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FACTORS ASSOCIATED WITH SUBSTANCE USE AMONG YOUTH ADMITTED AT A SELECTED PUBLIC REHABILITATION CENTER, RWANDA

JEAN BAPTISTE MUGABONAKE

Author Details
MUGABONAKE jean Baptiste is currently pursuing master's degree program in Art in Counselling Psychology in Mount Kenya University
E-mail:
Kigali, Rwanda

Abstract

Introduction: Given the lack of information, the actual nature of substance abuse problem in Rwanda is not well known. This is a quantitative cross-sectional study aimed at determining the risk factors of substance use among youth admitted to Iwawa Rehabilitation Center. **Method:** This study targeted 1586 youths and took place from 25th April to 7th July 2022. A systematic random sampling technique was used to select the study participants. Inclusion criteria was being a client of the rehabilitation center and providing consent for participation. Those who did not consent to participate was excluded. A Questionnaire containing socio-Demographic, socioeconomic and Alcohol, Smoking, and Substances Involvement Screening Tests (ASSIST) was used to collect data with a face-to-face interview technique. The collected data was checked for quality, and analyzed through SPSS version 26. **Results**: A total of 372 male youths with age ranging from 18 to 35 years and a mean age of 25.68 (SD = 4.84) were included. Two hundreds and sixty (69.9%) were single, 58 (15.6%) never attended school, 49 (13.2) were Muslims, 323 (86.8) were Christians, and 204 (54.8) were urban dwellers. Sixty respondents (16.1%) were orphan, 130 (34.9%) had one parent, and 182 (48.9%) have both parents. Among these, 124 (68.1%) have parents who were still living together, 179 (48.1%) had at least one family member who use drugs, 262 (70.4%) started using substances before exceeding 18 years. Two hundreds and forty one (64.8%) were formally employed and 131 (35.2%) were informally employed. Alcoholic beverages were the most used substances among youth in Iwawa Rehabilitation Center (75.3%) followed by cannabis (56.5%), tobacco (33.6), and other drugs 23.3%. Opioids were used by 5.6%, Cocaine/crack used by 1.6%, and only less than one percent used amphetamine type stimulants, inhalants, sedatives, and hallucinogens. The overall substance involvement was low in 181 (48.7%) and high in 191 (51.3%). The everyday source of substance-related psychosocial and health problems among youth admitted at Iwawa Rehabilitation Center were mostly due to alcoholic beverages (34.1%), cannabis (31.5%), other drugs (10%), and opioids (4.3%). Urban residence, having parents who do not live together, having a family member who use drugs, having a history of previous admission in rehabilitation center, early age at the onset of substance abuse, and having informal employment were significantly associated with high overall substance involvement. **Conclusion:** Combined effort to conduct regular and testimonial community outreach programs may be helpful to prevent substance use among Rwandan youth.

Key Words: Substances, substance abuse, Rehabilitation Center.

Introduction

Globally, it is estimated that 246 million people used drugs in 2013, and among these 27 million had drug use disorders. Substance use results into 400,000 deaths every year and contributes to blood born infections, road traffic injuries, suicide, work difficulties at work, family conflicts, sexual abuse, crime, and all sort of physical violence. People who use drugs through infection are at high risk of blood-borne infection, where approximately 13% of them live with HIV, and more than half of them live with Hepatitis C Virus infection (United Nations Office on Drugs and Crime,2015). According to WHO (2004,2005) out of 800 million substance users worldwide, 700 million come from developing countries and are males (Maithya, 2009). The same report indicated that tobacco, one of the substances used, causes four million deaths annually excluding prenatal morbidity and mortality. If this trend is not hampered, this report is projected that it will double in the year 2025 and three quarters will come from developing Nations (Kallenbach, 2004). According to research by Ministry of youth and ICT, in collaboration with Kigali Health Institute, showed that the rate of unavoidability of substance use is 52.5% among Rwandan youth aged 14 to 35. The same research indicates that Rwandan youth consume more than one substance, where, 50.6% use alcohol, 10.6% tobacco, 4.4% marijuana, 5% solvents; among these 0.1% used diazepam and other drugs. Additionally, among Rwandan youth 1% had gobbled up locale blends in with a mix of sorghum, sugar, and pot (Kanyoni et al., 2015). Concerning gender, the findings showed that the rate of substance use among Rwandan male youth is 67.03 was twofold that 36.9% is the rate of Rwandan females. The government of Rwanda to deal with drug use issues, in 2006 established Kigali Transit Center, and 27 Districts Transit Centers were established in 2010. For the last nine years, these Transit Centers admitted 402.861 clients including 174.941 clients from Kigali Transit Center. The higher number among them have sabotage behaviors related to drugs. Since the establishment of Rehabilitation Center of Gitagata in 2000 for street children, Iwawa Rehabilitation Center in 2010, and Nyamagabe Rehabilitation Center in 2019 where these Rehabilitation Centers have been admitted 38,894 clients among them 27.313 admitted at Iwawa, of whom (20%) are recidivists. (NRS,2021). Among 27,313 discharged at Iwawa since 2010, among them, 7.956 clients came from the City of Kigali, 4.083 came from Eastern province, 3.540 clients came from Northern Province, 6.506 clients came from Southern Province and 5.227 clients came from Western Province. (IRC, 2022). Many kinds of research were conducted in this field and these findings were not enough to make a change on substance use because we do not know why we are still facing escalating problems related to substance use. This research addressed clear assessment factors associated with substance use among youth admitted at Iwawa Rehabilitation Center. We have chosen Iwawa Rehabilitation Center because clients who are admitted at Iwawa are youth from all provinces in the country between 18 years to 35 years; those people are the future of Rwanda and they have the strength and power to build our country. A country without future offspring does not have a future itself that is why we decide to emphasize more on drugs because it is one of the major problems we face.

