

PREVALENCE OF PSYCHOTIC SYMPTOMS AND ASSOCIATED FACTORS AMONG PSYCHOACTIVE SUBSTANCE USERS AT HUYE ISANGE REHABILITATION CENTER, RWANDA

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Abstract: Psychoactive substances are possibly among the most threats to the world's population. In 2021, over 180,000 deaths were directly associated to disorders due to psychoactive substances. In 2015, the magnitude of drug use among Rwandan youth was revealed to be high. This study intended to measure the magnitude of psychotic symptoms and associated factors among psychoactive substances users at HUYE ISANGE Rehabilitation Centre. Multi-variable binary logistic regression shown the following factors to have a significant association with occurrence of psychotic symptoms among psychoactive substances users: Respondents who were 36 years of age and above {AOR=2.561,95%CI: [2.647,5.287], P=0.021}, Users who were male {AOR=3.050, 95%CI: [1.705,3.445], P=0.037}, users consuming cannabis {AOR: 1.810, 95%CI: [1.596;2.807], P=0.028}, users consuming Heroin {AOR: 1.250, 95%CI: [1.603;3.325], P=0.031}and participants using multiple substance use {AOR=2.85,95% CI: [0.417-0.983], P=0.041}. As a result, the study found that prevalence among psychoactive substances users at HUYE ISANGE Rehabilitation Centre is high (78%) and factors like age, sex, type of drug and type of use were identified to be associated to occurrence of psychotic symptoms among psychoactive substance users. The high prevalence of psychotic symptoms among psychoactive substance users underscores a critical mental health and public health challenge. Interventions targeting high-risk groups, including early screening, mental health education, and integrated rehabilitation programs, are urgently needed to reduce the burden of substance-related psychosis and improve mental health outcomes in this population. Targeted interventions, including community awareness campaigns, mental health screening in rehabilitation programs, and further research among other substance users, are urgently needed.

Keywords: Psychotic symptoms, Psychoactive substance use, Associated factors, Huye Isange Rehabilitation Centre.

1. INTRODUCTION

The ways of living in nowadays are full of stress and drugs which are considered as stress reliever are possibly the greatest threat to the world's population, these suggests mental health as the primordial aspect of health. To feel mentality better individuals, choose different ways to achieve, many of them are recreational with a possibility of being health threats for short-term and long-term. One of these mental relaxation activities is substance use. Over 180,000 deaths were directly associated to disorders due to psychoactive substances, the report released on annual basis have attributed 0.5 million deaths to illicit substances and 35 million were reported for suffering from psychoactive substances induced disorders. A number of persons around 15.3 million suffer disorders related to drug use; it was notified that approximately every person aged

15 or older takers 6.2 liters of pure alcohol per year (World Health Organization [WHO], 2021). Globally, youth, 14-35 years of age are the group that is very prone to this public health problem and even to another extent to a clinical problem (Christoffersson et al., 2018)

In a study done in Sweden in 2020, covering eleven Swedish cities, it was revealed that many youths who start using drugs, it will always be a difficult condition, even impossible to get out of this cycle of recovering and relapsing (Richert et al., 2020). In 2002 a study was done in New York to evaluate whether the consumption of psychoactive drugs ends in the development of mental illness; the results have evidenced an association between psychoactive substances and occurrence of psychiatric condition (Ganguli et al., 2002). In a study done in U S of America in 2020, in California University has revealed the cannabis as a risk factor to schizophrenia (Patel et al., 2020). A research which was done in the University of Toronto, Canada, showed that the psychoactive substances use may precede the onset of the psychotic symptoms (Green & Khokhar, 2022). In a comparison study conducted in the US of America, the commonness of psychotic symptoms amongst psychoactive substance users was found to be varying substance by substance, 48% among participants who used cocaine, 55% in participants who were experiencing minor cocaine dependence, 78% for participants who had a moderate cocaine dependence, and 89% among participants who were severely dependent on cocaine (Murray et al., 2020).

