

Research Article

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Factors Associated with Number of Drugs Abused among Patients Admitted to Tanka Tanka Psychiatric Hospital, The Gambia

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ABSTRACT

Background: Psychoactive substance abuse remains a pressing public health challenge worldwide with a significant impact on physical, social and psychological well-being. The burden of drug abuse has grown considerably, affecting millions of people and contributing to morbidity, mortality and disability. In Sub-Saharan Africa, high rates of substance use have been reported among persons presenting for psychiatric evaluation in mental health facilities. Most of the studies have not examined the factors associated with number of drugs being abused. There is rarity of studies in this subject matter at the psychiatric facility in the Gambia. This study was undertaken to examine the factors associated with the number of drugs being abused among patients admitted to Tanka Tanka Psychiatric Hospital in the Gambia.

Aim: The study aimed at exploring the factors associated with number of drugs abused among patients admitted to Tanka Tanka Psychiatric Hospital, The Gambia.

Methodology: The study employed a descriptive cross-sectional design to elicit information on drug abuse among in-patients at Tanka Tanka Psychiatric Hospital. After Ethical approval from HREC of EFSTH, 116 patients who consented and satisfied the inclusions criteria were recruited to complete Questionnaire containing sections on Socio-demographic, Drug Abuse and Clinical Profile. Data were analyzed using Stata MP 17. Descriptive statistics were used to summarize the sociodemographic characteristics of the participants. Continuous variables such as age were reported as means and standard deviations, while categorical variables were presented as frequencies and percentages. Association between sociodemographic characteristics and the number of drugs abused was examined using bivariate non-parametric tests (Mann-Whitney U across two groups) while Kruskal-Wallis H test was used to compare median across more than 2 groups. For the multivariate analysis, a Poisson regression model was fitted to identify independent factors associated with the number of drugs abused. A p-value < 0.05 was considered statistically significant.

Results: Out of the 116 patients that participated in the study, 69.8% were males. The mean (SD) age of the patients was 35(10.7) years, 36.2% were unemployed while 52.6% were single. Most of the patients (70.7%) initiated drug use within 15-19 years of age. Lifetime prevalence of any drug use was 100% with all participants reporting at least use of 2 different psychoactive substances. Substance use was predominantly a male affair with proportion of male users over twice greater than for females. Males reported a higher median drug abuse (Median = 3.0, IQR = 3.00) compared to females (Median = 2.0, IQR = 1.00) at a significant level ($Z = 4.76$, $p < 0.001$). The median number of drugs abused was higher among respondents aged ≤ 39 years. Retired individuals had a high median drug abused (median=3.5, IQR=3.00) with individuals having single marital status reporting the highest median number of drugs abused (median=3.0, IQR= 3.00). Among educational group, those with junior secondary education reported the highest drug abused (median=4.0, IQR=3.00) while individuals with no formal education had the lowest (median=1.0, IQR=1.00).

Conclusion: This study demonstrates a high prevalence of poly-drug use among psychiatric inpatients in The Gambia, with male gender being a significant independent predictor. These findings call for urgent policy and clinical responses, including routine substance use screening, development of addiction services, and early preventive interventions, particularly targeting adolescents and young adults. Further longitudinal and mixed-methods research is needed to better understand the pathways to multiple drug use and develop tailored intervention strategies for the Gambian context.

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Introduction

Substance abuse remains a pressing public health challenge worldwide, with a significant impact on physical, psychological, and social well-being. Globally, the burden of drug abuse has grown considerably, affecting millions of people and contributing to morbidity, mortality, and disability. According to the United Nations Office on Drugs and Crime (UNODC), over 296 million people used drugs globally in 2021, marking a 23% increase over the previous decade, with multiple drug use being a rising concern among youth and marginalized populations [1]. Multiple drug abuse—defined as the concurrent or sequential use of more than one psychoactive substance—presents more complex clinical presentations, higher relapse rates, and greater healthcare costs than single-substance use [2].

In sub-Saharan Africa, substance abuse has become increasingly prevalent due to rapid urbanization, socioeconomic stressors, youth unemployment, and poor mental health infrastructure [3]. Gambia, a small West African country, has not been protected against these trends. Although national-level data are scarce, anecdotal reports and limited studies suggest that drug use—particularly cannabis, alcohol, and increasingly synthetic substances such as tramadol—is on the rise, especially among young males [4]. The societal stigma attached to drug use and mental illness in Gambia often hinders early detection and treatment, leading to late presentations at psychiatric facilities such as Tanka Tanka Psychiatric Hospital, the only tertiary psychiatric care institution in the country.