Materials and method

Research design, population and the study area

This is a quantitative cross-sectional study that targeted 1586 male youth aged 18-35 who were admitted to Iwawa Rehabilitation Center in April 2022. Youth in the center comes from all Districts in Rwanda and therefore representative of delinquent population in Rwanda. Being a client of the center, and providing a consent for participation were the inclusion criteria. Not consenting for participation, mental illness, and severe medical conditions were the exclusion criteria.

Sampling and data collection

The Yamane's formula, (1967) for sample size calculation was used to calculate sample size: $n = N/1 + N \times e^2$. With N=Total population, e=Margin of error which is equal to 0.05, n=sample size. then the calculated sample size was 319. The sample was selected using a systematic sampling technique. The selected youth were subjected to the questionnaire containing sociodemographic and socioeconomic related items and Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST). Sociodemographic items were age, marital status, education level, religion, residents, whether respondents have biological parents, whether parents live together when present, housemates, previous admission in a rehabilitation center, whether a respondent have a family member who uses substances, respondent's age at the onset of substance use, and whether a respondent have ever been criminally convicted. Socioeconomic items included employment, income, and ubudehe status (a socioeconomic status pattern used in Rwanda). ASSIST was developed by the World Health Organization by the International Researchers group on addiction in a resolution of the public health burden associated with psychoactive substance use in the World. This study has used the latest ASSIST version updated in 2010 (Humeniuk et al., 2010). It was applied to screen the following substances: Tobacco products, alcohol, cannabis, cocaine, amphetamine-type, stimulants, sedatives, hallucinogens, inhalants, opioids, and other psychoactive substances. The permission to conduct this study were obtained from both Mount Kenya University and National Rehabilitation Service (NRS). Data collection was held in Iwawa Rehabilitation Center from 25th April to 13th May 2022. Firstly, the researcher called the selected youth and informed them about the purpose and procedures of the research. The data collection took place in a private and quiet environment to ensure the privacy and confidentiality of the respondents. A safe, free, and fast online data collection platform called KOBO Toolbox was employed during the interview. A face to face interview technique was used to collect the data. Before the interview, a researcher sought a consent for participation from the respondents. The researcher proceeded with the interview by following exact wording and sequence of items in the questionnaire. The collected data in Excel from were retrieved from the Kobo Toolbox database and stored in a computer for analysis.

Reliability and Validity of Instruments

Various studies have assessed the reliability and validity of ASSIST instruments (Gryczynski et al., 2015; Humeniuk et al., 2008; Sainz et al., 2016). According to these studies, ASSIST shows good concurrent validity (r = 0.76 to 0.88), good internal consistency (α = 0.68 to 0.88), and good specificities (90 to 93%) and sensitivities (95 to 100%). To ensure the internal validity, The researcher have followed the exact wording and sequence of items in ASSSIST questionnaire and ensured that the respondents captured the accurate meaning of items in the questionnaire. Additionally, to capture a sample as representative as feasible, a systematic sampling method was employed.

Data analysis

Following the course of data collection, the collected data were coded and uploaded into SPSS version 26 for analysis. The ASSIST guideline provides the scoring system and patterns to categorize respondents into low, moderate, and high involvement score (Humeniuk et al., 2010). ASSIST is composed of 8 items, with each item have different scoring system. To obtain a specific drug involvement score for a respondent, scores from question 2 to question 7 are added up. Each respondent is then categorized into low, moderate, and high risk levels. To obtain the overall substance involvement score, the risk levels were further recorded. Low was given a 0 score; moderate was scored 1 and high was scored 2. For each respondents scores obtained from all substances

were added up into the overall substance involvement score. The mean overall substance involvement score was computed and considered as the cutoff values for categorizing respondents levels of substance involvement. Respondents who obtained the overall substance involvement score below the mean were put in low substance involvement category. Respondents who obtained overall involvement score equal to the mean were categorized in high substance involvement category. All statistical analyses were performed by SPSS version 26. The characteristics of the study respondents was presented as frequencies and percentages in meaningful graphs and tables. Continuous variables were presented as mean and standard deviations (*SD*) in narratives. Chi-square test and Binary logistic regression were performed to determine the presence, magnitude, direction, and statistical significance of the relationship between both sociodemographic and socioeconomic factors and overall substance involvement. The level of statistical significance was set to < 0.05 for all statistical tests.