Researchers of Dartmouth College conducted a research, in New Hampshire, the results suggested that "in many cases, the substance use comes before the arise of psychotic symptoms"; they demonstrated that a great number of patients diagnosed with psychotic disorders were having history of substance use, where daily cannabis users were 26-50% likely to develop the cannabis dependence and in turn psychotic symptoms Di Forti et al. (as cited in (Khokhar et al., 2018). In 2020, researchers based in United States conducting a research on the connection between the use of Cannabis and the occurrence of chronic psychosis; it was found that there is a strong association between Cannabis and the increased risk of developing prolonged psychotic symptoms (Patel et al., 2020). European Monitoring Centre for Drugs and Drug Addiction, 2004 issued a report on drug use -mental illness comorbidity and the report evidenced that 80% of those who were dependent to psychoactive substances were also having a psychiatric condition as a comorbidity (European Monitoring Centre for Drugs and Drug Addiction [EMCDDA], 2004). In 2019, Inter-American Drug Abuse Control Commission released a report on the research they conducted on American continent, the results were showing that, the earlier the people start to use psychoactive substances the greater the health problems and consequences (Inter-American Drug Abuse Control Commission [IADACC], 2019). In 2019, in Thailand a research conducted in four different psychiatric settings and one Center for drug detox, it revealed the occurrence of psychotic symptoms among methamphetamine users was high ranging from 21% to 46% (Lamyai et al., 2019).

Existence of psychoactive substances in East African region is a reality, in 2010, a report was released highlighting 11 East African countries, the report's content revealed high level of production and trafficking of different psychoactive substances, especially Cannabis (Executive et al., 2010).

A research carried out with a cross-sectional method involving 2479 young Rwandans, concluded that psychoactive substances use is present in youth's lives and the prevalence was recorded substance by substance, authors suggested further studies to monitor this threat and its determinant so that the intervention to be put in place are evidence based (Kanyoni et al., 2015a). In 2015, a magnitude of psychoactive substance use was high and varying from one substance to the other, alcohol was represented by 34% and 8.5% (tobacco smoking), 2.7% (cannabis), 0.2% (glue and other solvents) and 0.1% (drugs such as diazepam). The dependence was found to be on 7.46% (one in thirteen), and 2.54% (one in forty) were revealed to be dependent on cannabis (Kanyoni et al., 2015b). In 2022 another study was published, it was conducted in Huye Isange Rehabilitation Centre with a sample size of 133 youth who came in rehabilitation with an objective of determining the magnitude, in addition to this, exploring the factors with an association to relapse of psychoactive substance abuse were also among the objective of the study (Uwera & Marete, 2022).

Globally, over 180,000 deaths were directly associated to disorders due to psychoactive substances, 35 million were reported for suffering from psychoactive substances induced disorders and 15.3 million of individuals suffer disorders related to drug use; it was reported that almost every person of 15 years or older takers 6.2 liters of beer per year (World Health Organization [WHO], 2021). In addition, youth, 14-35 years are very prone to this public health problem and even to another extent of clinical problem (Christoffersson et al., 2018). A research carried out with a cross-sectional approach involving 2479 young Rwandans, it was concluded that psychoactive substances use is a threat to the lives of youth and the prevalence was recorded substance by substance, authors suggested further studies to monitor this threat and its determinant so that the

intervention to be put in place are evidence based (Kanyoni et al., 2015a). In 2015, the magnitude of psychoactive substance consumption was high and varying from one substance to the other, alcohol was occupying by 34% and 8.5% (tobacco smoking), 2.7% (cannabis), 0.2% (glue and other solvents) and 0.1% (drugs such as diazepam). The dependence was found to be on 7.46% (one in thirteen), and 2.54% (one in forty) were revealed to be dependent on cannabis (Kanyoni et al., 2015b). In 2022 another study was published, it was conducted in Huye Isange Rehabilitation Centre with a sample size of 133 youth who came in rehabilitation, this research was conducted to the ratio and elements which contribute to relapse of psychoactive substance abuse (Uwera & Marete, 2022). Despite the above many studies conducted in the domain of psychoactive substances, their consumption and treatment, none of them was able to expose the knowledge on the magnitude of psychotic symptoms and elements of association amongst psychoactive substance users, the reason why of the existing gap. Thus, the outcome of this research intended to fill-up this gap because it was intended to determine the commonness and assessing the elements associated with the occurrence of psychotic symptoms amongst drugs users.