Tanka Tanka Psychiatric Hospital, located near the capital Banjul, provides specialized care for individuals suffering from mental illnesses, including substance-induced psychotic disorders. Clinical observations at the facility reveal a growing number of patients presenting with co-occurring mental disorders and multiple substance use, complicating diagnosis and treatment. Several socio-demographic and clinical factors, including age, gender, educational status, unemployment, family history of mental illness or substance use, and exposure to trauma, have been implicated in the risk of multiple drug abuse [5]. Additionally, peer influence, lack of awareness, and inadequate preventive strategies contribute significantly to the problem, especially among young adults and adolescents [6].

Understanding the factors associated with multiple drug abuse is critical for early identification, tailored interventions, and effective policy formulation. Despite the increasing burden, empirical studies on the subject remain limited in Gambia. There is a pressing need for localized data to guide the development of culturally appropriate and evidence-based strategies for prevention, treatment, and rehabilitation. Exploring the profiles of patients admitted with substance-related disorders at Tanka Tanka Psychiatric Hospital offers a unique opportunity to identify key risk factors, patterns of drug use, and gaps in the healthcare system. Such research can contribute to national mental health strategies and global efforts aimed at reducing the burden of drug-related mental illnesses.

Methodology

The Study was conducted at Tanka Tanka Psychiatric Hospital. The Tanka Tanka Psychiatric Hospital is the only psychiatric in-patient facility, located in the Western Region of the country. It was built in 2009 by a Dutch non-governmental foundation organization (NGO), Tanka Tanka Foundation, on land donated by the President of the Gambia. There are separate wards for male and female patients. The in-patient's capacity of the hospital is 150 bed spaces.

This hospital-based study employed a descriptive, cross-sectional design to elicit information on drug abuse among in-patients at Tanka Tanka Psychiatric Hospital. The study population were the patients admitted to Tanka Tanka psychiatric hospital who met inclusion criteria and provided informed consent to participate in the study.

Sample size was estimated using Leslie – Kish – formula for single proportion [7].

$$\text{Sample size } n = \frac{Z^2 pq}{d^2}$$

P is the prevalence of substance abuse among patients admitted to the Tanka Tanka Psychiatric Hospital. P = 60% (8)

$$P = 0.6$$

$$Q = 1 - P = 1 - 0.6$$

$$= 0.4$$

$Z_{\alpha} = 1.96$ (for 5% level of significance) is standard normal deviate
d= the precision of the study and for this study a precision of 5% (0.05) was chosen

$$\text{Hence sample size } n = \frac{(1.96)^2 \times 0.6 \times 0.4}{(0.05)^2}$$

$$= 368.8$$

$$\text{Sample Size } = 369$$

Finite Population Correction for population less than 10,000 using the formula below (9)

$$n = \frac{no}{1 + \frac{(no-1)}{N}}$$

no= Sample size = 369

N = Total Bed Occupancy = 150

n = Adjusted Sample size

$$\begin{aligned} n &= \frac{369}{1 + \frac{(369-1)}{150}} \\ &= 369 \\ &3.4533 \\ &= 107 \text{ patients} \end{aligned}$$

Correcting for attrition, inconsistent and missing data, the study on psychoactive substance use among in-patients in a Nigerian Neuropsychiatric hospital obtained 86% as data completion rate. (10)

So, the final sample size

$$\begin{aligned} n &= 107 \times \frac{100}{86} \\ &= 125 \text{ Patients} \end{aligned}$$

Sampling Procedure

The total bed space occupancy of the hospital is 150. A simple random sampling of all consenting patient on admission was adopted. The sampling considered only patients that satisfied the inclusion criteria for the study. The sample size of the study is 125 and this comprised both male and female patients on admission.

Study Instrument

A questionnaire used by Abdulfatai Bakare & Isah Balarabe in the study of psychoactive substance use among psychiatric patients in Nigeria in 2016 was used for this study [11].

The questionnaire contains sections on Socio-demographic profile such as age, gender, occupation, marital status, educational level; Drug use profile containing information on types of drug abuse, age of first use, lifetime use, past year use, use in the one month prior to admission, currently using, duration of use prior to presentation, urine test toxicology results; Clinical profile which include clinical diagnosis, number of previous admissions, physical signs at presentation, behavioural signs at presentation, family history of mental illness. Forensic section elicits information on previous arrest by law enforcement agencies, detention in the prison, crime committed, being charged to court and other items on forensic issues.

Additional information was extracted from the patients’ case files, clinical history, mental status examination, physical examinations and urine toxicology results.

Two Research Assistants were recruited and trained on the instrument administration.

