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AGE, IMPULSIVITY AND LOCUS OF CONTROL AS PREDICTORS OF SUBSTANCE USE DISORDER AMONG SUBSTANCE USING OUTPATIENTS IN LAGOS STATE

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Abstract

Substance use disorder (SUD) has been identified as an emerging national health concern especially among young people. While age, impulsivity and locus of control have been previously linked to substance abuse, this study specifically assessed these three factors in outpatients diagnosed with substance use disorder at the Federal Neuropsychiatric Hospital, Yaba, Lagos. Five hypotheses were tested. The sample included 113 patients (102 males and 11 females), aged between 18-26 years with mean age of 21.19 years (SD= 1.91). Data were collected using the Drug Abuse Screening Test 10 (DAST-10), the Barratt Impulsiveness Scale-Revised (BIS-R-21) and Nowicki-Strickland Locus of Control Scale (N-SLCS). The research adopted cross sectional survey design and data was analyzed using hierarchical multiple regression. The result showed that younger age, high levels of impulsivity, and external locus of control significantly predicted substance use disorder. However, the interaction between impulsivity and locus of control did not provide significant additional predictive value. To combat the rising SUD rates, the study recommends reorienting significant others on parenting practices that focus on fostering cognitive inhibition, affectionate communication and delayed gratification to reduce impulsivity. Additionally, SUD interventions should help young people shift from an external to internal locus of control, teach them to take personal responsibility for their actions from an early age and look inward rather than blaming external factors (outsiders) or circumstances.

Keywords: Drug abuse, Impulsivity, Locus of control, Neuropsychiatric hospital, Outpatients, Substance use disorder.

Introduction

According to the World Health Organization (World Health Organization, 2020), the burden of drug and substance abuse takes a heavy toll on several countries across the globe, especially the developing countries. Substance abuse is defined as a nonadaptive model of substance use, resulting in adverse problems and consequences, and includes cognitive, behavioural, and psychological symptoms (Madadi & Nogani, 2004). Due to the stigma that often surrounds the use of terms such as addiction, dependence and substance abuse, the DSM-5 changed the nomenclature to one which combines substance abuse and substance dependence into a single category called substance use disorder, which has levels ranging from mild to severe (APA, 2013). A Substance Use Disorder (SUD) involves patterns of symptoms caused by using substances that an individual continues taking despite the negative effects. According to DSM 5, the classes of substances under SUD include Alcohol, Caffeine, Cannabis, Hallucinogens, Phencyclidine, Inhalants, Opioids, Sedatives, hypnotics, or anxiolytics, Stimulants, Tobacco and any other category of drugs taken excessively or in combination or without prescription. Other psychoactive substances such as cannabis and amphetamines are associated with mental health consequences such as increased risk of suicidality, depression, anxiety and psychosis (Lowe, et. al., 2019). Substance Use Disorder may be persistent but is manageable through treatment and can be marked by periods of improvement. People with SUD have an intense focus-sometimes called an addiction on using a certain substance(s) to the point where their ability to function in day-to-day life becomes impaired. In addition to the effect on health, substance use is associated with significant socioeconomic costs arising from its impact on health and criminal justice systems (International Narcotics Control Board, 2013). Substance use disorder (SUD) has also been said to be associated with significant morbidity and mortality globally (Jaguga, et.al 2022). In the 2017 Global Burden of Disease (GBD) study, substance use disorder (SUD) was the second leading cause of disability from among the mental disorders with (25%) Years Lived with Disability (YLD) attributed to it (James, et.al, 2018). Hammer, et. al. (2018) reports that harmful alcohol use resulted in 3 million deaths (5.3% of all deaths) worldwide and

132.6 million (5.1%) disability-adjusted life years (DALYs). Based on decades of research, DSM-5 listed 11 criteria that can arise from substance use. Furthermore, these criteria are grouped under four basic categories as follows: impaired control: the experience of a craving or strong urge to use the substance; desire or failed attempts to cut down or control substance use; physical dependence (which is tolerance-need for larger amounts to get the same effect) and consequent withdrawal symptoms (different for each substance). Social problems: substance use causes failure to complete major tasks at work, school or home such that social, work or leisure activities may be cut back or given up entirely risky (dangerous) use: substance is used in unsafe settings with continued use despite known problems.