2. METHODOLOGY

Research Design

This study adopted descriptive cross sectional study design. A descriptive cross-sectional study is the research design are observational studies that measure exposure and health outcome in a given population and in a given geographical area at a given period of time (Wang & Cheng, 2020). A cross-sectional study design was chosen because its primary purpose was to determine the magnitude and factors associated with psychotic disorders in psychoactive substances abusers. A study conducted by American National Institute to determine the ratio of psychotic symptoms with substance users as participants used a cross-sectional study design (Smith et al., 2009).

Target Population

In any study the population of target a particular group of individuals to participate in study and having those features allowing them to be a real representative part of the population of interest (Kognisi et al., 2021). Both in-patients and non-hospitalized clients diagnosed substance use or a history of substance use who were met at Huye Isange Rehabilitation Center within two months of getting the data.

Inclusion criteria

Every patient (both in-patients and out-patients) participating in the study was the clients who use psychoactive substances, able to collaborate, and signed the consent and was seeking medical attention at Huye Isange Rehabilitation Center during the period of data collection.

Exclusion criteria

The patient who was having a diagnosis of psychotic disorder before he/she started using psychoactive substance (patient's past history), did not participate in this study. For example, patients who had psychotic disorder like brief psychotic disorder before drug abuse. In addition, the data collection method being an administration of structured questionnaire, participants with hearing and or sight disability were not involved.

Sample Design

In research, if the information is obtained from every elements of the population and no element is left, it is called census or complete enumeration (U.S. Census Bureau, 2020). In this study we used census because it is a better approach to obtain sufficient number of respondents considering a limited number of clients treated at Huye Isange Rehabilitation Center.

Sampling technique

All participants were included in this study. Both inpatient and outpatient clients at HUYE ISANGE Rehabilitation Center participated with no need of sampling.

Data Collection Instruments

In research a form of data collection is a tool that is designed to collect data from research respondents who constitute a research sample (Young, 2015). The questionnaire for respondents was structured in three main parts with different questions asking for social demographic features to know the socio-demographic information, the magnitude of symptoms of psychosis among psychoactive drug users and the elements in association with symptoms of psychosis assessment tools. The questionnaire to be used was adapted from the well-known **Psychosis Screening Questionnaire (PSQ)**. The clients'

files were used for the purpose of completing the missing data. For psychotic symptoms confirmation or validation, the Prodromal Questionnaire-16(PQ-16) was used, the above mentioned tool is a tool with 16 true/false self-reported items used to screen for Psychosis and respondents who met a six or more symptom are taken to have proneness to psychotic disorder (Howie et al., 2023).

Procedures of collecting data

Distribution of questionnaire in the form of interview to collect data. This was done after assuring the participants their privacy and confidentiality. After a self-introduction. Consent was signed between the two parties before the start of data collection. The data collector ticked variable by variable that correspond to the response given by the participants and the interview ended by thanking the participants. At the end, the data entry was the following step and afterwards the spreadsheets were cleaned up to make analysis ready.

Reliability and Validity of instruments

For the validity and reliability of the tools that we used, the tool was conceptualized helped by internationally approved tools. For example, to develop a questionnaire for this study the famous **Psychosis Screening questionnaire (PSQ)** will be employed to support the validity and reliability of our study. **Psychosis Screening Questionnaire (PSQ)** was also be used to design the questionnaire of this study. As recommended by (Heale & Twycross, 2015) to be sure again of validity and reliability, the first phase of this study was a pilot study to test our questionnaire. All questions asked in the questionnaire was the questions to find out the associated factors and the occurrence of psychotic symptoms.