A pilot study was conducted among psychiatric patients attending the out-patients clinic of the Edward Francis Small Teaching Hospital (EFSTH), Banjul. Using recommended 10% size of the final study, 13 patients participated in the pilot study [7]. The capability and adequacy of the questionnaire, time to complete the questionnaire, understanding of the questionnaire were assessed at the pilot phase before commencing on the main study.

Data Analysis

All statistical analyses were performed using Stata MP 17. Descriptive statistics were used to summarize the sociodemographic characteristics of the participants. Continuous variables such as age were reported as means and standard deviations, while categorical variables were presented as frequencies and percentages.

To examine the association between sociodemographic characteristics and the number of drugs abused, bivariate non-parametric tests were used due to the non-normal distribution of the outcome variable (number of drugs abused). Specifically, the **Mann-Whitney U test** was employed to compare the median number of drugs abused between two groups (e.g., gender, age group). The **Kruskal-Wallis H test** was used to compare medians across more than two categories (e.g., occupation, marital status, educational level, age at first drug use). For the multivariate analysis, a **Poisson regression model** was fitted to identify independent factors associated with the number of drugs abused. Variables that showed statistically significant associations in the bivariate analysis ($p < 0.05$) were included in the regression model to adjust for potential confounding effects. Regression coefficients (β), p-values, and 95% confidence intervals were reported for each predictor. A p-value < 0.05 was considered statistically significant.

Ethical Considerations

Ethical approval was duly obtained from Human Research Ethics Committee of Edward Francis Small Teaching Hospital (EFSTH) with Reference Number: EFSTH-REC-2025-43. Informed consent of all participating patients was obtained. The patients were free to opt out of the study at any point. International ethical norms and standards were strictly adhered to during the study. Confidentiality was ensured as the questionnaire did not contain the names of the participants or any means of identification.

Results

Sociodemographic Characteristics of the Respondents: The demographic distribution of the patient was presented in table 1. A total of 116 patients participated in the study. The majority were male ($n = 81$; 69.8%), while females accounted for 30.2% ($n = 35$). The mean age of participants was 35 years with a standard deviation of 10.7 years, ranging from 18 to 62 years. Over half of the respondents (59.5%) were aged 39 years or younger, while 40.5% were 40 years and above. In terms of occupation, 36.2% ($n = 42$) were unemployed, 31.0% ($n = 36$) were employed, and 24.1% ($n = 28$) were self-employed. A smaller proportion (8.6%, $n = 10$) were retired. Regarding marital status, more than half of the participants (52.6%, $n = 61$) were single, 31.9% ($n = 37$) were married, and 15.5% ($n = 18$) were divorced or widowed. Educational attainment varied among respondents. Approximately 29% ($n = 34$) had primary education, 26.7% ($n = 31$) had completed secondary education, and 16.4% ($n = 19$) had junior secondary education. About 10.3% ($n = 12$) had tertiary-level education. Additionally, 11.2% ($n = 13$) had Quranic education, and 6.0% ($n = 7$) had no formal education.

Table 1: Sociodemographic Characteristics of the Respondents

Variables	Frequency	Percent
Gender		
Male	81	69.8
Female	35	30.2
Age - Mean (SD)	35 (10.7)	min=18- max=62
Age group		

<= 39years	69	59.5
4>=0years	47	40.5
Occupation		
self employed	28	24.1
Employed	36	31.0
Unemployed	42	36.2
Retired	10	8.6
Marital Status		
Single	61	52.6
Married	37	31.9
Divorced/widowed	18	15.5
Highest Educational Level		
No formal Education	7	6.0
Primary education	34	29.3
Junior secondary	19	16.4
Secondary education	31	26.7
Tertiary education	12	10.3
Quranic education	13	11.2

Bivariate Analysis Comparing the Median Number of Drugs Abused by Patients

Lifetime prevalence of any drug use was 100% with all participants reporting at least use of 2 different psychoactive substances. Most of the patients (70.7%) initiated drug use within 15-19 years of age.

A bivariate analysis was conducted to compare the median number of drugs abused across various sociodemographic and behavioural factors. The results are presented in table 2.

