostic criteria. The confirmation of drug use was backed by routine blood and/or urine toxicology screening for abused drugs except alcohol, nicotine caffeine and organic solvents, which are not included in the panel of the test kits used. Ancillary laboratory tests were, however, carried out on PDU abusing alcohol which included hemogram to detect increased mean corpuscular volume and liver function tests. Diagnoses of drug dependence also followed the added clinical evidence of tolerance and drug specific withdrawal symptoms. Problem drug users had other mental comorbidities diagnosed using the relevant diagnostic criteria by the psychiatric team and managed by the team. In addition, PDU with coexisting somatic comorbidities had their diagnoses confirmed by other relevant clinical specialists and were co-managed through consultation-liaison services.

Ethical approval was obtained from the Health Research and Ethics Committee (HREC) before the commencement of the study.

All data collected were coded and entered into the computer for analysis. Data were analyzed using the Statistical Package for Social Sciences (SPSS) for windows Version 17.0 [10]. Means, frequencies and percentages were used to analyze data. Independent t-test test was used to test for significance between numerical variables. Chi square tests were used to test for significance between nominal variables when the minimal expected cell count was 1 and where at least 80% of the cells had expected values of 5 and above. The Fischer's exact test was used when the criteria for chi square were not met [11]. A confidence interval of 95% was used which allows for 5% sampling error at significance of less than or equal to 0.05.

Results

Table 1 shows the cases in which toxicology tests were done and also the substance use disorder (SUD) clinical presentation.

The diagnostic methods included clinical presentations based on diagnostic criteria with mandatory toxicology screening which detected cannabis, opioids and cocaine use. The commonest SUD diagnosis concerned cannabis, 61/83, followed by alcohol, 53/83, nicotine, 48/83, opioids, 23/83, cocaine, 14/83, and organic solvents, 2/83. While higher proportions of problem drug users (PDU) abusing opioids 19/23 (82.6%), nicotine 39/48 (81.3%) and alcohol 33/53 (62.3%) met the criteria for drug dependence; higher proportions of those abusing organic solvents 2/2 (100%), caffeinated drinks 2/2 (100%), cannabis 53/61 (86.8%) and cocaine 8/14 (57.1%) met the criteria for harmful use. In other words, while subjects abusing opioids, nicotine and alcohol were likely to have drug dependence, those abusing organic solvents, caffeinated drinks, cannabis and cocaine, were more likely to have the relatively less clinically severe problem of harmful use

Table 2 shows the association of clinico-demographics with comorbidity profile.

The mean age of participants was 34(10.9) years and majority of them were male 77/83 (92.8%) and single 77/83 (92.8%). Close to half 37/83 (44.6%) had tertiary level of education, while a little above half 46/83 (54.2%) were unemployed. In comparison to those without either mental or somatic comorbidity, *PDU with mental comorbidity had a significantly lower mean age,* 31(8.1) *year,* while those with somatic comorbidity had a significantly higher mean age, 39(13.6) *year*, (p=0.002). Specifically, *the largest proportion 33/83 (*38.8%) *of the PDU* were within their third decade of life, with those in this age group also significantly more likely to have mental comorbidity 26/33 (77.8%) (p<0.01). In contrast, PDU with somatic comorbidity were significantly more likely to be in their sixth decade of life 6/13 (46.2%) (p=0.01).

The mean age at onset of drug use was *19(5.5) years, and* close to half 39/83 (47.0%) of PDU started drug use in late adolescence between the ages of 15 to 19 years. *However, PDU with mental comorbidity had a lower mean age at drug use onset, 18 (4.3) year, while those with somatic comorbidity had a significantly higher mean age at drug use onset,* 22 (7.0) years *(p<0.01).*

Although, majority of PDU 59/83 (71.1%) *abused multiple psychoactive substances, those with somatic comorbidity were significantly more likely to abuse single psychoactive drug* (p=0.04). The commonest route of drug administration was via oral + inhalation route 61/83 (73.5%) which was also the significantly more likely preferred route 41/61 (67.2%) among those with mental comorbidities (p<0.01). Conversely, PDU with somatic comorbidities were significantly more likely to be injecting, combining injection with oral or inhalation routes, and less likely to combine oral and inhalation routes (p<0.01).