3. DATA ANALYSIS

Attempting to find the answer to the research questions, the Statistical Package Software for Social Sciences (SPSS v21) was utilized to perform the exploration. Frequencies and percentages of psychotic features following an history of drug use was performed to know the presence of psychotic symptoms among participants with history of psychoactive substances use. Chi-square (with $\alpha=0.05$) and Binary logistic regression analysis was computed to analyze correlation between the consumption of psychoactive substances and the psychotic symptoms occurrence and these were further run to multi-variable binary logistic regression analysis (adjusted odd ratios, 95% CI and P value) were performed to amount power of link between independent variables and outcome variable. Knowing the number of participants who had a history of substance use and later developed psychotic symptoms led us to the magnitude of psychotic symptoms among drugs users. The Odd Ratio (OR) was calculated to know the association between a factor and psychotic symptoms occurrence, with the odd ratio greater than 1($OR>1$) indicating a possibility of association, odd ratio which is equal to 1 ($OR=1$) indicating that there is no association and odd ratio less than 1($OR<1$) indicated that the variable can even be used as a preventive measure.

Ethical Consideration

In any research, ethics is a central point to ensure that there should no possibility of adverse effects of the study on the population and this was an essential part of this research. The said harm of bad effects may come from the activities related to the study it-self (Committee & Centre, 2018). At the starting and before doing anything related to this research, an ethical clearance from Mount Kenya University was needed. HUYE ISANGE Rehabilitation Center through its administration was another entity to consult in order to get permission to conduct research in the Center. All participants who agreed and signed the consent form were given full information on the study before any activity of the study and the researcher took time to ensure the participants: confidentiality, privacy and freedom to take a decision to refuse the participation, the participants names' initials were used in respect of privacy. All data collection tools were not accessible to persons who were not concerned.

4. RESULTS

Socio-demographic characteristics of study participants

Participants of a number of 123 were involved. Table 4.1 which displays the distribution of the participants by their socio-demographic characteristics. Among respondents, 70 (58.5%) of them were in range of 26-35 years old with the mean (\pm SD) age of participants was 28 (\pm 6) years. The majority 100(81.3%) of participants were males and 93 (75.6%) were single. Majority 71(57.7%) of participants had attained a university education and 42 (34.1%) of them had attended secondary school. By occupation, majority of participants 73(59.3%) respondents were students. Majority of respondents 60(48.8%) were in Catholicism. This study shows that 102(82.9%) respondents' residence was urban area.

Table 4.1: Socio-demographic features of participants.

Variables (n=123)	Frequency	Percent
Group of Age of participants		
25 years and below	40	32.5
26 to 35 years	72	58.5
36 years and above	11	9
Mean(±SD)	28(±6)	
Sex		
Female	23	18.7
Male	100	81.3
Marital status		
Single	93	75.6
Married	30	24.4
Place of residence		
Urban	102	82.9
Rural	21	17.1
Education level		
Never attended School	5	4.1
Primary	5	4.1
Secondary	42	34.1
University	71	57.7
Occupation		
Student	73	59.3
Self-employed	14	11.4
Employed	16	13.1
Farmer	2	1.6
Unemployed	18	14.6
Religion		
Protestantism	23	18.7
Islam	39	31.7
Catholicism	60	48.8
None		

Source: Primary data (2023)

Table 4.1 illustrates the factors linked to occurrence of symptoms of psychosis amongst 123 respondents. Presented frequencies and percentages show the percentage of psychotic symptoms occurrence in case of each psychoactive substance consumption.

Table 4.2: Prevalence of psychotic symptoms among psychoactive substances users.

