Global Scientific JOURNALS

GSJ: Volume 10, Issue 10, October 2022, Online: ISSN 2320-9186

www.globalscientificjournal.com

Factors Associated With Substance Use among Psychiatric Patients Attending Mental Health Service in Selected District Hospitals of Kigali, Rwanda

Author: **NIJIMBERE ALICE (*Department, Health Sciences, Mount Kenya University, Rwanda)***

Co-Authors: **Jean Damascene IYAMUREMYE *(Department, Health Sciences, Mount Kenya University, Rwanda)***

Monica Mochama ***(Department, Health Sciences, Mount Kenya University, Rwanda)***

Abstract:

Background*:* *There is a remarkable increase in drug use worldwide. More than 269 million people are drug users and 35millions are suffering from substance use disorders. The association between substance use and psychiatric disorder was known worldwide and has been found among substance users in Rwanda but little is known about the prevalence and the factors that are associated with this substance use in psychiatric patients. Thus, the main objective of this research was to determine the prevalence and factors associated with substance use among psychiatric patients attending mental health services at Masaka, Kibagabaga, and Muhima district hospitals in Rwanda.*

Materials and Methods: *Research is carried out under a cross-sectional study design with a quantitative approach. A stratified sampling technique was performed to get the sample size from each district hospital and a sample of 155 patients was selected using the convenience sampling technique. A structured questionnaire was used to collect data. Chi-square was performed and variables that have been significantly associated with outcome were processed into multivariate analysis to quantify the strength of association between variables at 95% CI.*

Results: *The overall prevalence of substance use among patients attending mental health services at Masaka, Kibagabaga, and Muhima District hospitals in Rwanda was 26.5% and the common substances used include alcohol, cannabis, and tobacco with prevalence rates of 14.8, 8.6, and 2.6 percent respectively. Variables such as gender was significantly associated with substance use (AOR˙ 0.201, 95%CI˙0.66-0.615, P-value=0.005) where patients of female gender were less likely to use substances compared to male gender. Religion was also significantly associated with substance use (AOR˙0.136, 95%CI˙0.040-0.464, P-value=0.001) where substance use was less likely to be used among protestant patients compared to catholic patients, and behavior disorder was also significantly associated with substance use (AOR˙12.227, 95%CI˙1.757- 85.07, P-value=0.011) where patients with behavior disorder were more likely to use substances than patients with anxiety disorders.*

Conclusion*:* *In conclusion, substance use was associated with gender, religion, and behavior disorder underlying mental conditions. Prevalence of substance use was a reality among psychiatric patients. Therefore, it is recommended to the Ministry of Health and other health stakeholders to strengthen the treatment program for those comorbid conditions at the district level and increase the mental health services utilization specifically for substance users. Thus, this study was limited in its methodology; other researchers are encouraged to conduct research on how each substance contributes to developing the mental disorder.*

Keywords*: Substance Use, Psychiatric Patients, Mental Health Service, Selected District Hospitals Of Kigali, Rwanda.*

Introduction

There is a remarkable increase in drug use worldwide where more than 275 million people are drugs users and 36millions are suffering from drug use disorders. An estimate of around five hundred thousand deaths and more than 30 million healthy life lost are attributed to drug use (UNODC, 2020) .Drug use causes adverse health negatives outcomes including substance use disorders, mental health disorders, sexual transmissible infection, chronic diseases, cancer, premature death, and vulnerable people, youth, and women are the most affected by the world drug burden (UNODC, 2020). One in eight among substance users developed Psychological disorders globally and only one in eight has access to treatment in the Sub-Saharan region. Researchers found that patients with psychiatric problems would finally experience substance use disorder and the coexistence of those conditions may lead to treatment non adherent and poor outcomes (NIDA, 2018). Many studies have discovered a strong link between psychiatric problems and substance abuse. Early usage of the drug was linked to a higher chance of acquiring a substance use disorder and developing mental illnesses later in life (Parakh & Basu, 2013). It is noted that 36 t0 40% among young with severe mental problems suffer from substance use disorder and more than two psychiatric disorders like personality disorders, psychotic disorders, depression, Post-traumatic stress disorder, and anxiety disorder, are highly found among substance user (Kelly & Daley, 2013).

Both epidemiological and clinical studies done in the United States found that the risk of substance use in schizophrenic patients was 4 times more than the general population (Khokhar et al., 2018).

A systemic study review noted that substance use disorders were high among psychiatric patients experienced with psychotic disorders (Degenhardt et al., 2018).Similarly, a study done in Australia confirmed that 62% of patients with psychiatric patients had substance use disorder (Barkus & Murray, 2013).Certain substances are more commonly abused by psychiatric patients than in the general population. For instance, alcohol, amphetamines, cannabis, and Nicotine were found to be commonly abused by psychotic patients, and smoking was more common among Schizophrenic patients (Stewart et al., 2012). Findings noted that substance use is associated with mental conditions following genetic, social, and environmental conditions, and young males and the most socially deprived were most victimized (Gowda et al., 2019).

