http://www.inosr.net/inosr-applied-sciences/
Ainembabazi
INOSR APPLIED SCIENCES 10(2):46-57, 2023

International Network Organization for Scientific Research ISSN: 2705-165X

Prevalence of Substance-Induced Psychosis among Youths Aged 18-30 Years at Hoima Regional Referral Hospital, Hoima District, Western Uganda

Roland Ainembabazi

Faculty of Clinical Medicine and Dentistry Kampala International University Western Campus Uganda.

ABSTRACT

Globally, around 269 million people used drugs worldwide in 2018, which was 30% more than in 2009, while over 35 million people suffer from drug use disorders according to the latest world drug report. In Uganda, a great percentage of the population had ever used these substances and the commonest substance used was alcohol, kuber, khat, aviation fuel, cannabis, and cigarettes. The objective of this study is to determine the prevalence of substance-induced psychosis and itsrisk factors among psychiatric patients at Hoima Regional Referral Hospital (HRRH). A cross-sectional qualitative and quantitative study was used to determine the prevalence and factors associated with substance-induced psychosis among youth aged 18-30 at HRRH where a documentary review was carried out on the youth who are admitted to the psychiatric ward. Data collected was cleaned, coded, and entered into Microsoft Excel then analyzed using IBM SPSS version 20.0. Variables were cross-tabulated using Bivariate and multinomial logistic regression models, and descriptive statistics were presented in the form of frequency tables, pie charts, and graphs. The study found that of the 100 patients who were admitted to the psychiatric unit due to substance use at Hoima Regional Referral Hospital, 38(38.0%) had substance-induced psychosis. According to the study, age, marital status, sex, and level of education were significantly associated with substance-induced psychosis as shown in the table below. According to the study, having other mental illnesses and a number of admissions showed an association with substance-induced psychosis as shown in the table below. There was an observed association between the use of cocaine, methamphetamine, and a combination of substances with the occurrence of substance-induced psychosis. Substance-induced psychosis is a significant health challenge among psychiatric patients. Predictors include; age, marital status, sex, level of education, other mental illness, number of admissions, and type of substances used.

Keywords: Drug use disorders, Alcohol, Cannabis, Psychiatric patients, Psychosis.

INTRODUCTION

Substance use is a major public health concern and is on a steady rise today worldwide. According to studies, a relationship between drug abuse and the onset of psychotic symptoms is strongly supported. In fact, plenty of findings prove that illicit substances (i.e., cannabinoids, cocaine, amphetamines, and hallucinogens) have psychotomimetic properties [1-3]. The extent of this problem is not clearly understood due to less research understanding and it as a problem. Substances with psychotomimetic properties such as cocaine, amphetamines, hallucinogens, and cannabinoids are widespread, and their use or abuse can provoke reactions resembling a primary psychotic disease. Even some herbs with hallucinogenic properties are commonly abused by youths leading to psychotic symptoms. A common example is the Thorns apple [4,5]. These herbs produce these psychotic effects as a result of the bioactive principles present in them [6-8]. The recent escalating use of methamphetamine throughout the world and its association with psychotic symptoms in regular users has fueled concerns. The use of cannabis and cocaine by young people has considerably

increased over recent years, and the age at first use has dramatically decreased. There is some evidence that cannabis is now on the market and in a more potent form than in previous decades. Research on substance-induced psychosis among the youth is very important because they are at a higher risk of using these illicit drugs. At this particular stage in their lives, they are undergoing a lot of stress, changes, and peer pressure so they easily turn to these as a solution to these many problems [9,10]. Drug abuse is a global problem. About 14% of the total health burden in young men is caused by alcohol and drug abuse. Younger people are also more likely to die from substance use disorders, and cannabis is the drug of choice among such users. Adolescents are the group of people most prone to addiction [11]. The critical age of initiation of drug use begins during the adolescent period, and the maximum usage of drugs occurs among young people aged 18–25 years old. Globally, around 269 million people used drugs worldwide in 2018, which was 30% more than in 2009, while over 35 million people suffer from drug use disorders according to the latest world drug report [12]. In Uganda, about 70.1% had ever used alcohol and substances. Only 39.1% used substances regularly. The commonest substance used was alcohol (23.3%), followed by kuber (10.8%), khat (10.5%), aviation fuel (10.1%), cannabis (9.2%), and cigarettes 5.9% [13]. According to a study done by Mwesiga and colleagues [14], the national prevalence of substance-induced psychosis was 67.1%. In Uganda, substance-induced psychosis is on the rise but there is less research into it and hence limited knowledge and understanding. Thus, this study sought to determine the prevalence of substance-induced psychosis among youth aged 18 -30 years at Hoima Regional Referral Hospital in Hoima district, Western Uganda.