Ethical consideration

Ethical approval was obtained from ethic committee of Mount Kenya University. Permission to carry out the research was requested from National Rehabilitation Service. Participants were explained that participation in the research is voluntary and participants wish to participate in the research their identification would remain confidential and data collected during the research was used for the research purpose only. Objectives and significance of the research was explained clearly to the respondents and then they signed consent form.

Results

This section presents characteristics of the study respondents and consecutively and addresses Specific objective of the present study was to identify the type of substances used by the youth, to describe psychosocial and health problems faced by the youth due to substance usage, and to examine both socioeconomic and sociodemographic characteristics associated with substances usage. The last section of this chapter discusses the study findings.

Characteristics of study respondents

Table 1 shows the characteristics of this study respondents. A total of 372 male respondents were included in this study. Their age ranged from 18 to 35 years with a mean age of 25.68 (SD = 4.84). Respondents with 18 to 25 years were 201 (54%) whilst those who were aged 26 to 35 were 171(46%). Two hundreds and sixty were single (69.9%), 58 (15.6%) were illiterates, 205 (55.1%) reached primary school, and 109 (29.3%). Forty nine (13.2) respondents were Muslims and 323 (86.8) were Christians. The urban dwellers were 204 (54.8) while respondents from rural areas were 168 (45.2%). Sixty respondents (16.1%) were orphan, 130 (34.9%) had one parent, and 182 (48.9%) have both parents. Among respondents with both parents, 124 (68.1%) have parents who still live together while (58) 31.9% have parents who were separated. Before being admitted in Iwawa Rehabilitation Center, 123 (33.1) were living with parents, 75 (20.2) were living with spouses, 51 (13.7) were living with siblings or friends, and 123 (33.1) were living alone. Among all respondents, only 83 (22.3) have been previously admitted in a rehabilitation center and 179 (48.1%) had at least one family member who use drugs. Respondents who have started using substances before exceeding 18 years were 262 (70.4%) while 56 (15.1%) have been criminally convicted were at least once in their lifetime. Before being admitted to Iwawa Rehabilitation Center, 241 (64.8%) respondents were formally employed and 131 (35.2%) were a day to day laborers. One hundred a forty two (42.2%) had been making 30000 frw and less, 140 (37.6%) had been making 30000 frw to 90000 frw, and 75 (20.2%) had been making over 90000 frw. Sixty nine (18.5%) did not know their ubudehe

status, 199 (53.5) were in the first, and second category, and 104 (28.0%) were in the third and fourth category.

Table 1: Characteristics of study respondents

Variables	Categories	Frequency	Percentage
Age group	18 – 25	201	54.0
	26 – 35	171	46.0
Marital status	Single	260	69.9
	Not single	112	30.1
Education	None	58	15.6
	Primary	205	55.1
	Secondary	109	29.3
Religion	Islam	49	13.2
	Christian	323	86.8
Resident	Rural	168	45.2
	Urban	204	54.8
Biological Parents	Orphan	60	16.1
	One parent	130	34.9
	Both parents	182	48.9
Parents live together (N = 182)	No	58	31.9
	Yes	124	68.1
Housemate	Alone	123	33.1
	Parents	123	33.1
	Spouse	75	20.2
	Siblings/friends	51	13.7
Previous admission to a Rehab	No	289	77.7
	Yes	83	22.3
Family members use drugs	No	193	51.9
	Yes	179	48.1
Age of onset of substance	18 years and under	262	70.4
	Over 18 years	107	28.8
Ever been convicted	No	316	84.9
	Yes	56	15.1
Employment	Formal	241	64.8
	Informal	131	35.2
Income (frw)	30000 and less	157	42.2
	30000 to 90000	140	37.6
	More than 90000	75	20.2
Ubudehe	Unknown	69	18.5
	First and second	199	53.5
	Third and fourth	104	28.0

Type of substances used by the youth

Figure 1 Shows the prevalence of different type of substances use by youths. One hundred and twenty five respondents (33.6) have ever used tobacco products, 280 (75.3%) used alcoholic beverages, 210 (56.5%) used cannabis and 21 (5.6%) used opioids. Only 6 (1.6%) respondents have ever used cocaine/crack while only less than 1% have ever used amphetamine type stimulants, inhalants, sedatives, and hallucinogens. Other drugs were mainly composed of illegal home-brewed beverages with various physiological and psychological effects. These drugs were used by 23.3% of the current study respondents. WHO alcohol smoking and substance involvement screening tests (ASSIST) was used to determine the levels of substance usage in youth (Humeniuk et al., 2010). According to the ASSIST protocol, involvement score from 0 to 3 is categorized as low, 4 to 26 is categorized as moderate, and 27 and above is categorized as high. Although, for alcoholic beverages, involvement score from 0 to 10 is low, 11 to 26 is moderate, and 27 and above is high.