Similarly, Findings discovered that factors such as individuals' attempts to manage psychiatric symptoms through legal medical use, living in areas with high drug availability, psychological trauma, and stress were associated with mental and substance use disorder. The treatment for those coexisting conditions commonly used is cognitive-behavioral strategies that help to boost life skills and cope with environmental challenges (Mueser & Gingerich, 2013). Male and single patients with mental problems were exposed to substance use with severe morbidity and poor improvement compared to patients without Substance use disorder (Marie, 2014). Similarly, study done in Tanzania

among psychotic patients noted that alcohol use disorders were predominately found among young male with history of alcohol use in their family (Simon et al., 2021).

A longitudinal study done noted that half of the young adolescents with biological parents using alcohol are mainly exposed to substance abuse (Sheidow et al., 2012).

Conversely to the last decades, low incomes and middle incomes countries are facing increasing rate of mental and addictive disorders despite the lack of empirical data in many countries. Scarcity of general population survey studies and lack of treatment of drug use disorders constitute a great challenge and build limits to preventions strategies towards this burden(Reider et al., 2015). Thus,. Rwanda elaborate mitigations measures involving the prevention and management of drug use disorders including creation, and support services of department of Neuropsychiatric Hospital of Ndera that deliver the psychotherapy treatment and care for addicted people. However, a half of patients' rehabilated at Huye Isange Rehabilitation Center were coming from Kigali and 8% of patients at the Neuropsychiatric Hospital of Ndera consult for drug-induced mental disorders annually (MoH, 2020). There has been however few research on the reasons of substance misuse among psychiatric patients in Rwanda. The reasons to conduct this study were to determine prevalence of substance use, identifying the common types of substances used and determining factors associated with substance use among psychiatric patients attending mental health service in selected district hospitals of Kigali, Rwanda.

Research Materials and Methods

Research Design

The present study used a cross sectional design with quantitative method approach.This study was conducted in Masaka, Kibagabaga and Muhima district hospital of Kigali city: Masaka which is located in Kicukiro district, Kibagabaga Hospital located from Gasabo district and Muhima located in Nyarugenge district.Those three districts have mental health services in charge of mental health patients and drug use counceling and transfer to referral hospital and rehabilitation centers.

Sample size

A sample size of 155 patients attending mental health service at Masaka, Kibagabaga, Muhima district hospitals were selected using Yamane's formula.

Sampling Technique

The targeted people were patients attending mental health services for follow up in Masaka, Kibagabaga and Muhima district hospitals. However, through proportional distribution of patients, sample size was allocated depending on the number of patients in each district hospital .This study used convenient sampling techniques to allow selection of mental health patients in these selected districtshospitals

Data Collection Methods

A structured questionnaire captured demographic, medical and sociofamily informations such as age, gender, religion, marital status, occupation, level of education, and medical and past history information including past psychiatric admissions, mental illness and substance use background in the family,etc. Questionnaire has been pre-tested to identify the strength and weaknesses and adjustment before applying them to the whole study population was done.

In addition, Alcohol, Smoking and Substance Involvement Screening Test have been also used to find out the types and the health burden associated with psychoactive substance use.

Procedures of Data Collection

The mental health professionals (clinical psychologists and mental health nurses in the charge of mental health services at each district hospital) were informed on the questionnaire to be used in order to facilitate the structured administered questionnaire between the researcher and the selected respondents. Details of objectives and benefits from the study were explained. Thereafter, the researcher with the professionals in mental health collected the data.

Data Analysis

Data entry and analysis was performed using the Statistical Package for Social Sciences (SPSS Vs 21). Descriptive statistics was done to show frequencies and percentages of substance use in Psychiatric patients and types of substances use among respondents. Chi-square was used for categorical variables to check for relationship between dependent and independent variables at a confidence level of 95%. Variables that have been strongly related with the dependent variable were operated into logistic regression to show the relationship between the variables. Results were however presented in figures and tables.

Ethical Consideration

The Department of Mount Kenya University has granted the permission to conduct the research, and the Research and Publication Ethical Committee of those district Hospitals gave their approval. Informed consent has been presented to the study participants and participation was voluntary. Therein, it was explained that withdraw would be retrieved without any loss of benefits as consequences. Participants who had a substance use problem were given initial advice. Confidentiality and anonymity were granted to study participants by using codes and registration number.

Results

Demographic Characteristics of Respondents

The socio demographic description of respondent studied in this study include age group, gender, civil status, education, social category, patient current occupation and religion of the respondent and are presented in Table 2.