Table 3 shows the association of substance use disorder (SUD) diagnoses with comorbidity profile.

Higher proportions of PDU with cannabis 42/61 (68.9%) and nicotine 33/48 (68.8%) SUD significantly had mental comorbidities compared to PDU with cannabis and nicotine SUD without mental comorbidity (p<0.01 respectively). However PDU with opioid 6/23 (26.1%) and other stimulant (caffeine and cocaine) SUD 5/16 (31.2%) were significantly

Table 1: Frequency of substance use disorders and methods of diagnosis

Substance use disorder	Toxicology* (urine/blood)	Clinical presentation		Total
		Harmful Use	Dependence Tolerance/Withdrawal	
	n (%)	n (%)	n (%)	n (%)
Alcohol Use Disorder	0 (0.0)	20 (37.7)	33 (62.3)	53 (100)
Nicotine Use Disorder	0 (0.0)	9 (18.7)	39 (81.3)	48 (100)
Cannabis Use Disorder	61 (100)	53 (86.8)	8 (13.2)	61 (100)
Opioids Use Disorder	23 (100)	4 (17.4)	19 (82.6)	23 (100)
Other Stimulant Use Disorder				
• Cocaine	14 (100)	8 (57.1)	6 (42.9)	14 (100)
• Caffeinated drinks	0 (0)	2 (100)	(0)	2 (100)
Organic solvents use Disorder	0 (0.0)	2 (100)	0 (0)	2 (100)

*Toxicology tests were not done for: alcohol, nicotine and caffeinated drinks.

Table 2: Association of socio-demographics factors with comorbidity profile

Parameter	Frequency	Comorbidity Profile					
		Mental		TOS	Somatic		TOS
	n (%)	Yes n (%)	No n (%)		Yes n (%)	No n (%)	
Gender							
Male	77 (92.8)	44 (57.1)	33 (42.9)	p=0.40	13 (16.9)	64 (83.1)	p=0.08
Female	6 (7.2)	2 (33.3)	4 (66.7)		3 (50.0)	3 (50.0)	
Education							
Secondary	33 (39.8)	15 (45.5)	18 (54.5)	p=0.33	9 (27.3)	24 (72.7)	P=0.10
Tertiary	37 (44.6)	23 (62.2)	14 (27.8)		7 (18.9)	30 (81.1)	
Drop out	13 (15.6)	8 (61.5)	5 (38.5)		0 (0.0)	13 (100)	
Mean Age Yrs (±SD)	*34 (± 10.9)*	31.6 (± 8.1)	37 (± 13.1)	P=0.02	39.9 (± 13.6)	32.6 (± 9.7)	P=0.02
Age Range (Years)							
10 – 19	4 (4.8)	0 (0.0)	4 (100)	p<0.01	2 (50.0)	2 (50.0)	p=0.01
20 – 29	33 (38.8)	26 (78.8)	7 (21.2)		2 (6.1)	31 (93.9)	
30 – 39	22 (26.5)	12 (54.5)	10 (45.5)		4 (18.2)	18 (81.8)	
40 – 49	11 (13.3)	6 (54.5)	5 (45.5)		2 (18.2)	9 (81.8)	
50 – 59	13 15.7)	2 (15.4)	2 (84.6)		6 (46.2)	7 (53.8)	
Marital Status							
Single	77 (92.8)	44 (57.1)	33 (42.9)	p=0.40	13 (16.9)	64 (83.1)	p=0.08
Married	6 (7.2)	2 (33.3)	4 (66.7)		3 (50.0)	3 (50.0)	
Employment Status							
Employed	21 (25.3)	10 (45.5)	12 (54.5)		2 (11.8)	15 (88.2)	
Unemployed	46 (55.4)	25 (56.1)	20 (43.9)	p=0.45	9 (20.0)	36 (80.0)	p=0.21
Student	16 (19.3)	11 (68.8)	5 (31.2)		5 (23.8)	16 (76.2)	
Mean Age At Onset Of Drug Use	19.1 (5.5)	18.2 (4.3)	20.3 (6.6)	P<0.01	22.1 (7.0)	18.3 (4.9)	P<0.01
Age At Drug Use Onset (Years)							
Early Adolescent (10-14)	12 (14.5)	6 (50.0)	6 (50.0)	p<0.01	1 (8.3)	11 (91.7)	p<0.01
Late Adolescent (15-19)	39 (47.0)	24 (61.5)	15 (38.5)		7 (17.9)	32 (82.1)	
Early Adulthood (20-24)	19 (22.9)	14 (73.7)	5 (26.3)		1 (5.3)	18 (94.7)	
Older Adult (25- Above)	13 (15.7)	2 (15.4)	11 (84.6)		7 (53.8)	6 (46.2)	