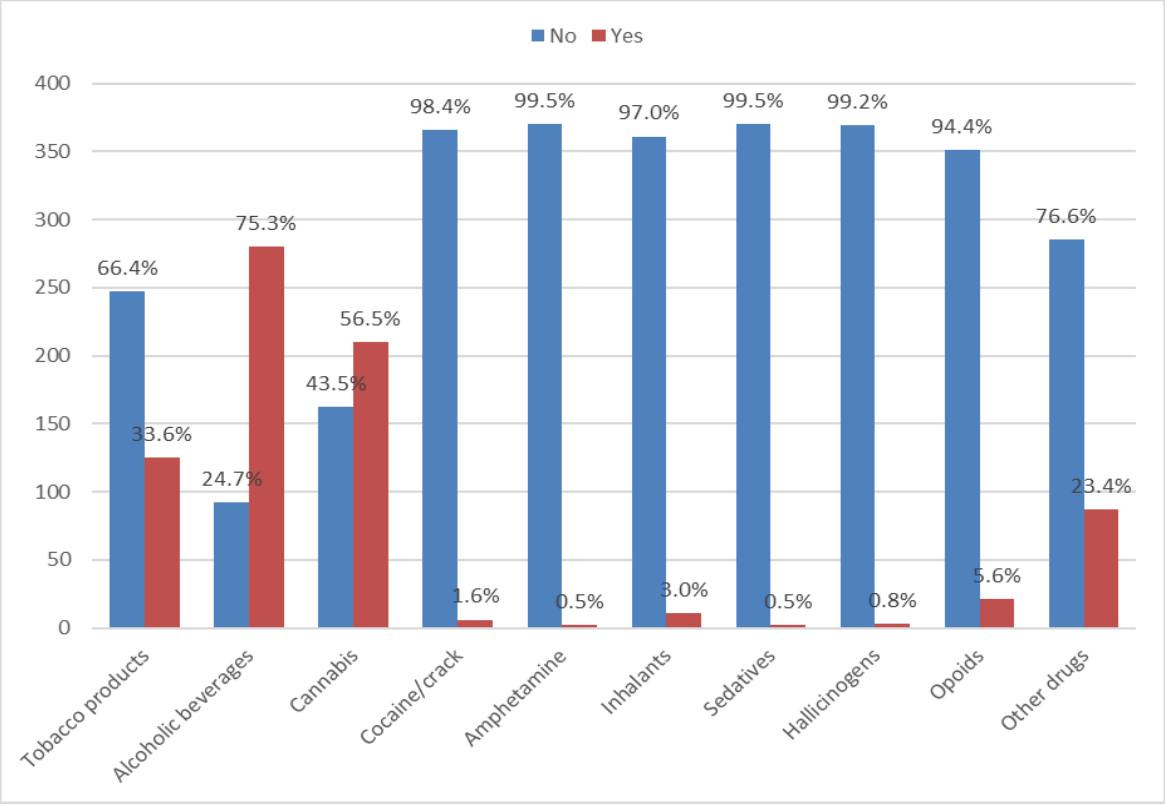

Figure 1: Type of substance ever used by youths to Iwawa Rehabilitation center

Figure 2 demonstrates levels of substances used by youths in Iwawa Rehabilitation center. Tobacco involvement score was low for 251 (67.5%), moderate for 88 (23.6%), and high for 33 (8.8%). Alcohol beverages involvement score was low for 106 (28.5%), moderate for 111 (29.8%) and high for 155 (41.7%). Cannabis involvement score was low for 173 (46.5%), moderate for 59 (15.9%), and high for 140 (37.6%). Over 97% of respondents had low involvement score of cocaine/crack, amphetamine types stimulants, inhalants, sedatives, and hallucinogens. Opioids involvement score was found to be low in 353 (94.9%), moderate in one respondent and high in 18 (4.8%). Other drugs involvement score was low in 283 (76.8%), moderate in 27 (7.26%), and high in 62 (16.7%). To obtain the overall substance involvement score, the risk levels were further recorded. Low was given a 0 score; moderate was scored 1 and high was scored 2. For each respondents scores obtained from all substances were added up into the overall substance involvement score. The mean overall substance involve-

ment score was computed and considered as the cutoff values for categorizing respondents levels of substance involvement. Respondents who obtained the overall substance involvement score below the mean were put in low substance involvement category. Respondents who obtained overall involvement score equal to the mean were categorized in high substance involvement category. Respondents were therefore categorized into low and high overall substance involvement.