Table 2: Socio Demographic Characteristics of Sampled Patients

Variables	Frequency	Percentage
Age group		
18-24 Youth	5	3.2
25-35 Young adult	38	24.5
36-59 Adult	45	29
>60 Old adult	67	43.2
Gender		
Male	62	40
Female	93	60
Marital Status		
Single	66	42.6
Married	40	25.8
Cohabitating	22	13.5
Widowed	12	7.7
Divorced	15	9.7
Education		
No formal& primary	66	42.6
Secondary	68	43.9
Tertiary	21	13.5
Current occupation		
Student	24	15.5
Civil servant	11	7.1
Self-employed (Businessmen/women)	42	27.1
Jobless	78	50.3

Social Category		
Ubudehe 1	36	23.2
Ubudehe 2	87	56.1
Ubudehe 3	32	20.6
Religion		
Catholic	59	38.1
Protestant	77	49.7
Islam	11	7.1
Other	8	5.2

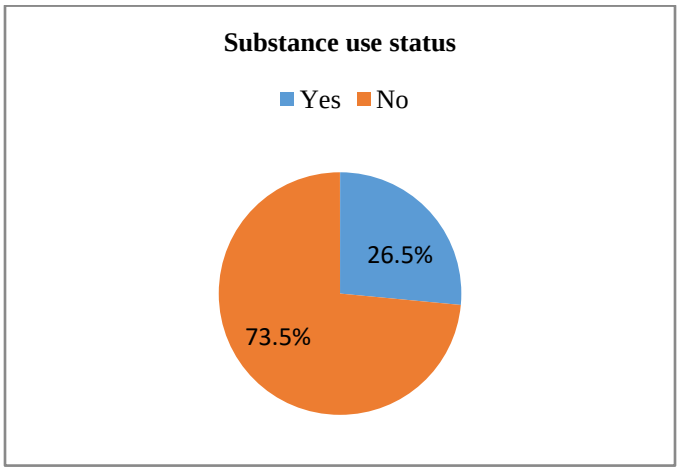
Source: Research 2022

Table 2 presents socio-demographic characteristics where all participants were 18 years and above; their mean age was 33 years old (range 18–64 years) and the majority (43.2%) were in age greater than 60years old and 29% were in age between 36-59 years. Most of the patients were female 93 (60%). The majority of sampled patients were single and accounted 69(45%); only 9.7% and 7.7% were successively divorced and widowed. 43.9% had a Secondary level of education 68(43.9%) and 13.5% did tertiary level. Regarding Occupation, greater than half were unemployed 78(50.3%) while self-employed were 42(27 %). Vast majority 87 (56.1%) were in second category. Most of the patients 77(49.7%) were protestant, 38.1% were Catholic, 11(7.1%) were Muslim and only 8(5.2%) practiced other religions.

Presentation of Findings

The first objective of this research was to determine the prevalence of substance use among patients attending mental health services at Masaka, Muhima and Kibagabaga DH of Kigali.

