



# Tramadol Abuse Among Patients Attending An Addiction Clinic in North-Eastern Nigeria: Outcome of a Four Year Retrospective Study

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## To cite this article:

Ibrahim A. W., Yerima M. M., Pindar S. K., Onyencho V. C., Ahmed H. K., Machina B. K., Shehu S., Rabbebe I. B., Wakil M. A. Tramadol Abuse Among Patients Attending An Addiction Clinic in North-Eastern Nigeria: Outcome of a Four Year Retrospective Study. *Advances in Psychology and Neuroscience*. Special Issue: Substance Abuse: Perspectives, Trends, Issues and the Way Forward. Vol. 2, No. 2-1, 2017, pp. 31-37. doi: 10.11648/j.apn.s.2017020201.16

**Received:** September 28, 2016; **Accepted:** September 30, 2016; **Published:** February 14, 2017

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**Abstract:** The 21st century Nigeria has witnessed changing trends in the patterns of psychoactive substance use with Tramadol HCl emerging as a candidate drug in the North-eastern region of the country. This study assessed the prevalence, patterns and the reasons behind the sustained use of Tramadol in a sub-population of drug users. This is a retrospective cross-sectional study in which socio-demographic, clinical and drug-related data were extracted from the clinical records of 237 drug users attending the addiction clinic of Federal Neuropsychiatric Hospital, Maiduguri, North-eastern Nigeria. The prevalence of Tramadol abuse was 54.4% [n=129] and 78 [60.5%, 95% C.I. = 54.1 - 65.7] met the ICD-10 diagnostic criteria for Tramadol dependence. Over 93% of Tramadol users were males and 87 [67.4%, 95% C.I. = 59.9 - 73.4] were in the 18 to 37 years age bracket. Over 67% used Tramadol in combination with other psychoactive substances while 65.1% [95% C.I. = 50.7 - 81.4] used multiple daily doses. Over 91% of the subjects obtained the drug without prescriptions and 12.4% [95% C.I. = 7.5 - 16.8] were first initiated to the drugs by prescriptions from health professionals. The commonest primary reasons for continuous usage were; to relieve tiredness [28.7%, 95% C.I.= 25.4 - 31.2] and to prolong the time of sexual intercourse [22.5%, 95% C.I. = 20.1 - 24.7]. Considering the addictive potentials of Tramadol, there is the need for; psychoeducational programmes for adolescents and young adults, rational prescriptions by clinicians and enhancing the operational capacities of regulatory agencies.

**Keywords:** Tramadol, Abuse, North-Eastern Nigeria

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## 1. Introduction

In the 21st century Nigeria, the use and abuse of psychoactive substances have become problems of national public health significance [1]. This is because the use and abuse of such drugs are associated with psychosocial, economic and medical complications [2 - 6]. From the initial studies conducted after the second world war (WWII), the

prevalence and patterns of psychoactive substance use in the country have consistently changed [7, 8]. Such changes could be accounted for by the demographic characteristics of the respondents as well as by socio-cultural variations [1, 8]. Though, Alcohol remains the most prevalent used psychoactive substance nationwide, its use in the northern

parts of the country is considerably lower than in the south [9, 10]. This is attributed mainly to the influence of the Islamic religion which is the predominant faith in the north [1]. However, *ab initio*, the use of other psychoactive drugs such as Cannabis and certain stimulants has been reported in the north [11].

North-eastern Nigeria, like other parts of the country, also has its own share of the national drug abuse epidemic. Just like the national picture that has exhibited changing trends overtime, the drug use trends and patterns in the North-east have also changed with time [12]. Based on anecdotal clinical experience, the emergence of the opioid-based analgesic, Tramadol, among drug users in the northeast region of Nigeria within the last decade represents a major landmark in the annals of drug use events in the sub-region. Tramadol is a centrally-acting analgesic with weak  $\mu$ -opioid agonist properties as well as inhibitory effects on the reuptake of noradrenaline and serotonin [13]. It was initially thought to have minimal addictive potentials when compared to other opioid analgesics but the unfolding scenarios are contrary.