In addition to societal factors like drug availability, psychological characteristics are important in determining whether an individual will go on to use substances, and their subsequent degree of dependence if they do, depending on an individual's ability to control their urges and take responsibility for the consequences of their actions. These psychological factors include a mix of personality traits (such as impulsivity and locus of control) and other mental health conditions that influence the use and misuse of substances. An understanding of these traits is important to enhance prevention efforts.

Impulsivity according to Monterosso and Ainslie (1999) is a chronic difficulty in delaying gratification or inhibiting response to rewarding stimuli. It also refers to a tendency to act on immediate desires or urges without considering potential long-term consequences. Madden and Bickel (2010) describe impulsivity as a tendency to "act on a whim while disregarding rational long-term strategy for success and consists of long-standing pattern of behaviours that reflect preference for readily available rewards coupled with marked difficulty in delaying or resisting response to such rewards. Impulsivity and substance use have a complex relationship, and research has consistently shown a significant association between the two. Some research suggests that highly impulsive individuals are more likely to use substances than are their less impulsive peers (Bickel et al., 1999; Kassel, et. al., 1994). Impulsivity is thus considered a risk factor for the initiation and escalation of substance use in individuals who may be more prone to seeking immediate gratification and engaging in impulsive behaviours, including

substance use, to satisfy their desires or cope with negative emotions. Berey, et. al., (2017) concluded that impulsivity is an important predictor of substance use and alcohol-related problems. It means that Substance use can be seen as an impulsive behaviour because substance use itself is impulsive in nature.

Therefore, individuals with high levels of impulsivity may be more likely to experiment with drugs or alcohol with binge drinking or experimenting with illicit substances and engage in risky behaviours without fully considering their potential risks or consequences. This may lead to a dual or bidirectional relationship where impulsivity contributes to an increased substance use while substance use itself further exacerbates impulsivity, leading to a cycle of impulsive behaviours and substance use. There are several underlying mechanisms that may help explain the association between impulsivity and substance use including neurobiological factors, such as dysfunction in brain regions related to impulse control and reward processing, psychological factors, such as sensation-seeking, poor decision-making skills, and difficulties in emotion regulation. Several studies have shown that increased impulsivity is a symptom exhibited by users of several drugs of abuse including alcohol, cocaine, and amphetamines (Poulton & Hester 2020; Bjork, et. al., 2004; Dom, et. al., 2006).

Locus of control is a frequently used variable of research since Rotter (1966) first introduced the concept in the field of substance use. It refers to an individual's belief about the extent to which they have control over the events and outcomes in their lives. Locus of control can be categorized into two types: internal locus of control and external locus of control. Internal Locus of Control is when individuals believe that they have control over their actions and the outcomes they experience thus tend to attribute their successes or failures to their own efforts and abilities. In contrast, individuals with an external locus of control believe that external forces, such as luck, fate, or powerful others, have a significant influence on their lives which may make them feel that they have little or no control over their actions and that outcomes are determined by external factors. This is thought to arise from associations between behaviour and reinforcers (Rotter, 1966), as first experienced in early life with the primary attachment figures (Feeney, 1995). However, Locus of control

may change across the lifespan; becoming more internal from adolescence, when parental and societal rules are internalized and the child's thinking becomes more abstract, hypothetical and critical. It becomes more relatively stable in adulthood and even until later adulthood. The relationship between locus of control and substance use has been examined in various research studies e. g. Pikó et al. (2011) and suggest that individuals with a stronger internal locus of control tend to have lower rates of substance use and are more likely to engage in healthier behaviours. They may feel more empowered to resist peer pressure, make informed decisions about substance use, and take responsibility for their choices. On the other hand, individuals with an external locus of control tend to be more likely to engage in risky behaviours, including drug consumption, as they believe that their actions have little impact on their outcomes, be more influenced by external factors such as social norms, environmental cues, or stressors. This can lead to a higher likelihood of engaging in substance use behaviours. Research suggests that individuals with a stronger internal locus of control may be more responsive to treatment interventions, as they may perceive themselves as having the ability to change their behaviours and make positive choices. On the other hand, individuals with a stronger external locus of control may require additional support and interventions that address external factors influencing their substance use (Lassi et al., 2019).