Variable (n=123)	Frequency	Percentage
Do you ever hear things that other people do not hear?		
Yes	80	65.0
No	43	35.0
Do you ever feel that people are watching you or talking about you?		
Yes	62	50.4
No	61	49.6
Do you ever see things that other people do not see?		
Yes	27	22.0
No	96	78.0

Do you ever feel that your thoughts are being controlled by outside forces?			
Yes	31	25.2	
No	92	74.8	
Do you feel that your thinking is being transmitted so that others can hear it?			
Yes	60	48.8	
No	63	51.2	
Do you ever feel that your mind is playing tricks on you?			
Yes	67	54.5	
No	56	45.5	
Do you ever have unusual experiences that you cannot explain?			
Yes	24	19.5	
No	99	80.5	
Do you ever feel disconnected from reality or like things are unreal?			
Yes	56	45.5	
No	67	54.5	
Do you ever feel like your thoughts are being taken out of your head?			
Yes	25	20.3	
No	98	79.7	
Do you have trouble controlling your thoughts?			
Yes	72	58.5	
No	51	41.5	
Do you ever feel that your body is changing in strange ways?			
Yes	22	17.9	
No	101	82.1	
Do you ever feel like your thoughts are racing or jumbled?			
Yes	72	58.5	
No	51	41.5	
Do you have difficulty organizing your thoughts?			
Yes	80	65.0	
No	43	35.0	
Do you have trouble concentrating or focusing?			
Yes	72	58.5	
No	51	41.5	
Do you experience strong beliefs that others find strange?			
Yes	18	14.6	
No	105	85.4	
Do you ever feel like you have special abilities or powers?			
Yes	77	62.6	
No	46	37.4	
Total Symptoms/Overall Prevalence			
Yes	96	78.0	

Source: primary data (2023)

Table 4.2, reveals the psychotic symptoms experienced by psychoactive substance users and the prevalence for each symptom among the users. The question asked to assess the psychotic symptoms were formed using the PQ-16, tool defines

a participant who scored ≥ 6 to be at risk of psychosis, meaning a total score of ≥ 6 'True' responses was considered to designate high risk of developing psychotic disorder (Howie et al., 2023). A percentage of 66.7 % of participants in the analysis have scored ≥ 6 which is the cut-off for risk of psychosis and the overall prevalence of psychotic symptoms is 96(78%).

Table 4.3: Bivariate analysis of elements linked to occurrence of psychotic symptom amongst psychoactive substance users.

Variable	Does the participant's past month history meet at least one psychotic symptom? Frequency (%)		χ^2 value	P value
	Yes	No		
Age group of participants			14.98	<0.001
25 years and below	32(80)	8(20)		
26 to 35 years	61(84.7)	11(15.3)		
36 years and above	3(27.3)	8(72.7)		
Sex			13.82	<0.001
Female	23(77)	7(23)		
Male	84(90)	9(10)		
Marital status			10.83	<0.001
Single	74(79.6)	19(20.4)		
Married	22(73.3)	8(26.7)		
Place of residence			11.21	<0.001
Urban	80(78.4)	22(21.6)		
Rural	16(76.2)	4(23.8)		
Education level			12.72	<0.001
Never attended School	3(60)	2(40)		
Primary	2(40)	3(60)		
Secondary	33(78.6)	9(21.4)		
University	58(81.7)	13(18.3)		
Occupation			1.42	0.701
Student	61(83.6)	12(16.4)		
Self-employed	8(57.1)	6(42.9)		
Employed	15(93.8)	1(6.2)		
Farmer	2(100)	0(0)		
Unemployed	10(55.6)	8(44.4)		
Religion			2.0	0.368
Protestantism	17(73.9)	6(26.1)		
Islam	34(82.9)	7(17.1)		
Catholicism	45(76.3)	14(23.7)		
Type of substance used				
Alcohol				
Yes	56(75.3)	19(24.7)	4.52	0.033
No	13(43.3)	17(56.7)		
Cannabis			10.54	<0.001
Yes	70(71)	23(29)		
No	36(66.7)	18(33.3)		
Heroin			6.28	0.012
Yes	47(78.3)	13(21.7)		
No	36(57.1)	27(42.9)		