Though, not included in the essential drugs list of the country, it is often prescribed for acute pains and moderate pains that are not responsive to other non-narcotic analgesics by clinicians [14, 15]. It is also often used off-label for other purposes such as premature ejaculation and for its euphoric effects [16 - 18]. Literature also abound that have documented the negative effects of Tramadol which include; the induction of seizures, development of classical opioid withdrawal syndrome and psychiatric symptoms such as aggressiveness and hostility [19 - 25]. Studies in Egypt and Iran have reported variable prevalence rates ranging between 8.8% to 64% among persons with drug use problems and both client-related as well as drug-related factors have been implicated in increasing the vulnerability [18, 26, 27].

Despite, the relative frequency of the use of Tramadol in Northern Nigeria, this is the first study based on available literature in this clime that attempts to look at this drug from the perspective of addiction. The objectives of this study are to:

- i. determine the prevalence of Tramadol abuse among a sub-population of drug users
- ii. determine the pattern of Tramadol use, and
- iii. evaluate the reasons underlying the use of Tramadol among the subjects

## 2. Materials and Methods

This study was conducted among clients with drug use problems attending the drug addiction clinic of Federal Neuropsychiatric Hospital, Maiduguri in North-eastern Nigeria. The institution has a drug addiction treatment, education and rehabilitation (DATER) unit that was commissioned in 2011 and runs an addiction clinic twice weekly (Mondays and Thursdays). From June 2012 to June 2016, two hundred and eighty three (283) clients with drug-related disorders were seen in the clinic [28]. All clients were

assessed by the therapeutic team consisting of a psychiatrist, a clinical psychologist, a psychiatric nurse and a social worker. All diagnoses were made according to the International Classification of Diseases and Related Disorders version 10 (ICD - 10) of the World Health Organization criteria.

### 2.1. Study Design

This is a retrospective cross sectional study in which the clients' medical records for the stipulated period were retrieved from the Health Information Management Department of the Hospital. All relevant information which included; sociodemographic, clinical and drug-related information as well as the ICD-10 diagnoses of the clients were extracted.

### 2.2. Sample Population

The inclusion criteria were;

- i. adults between the ages of 18 and 65years
- ii. identified diagnosis of drug-related problem based on ICD-10 diagnostic criteria
- iii. objective evidence of drug use using the multi-panel urine drug analysis assay
- iv. Must have been admitted at least once

The exclusion criteria were;

- i. comorbid axis I psychiatric disorder
- ii. missing relevant data such as diagnosis or absence of urine drug analysis outcome
- iii. comorbid physical illnesses such as cognitive impairment or end-organ damage

### 2.3. Study Tools

The information obtained using the parameters below from the medical records of the clients were entered into a predesigned proforma

- i. Sociodemographic profiles: which include the gender, age of the respondents, years of education, occupational classification by Boroffka and Olatawura [29], marital status, and place of residence.
- ii. Clinical and drug-related profiles: such as age at onset of use of psychoactive substance, how the client was initiated, number of psychoactive substances used, the drug formulation, average daily dosage, average daily dosing frequency, mode of obtaining the drug, whether the client has met the criteria for dependence, commonest dependence symptoms and reasons advanced for continuous Tramadol abuse.

### 2.4. Ethical Issues

Ethical clearance was obtained from the Institutional Review Board of the Federal Neuropsychiatric Hospital, Maiduguri after the protocol was found to be in substantial compliance with the Declaration of Helsinki for research in human subjects. All questionnaires were anonymous in order to ensure confidentiality.

### 2.5. Data Entry and Statistical Analyses

The collected data were coded and cleaned before entry into the Statistical Package for Social Sciences Version 18.0 (SPSS18.0) for analysis. Descriptive statistics mainly frequency and percentage were used. The statistics were set at 95% confidence interval (95% C.I.), two-tailed.

## 3. Results

Of the 283 clinical records of the clients retrieved for the period under review, only 237 records were finally found to fulfil the eligibility criteria for the study. The remaining 46 were not included due to failure to meet the inclusion criteria (n=31) and incomplete data (n=15).

### 3.1. Sociodemographic Profiles of the Respondents

Males constituted 92% of the subjects and 73% of them were below 38 years of age with a mean average age of 33.79 years. Over 70% of the subjects had less than 12 years of education based on the Nigerian educational system and 70% were either unskilled workers or unemployed. Over 73% of the subjects were either urban or semi-urban dwellers while 71% were not married.