Drug Use							
Single Use	24 (28.9)	10 (41.7)	14 (58.3)	p=0.10	8 (33.3)	15 (66.7)	p=0.04
Multiple Use	59 (71.1)	36 (61.0)	23 (39.0)		8 (13.6)	51 (86.4)	
Route of Use							
Oral	9 (10.8)	0 (0)	9 (100)	P<0.01	4 (44.4)	5 (55.6)	P<0.01
Inhalational	8 (9.6)	5 (62.5)	3 (37.5)		1 (12.5)	7 (87.5)	
Injections (IV/IM)	3 (3.7)	0 (0)	3 (100)		3 (100)	0 (0)	
Oral + Inhalational	61 (73.5)	41 (67.2)	20 (32.8)		6 (9.8)	55 (90.2)	
Oral + Injections	1 (1.2)	0 (0)	1 (100)		1 (100)	0 (0)	
Inhalational + Injections	1 (1.2)	0 (0)	1 (100)		1 (100)	0 (0)	

p=Level of Significance, Bold=Statistically significant, TOS=Test of Significance, N=Frequency, %=Percentage

Table 3: Association of diagnoses of mental and behavioral disorders due to psychoactive substance use (Harmful use/dependence) with comorbidity

Parameters	**Co-morbidity Profile**					
Mental and behavioral disorders due to psychoactive substance use (Harmful use and dependence	**Mental**		**TOS**	**Somatic**		**TOS**
	YES n (%)	**NO n (%)**		**YES n (%)**	**NO (n)**	
Alcohol (Harmful Use or Dependence)						
Yes	29 (54.7)	24 (45.3)	p=0.86	11 (20.7)	42 (79.3)	p=0.65
No	17 (15.6)	13 (43.3)		5 (16.7)	25 (83.3)	
Nicotine (Harmful Use or Dependence)						
Yes	33 (68.8)	15 (31.3)	P<0.01	5 (10.4)	43 (89.6)	p=0.02
No	13 (37.1)	22 (62.9)		11 (31.4)	24 (68.6)	
Cannabis (Harmful Use or Dependence)						
Yes	42 (68.9)	19 (31.1)	p<0.01	5 (8.2)	56 (91.8)	p<0.01
No	4 (19.2)	18 (81.8)		11 (50)	11 (50)	
Opiate/Opioid (Harmful Use or Dependence)						
Yes	6 (26.1)	17 (73.9)	P<0.01	6 (26.1)	17 (73.9)	p=0.33
No	40 (68.7)	20 (33.3)		10 (16.7)	50 (83.3)	
Other Stimulants (Harmful use or Dependence)						
Yes	5 (31.2)	11 (68.8)	p=0.03	2 (12.5)	14 (87.5)	P=0.44
No	41 (61.2)	26 (38.8)		14 (20.9)	53 (79.1)	
Organic Solvents (Harmful Use or Dependence)						
Yes	2 (100)	0 (0)	p=0.20	0 (0)	2 (100)	p=0.40
No	44 (54.2)	37 (45.7)		16 (19.8)	65 (80.2)	
Total	46 (55.4)	37 (44.6)	83 (100)	16 (19.2)	67 (80.8)	83 (100)