Figure 2: Prevalence of Substance use among Respondents

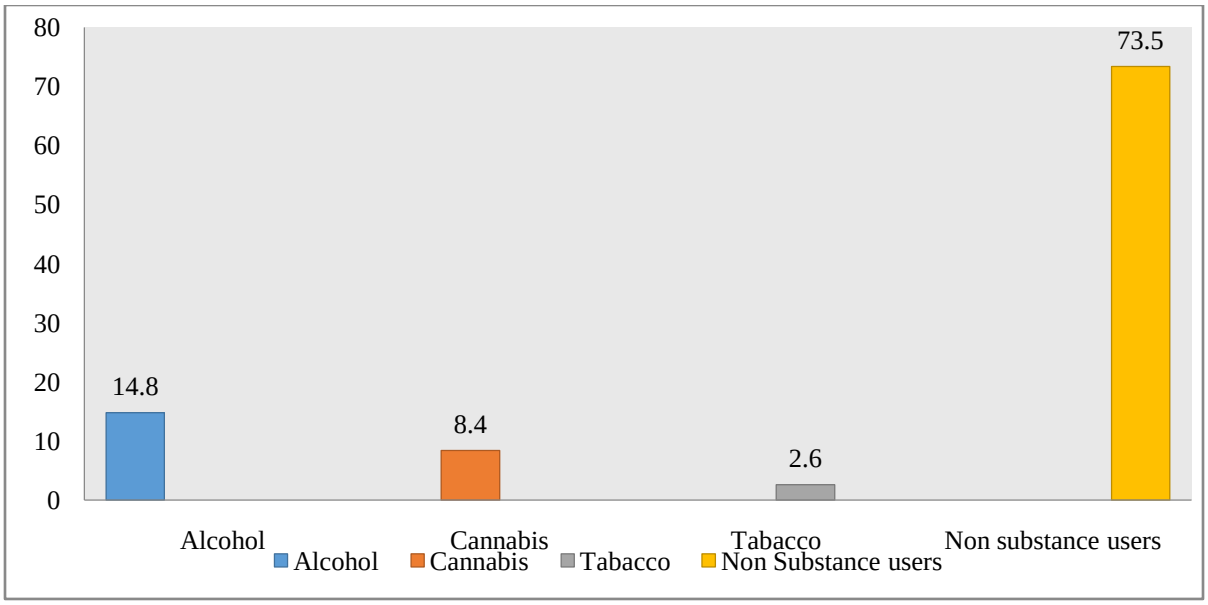


Source primary data

Results presented in figure 2 showed that greater than a half 114(73.5%) among patients attending mental health services were not using any substances and 41(26.5%) were current users as shown in figure 3 above.

Figure 3: Common Substances that were used by Respondents

The second objective of this study was to determine the common substance used among patients attending mental health services at Masaka, Muhima and Kibagabaga DH of Kigali.



The figure 3 presents the psychoactive substances used by mental health patients attending Masaka, Muhima and Kibagabaga DH of Kigali. Most substances used were alcohol, cannabis, and tobacco

with successive prevalence rate of 14.8%, 8.4%, and 2.6%. Nobody reported using other substances reported by WHO ASSIST.

Factors associated with substance use among patients attending mental health services at Masaka, Kibagabaga and Muhima DH, Rwanda.

The third objective was to assess factors associated with substance use among the patients attending mental health services at Masaka, Muhima and Kibagabaga DH, Rwanda. The researcher carried out the bivariate analysis which verified the demographic factors and familial and social factors to verify the relationship toward the outcome variable (substance use) (Table 3, Table 3).

Table 3: Bivariate analysis of Substance Use and socio-demographic of Respondent

Variables	Substance use		P value
	Not Used=114	Used=41	
Age group			
18-24 Youth	3(60)	2(40)	
25-35 Young adult	18(47.4)	20(52.6)	**0.001**
36-59 Adult	34(75.6)	11(24.4)	
>60 Old adult	59(88.1)	8(17.9)	
Gender			
Male	37(60.7)	25 (40.3)	**0.001**
Female	77(82.8)	16(17.2)	
Civil Status			
Single	35(87.5)	5(12.5)	
Married	36(54.5)	30(45.5)	
Cohabitating	20(90.9)	2(9.1)	**0.001**
Widowed	13(86.7)	2(13.3)	
Divorced	10(83.3)	2(13.3)	
Education			
Noformal& primary	53(80.3)	13(19.7)	
Secondary	46(67.6)	22(32.4)	**0.245**
Tertiary	15(71.4)	6(28.6)	
Current occupation			
Student	12(50)	12(50)	

Civil servant	9(81.8)	2(18.2)	
Self-employed	34(81)	8(19)	**0.035**
Jobless	59(75.9)	19(24.4)	
Social Category			
Ubudehe 1	29(80.6)	7 (19.4)	
Ubudehe 2	65(74.7)	22(25.3)	**0.226**
Ubudehe 3	20(62.5)	12(37.5)	
Religion			
Catholic	38(64.4)	21(35.6)	
Protestant	66(85.7)	11(14.3)	**0.003**
Islam	7(63.6)	4 (36.4)	
Other	3(37.5)	5 (62.5)	

Source: Primary data, 2022

The bivariate analysis findings shown in Table 3 demonstrated that substance use is significantly associated with age (PValue =0.001).The gender, civil status; occupation and religion were also significantly associated with substance use. However, there is no significant relationship between substance use and social category (p=0.226), between substance use and education category (p=0.245).This implies that they are determinant factors influencing for the use of substances among users with mental health conditions.

Table 4: Bivariate analysis of Substance use and family and social factors among patients attending mental health services

Variables	**Substance use status**		**P value**
	Non Users(114)	**Users(41)**	
Orphan			
Yes	40(70.2)	17 (26.3)	0.468
No	74(75.5)	24(24.5)	
Genocide survivor			
Yes	48(85.7)	8(14.3)	
No	66(66.7)	33 (33.3)	**0.010**