Cocaine			4.90	0.027
Yes	38(79.2)	10(20.8)		
No	45(60)	30(40)		
Cigarette			2.10	0.146
Yes	34(75.6)	11(24.4)		
No	49(62.8)	29(37.2)		
Ecstasy (MDMA)			8.55	0.003
Yes	29(87.9)	4(12.1)		
No	54(60)	36(40)		
Diazepam			5.06	0.024
Yes	36(80)	9(20)		
No	47(60.3)	31(39.7)		
Type of use			7.32	0.007
Multiple Substance	70(73.7)	25(26.3)		
Single Substance	13(46.4)	15(53.6)		

Source: primary data (2023)

Table 4.3 displays the findings of bivariate analysis of elements linked to manifestation of psychotic symptoms among psychoactive substance users. The study revealed statistical significance association between some factors age ($p < 0.001$), sex ($p < 0.001$), marital status ($p < 0.001$), where people live ($p < 0.001$), level of education ($p < 0.001$) and occurrence of psychotic symptoms. However, occupation and religion, with $p = 0.701$ and 0.368 are not significantly connected to the development of symptoms of psychosis.

Table 4.4: Multivariable Binary Logistic regression for factors linked with occurrence of psychotic symptom amongst psychoactive substance users at HUYE ISANGE Rehabilitation Centre September-December 2023, (n=123)

Variables	COR(95%CI)	P Value	AOR	P value
Age group of participants				
25 years and below	1.0(Ref)		1.0(Ref)	
26 to 35 years	0.721 [0.264-1.973]	0.525	0.587 [1.55-2.220]	0.433
36 years and above	2.667 [1.2995-4.583]	0.003	2.5614[2.647-5.287]	0.021
Sex				
Female	1.0(Ref)		1.0(Ref)	
Male	1.419 [0.438-4.592]	0.045	3.050[1.705-3.445]	0.037
Marital status				
Single	0.706 [0.272-1.832]	0.474	1.755[0.351-8.770]	0.493
Married	1.0(Ref)		1.0(Ref)	
Place of residence				
Urban	0.880 [0.290-2.669]	0.821	0.371[0.089-1.538]	0.172
Rural	1.0(Ref)		1.0(Ref)	
Education level				
Never attended School	1.0(Ref)		1.0(Ref)	
Primary	0.182 [0.026-1.259]	0.084	0.107[0.012-0.927]	0.042
Secondary	0.409 [0.059-2.833]	0.048	0.094 [0.012-0.730]	0.024
Type of Substance used				
Alcohol				
Yes	0.797[0.324-1.960]	0.622	0.797 [0.324-1.960]	0.622
No	1.0(Ref)		1.0(Ref)	

Cannabis				
Yes	1.520 [1.360-2.807]	0.708	1.810 [1.596-2.807]	0.028
No	1.0(Ref)		1.0(Ref)	
Heroin				
Yes	1.250 [1.66-3.355]	0.658	1.250 [1.603-3.325]	0.031
No	1.0(Ref)		1.0(Ref)	
Diazepam				
Yes	1.746 [0.553-5.581]	0.034	1.856 [0.553-5.582]	0.032
No	1.0(Ref)		1.0(Ref)	
Type of use				
Multiple Substance	1.505 [0.417-0.973]	0.030	2.85 [0.417-0.983]	0.041
Single Substance	1.0(Ref)		1.0(Ref)	

Source: primary data (2023)