p=Level of significance, bold=Statistically significant, TOS=Test of significance (chi-square), n=Frequency, %=Percentage

less likely to report mental comorbidities (p<0. 01, p=0.03, respectively). A higher percentage (26.1%) 6/23 of PDU with somatic comorbidities had opioid use disorder compared to those with other SUD diagnoses.

Table 4 shows the association of specific mental comorbidity with specific substance use disorder (SUD) diagnoses.

Schizophrenia was significantly associated with cannabis use disorders 21/23 (91.3%) (p=0.02). However, PDU with opioid 1/23 (4.3%) and other stimulant 1/23 (4.3%) use disorders were significantly less likely to be diagnosed with comorbid schizophrenia (p=0.01, p=0.03 respectively).

Table 5 shows profile of specific somatic comorbidity with substance use disorder diagnoses (SUD).

Somatic comorbidity occurred in 19.3% (16/83) of PDU in this study. A little above half of PDU 9/16 (56.3%) with somatic comorbidity had single SUD diagnosis. Sickle cell disease accounted for one-quarter (4/16) of somatic comorbidity in PDU and all of participants with comorbid sickle cell disease abused opioids.

Discussion

In this study, most problem drug users (PDU) were male, single and unemployed; this agrees with findings of other studies reviewed [12-15]. It is also a world-wide observation that, generally speaking, externalizing disorders, like drug abuse, are commoner among males, probably because of the socializing process which favours male outward behaviour. The percentage

Table 4: Comparison of specific psychiatric comorbidity with substance use disorder diagnosis

Substance Disorders	Schizophrenia		TOS	Mood Disorders/ DSH		TOS	Personality Disorder		TOS	Multiple Co-morbidity		TOS
	Yes	No		Yes	No		Yes	No		Yes	No	
Alcohol Use Disorder												
Yes	16 (69.6)	37 (61.7)		8 (50.0)	45 (67.2)		2 (50.0)	51 (64.6)		3 (100)	50 (62.5)	
No	7 (30.4)	23 (38.3)	p=0.50	8 (50.0)	22 (32.8)	p=0.20	2 (50.0)	28 (35.4)	p=0.82	0 (0.0)	30 (37.5)	p=0.55
Nicotine Use Disorder												
Yes	17 (73.9)	31 (51.7)		10 (62.5)	38 (56.7)		3 (75.0)	45 (57.0)		3 (100)	45 (56.3)	
No	6 (26.1)	29 (48.3)	p=0.07	6 (37.5)	29 (43.3)	p=0.67	1 (25.0)	34 (43.0)	p=0.64	0 (0.0)	35 (43.7)	p=0.26
Cannabis Use Disorder												
Yes	21 (91.3)	40 (66.7)		14 (87.5)	47 (70.1)		4 (100)	57 (72.2)		3 (100)	58 (72.5)	
No	2 (8.7)	20 (33.3)	p=0.02	2 (12.5)	20 (29.9)	p=0.16	0 (0.0)	22 (27.8)	p=0.57	0 (0.0)	22 (27.5)	P=0.56
Opioid Use Disorder												
Yes	1 (4.3)	22 (95.7)		3 (13.0)	20 (29.9)		1 (25.0)	22 (27.8)		1 (33.3)	22 (27.5)	
No	22 (36.7)	38 (63.3)	p=0.01	13 (21.7)	47 (70.1)	p=0.37	3 (75.0)	57 (72.2)	p=0.99	2 (66.7)	58 (72.5)	p=0.99
Other Stimulant Use Disorder												
Yes	1 (4.3)	15 (25.0)		2 (12.5)	14 (20.9)		1 (25.0)	15 (19.0)		1 (33.3)	15 (18.7)	
No	22 (95.7)	45 (75.0)	p=0.03	14 (87.5)	53 (79.1)	p=0.44	3 (75.0)	64 (81.0)	p=0.99	2 (66.7)	65 (81.3)	p=0.48
Organic Solvent Use Disorder												
Yes	1 (4.3)	1 (1.7)		1 (6.2)	1 (1.5)		0 (0.0)	2 (2.5)		0 (0.0)	2 (2.5)	
No	22 (95.7)	59 (98.3)	p=0.48	15 (93.8)	66 (98.5)	p=0.35	4 (100)	77 (97.5)	p=0.99	3 (100)	78 (97.5)	p=0.99
Total	23 (100)	60 (100)		16 (100)	67 (100)		4 (100)	79 (100)		3 (100)	80 (100)	