Being in Jail			
Yes	1(50)	1(50)	
No	113(73.9)	40(26.1)	0.447
Family conflict			
No conflict	61(73.5)	22(26.5)	
Between Parents	12(54.5)	10(45.5)	**0.021**
Conjugal conflict	33(89.2)	4(10.8)	
Large family Co	8(61.5)	5(38.5)	
Violence			
Yes	28(73.7)	10(26.3)	0.983
No	86(73.5)	31(26.5)	
Types of violence			
None	78(73.6)	28(26.4)	
Sexual	6(85.7)	1(14.3)	
Physical	6(60)	4(40)	
Psychological	22(75.9)	7(24.1)	0.804
Financial	2(66.7)	1(33.3)	
Family Substance Use			
Yes	52(75.4)	17(24.6)	0.647
No	62(72.1)	24(27.9)	
Underlying Mental Disorder			
Anxiety disorder	16(76.2)	5(23.8)	
Depression	55(80.9)	13(19.1)	
Schizophrenia	6(85.7)	1 (14.3)	**0.001**
Behavior disorder	8(32)	17(68)	
Suicide attempt	7(77.8)	2 (22.2)	
Bipolar disorder &Psychosis	22(88)	3(12)	

Primary data, 2022

As shown by the table 4, the findings showed that there is significant relationship between Substance use and some social and family factors including genocide survivor (p=0.010), family conflict (p=0.021), and mental conditions (p=0.001). But there is no significant relationship found between substance use and factors like being orphan (p=0.468) or being in jail (p=0.447), violence (p=0.983) or with any type of violence (p=0.804), and family use of substance (p=0.647).

After bivariate analysis is performed, all variables with pvalue less than 0.05 were extracted into binary logistic regression and multivariate analysis was calculated to find the strength of the association with the outcome variable.

Table 5: Multivariate analysis of factors associated with substance use

Variables	AOR	95% C.I		P value
		Lower	Upper	
Age group				
Between 18-24	Ref.			
25-35	2.333	0.238	22.909	0.467
36-59	0.699	0.056	8.775	0.781
60 above	0.704	0.601	0.043	0.704
Gender				
Male	Ref			
Female	**0.201**	0.066	0.615	**0.005**
Civil status				
Married	**Ref**.			
Single	0.819	0.165	4.067	0.807
Cohabitating	0.848	0.116	6.190	0.870
Divorced	1.473	0.194	11.182	0.708
Widowed	3.144	0.362	0.362	27.271
Religion				
Catholic	Ref.			
Protestant	**0.142**	0.043	0.470	**0.001**
Islam	0.662	1.479	0.255	8.583
Others	0.874	0.084	9.151	0.911
Family conflict				
No conflict	**Ref**			
Conflict between parents	1.402	0.338	5.821	0.642
Conjugal conflict	0.940	0.203	4.365	0.937
Large conflict	1.422	0.271	7.466	0.677
Occupation				
Student	**Ref.**			

Civil servant(employed)	0.945	0.070	12.815	0.966
Self employed	0.554	0.097	3.176	0.507
Jobless	0.728	0.143	3.716	0.703
Genocide survivor				
No	**Ref.**			
Yes	1.267	0.312	5.153	0.741
Underlying Mental Disorder				
Anxiety disorder	**Ref.**			
Depression & PTSD	1.339	0.315	5.695	0.693
Schizophrenia	1.652	0.100	27.395	0.726
Behavior disorder	**12.227**	1.757	95.070	**0.011**
Suicide attempt	5.548	0.433	71.003	0.188
Bipolar disorder &Psychosis	0.530	0.072	3.904	0.533

Source Primary data

The findings presented in Table 5 showed that substance use was statistically found associated with gender, religion, and patient mental disorder. Patients with female gender were found less likely to use substance compared to patients with male gender (AOR:0.201, 95%CI:0.66-0.615, P-value=0.005). Patients with protestant religion were also found less likely to use substances rather than patients with catholic religion (AOR:0.136, 95%CI:0.040-0.464, P-value=0.001). Regarding underlying patient mental condition, multivariate analysis revealed that patients with behavior disorder were 12 times more likely to abuse substance compared to Anxiety disorder (AOR:12.227, 95%CI:1.757- 95.070,P-value=0.011).

Discussion of Results

The current research was carried out to determine the prevalence and factors associated with substance use among psychiatric patients attending mental health services at Masaka, Kibagabaga, and Muhima district hospitals in Rwanda. To attain this, we set objectives and tools for determining the prevalence of substance use among psychiatric patients, identify the common types of substances used by psychiatric patients and assessing factors associated with substance use in psychiatric patients attending mental health service at Masaka, Kibagabaga and Muhima district hospitals in Rwanda. Results of these three objectives are going to be discussed in this chapter to compare with other studies.

Findings from this current research revealed that the overall prevalence of substance use was 26.5 %. This percentage is low compared to the study done in Nigeria with a prevalence of 69% of substance abuse among psychiatric patients (T Bakare, 2016). This might be explained by the fact that Nigeria are middle incomes countries and their population might be able to access financially the substance use(USAID,2021, Mueser & Gingerich,2013) while for Rwandan mental health disorders are more correlated with the past event of genocide against Tutsi than other factors. However, the present study findings also concur with the cohort study done by Craig et al. in Vietnam veterans which found that substance use in psychiatric patients accounted for 27.6%(Rosen et al., 2012). This percentage is moderately near of our research because it was conducted among Vietnam veterans affected by the war.