There was a statistically significant difference in the median number of drugs abused between males and females ($Z = 4.76$, $p < 0.001$). Males reported a higher median drug abused (Median = 3.0, IQR = 3.00) compared to females (Median = 2.0, IQR = 1.00). The median number of drugs abused was higher among respondents aged ≤ 39 years (Median = 3.0, IQR = 3.00) than those aged ≥ 40 years (Median = 2.0, IQR = 3.00), with a significant difference ($Z = 6.00$, $p = 0.014$). No significant difference was observed in drug abuse across different occupational groups ($Z = 2.02$, $p = 0.568$). However, retired individuals had the highest median drug abuse (Median = 3.5, IQR = 3.00), while unemployed individuals had the lowest (Median = 2.5, IQR = 3.00). A significant association was found between marital status and drugs abused ($Z = 9.94$, $p = 0.007$). Single individuals had the highest median number of drugs abused (Median = 3.0, IQR = 3.00), while married and divorced/widowed individuals both had lower medians of 2.0. Educational level was associated with drugs abused ($Z = 12.7$, $p = 0.026$). Those with junior secondary education reported the highest drugs abused (Median = 4.0, IQR = 3.00), while individuals with no formal education had the lowest (Median = 1.0, IQR = 1.00). Although not statistically significant ($Z = 7.4$, $p = 0.060$), there was a trend indicating that those who started using drugs at an earlier age (10–29 years) had higher median drugs abused (Median = 3.0) compared to those who started at age ≥ 30 years (Median = 1.0, IQR = 1.00).

Table 2: Bivariate Analysis Comparing the Median Number of Drugs Abused by Patients

Variables	Number of Drugs abused			
	Median	IQR	Z	P-Value
Gender			4.76	0.000
Male	3.0	3.00		
Female	2.0	1.00		
Age group			6	0.014
<= 39years	3.0	3.00		
40>=years	2.0	3.00		
Occupation			2.02	0.568
self employed	3.0	3.00		
Employed	3.0	4.00		
Unemployed	2.5	3.00		
Retired	3.5	3.00		
Marital Status			9.94	0.007
Single	3.0	3.00		
Married	2.0	3.00		
Divorced/widowed	2.0	2.00		
Highest Educational Level			12.7	0.026
No formal Education	1.0	1.00		
Primary education	3.0	3.00		
Junior secondary	4.0	3.00		
Secondary education	3.0	3.00		
Tertiary education	3.5	4.00		
Quranic education	2.0	2.00		
Age range at first use of any drug			7.4	0.060

10-14years	3.0	2.00		
15-19years	3.0	4.00		
20 - 29 years	3.0	3.00		
>=30years	1.0	1.00		

Factors associated with the number of drugs abused by patients.

In other to adjust for confounders that may be reported in the bivariate results, multivariate Poisson regression model was fitted to identify factors associated with the number of drugs abused by patients. The model included only those variables that were significant in the bivariate analysis. The results are presented in the table below:

In the multivariate Poisson regression analysis, only gender was found to be significantly associated with the number of drugs used. Specifically, female patients reported significantly fewer drugs used compared to their male counterparts ($\beta = -0.51$, $p = 0.001$), indicating a lower burden of poly-drug use among females. Other variables such as age, marital status, highest level of education, and age at first drug use were not statistically significant predictors of the number of drugs used. This suggests that, after adjusting for other variables, these factors did not meaningfully influence the count of drugs reported by the patients in the sample.

Table 3: Factors Associated with the Number of Drugs abused by Patients.

Variables	B	P-value	95% CI (lower: Upper)	
			Upper	Lower
Gender				
Male	-	-	-	-
Female	-0.51	0.001	-0.8	-0.2
Age group				
<= 39years	-	-	-	-
40>=years	-0.14	0.31	-0.41	0.13
Marital Status				
Single	-	-	-	-
Married	-0.19	0.903	-0.32	0.3
Divorced/widowed	0.12	0.549	-0.28	0.53
Highest Educational Level				
No formal Education	-	-	-	-
Primary education	0.32	0.318	-0.31	0.96
Junior secondary	0.48	0.143	-0.16	1.12
Secondary education	0.27	0.42	-0.38	0.91
Tertiary education	0.28	0.43	-0.43	0.98
Quranic education	0.1	0.782	-0.78	0.82
Age range at first use of any drug				
10-14years	-	-	-	-
15-19years	0.18	0.346	-0.2	0.58
20 - 29 years	0.18	0.428	-0.27	0.64
>=30years	-0.14	0.752	-1.03	0.75

Discussion

This study examined factors associated with the number of drugs abused among patients admitted to Tanka Tanka Psychiatric Hospital in The Gambia, providing critical insight into the sociodemographic and clinical characteristics linked with poly-drug use in a psychiatric setting. The findings highlight a substantial burden of multiple substance use, with significant gender disparities and early initiation of drug use among participants.