### 3.2. Clinical and Drug-related Parameters of Tramadol Users

The prevalence of Tramadol abuse is 54.4% (n=129). Over 65% of the Tramadol users were below 38 years of age and the average age of onset of use was 28.24 years. The major mode of initiation into Tramadol use was peer group influence and over 67% of the subjects used multiple psychoactive substances. The commonest Polysubstance combinations were Tramadol and Cannabis (53%) and Tramadol and hypnotosedatives (Benzodiazepines) (44%). Over 96% of the subjects used the tablet formulation, over 83% used  $\leq 200$  mg per day and 65.1% of them used multiple daily doses. Over 91% of the subjects obtained the drugs without a prescription and over 60% met at least three ICD-10 Diagnostic criteria of dependence.

### 3.3. Frequency of Occurrence of Diagnostic Criteria of Dependence

Of all the diagnostic criteria for dependence, the progressive increment in the quantity of the substance used (tolerance) was the commonest reported in 88.5% (n=69) of the subjects. This is followed by symptoms of physiological withdrawal 66.7% (n=52) while the least occurring criterion was persistent usage despite evidence of harm 21.8% (n=17).

**Table 1.** Sociodemographic profile of the study subjects (N=237).

Variables	Tramadol Users Freq (%)	Other Drugs Users Freq (%)	Total Freq (%)
<b>Gender</b>			
Males	121(93.8)	97(89.8)	218(92.0)
Females	8(6.2)	11(10.2)	19(8.0)
<b>Age in years [Mean=33.79yrs<math>\pm</math>5.68SD,Range=18-65yrs]</b>			
18-27	41(31.8)	43(39.8)	84(35.4)
28-37	47(36.4)	42(38.9)	89(37.6)
38-47	21(16.3)	13(12.1)	34(14.4)
48-57	14(10.8)	5(4.6)	19(8.0)
$\geq 58$	6(4.7)	5(4.6)	11(4.6)
<b>Years of education</b>			
$\leq 12$ years	94(72.9)	89(82.4)	183(77.2)
$> 12$ years	35(27.1)	19(17.6)	54(22.8)
<b>Occupation</b>			
Skilled	7(5.4)	5(4.6)	12(5.1)
Intermediate skilled	13(10.1)	9(8.3)	22(9.3)
Semi-skilled	20(15.5)	17(15.7)	37(15.6)
Unskilled	51(39.5)	48(44.4)	99(41.8)
Unemployed	38(29.5)	29(27.0)	67(28.2)
<b>Place of Residence</b>			
Urban	63(48.8)	49(45.4)	112(47.3)
Semi-urban	34(26.4)	28(25.9)	62(26.2)
Rural	32(24.8)	31(28.7)	63(26.5)
<b>Marital status</b>			
Married	32(24.8)	27(25.0)	59(24.9)
Not married	97(75.2)	81(75.0)	178(75.1)

**Table 2.** Clinical and Drug-related parameters of Tramadol Users (N=129).

Parameters	Freq (%)	95% C.I.
<b>Age at onset of use</b> [Mean=28.24±3.41yrs,Range=18-59yrs]		
18-27	48(37.2)	31.6-40.3
28-37	39(30.2)	28.3-33.1
38-47	22(17.1)	13.5-20.8
48-57	13(10.1)	7.9-12.7
≥58	7(5.4)	3.6-7.6
<b>Mode of Initiation</b>		
Peer group influence	69(53.5)	43.5-62.7
Curiosity	23(17.8)	12.3-21.3
Prescribed by a health worker	16(12.4)	7.5-16.8
Others	21(16.3)	11.8-22.1
<b>Number of Drugs Used</b>		
Polysubstance use	87(67.4)	51.3-76.9
Tramadol Only	42(32.6)	25.1-38.7
<b>Drug Formulation</b>		
Tablet	124(96.1)	87.9-100.0
Injectable	5(3.9)	1.1-6.3
<b>Daily Dosage</b>		
≤100 mg per day	47(36.4)	30.5-39.9
101-200 mg per day	61(47.3)	39.3-52.1
>200 mg per day	21(16.3)	13.4-18.7
<b>Dosing Frequency</b>		
Once daily	45(34.9)	29.9-39.2
Multiple daily dosage	84(65.1)	50.7-81.4
<b>Mode of obtaining the drug</b>		
With prescription	11(8.5)	5.5-10.7
Without prescription	118(91.5)	79.6-98.3
<b>Criteria for Dependence</b>		
Met	78(60.5)	54.1-65.7
Not met	51(39.5)	33.9-43.8