Table 4.4 discloses that participants who were 36 and older were 2.5 times more prone to experience psychotic symptoms than participants who were younger to them {AOR=2.667,95%CI: [2.647-5.287], P=0.021}. Users who were male were 3 times likely to develop psychotic symptoms than female users {AOR=3.050, 95%CI: [1.705-3.445], P=0.037}. The study made known that participants who have consumed cannabis were just about 1.8 times more expected to have psychotic symptoms than the individuals who do not use cannabis {AOR=1.810,95% CI: [1.596-2.807], P=0.028}. The use of cannabis is connected to increased probabilities of psychotic symptoms, exposing those who use cannabis than those who do not. Statistical analysis showed that participants who used heroin were almost 1.2 times more prone to have psychotic symptoms than the individuals who do not use no heroin {AOR=1.250 ,95% CI: [1.603-3.325], P=0.031}. The use of heroin is meaningfully linked with increased likelihoods of psychotic symptoms among heroin users. The analysis also found that psychoactive substances users who reported the multiple substance use were almost 2.8 times further probable to have psychotic symptoms if compared to individuals who use only one or single substance use {A O R=2.85,95% CI: [0.417-0.983], P=0.041}.

5. DISCUSSION

The core intention of this research was to measure magnitude and assess elements with association to occurrence of psychotic symptoms among psychoactive substance users in Huye Isange Rehabilitation Center, Rwanda. The study revealed that the overall commonness of symptoms of psychosis among drug users at Huye Isange Rehabilitation Center was 78%. A number of 84(90 %) who had at least one psychotic symptom were male participants, the occurrence of symptoms of psychosis among participants in 26 to 35 age range was 84.7%. The psychotic symptoms were assessed and computed using SPSS v21 basing on PQ-16 and 66.7% of respondents have scored ≥ 6 , justifying a risk of psychosis for them as supported by the PQ-16 scoring cut-off (Howie et al., 2023). A number of 80(65%) of participants reported to hear voices that other people do not hear, difficulty organizing thoughts 80(65%).Grandiosity was a major delusional symptom with 77(62.6%) to easily getting confused 72(58.5). A percentage of 75.3%, 71%, 78.3%, 79.2%, 75.6%, 80% among alcohol, cannabis, heroin, Cocaine, cigarettes and diazepam users respectively reported at least one psychotic symptom. A study conducted in Ethiopia, Northwest Zone found lower prevalence of psychotic symptoms among users where 27.4%,28.6%,31.5% of alcohol, Khat chewers, tobacco/cigarette smokers had psychotic symptoms and a number of 66 (73.33%) were having psychotic symptoms and were male subjects (Kassew et al., n.d.), a multistage sampling technique and the sample size might be the reason behind the difference between two studies .These results proved that psychotic symptoms are obvious among the users of psychoactive substances, they provided the real image of the impact of substances to the users’ mental health. In study conducted in Southwestern Nigeria, in Redeemer’s University found prevalence of 92.7% of general psychopathological among psychoactive substances users, a prevalence which high than the prevalence of this study (Onisile et al., 2019). Presence of psychotic symptoms amongst psychoactive substances consumers is supported by different articles. Psychoactive substance users will present different psychotic disorders like drug induced psychotic disorders which may be classified depending on the type of drug abused, even if these disorders are said to be brief, they many times develop in chronic conditions like Schizophrenia in its different forms (Patel et al., 2020).Among cases of psychoactive substance abuse when it comes to occurrence of symptoms, psychotic symptoms will be the most experienced symptoms and they will occupy the leading place among people using drugs (Mustonen et al., 2018). Findings of present research are almost the same as those of a research done in ten European countries assessing the occurrence of

symptoms psychosis among drug users, in this study the substances like tryptamines, methylenedioxypropylamphetamine, methylphenidate, lysergic acid diethylamide (LSD), synthetic cannabinoids and amphetamine among others revealed the magnitude of 57.1%, 27.3%, 23.1%, 20.9%, 15.4% and 14.7% respectively (Vallersnes et al., 2016). Again, the findings of this research fall in the same range as results found in the study done in US of America in 2009 and revealed the following magnitudes of psychotic symptoms: amphetamines (5.2% to 100%), cannabis (12.4% to 80.0%), cocaine (6.7% to 80.7%), and opiates (6.7% to 58.2%) (Smith et al., 2009). These findings show a magnitude of symptoms which is lesser than the prevalence of psychotic symptoms found in similar study which was conducted in the University of New South Wales, Australia and revealed that 30% of participants meet all diagnostic criteria for psychotic disorder and the prevalence of symptoms of psychosis among the participants in the study was eleven times higher than among non-methamphetamine users (McKetin et al., 2019). Researches done in different settings which was quoted in this discussion have lower prevalence compared to the current study and the justification of this differences is the different study designs, research settings, sampling method and sample size, all these differences can lead to the difference in findings.