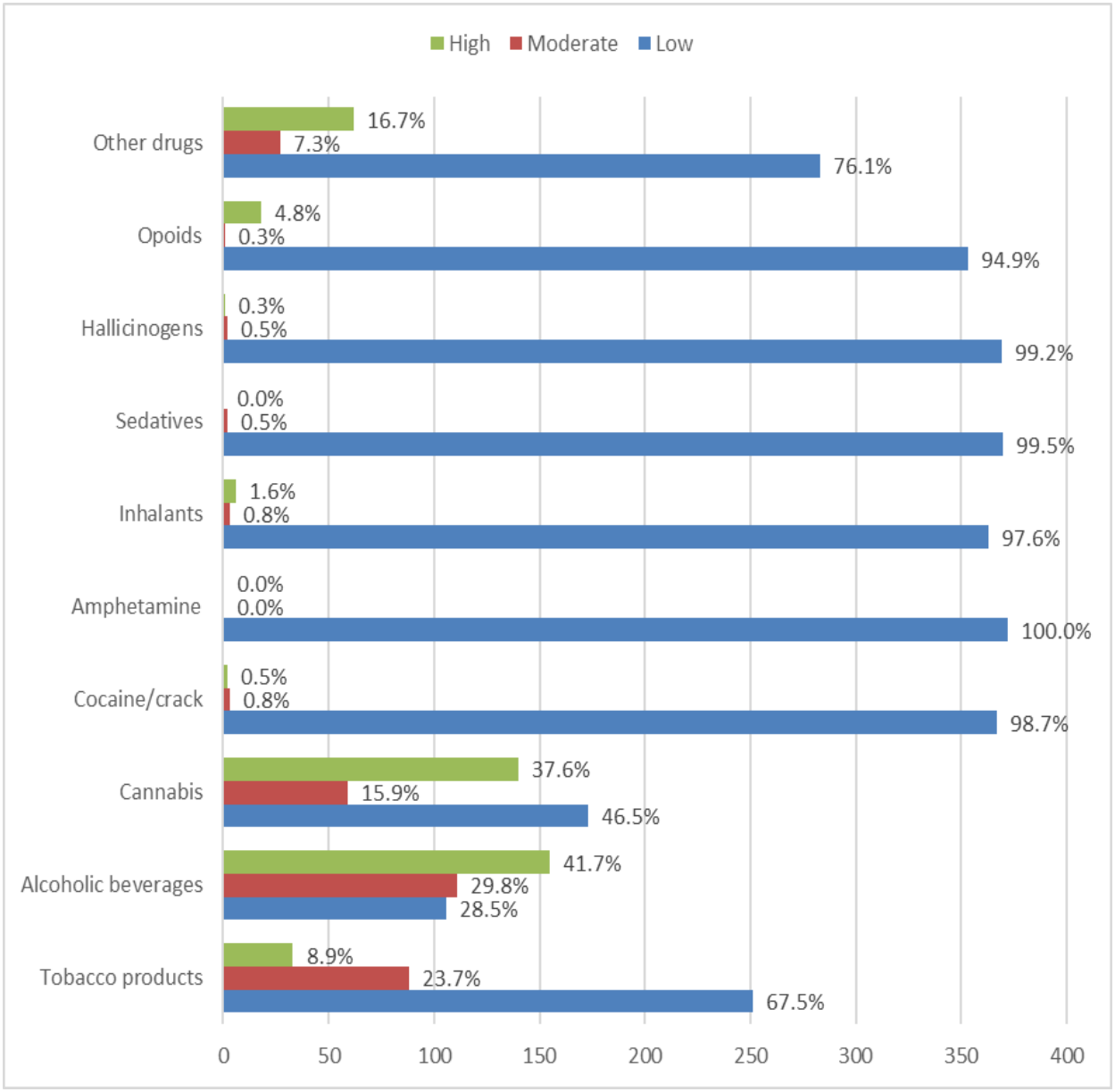

Figure 2: level of substances uses by youth in Iwawa Rehabilitation center

Figure 3 present the overall substance involvement of youth admitted in Iwawa Rehabilitation center. The Overall substance involvement score ranged from 0 to 12 with the mean of 3.04 (SD = 1.8). One hundred and eighty-one (48.7%) respondents had the Overall substance involvement score below the mean and were categorized into low level of substance use. Respondents with 3 and above overall substance use score were 191 (51.3%), and categorized into high level of substance use.