METHODOLOGY

Study Design

A cross-sectional qualitative and quantitative study was used to determine the prevalence and factorsassociated with substance-induced psychosis among youth aged 18-30 at HRRH where a documentary review was carried out on the youth who are admitted to the psychiatric ward.

Area of Study

The study was conducted at Hoima Regional Referral Hospital located in Hoima municipality Western Uganda. It caters to populations of greater Bunyoro, encompassing the districts of Hoima, Kibale, Masindi, Bulisa, Kiryandongo, Kiboga, and the Eastern part of DR. Congo. Hoima district is located in mid-Western Uganda approximately 200km from Kampala the capital city of Uganda. It shares borders with Bulisa and Masindi districts in the North, Kyankwazi in the East, Kikuube, Ntoroko, Kakumiro, and Kagadi districts in the South. It stretches to the national boundary of the Democratic Republic of Congo in the Western. Hoima district covers a total area of 5735.3 square kilometers.

Study Population

The study was conducted among the youth aged 18-30 admitted to the psychiatric ward beingmanaged for substance-induced psychosis.

Inclusion Criteria

Only youth aged 18 up to 30 years being managed for substance-induced psychosis in the psychiatric ward and are stable were eligible to participate in this study.

Exclusion Criteria

The youth who met the inclusion criteria but were critically unwell and unstable to freely and comfortably take part in the study were excluded. Also, those who declined from participating in the study were excluded.

Sample Size Determination

The sample size was determined using Kish Leslie's (1965) formula.

$$n = \frac{ZP(1-P)}{E^2}$$

Where:

n= Estimated minimum Sample size.
Z =1.96 for 95% Confidence interval.
P = Proportion of a characteristic sample. (38%) (M Mugigha Babaiha et al., 2010)
E = Margin of Error (E = 5%)
$n = 1.96^2 x (0.38) (1-0.38)) / 0.05^2$
n= 362 participants

Sampling Procedure

On each day, to meet the calculated sample size of 362 participants both random sampling and purposive sampling were employed to the youth in the eligibility criteria until the sample size apportioned was attained.

Data Collection

A survey questionnaire was used to collect information relevant to the study objectives.

Data Analysis

Data collected was cleaned, coded, and entered into MS Excel then analyzed using IBM SPSS version 20.0. Variables were cross-tabulated using Bivariate and multinomial logistic regression models to establish the relationship between dependent and independent variables. Descriptive statistics were presented in the form of frequency tables, pie charts, and graphs.

Ethical Consideration

The study was conducted upon approval by the supervisor. This was followed by obtaining a letter of approval from the university's research committee board and from the office of the Dean Faculty of Clinical Medicine and Dentistry of Kampala International University Western Campus which was then presented to the Hospital management of the psychiatric ward. Permission was sought from the hospital management to proceed with the research and data collection. The participants were explained, the importance of their participation in the study and the possible benefits of the findings to their communities.

RESULTS

Prevalence of Substance-Induced Psychosis

The study found that of the 100 patients who were admitted to the psychiatric unit due to substance use at Hoima Regional Referral Hospital,38(38.0%) had substance-induced psychosis as shown in figure 1 below.