Regarding the second objective to identify the common types of substances used by psychiatric patients attending substance use services at Masaka, Kibagabaga, and Muhima district hospitals in Rwanda. The current study showed that more than half (56%) of substance users had used alcohol, and 31.7% had used cannabis and 9.7% had used tobacco. This is similar to the studies done in 30 districts of Rwanda on substance use among youth and which found that substances commonly used in Rwanda were alcohol accounted for 34%, followed by tobacco with 8.5 percent, and cannabis occupied 2.7%(Kanyoni et al., 2015). Similarly, a study done at the Icyizere Rehabilitation center of Rwanda found that most psychoactive substances used were alcohol, Cannabis , tobacco , inhalants , hallucinogens, opioids , cocaine , amphetamines, and sedatives or sleeping pills(Nzamwita, 2017). However, the current study didn't find the use of psychoactive substances such as inhalants, hallucinogens, cocaine, amphetamine types of stimulants and sedatives or sleeping pills and this discrepancy could be due to difference in study settings ,from which the previous studies were conducted in the general population(youth), and another one at Icyizere center in charge of the rehabilitation of substances users while the present study was carried at the mental health services within which the prevalence of Substance use might be lower because substance users consult healthcare services if mental condition was presented.

This finding is supported by other studies done in sub-Saharan region among the general population and another one in Ghana among psychiatric patients which demonstrated that cannabis, alcohol, and tobacco were substances frequently abused (Olawole et al., 2018, Read&Doku, 2012). Regarding the third objective looking at the factors associated with substance use among psychiatric patients, results showed that gender was significantly associated with substance use where patients with female gender were found less likely to use substances compared to patients with male gender (AOR:0.201, 95%CI:0.66-0.615, P-value=0.005).This similarity was also demonstrated in other studies, one among

psychotic patients in Tanzania and another study among females and males with severe mental illness where male gender was at high risk of using substances compared to female ($p < 0.01$) (Marie, 2014, Simon et al., 2021). The results of higher substance use rate in males were previously found also in the United States and in Denmark (Adejimi, 2021, Gilliam Toftdahl et al., 2016). For that, the overall reason should be explained in the way in most cultures, substance use is accepted more in males than for females, and shows higher intolerance for young females of productive age than for elderly women. The current study revealed that religion(Pvalue:0.001) and civil status (P-value :0.001) were significant for bivariate analysis and this was supported by the study done in Sao state that found factors including religion (pvalue:0.008)and civil status(Pvalue: 0.009) were associated with substance use (Corradi-Webster & Da Silva Gherardi-Donato, 2016).

Family conflict was significantly associated with substance use for bivariate analysis (Pvalue:0.021) and this was supported by the study done in Kenya and was also highlighted by literature that explains the place of family conflict on use of substances (Giuseppe, 2015, Kiburi et al., 2018). However, after adjustment with other variables, multivariate analysis in this current research didn't find a statistically significant association with substance use and the explanation could be that psychiatric patients were influenced with other multiple social events that should contribute to substance use rather than family conflict alone. Bivariate analysis showed a significant association between substance use and occupation (P value:0.035) and this was similar to the findings of a study done in Ethiopia which highlighted joblessness being associated with substances abuse (AOR 3.05, 95% CI = 1.30-7.16) (Dawud et al., 2021).

Behavior disorder was statically significant associated with substance use and was supported with the study of Sao state that noted that conduct disorder was related with problematic drug use ($p = 0.003$)(Li-Tzy Wua, Udi E. Ghitzae, He Zhua, Susan Sprattf, Marvin Swartza, 2018) .Unfortunately this was contrasting with another epidemiological study done in United States that found schizophrenic patients was 4 times more to use substances greater than the general population(Khokhar *et al*., 2018).This may be due to the current study was done among psychiatric patients while previous study was compared with general population.

Conclusions

To ensure appropriate treatment of Psychiatric patients with substance use, Ministry of Health and other health stakeholders should strengthen treatment program of those co-occurring disorders at district level and increases awareness of the mental health services utilization specifically for users of substances.

Whole community, religion leaders and local authorities are called to support and educate the society and ban accessibility of psychoactive substances mostly illicit drug is needed to prevent further consequences resulting to its use.