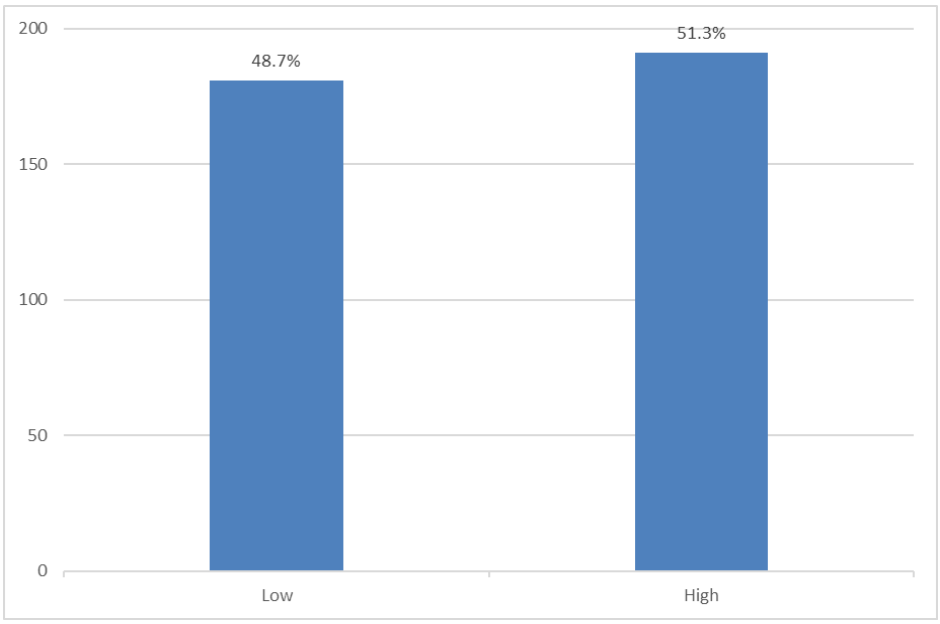

Figure 1: Overall substance involvement

Substances related psychosocial and health problems

Table 2 shows the frequency of drugs related psychological and health problems. Tobacco related psychological and health problems were available in 8.3% once or twice, 1.1% monthly and 2.7% weekly and 16.4% daily. For alcoholic beverages the problems were available in 20.4% once or twice, 9.4% weekly and 34.1% every day. Cannabis related psychosocial and health problems were presents every day in 31.5% and once or twice in 12.6%. Sixteen respondents (4.3%) had had opioid related psychosocial and health problems everyday of almost every day. Ten percent of respondents experienced other drugs related psychosocial and health problems almost every day.

Table 1: Frequency of drug related psychological and health problems

Substances	Frequency									
	Never		Once or twice		Monthly		Weekly		Daily	
	n	%	n	%	n	%	n	%	n	%
Tobacco products	266	71.5	31	8.3	4	1.1	10	2.7	61	16.4
Alcoholic drinks	126	33.9	76	20.4	8	2.2	35	9.4	127	34.1
Cannabis	187	50.3	47	12.6	7	1.9	14	3.8	117	31.5
Cocaine	367	98.7	2	0.5	2	0.5	0	0.0	1	0.3
Amphetamine	372	100	0	0.0	0	0.0	0	0.0	0	0.0
Inhalants	363	97.6	1	0.3	3	0.8	2	0.5	3	0.8
Sedatives	370	99.5	1	0.3	1	0.3	0	0.0	0	0.0
Hallucinogens	370	99.5	0	0.0	1	0.3	1	0.3	0	0.0
Opioids	353	94.9	1	0.3	1	0.3	1	0.3	16	4.3
Other drugs	289	77.7	6	1.6	8	2.2	17	4.6	52	10.1

Socio-demographic factors associated with substance involvement

Table 2: Sociodemographic factors associated with substance involvement.

Variables	Overall substance involvement				χ^2	*p*
	Low		High			
	n	%	n	%		
Age group					2.247	0.134
18 - 25	105	52.2	96	47.8		
26 - 35	76	44.4	95	55.6		
Marital status					0.116	0.734
Single	125	48.1	135	51.9		
Not single	56	50.0	56	50.0		
Education level					0.847	0.655
None	29	50.0	29	50.0		
Primary	103	50.2	102	49.8		
Secondary	49	45.0	60	55.0		
Religion					**5.785**	**0.016**
Islam	16	32.7	33	67.3		
Christian	165	51.1	158	48.9		
Resident					**11.485**	**0.001**
Rural	98	58.3	70	41.7		
Urban	83	40.7	121	59.3		
Biological Parents					0.378	0.828
Orphan	29	48.3	31	51.7		
One parent	66	50.8	64	49.2		
Both parents	86	47.3	96	52.7		
Parents live together					**8.984**	**0.003**
No	18	31.6	39	68.4		
Yes	68	54.8	56	45.2		
Housemates					3.572	0.312
Alone	67	54.5	56	45.5		
Parents	53	43.1	70	56.9		
Spouse	38	50.7	37	49.3		
Siblings/friends	23	45.1	28	54.9		
Previously admitted in a Rehab					**14.693**	**< 0.001**
No	156	54.0	133	46.0		
Yes	25	30.1	58	69.9		
Family member use drugs					**12.595**	**< 0.001**
No	111	57.5	82	42.5		
Yes	70	39.1	109	60.9		
Age of onset of substance					**14.152**	**< 0.001**
At age 18 years and below	110	42.0	152	58.0		
Over 18 years	68	63.6	39	36.4		
Ever been convicted					**4.420**	**0.036**
No	161	50.9	155	49.1		
Yes	20	35.7	36	64.3		

Table 3 shows the relationship between sociodemographic factors and Overall substance involvement. Religion, Residents, whether respondent's parents live together, previous admission in a rehabilitation center, whether a

respondent have a family member who uses drugs, age at the onset of substance, and whether a respondent have criminally convicted, were significantly associated with the Overall substance involvement ($p < 0.05$. These variables were therefore involved in binary logistic regression to the determine directions of associations. However, Age group, marital status, education, biological parents, and housemates were not significantly related to the Overall substance involvement ($p > 0.05$). Table 4 shows binary logistic regression analysis of sociodemographic factors on overall substance involvement. Urban residents were 1.6 times more likely to have high Overall substance involvement score than rural dwellers (A*OR* = 1.6, $p = 0.04$, 95% *CI* = [1.013, 2.559]). Respondents whose parents do not live together were 2.747 times more likely to have Overall substance involvement score than those whose parents were separated (A*OR* = 2.7, $p = .004$, 95% *CI* = [1.370, 5.505]). Respondents with a history of previous rehabilitation program were 1.9 times higher odd of having high Overall substance involvement score than those who were following their first rehabilitation program (A*OR* = 1.9, $p = 0.017$, 95% *CI* = [1.133, 3.499]). Respondents with a family member who uses drugs were 1.7 more likely to have high Overall substance involvement score than those who had no family member who use drugs (A*OR* = 1.9, $p = 0.017$, 95% *CI* = [1.133, 3.499]). Finally, respondents who started using substances before exceeding 18 years of age had 2.25 higher odd of having high Overall substance involvement score than those who started later A*OR* = 2.25, $p = 0.001$, 95% *CI* = [1.377, 3.687]). However, the logistic regression analysis in this study showed that the relationship between the Overall substance involvement with religion and the history of criminal conviction were not significant.