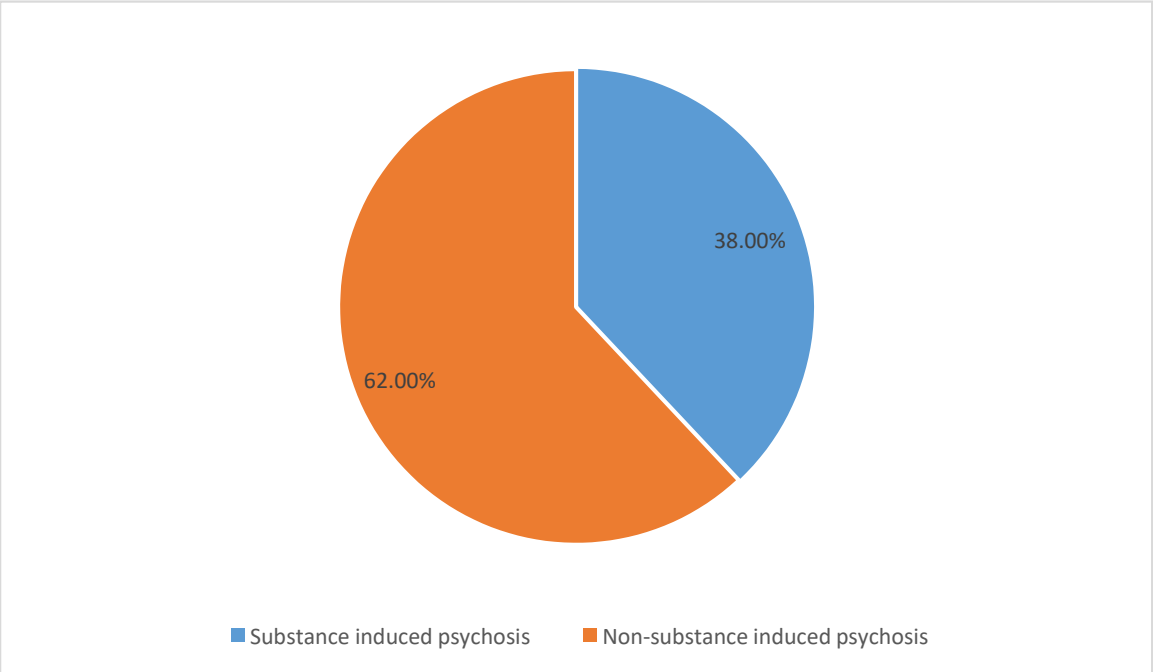

Figure 1: Prevalence of substance-induced psychosis

Socio-Demographic Factors Characteristics of the Respondents

The majority 48(48.0%) of the respondents were aged between 20-25 years, 51(51.0%) were in tertiary institution, 64(64.0%) were unemployed, 35(35.0%) of the patients were Muslim, 78(78%) of the patients were male, 68(68.0%) were single and 87(87.0%) of

them were Banyoro by tribe as shown in table 1 below

Table 1: Socio-demographic characteristics

Characteristics	Category	Frequency(N=100)	Percentage (%)
Age(Years)	18-20	09	9.0
	20-25	48	48.0
	25-30	43	43.0
Level of Education	No formal education	06	6.0
	Primary	17	17.0
	Secondary	26	26.0
	Tertiary	51	51.0
Occupation	Unemployed	64	64.0
.	Small business	05	5.0
	Peasant farmer	19	19.0
	Civil servant	03	3.0
	Others	09	9.0
Religion	Catholic	32	32.0
	Muslim	35	35.0
	Protestant	30	30.0
	Others	03	3.0
Sex	Male	78	78.0
	female	22	22.0
Marital Status.	Single	68	68.0
	Married	04	4.0
	Divorced/separated	23	23.0
	Widowed	05	5.0
Tribe	Munyoro	87	87.0
	Others	13	13.0

Social and medical characteristics of the respondents

The majority of respondents 44 (44.0%) didn't have any other chronic illnesses like HIV/AIDS or Cancer, 86(86.0%) didn't have other mental illnesses, 92(92.0%) took these substances because of peer pressure, 51(51.0%) had a stressful life event, 63(63.0%) were initiated into these substances by their friends and 82(82.0%) had multiple admission as shown in Table 2 below.