High Prevalence of Poly-drug Use and Early Onset

The lifetime prevalence of any drug use in this sample was 100% and with all the study participants using at least 2 types of psychoactive substances. This pattern is consistent with the picture of drug abuse reported in sub-Saharan Africa [1]. A majority (over 70%) of the participants-initiated drug use between the ages of 15–19 years. This early initiation is consistent with global and regional patterns, where adolescence and early adulthood are critical periods for the onset of substance use due to increased vulnerability to peer pressure, identity formation, and risk-taking behaviours [12,13]. Although the association between age at first use and the number of drugs abused did not reach statistical significance in the multivariate model, the observed trend suggests that earlier initiation may predispose individuals to more extensive drug experimentation, as found in other studies [14,15].

Gender Disparity in Drug Use

Male patients in this study reported significantly higher numbers of drugs abused than their female counterparts, even after adjusting for potential confounders. This finding is in line with global literature that consistently reports higher rates of poly-drug use among males [16]. The National Institute on Drug Abuse (NIDA) also reports that men are more likely than women to use many types of illicit drugs [17]. Several factors may explain this pattern, including greater social tolerance for substance use among males, increased exposure to peer influence, and gendered social roles that affect drug accessibility and use patterns [16]. In The Gambia, these gendered expectations may be further reinforced by cultural stigma that disproportionately penalizes women who use drugs, potentially leading to underreporting or lower engagement in high-risk drug use among females.

Marital Status, Education, and Employment: No Clear Association
Although marital status, educational level, and occupational status showed significant associations with the number of drugs abused in the bivariate analysis, none remained statistically significant in the multivariate Poisson regression model. This suggests potential confounding effects and underlines the complexity of how social and structural factors influence substance use behaviours. Single individuals and those with lower levels of education had higher medians of drugs abused in the unadjusted analysis, echoing findings from studies in similar settings that associate limited social support and lower health literacy with increased vulnerability to drug misuse [17,18].

However, the absence of statistical significance in the adjusted model might be due to the relatively small sample size. With 116 participants, the study may lack statistical power to detect more modest associations, particularly for variables with limited variance.

Public Health and Policy Implications

The strong association between male gender and poly-drug use among psychiatric inpatients in The Gambia has several important implications for prevention, treatment, and policy.

- **Prevention and Outreach-** Substance-use prevention programs in The Gambia should incorporate gender-sensitive messaging, particularly targeting young men, who appear to be at higher risk of poly-drug abuse in this population. This aligns with evidence that gender norms shape substance-use patterns differently for males and females.
- Peer-based interventions may be especially effective among men, who often use substances in social contexts; designing prevention activities that account for male risk environments and peer networks could improve impact. Gender-responsive prevention is recommended in international guidelines to account for social and cultural differences in how men and women develop and maintain substance use [19].
- **Treatment and Rehabilitation-** Psychiatric and addiction treatment services should integrate gender-responsive treatment models such that men can benefit from more frequent and intensive screening for multi-substance use. For women, services need to address distinct barriers to access and retention in treatment. Women often face structural obstacles such as childcare responsibilities, fear of losing custody of children, and stigma around drug use [19].
- **Health policy-** in The Gambia should support gender-informed substance abuse programming, embedding gender considerations across prevention, treatment, and reintegration

services [19]. Policymakers should ensure that treatment infrastructure is accessible and flexible: for example, by providing childcare, offering transport support, or designing admission schedules that accommodate women's caregiving roles. These structural adjustments help reduce barriers and improve treatment equity [19,20].

Strength and Limitations

This study provided data from a specialized psychiatric inpatient setting in The Gambia, a context underrepresented in literatures. It also used multivariate Poisson regression in statistical analysis which is appropriate for count outcomes (i.e., number of drugs).

However, despite the strengths highlighted, some limitations were observed. First, its cross-sectional design limits causal inferences between sociodemographic factors and the number of drugs abused. Second, the reliance on self-reported data may have introduced recall bias or social desirability bias, particularly for sensitive information-like substance use history. Third, the sample was restricted to inpatients at a single psychiatric facility, which may limit the generalizability of findings to the broader population of individuals who use drugs, including those who have not accessed mental health care. Also, the modest sample size may make it difficult to detect smaller associations for other predictors.

Conclusion

In conclusion, this study demonstrates a high prevalence of poly-drug use among psychiatric in-patients in The Gambia, with male gender being a significant independent predictor. These findings call for urgent policy and clinical responses, including routine substance use screening, development of addiction services, and early preventive interventions, particularly targeting adolescents and young adults. Further longitudinal and mixed-methods research is needed to better understand the pathways to multiple drug use and develop tailored intervention strategies for the Gambian context.

Declaration of Interest: None

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