Table 3: Logistic regression of sociodemographic factors and substance involvement

Variables	Odds Ratio	95 C.I.	*p*
Religion			
Christian	Ref.		
Muslim	1.550	[0.782, 3.072]	0.209
Resident			
Rural	Ref.		
Urban	1.610	[1.013, 2.559]	**0.044**
Parents live together			
Yes	Ref.		
No	2.747	[1.370, 5.505]	**0.004**
Previously admitted in a Rehab			
No	Ref.		
Yes	1.991	[1.133, 3.499]	**0.017**
Family member use drugs			
No	Ref.		
Yes	1.741	[1.116, 2.717]	**0.015**
Age of onset of substance			
Over 18 years	Ref.		
At age 18 years and below	2.253	[1.377, 3.687]	**0.001**
Ever been convicted			
No	Ref.		
Yes	1.450	[0.774, 2.715]	0.246

Socio-economic factors associated with substance involvement

Table 4: Socioeconomic factors associated with substance involvement

Variables	Overall substance involvement				χ^2	*p*
	Low		High			
	n	%	n	%		
Employment					**22.290**	**< 0.001**
Informal	42	32.1	89	67.9		
Formal	139	57.7	102	42.3		
Income (frw)					2.760	0.252
30000 and less	83	52.9	74	47.1		
31000 – 90000	67	47.9	73	52.1		
Above 90000	31	41.3	44	58.7		
Ubudehe status					**7.676**	**0.022**
Unknown	25	36.2	44	63.8		
First & second	96	48.2	103	51.8		
Third and fourth	60	57.7	44	42.3		

Table 5 shows socioeconomic factors associated with Overall substance involvement score. Employment status, and ubudehe status were found to be significantly associated with Overall substance involvement ($p < 0.05$). The respondent's income before being admitted in Iwawa Rehabilitation Center were not significantly related to the Overall substance involvement ($p > 0.05$). Ubudehe status and employment variables were therefore involved in the binary logistic regression analysis with Overall substance involvement. Table 4.6 represents binary logistic regression between socioeconomic factors and Overall substance involvement. Respondents who had informal employment before being admitted in Iwawa Rehabilitation center were 2.8 times more likely to have high overall substance involvement score than respondents who were formally employed (A*OR* = 2.8, $p < 0.001$, 95% *CI* = [1.786, 4.399]). Respondents who did not know their ubudehe status had 2.2 higher odds of having higher overall substance involvement score (A*OR* = 2.2, $p < 0.015$, 95% *CI* = [1.166, 4.230]. Being in the first and second ubudehe status were not significantly related to the overall substance ($p > 0.05$).

Table 5: Logistic regression of socioeconomic factors and substance involvement.

Variables	Odds Ratio	95 C.I.	*p*
Employment			
Formal	Ref.		
Informal	2.802	[1.786, 4.399]	**< 0.001**
Ubudehe status			
Third and fourth	Ref.		
First & second	1.405	[0.859, 2.298]	0.175
Unknown	2.221	[1.166, 4.230]	**0.015**