Table 2: Social and medical characteristics of the respondents

Characteristic	Category	Frequency	Percentage (%)
History Of Any Chronic Illness?	HIV/AIDS	36	36.0
	Cancer	03	3.0
	Other	27	27.0
	No	44	44.0
Other Mental Illnesses?	Yes	14	14.0
	No	86	86.0
Any Peer Pressure?	Yes	92	92.0
	No	08	8.0
Stressful Life Event?	Yes	51	51.0
	No	49	49.0
Who Initiated You Into Using Substances?	Friends	63	63.0
	Relative	10	10.0
	Others	27	27.0
Number of Admissions	First	08	8.0
	Multiple	82	82.0

Relationship between Demographic Factors and Substance-Induced Psychosis
According to the study, age, marital status, sex, and level of education were significantly associated with substance-induced psychosis as shown in the table below.

Table 3: Relationship between demographic factors and substance-induced psychosis

Variable	Category	Frequency	Substance-induced psychosis		P-Value
			N	%	
Age(Years)	18-20	09	04	44.44	
	21-25	48	22	45.83	0.013
	26-30	43	14	32.56	
Level Of Education	No For mal Education	06	03	50.00	
	Primary	17	08	47.06	0.003
	Secondary	26	12	46.15	
	Tertiary	51	14	27.45	
Occupation	Unemployed	64	25	39.06	
	Small Business	05	02	40.00	
	Peasant Farmer	19	08	42.11	0.531
	Civil Servant	03	01	33.33	
	Others	09	03	33.33	
Religion	Catholic	32	12	37.50	
	Muslim	35	11	31.43	0.781
	Protestant	30	14	46.67	
	Others	03	01	33.33	
Sex	Male	78	32	41.03	0.012
	Female	22	06	27.27	
Marital Status	Single	68	25	36.76	
	Married	04	01	25.00	0.004
	Divorced	23	10	43.48	
	Widowed	05	02	40.00	
Tribe	Munyoro	87	30	34.48	0.826
	Others	13	08	61.54	

Note: P-Value <0.05 was considered significant

Relationship between Social and Medical Factors and Substance-Induced Psychosis
According to the study, having other mental illnesses and the number of admissions showed anassociation with substance-induced psychosis as shown in the table below.

Table 4: Relationship between social and medical factors with substance-induced psychosis

Variable	Category	Frequency	Substance induced psychosis		P-Value
			N	%	
History of Any Chronic Illness?	HIV/AIDS	36	20	55.56	
	Cancer	03	01	33.33	0.081
	Other	27	11	40.74	
	No	44	07	15.91	
Other Mental Illnesses?	Yes	14	06	42.86	0.034
	No	86	32	37.21	
Any Peer Pressure?	Yes	92	36	39.13	0.923
	No	08	02	25.00	
Stressful Life Event?	Yes	51	28	54.90	0.056
	No	49	10	20.41	
Who Initiated You Into Using Substances?	Friends	63	27	42.86	
	Relative	10	04	40.00	0.069
	Others	27	07	25.93	
Number of Admissions	First	08	02	25.00	0.025
	Multiple	82	36	43.90	

Note: P-Value <0.05 was considered significant

Different Substances Used by Study Participants
Majority of the participants 47(47.0%) were using multiple substances, followed by Cannabis 31(31.0%), alcohol 9(9.0%), cocaine 2(2.0%) and methamphetamines 01(1.0%) as shown in thetable below.

Table 5: Different substances used by study participants

Characteristic	Frequency	Percentage
Alcohol	09	9%
Cannabis	31	31%
Cocaine	02	2%
Methamphetamines	01	1%
Other Substance	10	10%
Combination of Any of the Above	47	47%

Relationship between Substances Used and Substance Induced Psychosis. There was an observed association between use of cocaine, methamphetamine and combinationof substances with occurrence of substance induced psychosis.