This study found among participants who have used cannabis, 71% of them were having psychotic symptoms and this is the fact that the use cannabis contributes to the manifestation of psychotic symptoms. In fact, there is a remarkable influence of cannabis consumption for users' mental health. The extra the cannabis is consumed the more it exposes the consumers to psychotic symptoms. Other study done in Britain 2009, with two distinct groups, participants with only first psychotic crisis and controls; the results showed that 78% of cases had smoked more cannabis (Di Forti et al., 2009).

In this study being male and having an history of psychoactive substances use was associated with psychotic symptoms with odd ration of 3, male participants are 3 times further exposed to psychotic symptoms in comparison to female participants. Other similar study done Thailand in 2019 revealed that that being male and having an history of psychoactive substances use were associated with psychosis with odd ratio of 9.41, an odd ratio which is three higher than the one in current study. (Lamyai et al., 2019). In fact, considering the fact of being a male and having an history of psychoactive substances consumption, this will make the user prone to psychotic symptoms three times more than a female user.

This research displayed an important association of the consumption of different drugs to psychotic symptoms. The consumption of cannabis and Heroin was linked with the occurrence of psychotic symptoms {AOR=1.810, 95% CI: [1.596-2.807]}, P=0.028} and {AOR=1.250, 95% CI: [1.603-3.325]}, P<0.031. A similar study conducted in Ethiopia, Amanuel Mental Specialized Hospital found that the use of psychoactive substances is significantly associated to psychotic symptoms {AOR: 4.36, CI (95%): [1.12- 7.33]}, p<0.01 (Boka et al., 2021).

Lastly, this research revealed multiple substance use to be associated with psychotic symptoms and participants who were multiple users were 2.8 times more likely to experience psychotic symptoms than participants who were single substance users {AOR:2.85, CI (95%): [0.417-0.983]}, p< 0.041. The similar study done in Australia ,Sydney found that for many cases the consumption of cannabis accompanied by heavy consumption of alcohol , this combination is a strong predictor of psychotic symptoms among users, two substances used together (OR=7.9) and regular cannabis use (OR=2.0, p< 0.001) (Degenhardt et al., 2000). The facts that the data were collected from patients in different mental states, affecting reliability. Some could hide information due to fear of drug-crime association. Therefore, results cannot be generalized to all Rwandans or all substance users. In addition to these, preexisting psychotic conditions may also confound results, so psychotic symptoms cannot be attributed solely to substance use.

6. CONCLUSION

This research was done to measure the prevalence of psychotic symptoms and elements linked amongst psychoactive substances users at HUYE ISANGE Rehabilitation center. The results of this research shown the magnitude of psychotic symptoms among psychoactive substances users at Huye Isange Rehabilitation Center and factors such as the age and sex of participants, the multiple substance use and the type of drug use were found to be significantly associated with the occurrence of psychotic symptoms.

The results of the study indicated a magnitude of 78% of psychotic symptoms among participants, a prevalence which is high and factors like being 36 years and above (2.5 times), being male (3 times), consuming a give type of substance, cannabis (1.8 times) and history of multiple substance use was 2.8 times linked to the development of psychotic symptoms.

The magnitude among psychoactive substance users highlights a serious public health concern. The strong associations with age, sex, cannabis use, and multiple substance use emphasize the urgent need for targeted prevention, early detection, and treatment programs. Strengthening community awareness, improving access to mental health and rehabilitation services, and implementing evidence-based interventions can help reduce substance-related psychosis and promote mental well-being in the population.

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