Discussion

This study has mainly investigated the factors associated with substance use among youth admitted at Iwawa Rehabilitation center. Tobacco products, cannabis, alcohol, and home-brewed drinks was found to be the most prevalent substances used by youth in the center. The important predictors of high substance involvement were urban resident, having parents who do not live together, having a family member who use drugs, early age at the onset of drug abuse, and informal employment. This section discusses the findings obtained in this study. This study found the prevalence of alcohol consumption to be 75.2% and that of cannabis to be 56.4% while 33.6% used tobacco products. This prevalence is significantly higher than the prevalence of alcohol (50.6%), tobacco (8%) cannabis (4.4%) use obtained in a nationwide study among general Rwandan youth (Habiyaremye et al., 2019; Kanyoni et al., 2015). Evidences show that increased alcohol, cannabis, and tobacco use among youth are interlinked with delinquency (Rocca et al., 2019; Tucker et al., 2019). Respondents in the present study are late delinquents and were likely to use substances mainly alcoholic beverages, tobacco products and cannabis which explain the higher rates obtained. The prevalence of inhalant usage was 2.9% while the prevalence of opioids was 5.6%. Only 6 respondents used Cocaine/ crack, sedatives were used by 2, amphetamine type stimulants were used by 2 and hallucinogens were used by only 3 respondents. Less than 0.5% had ever experienced sedative such as Diazepam or inhalants such as glue in a nationwide study among Rwandan youth (Kanyoni et al., 2015). Very low rate of cocaine, opioids and amphetamine type stimulants were also obtained among youths in Icyizere Rehabilitation Center, Kicukiro, Rwanda (Nzamwita, 2017). The unpopularity, and the high-cost of these drugs might be the cause of the low rate of abuse. Other type of drugs was used by 23.3% of the study respondents. They include illicit homemade substances with various psychological and psychological effects. According to the study respondents, they go with names such as ‘Imbutabuta’, ‘Ibikwangari’, or ‘Muriture’ etc. They also included homemade liquor called “Kanyanga”. In this study, urban residence was found to be an important determinant of high substance involvement. Similar results were found among Saudi College students (Alotaibi & Durgampudi, 2020), among college students in southeastern public university, US (Derefinko et al., 2018), and among Indian men (Balasubramani et al., 2021). Higher exposure, affordability, and easy access of these substances to the urban residents may contribute to the higher odd of usage in cities than in rural areas. This study found a significantly higher odd of having higher substance involvement among respondents whose parents do not live together. Similar results were found among Estonian adolescents (Tamson et al., 2021), French adolescents (Khlat et al., 2020), Finnish adolescents (Knaappila et al., 2020), and Nigerian youth (Oyewole et al., 2018) where having non-intact families were strongly associated with cannabis and tobacco use. People with substance use disorders at Icyizere Psychotherapeutic Center who were lived with only their mother had a higher odd of relapse than those were living with both parents (Kabisa et al., 2021). Youths who grow up in a non-intact family are likely to engage in substance consumption due to the premature independence and lack of parenting resources and/or lack of supervision. Findings of the present study showed that youth with family member who use drugs had higher odds of having higher substance involvement. Having a family member who consume alcohol were also strongly associated with alcohol initiation among youths in Puducherry, India (Lourde & Kodali, 2020) and in Lusaka, Zambia (Siwale & Siziya, 2019). Evidence also shows that the family history of alcohol use is the predictor of alcohol dependence (Mukherjee & Ghosh, 2022). Having a substance using family members was also a significant risk factors of tobacco and cannabis usage in other studies (Cambron et al., 2020; Dugas et al., 2019; Oyewole et al., 2018). Findings from a study among Mexican children suggests that maximum exploitation of parental influence during childhood may significantly reduce nonalcoholic substance usage (Vázquez et al., 2021). Parents who suffer from addiction show a limited or absent guidance of their children’s behaviors which contribute to the early substance abuse in children (Maina et al.,

2021). In the present study respondents who started using substances before exceeding 18 had higher odds of having high substance involvement than their counterparts. This finding is consistent with evidences that show that the early onset of drinking may results into severe level of alcohol dependence (Mukherjee & Ghosh, 2022; Yeung et al., 2022). Canadian youth who started to use cannabis before15 were at higher risk of developing drug abuse symptom at age 28 (Rioux et al., 2018). A systematic review of prospective longitudinal studies has also concluded that the at first intoxication at early age is a significant predictor of substance abuse disorders in adulthood (Morales et al., 2020). In this study all respondents with high substance involvement were using more than one substance. Evidences shows that people who use multiple substances have a greater chance of relapse (Andersson et al., 2019; Kabisa et al., 2021). This goes in line with findings of the present study where relapsed youth were more likely to have higher substance involvement than youth who were following their first rehabilitation programs. In addition to the sociodemographic factors, the relationship between socioeconomic factors were also assessed. A nationwide study among Rwandan youth found that employed individuals were 2.5 more likely to use tobacco (Habiyaremye et al., 2019). The present study found that respondents who were informally employed were 2.8 times more likely to have higher substance involvement. Day-to-day laborers are likely to frequent substance use permissive environment throughout the day. Contrastingly, tobacco and alcohol usage are usually prohibited in formal employment environment including banks, clinics, and public administration. Additionally, people with high substance involvement are not likely to stay at work for long time. There was no significant difference in substance involvement between respondents in the first and second ubudehe status compared to those in third and fourth. However, respondents who did not know their ubudehe status were more likely to have high overall substance involvement. Not knowing the ubudehe status may be attributed to the delinquency which in turn is usually associated with substance use. The fact that the present study included the late delinquent people may have caused the lack of significant difference in substance involvement based on biological parents status. In a study among general youth in Rwanda, people who had no alive parents were more likely to use substances than those with at least one alive parent (Kanyoni et al., 2015). Age, marital status, religion, education, income and the history of criminal conviction were also not associated with substance use in this study. Nevertheless, This study has identified the levels and risk factors of substance use among youth admitted in Iwawa Rehabilitation Center. It included youths from all Districts of Rwanda. It is therefore an important support to the prevention of substance abuse and related disorders in Rwanda.

Conclusion

Alcoholic beverages, cannabis, tobacco, home-brewed beverages, and opioids are the mostly used substances at high risk level by youth in Iwawa Rehabilitation Center. These substances are also responsible for daily drug related psychosocial and health problems faced by youth. Having parents who do not live together, having a family member who use drug, early age at the onset of substance abuse, more than one admission in a rehabilitation center, urban residents, and informal employment are independent predictors of high substance involvement.

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