**Table 3.** Frequency of Occurrence of ICD-10 Criteria for Dependence (N=78).

Diagnostic criterion	Freq (%)	95% C.I.
Compulsive desire for continuous usage	47(60.3)	48.7-69.4
Difficulty in controlling substance intake behaviour	33(42.3)	35.2-48.5
Symptoms of physiological withdrawal	52(66.7)	56.5-72.4
Progressive increment in quantity used (tolerance)	69(88.5)	70.1-99.7
Neglect of alternative sources of pleasure	22(28.2)	20.5-37.2
Persistent usage despite evidence of harm	17(21.8)	17.3-24.4

NB: Totalis > 78 because for dependence, all respondents must have at least 3 symptoms

**Table 4.** Primary reasons for continuous Tramadol Abuse (N=129).

Reason	Freq(%)	95% C.I.
To relieve tiredness or fatigue	37(28.7)	25.4-31.2
To improve mood (euphoric effect)	12(9.3)	7.3-9.9
To prolong time of sexual intercourse	29(22.5)	20.1-24.7
To relief pain	13(10.1)	7.2-14.3
To prevent withdrawal symptoms	14(10.8)	7.6-13.8
Compulsive urge (craving)	19(14.7)	8.4-22.3
Others (e.g. socialization, no specific, etc)	5(3.9)	2.2-5.4

### 3.4. Primary Reasons for Continuous Tramadol Abuse

In terms of the primary reasons why the subjects abused Tramadol on a continuous basis, the first three advanced were; to relieve tiredness (28.7%, n=37), to prolong time of sexual intercourse (22.5%, n=29), and compulsive urge (14.7%, n=19) respectively.

## 4. Discussion

This study assessed the prevalence, patterns of use and reasons underlying the use of Tramadol as a psychoactive substance in Northern Nigeria. This was informed by anecdotal experiences of clinicians practicing in this clime because of the emerging trend. Though the use of Tramadol has been well documented in other parts of the world, this is the first study based on available literature that addresses this topical issue in Northern Nigeria [18, 26, 27].

The sociodemographic characteristics revealed that males constituted over 93% of the Tramadol users. This is in consonance with the outcome of earlier studies conducted by Nabil *et al.* (2015) in Iran and Bassiony *et al.* (2015) in Egypt that all showed male preponderance [18, 26]. The reason for the male predominance in this study could be attributed to cultural influences that view feminine psychoactive substance use as a complete taboo while the use by men, despite the prohibition, could be condoned. Secondly, the number of females in the study might not be a true reflection of the real scenario as females might not readily be presented for addiction therapy for the fear of the attendant stigma.

In terms of the age composition, over 67% of the Tramadol users were below 37 years of age. Earlier studies by Zabihi *et al.* (2011) and Bashirian *et al.* (2014) have revealed similar outcomes [27, 30]. The most likely reasons that could be advanced here are; (i) the pervasive effect of peer pressure on adolescents and young adults [31, 32], and (ii) the effects of

curiosity and experimentation [33, 34]. The years of education and the occupational status of the subjects are closely linked in this study, as one's level of education determines one's occupational status. The majority of Tramadol users had less than 12 years of education, concurrently approximately 70% of them were either unskilled workers or completely unemployed. It could, therefore, be adduced that most of the unskilled workers might be using Tramadol to relieve tiredness or fatigue as reflected in the reasons advanced by the respondents for continuous usage.

Though, Tramadol is more commonly used in the urban areas (48.8%), its usage seems to be common irrespective of the place of residence as shown by the frequencies of use of 26.4% and 24.8% for semi-urban and rural residents respectively. This could be attributed to the ubiquitous availability of drugs without regards for locality due mainly to the activities of drug vendors who dispense these drugs without prescriptions. Also, the activities of enforcement and regulatory agencies such as the National Drug Law Enforcement Agency (NDLEA) and the National Agency for Food and Drug Administration Control (NAFDAC) are virtually nonexistent with regards to the dispensation and utilization of this drug in the study setting. The 'Boko Haram' insurgency that has engulfed the study for more than half a decade might have further weakened the ability of the control agencies.