p=Level of significance, In Bold=Statistically Significant, TOS-Test of significant (chi-square).

Table 5: Profile of Specific Somatic Comorbidity with Substance use Diagnoses

Somatic comorbidity	Single substance use diagnosis		Multiple substance use diagnoses		Total n (%)
	Type	(n)	Types	(n)	
Sickle Cell Disease	Opioids	4	-	-	4 (25.0)
Delirium Tremens	Alcohol	1	Alcohol + Nicotine	1	
			Alcohol + Cannabis	1	3 (18.8)
Chronic Liver Disease	Alcohol	1	Alcohol + Nicotine	1	2 (12.5)
Skin Lesions			Alcohol + Nicotine + cannabis + opioids	1	1 (6.3)
Head Trauma	Alcohol	1	-		1 (6.3)
Chronic Bronchitis			Alcohol +Nicotine + Cannabis	1	1 (6.3)
Combined Somatic Disorders	Alcohol	1	Alcohol + Cannabis + Other Stimulants	1	
	Opioids	1	Alcohol + Nicotine + Cannabis + Other Stimulants	1	4 (25.0)
Total n (%)		9 (56.3)		7 (43.7)	16 (100.0)

(n)=Frequency, %=percentage

of unemployed PDU (55.4%) is about five-fold higher than the 2015 national unemployment rate in Nigeria (10.4%) [16]. This may indicate drug use severely affecting capacity to function in any job capacity, which could ultimately lead to criminal behavior in an effort to fund use. In our study, almost half of PDU had finished tertiary education. At least 12 years of formal educational attainment was also reported among PDU in other studies [6,13,17,18]. This finding is backed by studies which also show significant rates of drug use among Nigerian university students [19-21]. The proportions of university dropout and unemployment in this study may also indicate focal points of loss of productive potentials, and could signal the need for effective public health policy along with proactive intervention to curb these entwined consequences of SDU on productivity.

Almost half of participants commenced drug use in late adolescence which is in keeping with findings of other local studies reviewed [6,22,23]. The main route of drug administration was a combination of the oral and inhalation route. This may be reflective of the preferred routes of administration for the common types of drug abused locally. This finding also agrees with a recent WHO drug report indicating low prevalence of injection drug use in Africa, where the lowest HIV transmission rates via contaminated needles among IV drug users was also recorded worldwide [1].

In agreement with findings in extant literature, majority of PDU in our study had mental comorbidities [6,12-14,17,18]. Individuals with substance use disorders (SUD) and other comorbid mental disorders often exhibit symptoms that are persistent, severe and resistant to treatment with poorer prognosis [2].

Study participants with mental comorbidities were significantly more likely to be in their third decade of life. This finding has been replicated in other studies [15,24]. The reason for PDU having mental comorbidity early is not clear, but these individuals may have started using psychoactive substances to self-medicate subclinical psychiatric symptoms. In particular because most major mental illnesses like schizophrenia (especially in males) usually begin to manifest in the third decade of life [25].