Table 6: Relationship between substances used and substance-induced psychosis

Characteristic	Frequency	SIP		P-Value
		n	%	
Alcohol	09	03	33.33	0.241
Cannabis	31	14	45.16	0.456
Cocaine	02	01	50.00	0.014
Methamphetamines	01	00	0.0	0.026
Other Substance	10	03	30.00	0.823
Combination of any of the Above	47	17	36.17	0.005

DISCUSSIONS

Substance-induced psychosis also known as drug-induced psychosis is a form of substance-related disorder, where psychosis can be attributed to illicit substance use. Various substances have been implicated in causing, exacerbating, or predisposing to psychotic states. Substance misuse is a well-recognized comorbidity to schizophrenia and rates of substance use are significantly higher in psychiatric patients than in the general population. Studies comparing substance users to non-users in psychosis have shown that persistent misuse in the early course of illness is linked to higher readmission rates and more severe psychopathology [15]. This study determined the prevalence and factors associated with substance-induced psychosis among youths admitted to the psychiatric unit of Hoima Regional Referral Hospital. According to the study, the prevalence of substance-induced psychosis was determined to be 38.0%. This is high compared to a prevalence of 36.5% among methamphetamine users according to a study by Lecomte *et al.* [16]. It's also slightly high compared to another study by Gan *et al.* [17] which reported a prevalence of substance-induced psychosis among methamphetamine users to be 37.1%. The

variation is attributed to methodological differences in the studies and participant characteristics. According to the study, age, marital status, sex, and level of education were significantly associated with substance-induced psychosis. Additionally, having other mental illnesses and the number of admissions showed an association with substance-induced psychosis. The prevalence, of substance-induced psychosis was highest among those aged 21-25. This is in line with the findings of a study in Nigeria [18]. This may be because of an increase in the frequency and quantity of substances consumed by youths in this age group. The present study found the prevalence of substance-induced psychosis to be higher among males compared to females, those with no formal education, and those who had divorced. This is inconsistent with the findings of a study that found no association between socio-demographic factors and substance-induced psychosis [19]. The difference may be due to patient variation in patient characteristics.

Having other mental illnesses and multiple admissions were strong predictors of substance-induced psychosis. This is concordant with Rognli and colleagues' report [20]. Other mental illnesses may alter the balance of neurotransmitters in the brain hence predisposing to substance-induced psychosis [21-27]. There was an observed association between the use of cocaine, methamphetamine, and a combination of substances with the occurrence of substance-induced psychosis. The odds of occurrence of substance-induced psychosis were highest among those using multiple substances in the current study. This is consistent with the findings of a study that revealed that though all substances imposed an increased risk, polydrug use was the strongest predictor of substance-induced psychosis [20-27]. An increased dopamine level may occur in patients using multiple drugs, therefore, increasing the risk of substance-induced psychosis. The limitation of this study was that diagnosing substance-induced psychosis in a clinical setting that co-occurred with primary psychosis was challenging [21-24]. Patients with primary psychosis may have had substance misuse as a comorbidity or patients with substance misuse having psychosis as a comorbidity. This may have led to the exaggeration of the burden of disease.

Substance-induced psychosis is a significant health challenge among psychiatric patients. Predictors include; age, marital status, sex, level of education, other mental illness, number of admissions, and type of substance used. Public health awareness campaigns should be carried out on the dangers of illicit drug or substance use. Government should review the constitution to prosecute offenders and formulate policies and guidance that will address cases of illicit drugs.

REFERENCES

1. Anyanwu, C. F., JohnBull, T. O., Usman, I. M., Aigbogun Jr, E. O., Ochai, J., Qasem, A. H. and Batiha, G. E. S. (2021). Substance Use, Highly Active Antiretroviral Therapy, and Liver Enzymes: Evidence from a Cross-Sectional Study of HIV-Infected Adult Patients Without Comorbidities on HAART in the University of Port Harcourt Teaching Hospital. *Frontiers in Reproductive Health*, 3: 664080.
2. Archibong, V. B., Usman, I. M. and Lemuel, A. M. (2022). Prolonged Codeine Administration Causes Degeneration of Myelinated Axons and Motor Dysfunction in Wistar Rats. *Substance Abuse and Rehabilitation*, 13: 73-81.
3. Awuchi, C. G., Aja, M. P., Mitaki, N. B., Morya, S., Amagwula, I. O., Echeta, C. K. and Igwe, V. S. (2023). New Psychoactive Substances: Major Groups, Laboratory Testing Challenges, Public Health Concerns, and Community-Based Solutions. *Journal of Chemistry*, 20(12); 310-330.
4. Alum, E. U., Inya, J. E., Ugwu, O. P. C., Obeagu, I. E., Aloke, C., Aja, P. M., et al. (2023). Ethanolic leaf extract of *Datura stramonium* attenuates Methotrexate-induced Biochemical Alterations in Wistar Albino rats. *RPS Pharmacy and Pharmacology Reports*, 2(1):1–6. doi: 10.1093/rpsppr/rqac011.