In terms of the clinical parameters, the average age of onset of Tramadol abuse is 28.24 years and over two-thirds of the users were between 18 and 37 years of age. This is consistent with the findings of previous studies by Zabihi *et al.* (2011) and Bashirian *et al.* (2014) in other climes [27, 31]. However, the age of onset of use seems to be later than that reported by Jordan-Jinez *et al.* (2009) of 13.03 years in Brazil and 15 to 18 years reported by Gopiram and Kishore (2014) in India [33, 34]. This might be due to the age selection criterion adopted for this study that stipulated the ages of the respondents to be in the 18 to 65 years age bracket, while the other studies were conducted among adolescents and young adults.

Peer group influence and curiosity were the commonest reasons for initiation which are consistent with the outcomes of previous studies by Reed and Rountree (1997) and Simons-Morton and Farhat (2010) [31, 32]. A peculiar method of initiation noted in this study, is the iatrogenic mode (usually prescription by a health worker) for pains and the subjects subsequently discovered the other beneficial effects and become dependent on the drug. There is, therefore, the need for rational prescription on the part of clinicians and other health workers. Over two-thirds of the subjects used multiple psychoactive substances, usually various combinations of Tramadol and other drugs. This is in consonance with the outcomes of previous studies by Abasiubong *et al.* (2014), Osman *et al.* (2016), and Onyenko *et al.* (2016) respectively that have all revealed the use of multiple psychoactive substances by drug abusers in Africa [9, 35, 36]. The probable reason for the concurrent

multiple substance use is to get variable psychoactive effects ranging from euphoric to sedating, as well as fatigue relieving and pleasurable experience.

In terms of the Tramadol formulation, the overwhelming majority of the respondents (96.1%) used the tablet form and almost two-thirds used multiple frequency dosing. The likely reason for preference for the tablets could be attributed to the absence of the injectable formulation in North-eastern Nigeria. While the multiple daily dosing frequencies could be attributed to the half-life of Tramadol which ranges between 5 and 9 hours [37], hence, there is the need to take multiple daily doses in order to obtain a sustained effect among Tramadol-dependent subjects. Over 90% of the subjects also obtained Tramadol without prescriptions, this could be attributed to the activities of unprofessional drug vendors and the lack of adequate control by the relevant regulatory agencies as earlier advanced.

In terms of meeting at least three of the ICD-10 diagnostic criteria for dependence, over three-fifths of the subjects were dependent on Tramadol. The three most common occurring symptoms criteria were; (i) progressive increment in the quantity of Tramadol use or tolerance (88.5%), (ii) symptoms of physiological withdrawal, mainly, rhinorrhoea, trembling, abdominal cramps, sweatiness, etc (66.7%), and (iii) compulsive desire for continuous usage or craving (60.3%). All these might be attributed to the high addictive potentials of Tramadol like other Opiates [21, 22, 38].

Finally, the three predominant reasons that seem to sustain the use of Tramadol among the dependent subjects were; (i) to relieve tiredness or fatigue, which could be accounted for by the occupational composition of the subjects (unskilled workers), as earlier highlighted, (ii) to prolong time of sexual intercourse, this is consistent with the finding by Nabil *et al.* (2015) in Egypt that reported high use of Tramadol to prolong the time of sexual intercourse [18], and (iii) to control compulsive urge or craving for the drug which is attributable to the addictive potential of the drug.

## 5. Strength and Limitations of the Study

The major strength of the study is the use of a fairly large sample size, while the limitations include; (i) the cross-sectional nature of the study which could not allow any causal inference, and (ii) it is a hospital-based study, hence, it might not be a true reflection of what obtains in the community.

## 6. Conclusion

Conclusively, the outcome of this study revealed that over two-thirds of the drug users in this environment are adolescents and young adults and they use Tramadol either as a single drug or in combination with other psychoactive substances. Secondly, significant proportion of the subjects obtained the drug without prescription and some were initiated to the use of the drug by health professionals, the authors hereby make the following recommendations;

1. Design psychoeducational programmes that will target adolescents and young adults who have increased vulnerability to using the drug.
2. Enhance the operational capacities of the regulatory agencies such as the NDLEA and NAFDAC to exert the necessary control effects.
3. Train health professionals on rational prescriptions, with particular emphasis on the Opiates and related drugs.

## Competing Interests

The authors declare no competing interests

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