REFERENCES

Alhyas, L., Al Ozaibi, N., Elarabi, H., El-Kashef, A., Wanigaratne, S., Almarzouqi, A., Alhosani, A., & Al Ghaferi, H. (2015). Adolescents' perception of substance use and factors influencing its use: a qualitative study in Abu Dhabi. *Journal of the Royal Society Medicine Open*, *6*(2), 205427041456716. https://doi.org/10.1177/2054270414567167

Brunette, M. F., Mueser, K. T., Babbin, S., Meyer-kalos, P., Rosenheck, R., Correll, C. U., Cather, C., Robinson, D. G., Schooler, N. R., Penn, D. L., Addington, J., Estroff, S. E., Gottlieb, J., Glynn, S. M., Marcy, P., Robinson, J., & Kane, J. M. (2018). Demographic and clinical correlates of substance use disorders in fi rst episode psychosis. *Schizophrenia Research*, *194*, 4–12. https://doi.org/10.1016/j.schres.2017.06.039

Castle, D. J., Galletly, C. A., Dark, F., Humberstone, V., Morgan, V. A., Killackey, E., Kulkarni, J., McGorry, P., Nielssen, O., Tran, N. T., & Jablensky, A. (2017). The 2016 royal australian and New Zealand college of psychiatrists guidelines for the management of schizophrenia and related disorders. *Medical Journal of Australia*, *206*(11), 501–505. https://doi.org/10.5694/mja16.01159

Cheon, H., Decker, S. H., & Katz, C. M. (2017). Medical Marijuana and Crime: Substance Use and Criminal Behaviors in a Sample of Arrestees: *Https://Doi.Org/10.1177/0022042617743775*, *48*(2), 182–204. https://doi.org/10.1177/0022042617743775

Corradi-Webster, C. M., & Da Silva Gherardi-Donato, E. C. (2016). Fatores associados ao consumo problemático de drogas entre pacientes psiquiátricos ambulatoriais. *Revista Latino-Americana de Enfermagem*, *24*. https://doi.org/10.1590/1518-8345.1444.2815

Cutrín, O., Gómez-Fraguela, J. A., & Sobral, J. (2017). Gender Differences in Youth Substance Use: The Effects of Parenting Through a Deviant Peer Group. *Http://Dx.Doi.Org/10.1080/1067828X.2017.1369203*, *26*(6), 472–781. https://doi.org/10.1080/1067828X.2017.1369203

Dawud, B., Yeshigeta, E., Negash, A., Mamaru, A., Agenagnew, L., Tolosa, D., Kerebih, H., Mekuriaw, B., Abdisa, E., Abera, M., Hailesilassie, H., & Soboka, M. (2021). Substance Use Disorders and Associated Factors Among Adult Psychiatric Patients in Jimma Town, Southwest Ethiopia, 2017. Community-Based Cross-Sectional Study. *Clinical Medicine Insights:*

Psychiatry, *12*, 117955732198969. https://doi.org/10.1177/1179557321989699

Dubowitz, H., Roesch, S., Arria, A. M., Metzger, R., Thompson, R., Kotch, J. B., & Lewis, T. (2019). Timing and Chronicity of Child Neglect and Substance Use in Early Adulthood 5/10/19. *Child Abuse Negl. 2019 August ; 94*. https://doi.org/10.1016/j.chiabu.2019.104027

Feyisa, Z. T. (2021). The Association between Sociocultural Factors and Substance Use among Haramaya University Students. *Substance Abuse: Research and Treatment*, *15*. https://doi.org/10.1177/11782218211004522

Giuseppe, G. (2015). The Impact of Urbanization on The Traditional Family Systems in Sub- Saharan Africa. *ResearchGate*.

Harris, M. G., Bharat, C., Glantz, M. D., Sampson, N. A., Al-Hamzawi, A., Alonso, J., Bruffaerts, R., Miguel Caldas de Almeida, J., Cia, A. H., De Girolamo, G., Florescu, S., Gureje, O., Maria Haro, J., Sanitari Sant Joan, P., Hinkov, H., Po, T., Kong, H., Lepine, J.-P., Lariboisière-Fernand Widal, H., … Degenhardt, L. (2019). *Queensland Centre for Mental Health Research, The Park Centre for Mental Health, QLD 4072, Australia; Chrianna Bharat, BSc (Hons.) National Drug and Alcohol Research Centre*. *114*(8), 1446–1459. https://doi.org/10.1111/add.14599

Kanyoni, M., Gishoma, D., & Ndahindwa, V. (2015). Prevalence of psychoactive substance use among youth in Rwanda. *BMC Research Notes*, *8*(1). https://doi.org/10.1186/s13104-015-1148-2

Khokhar, J. Y., Dwiel, L. L., Henricks, A. M., Doucette, W. T., & Green, A. I. (2018). The Link Between Schizophrenia and Substance Use Disorder: A Unifying Hypothesis. *Schizophrenia Research*, *194*, 78. https://doi.org/10.1016/J.SCHRES.2017.04.016

Kiburi, S. K., Molebatsi, K., Obondo, A., & Kuria, M. W. (2018). *Adverse childhood experiences among patients with substance use disorders at a referral psychiatric hospital in Kenya*. 1–12.