Problem drug users in our study with mental comorbidity significantly used the oral and inhalational route of drug administration. Our study found cannabis abuse to be most prevalent SUD and associated with mental comorbidity. In Nigeria, cannabis is usually smoked or added to food or beverages, [26]. so it may not be surprising that most study participants with comorbid mental conditions used oral and inhalation routes as preferred means of drug administration.

Study participants with nicotine and cannabis use disorders were significantly more likely to have mental comorbidities. Surveys have shown increased nicotine use in individuals with other mental disorders particularly schizophrenia [27]. It has been hypothesized that nicotine may help compensate for cognitive impairments associated with schizophrenia, counteract psychotic symptoms, help alleviate unpleasant antipsychotic side effects or help deal with anxiety symptoms [27]. Problem drug users in our study with comorbid schizophrenia were also significantly more likely to be diagnosed with cannabis use disorder. A review of studies showed that schizophrenia had the highest comorbid prevalence with associated cannabis use [12-15,17]. In the same vein, one local study on admission trends over two decades found significantly increasing annual rates of schizophrenia in association with cannabis use [6]. However, PDU with opioid and other stimulants use disorders in our study were less likely to report mental comorbidities, particularly schizophrenia. The reason for these findings is unclear but low rates of major mental comorbidities especially psychoses have also been reported among opioid abusers in other studies [28]. There is need for further studies in this area.

There is a paucity of studies in Nigeria that examined physical illnesses in people with SUD. Somatic comorbidities in our study occurred in less than a quarter of PDU. Alcohol use disorder was the most reported substance use problem across the spectrum of those with somatic comorbidities. This finding is in agreement with a recent WHO report highlighting the toxic effects of chronic excessive alcohol consumption [29]. However, opioid use disorders occurred in a higher percentage (but lower frequency than alcohol use disorder) of PDU with somatic comorbidity. A Nigerian household survey [30]. also found increasing abuse of prescription opioids (mainly pentazocine, codeine and morphine) with its use even more prevalent than cannabis.

Study participants with somatic comorbidity were significantly more likely to be older, commenced drug use later in life and were injecting drugs. The toxic effects of psychoactive substances have been shown to cumulate over time hence causing more physical problem for older demographics [31]. Pentazocine, which is an opioid parenteral analgesic agent, was abused singly by all PDU with sickle cell disease in our study. This narcotic agent is commonly prescribed to alleviate painful crisis in sickle cell disease patients locally. Possibly due to poor regulation of drug prescription and patency in Nigeria, patients with sickle cell disease in an attempt to use a drug that will effectively control pain crisis, not minding the addictive effect or due to ignorance eventually become problem users. More elaborate studies need to be done on opioid use disorders in sickle cell disease patients, and formulation of prevention strategies is indicated in this environment where the condition is fairly common [32].

Study participants with somatic comorbidities were significantly less likely to have cannabis or nicotine use disorders. The reason for these findings is also not clear and there is a paucity of studies for comparison. This may however be due to faulty referral services as individuals being managed for physical illnesses who may also have comorbid SUD may not have psychiatric referrals. Also, mental comorbidities associated with cannabis and nicotine use disorder diagnoses occurred early in PDU in our study, possibly not allowing for its delayed toxic somatic effects.

Limitations

The study was carried out at a single treatment center which could limit generalization. No control group was sampled which may also limit inferences on risk factors. The retrospective nature of the study also limits its usefulness.

Conclusion

This study reported the potential relevance of demographic variables (including marital status, age, age at drug use onset, gender and employment status) to the development of problem drug use. These factors may be key to detecting at-risk subgroups of the population. Polysubstance abuse was rife, and coupled with the positive association of cannabis abuse with schizophrenia portends negative consequences. The high frequency of comorbid sickle cell disease among those seeking help for opioid use disorder should also be of great concern. The findings of this retrospective study should provide hypotheses for prospective longitudinal studies, and suggest the need to be cognizant of potential comorbidity of mental and somatic disorders in PDU.

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