5. Alum, E. U., Famurewa, A. C., Orji, O. U., Aja, P. M., Nwite, F., Ohuche, S. E., et al. (2023). Nephroprotective effects of *Datura stramonium* leaves against methotrexate nephrotoxicity via attenuation of oxidative stress-mediated inflammation and apoptosis in rats. *Avicenna J Phytomed.*, 13(4): 377-387. doi: 10.22038/ ajp.2023.21903.
6. Ibiam, U. A., Alum, E. U., Aja, P. M., Orji, O. U., Ezeani, N. N. and Ugwu, O. P. (2018). Comparative analysis of chemical composition of *Buchholzia coriacea* ethanol leaf-extract, aqueous and ethylacetate fractions. *Indo Am J Pharm Sci.*, 5(7):6358-69. doi: 10.5281/zenodo.1311171.
7. Ugwu, O. P.C., Alum, E. U., Okon, M. B., Aja, P. M., Obeagu, E. I. and Onyeneke, E. C. (2023). Anti-nutritional and Gas Chromatography-Mass spectrometry (GC-MS) analysis of ethanol root extract and fractions of *Sphenocentrum jollyanum. RPS Pharmacy and Pharmacology Reports*, rqad007. DOI:10.1093/rpsppr/rqad007/7085509.
8. Alum, E. U., Aja, W., Ugwu, O. P. C., Obeagu, E. I., Okon, M. B. (2023). Assessment of vitamin composition of ethanol leaf and seed extracts of *Datura stramonium. Avicenna J Med Biochem.,* 11(1):92-97. doi:10.34172/ajmb.2023.2421.
9. Ibebuike, J. E., Nwokike, I. G., Iquiro, A. A., Ibebuike, K. E., Nwinyinya, O. P., Oti, I. P. and Nwosu, D. C. (2017). Prevalence of Substance Abuse Among Students of Eziach Senior Secondary School Orlu Local Government Area, Imo State. *World Journal of Pharmacy and Pharmaceutical Sciences*, 6(10):1519-1525.
10. Offie, D. C., Ekanem, E., Femi, O., Ekeh, O., Ariyo, A. O., Dike, P. N. and Nnaoma, D. (2021). Determinants of Psychoactive Substance Use Among Young People in Ado Ekiti, South West, *Nigeria. World Journal of Pharmacy and Pharmaceutical Sciences,* 11(4):140-165.
11. Okorie, N., Obeagu, E. I., Adeniran, O. C., Onyema, A. S. and Agwu, U. (2022). Codeine Substitute Challenges Drug and Substance Abuse Controls in Nigeria: Histopathology Evaluations of Norvegicus rattus on Lacatomtom. *Journal of Complementary and Alternative Medical Research*, 19(1): 8-22.
12. United Nations Drug Control Programme and the Centre for International Crime Prevention, UNODC World Drug Report 2020.
13. Abbo, C., Okello, E. S., Muhwezi, W., Akello, G. and Ovuga, E. (2016). Alcohol, Substance Use and Psychosocial Competence of Adolescents in Selected Secondary Schools in Uganda: A Cross Sectional Survey. *Int Neuropsychiatr Dis J.*, 7(2):25387. doi: 10.9734/INDJ/2016/25387. PMID: 27398388; PMCID: PMC4936516.
14. Mwesiga, E. K., Nakasujja, N., Nakku, J., Nanyonga, A., Gumikiriza, J. L., Bangirana. P., et al. (2020). One-year prevalence of psychotic disorders among first treatment contact patients at the National Psychiatric Referral and Teaching Hospital in Uganda. *PLoS One.*, 15(1): e0218843. doi: 10.1371/journal.pone.0218843. PMID: 31995567; PMCID: PMC6988969.
15. Weibell, M. A., Joa, I., Bramness, J. *et al.* (2013). Treated incidence and baseline characteristics of substance induced psychosis in a Norwegian catchment area. *BMC Psychiatry,* **13**: 319. https://doi.org/10.1186/1471-244X-13-319.
16. Lecomte, T., Dumais, A., Dugré, J. R., Potvin, S. (2018). The prevalence of substance-induced psychotic disorder in methamphetamine misusers: A meta-analysis. *Psychiatry Res.* 2018 Oct; 268:189-192. doi: 10.1016/j.psychres.2018.05.033. PMID: 30041133.
17. Gan, L., Cookson, M. R., Petrucelli, L. and La Spada, A. R. (2018). Converging pathways in neurodegeneration, from genetics to mechanisms. *Nat Neurosci.*, 21(10):1300-1309. doi: 10.1038/s41593-018-0237-7. Epub 2018 Sep 26. PMID: 30258237; PMCID: PMC6278826.
18. Idowu, A., Aremu, A. O., Olumide, A. and Ogunlaja, A. O. (2018). Substance abuse among students in selected secondary schools of an urban community of Oyo-state, South West Nigeria: implication for policy action. *Afr Health Sci.*, 18(3):776-785. doi: 10.4314/ahs.v18i3.36. PMID: 30603011; PMCID: PMC6307013.
19. Arunogiri, S., Foulds, J.A., McKetin, R. and Lubman, D. I. (2018). A systematic review of risk factors for methamphetamine-associated psychosis. *Aust N Z J Psychiatry,*