Li-Tzy Wua, Udi E. Ghitzae, He Zhua, Susan Sprattf, Marvin Swartza, P. M. (2018). Substance use disorders and medical comorbidities among high-need, high-risk patients with diabetes. *Drug and Alcohol Dependence*, *186*, 86–93. https://doi.org/10.1016/J.DRUGALCDEP.2018.01.008

Lo, T. W., Yeung, J. W. K., & Tam, C. H. L. (2020). Substance abuse and public health: A multilevel perspective and multiple responses. *International Journal of Environmental Research and Public Health*, *17*(7). https://doi.org/10.3390/ijerph17072610

Marchand, K., Beaumont, S., Westfall, J., Macdonald, S., Harrison, S., Marsh, D. C., Schechter, M. T., & Oviedo-Joekes, E. (2019). *Conceptualizing patient-centered care for substance use disorder treatment: findings from a systematic scoping review*. https://doi.org/10.1186/s13011-019-0227-0

MoH. (2020). Rwanda Health Sector Performance Report 2019-2020. *Ministry of Health Rwanda*, 1–95.

Moos, R. H. (2017). *Theory-Based Active Ingredients of Effective Treatments for Substance Use Disorders*.

Mueser, K. T., & Gingerich, S. (2013). Treatment of co-occurring psychotic and substance use disorders. *Social Work in Public Health*, *28*(3–4), 424–439. https://doi.org/10.1080/19371918.2013.774676

Nabavi, R. T. (2012). *Theories of Developmental Psychology Title : Bandura ' s Social Learning Theory & Social Cognitive Learning Theory Razieh Tadayon Nabavi*. *January 2012*.

Ndetei, D. M., Pizzo, M., Kuria, M. W., Khasakhala, L., Maru, H. M., & Mutiso, V. (2013). *African Journal of Drug & Alcohol Studies, 7(1), 2008*. *7*(1).

Okpataku, C. I., Kwanashie, H. O., Ejiofor, J. I., & Olisah, V. O. (2014). African Journal of Drug & Alcohol Studies, 13(2), 2014. *African Journal of Drug & Alcohol Studies*, *13*(2), 107–115.

Olawole-Isaac, A., Ogundipe, O., Amoo, E. O., & Adeloye, D. (2018). Substance use among adolescents in sub-Saharan Africa: A systematic review and meta-analysis. *SAJCH South African Journal of Child Health*, *12*(Special Issue), S79–S84. https://doi.org/10.7196/SAJCH.2018.v12i2.1524

Read, U. M., & Doku, V. C. (2012). Mental health research in Ghana: a literature review. *Ghana Medical Journal*, *46*(2 Suppl), 29–38. https://doi.org/10.4314/gmj.v46i2

Reider, E., Salazar, F., Herzegovina, B., Spoth, R., Lanka, S., Emirates, U. A., Expert, A., Officer, P., & Section, R. (2015). International standards on drug use prevention. *United Nations Office on Drugs and Crime*.

Rosen, C. S., Kuhn, E., Greenbaum, M. A., & Drescher, K. D. (2012). Substance abuse-related mortality among middle-aged male VA psychiatric patients. *Psychiatric Services*, *59*(3), 290–296. https://doi.org/10.1176/PS.2008.59.3.290/ASSET/IMAGES/LARGE/JF13T3.JPEG

Setia, M. S. (2016). Methodology series module 3: Cross-sectional studies. *Indian Journal of Dermatology*, *61*(3), 261–264. https://doi.org/10.4103/0019-5154.182410

Simon, E., Levin, J. B., Mbwambo, J., Blixen, C., Lema, I., Aebi, M., Njiro, G., Cassidy, K., Kaaya, S., & Sajatovic, M. (2021). Alcohol use in Tanzanians with chronic psychotic disorders and poor medication adherence. *South African Journal of Psychiatry*. https://doi.org/10.4102/sajpsychiatry.v27i0.1570

T Bakare, A. (2016). Psychoactive Substances Use among In-patients in a Nigerian Neuropsychiatric Hospital: Prevalence, Pattern and Presentation. *MOJ Addiction Medicine & Therapy*, *2*(1), 18–22. https://doi.org/10.15406/mojamt.2016.02.00016

UNODC. (2020). *Drug use and health consequences*. https://doi.org/10.18356/025e247e-en

UNODC. (2021). *Global overview of drug demand and Drug supply*. https://doi.org/10.18356/bdc264f4-en