52(6):514-529. doi: 10.1177/0004867417748750. Epub 2018 Jan 16. PMID: 29338289.

20. Rognli, E. B. and Bramness, J. G. (2015). Understanding the Relationship between Amphetamines and Psychosis. *Curr Addict Rep.*, **2**: 285–292. https://doi.org/10.1007/s40429-015-0077-4
21. Fred, S., Vicente-Crespo, M., Samuel, S. D. and Eriya, B. E. (2022).The effect of Imperata cylindrica (L.) P. Beauv. on Brain tissue Morphology of Drosophila Melanogaster transgenic flies overexpressing the paralytic Gene. IDOSR Journal of Biochemistry, Biotechnology and Allied Fields. 7(1), 1-11.
22. Gilbert, A. (2023). Prevalence of Alcohol Use Disorders among Patients in the Psychiatry Unit of Kampala International University Teaching Hospital in South Western Uganda. IDOSR Journal of Scientific Research. 8(2), 116-123.
23. Rogers, K. (2023). Evaluation of Factors contributing to high Alcoholism among Youths in Adumi Village, Arua District Uganda. IDOSR Journal of Scientific Research. 8(2), 1-17.
24. Solomon, M. (2023). Factors Influencing Youth alcoholism in Ishaka Division Bushenyi-Ishaka Municipality. INOSR Experimental Sciences. 11(2), 56-76.
25. OPC Ugwu Ebugosi RS, IN Achara (2023). Evaluation of the effects of Maternal alcohol consumption on someselected biochemical parameters. IAA Journal of Biological Sciences.10 (1) 87-95.
26. Ugwu Okechukwu P.C. and Amasiorah V.I. (2020). Review on Health Implications, Benefits and Biochemistry of Alcohol Intoxication. INOSR Experimental Sciences. 6(1). 62-74.
27. Odom Ruth Obianuju and Okon Michael Ben. Ugwu Okechukwu Paul Chima (2022). The Effect of Ethanol Leaf Extract of Rauwolfia vomitoria on Hepatic Markers of Chloroform Intoxicated Albino Wistar Rats IAA Journal of Applied Sciences 8 (1) 87-97.

Roland Ainembabazi (2023). Prevalence of Substance-Induced Psychosis among Youths Aged 18-30 Years at Hoima Regional Referral Hospital, Hoima District,Western Uganda. INOSR APPLIED SCIENCES 10(2):46-57.