Although global research on impulsivity, locus of control and substance abuse is growing, there is limited empirical evidence from sub-Saharan Africa. Within Nigeria, studies on locus of control are growing more than work explicitly on impulsivity. Few studies have examined these variables in contextually differing areas other than clinical settings. Obindah & Okem (2023) found a significant relationship between external locus of control and aggression among secondary school students. Others have focused on other variables such as Risky Sexual behaviours (Ekundayo, 2021), assertiveness, internet addiction and mental health etc. Enwere & Afunugo (2024) reported that locus of control is a moderate predictor of psychological well-being of senior secondary school adolescents in Anambra State. Despite the numerous studies showing impulsivity and locus of control as strong risk factors in drug abuse, both as determinants and consequences, none of the studies have been carried out on a clinical

population involving substance abusers. The present study was therefore carried out to fill this gap in knowledge. Understanding the relationship between impulsivity, locus of control and substance use disorder in the Nigerian outpatient context is therefore critical. Such knowledge can inform interventions aimed at reducing problematic substance use, improving impaired decision making and self-efficacy and promoting healthier environments. These interventions will by and large help to reduce the epidemic of substance use disorder in the larger society thereby contributing to reducing the Global Burden of Disease (GBD).

Hypotheses

1. Age group will significantly predict substance use disorder among outpatient substance users in Lagos State.
2. Impulsivity will significantly predict substance use disorder among outpatient substance users in Lagos State.
3. Locus of control will significantly predict substance use disorder among outpatient substance users in Lagos.
4. Impulsivity and Locus of control will jointly predict substance use disorder among outpatient substance users in Lagos.

Method

A cross-sectional design was employed, and purposive sampling method was used to select 113 outpatients who were visiting the day clinics at the Federal Neuropsychiatric hospital Yaba, Lagos. There was no attempt to isolate or differentiate between the substances of abuse within the sample knowing that most people diagnosed with substance use disorders were multi-substance users. They were aged between 18 and 26 years with a mean age of 21.39 with SD of 1.91. The following instruments were used for this study:

The Drug Abuse Screening Test (DAST - 10) was developed by Skinner (1982) as a 10-item self-report instrument for assessing drug use and evaluating the severity of drug-related problems. It was designed to be a brief, self-report instrument for population screening, clinical case finding and treatment evaluation research and can be used with adults and young adults. The instructions read as: Drug use" refers to (1) the use of prescribed or over-the-counter

drugs in excess of the directions, and (2) any nonmedical use of drugs. The questions do not include alcoholic beverages, and the scale has a maximum score of 10 indicating severe problems, with 1 point for each question answered 'Yes' except for question 3 which is reverse scored. Examples of sample questions: "Do you use more than one drug at a time?" "Are you always able to stop using drugs when you want to?" The DAST-10 is for screening the various classes of drugs which may include cannabis (marijuana, hashish), solvents (e.g., paint thinner), tranquilizers (e.g., Valium), barbiturates, cocaine, stimulants (e.g., speed), hallucinogens (e.g., LSD) or narcotics (e.g., heroin). Yudko et.al. (2007) provided psychometric properties with high convergent validity of ($r=0.76$) when correlated with the Drug Use Disorders Identification Test (DUDIT) and a Cronbach alpha of 0.92 (Evren et.al., 2013). In addition, the DAST-10 had sensitivity and specificity scores of 0.98 and 0.91, respectively, when using the optimal cut-off score of 4. The DAST-10 yields a quantitative index of the degree of consequences related to drug abuse and takes approximately 8 minutes to administer. Opakunle et. al. (2022) adapted DAST-10 among Nigerian adolescents and obtained a Cronbach Alpha value of 0.79. Interpretation of the Scores is as follows: 0- No problems reported; 1-2 Low level- Monitor, reassess at a later date; 3-5 Moderate level -Further investigation; 6-8 Substantial level- Intensive assessment; and 9-10 Severe level- Intensive assessment.

Nowicki-Strickland Locus of Control Scale (N-SLCS) developed by Nowicki & Strickland, 1973. The scale is a 40-item self-report inventory designed to measure the internal and external locus of control of an individual and modified for use among young adults. A response format of Yes and No was used in the scale and higher score than the mean score indicates high locus of control. Sample item on the scale is "Do you believe that you can stop yourself from catching cold?" The items are scored directly by adding together the "yes" or the "no" responses that are correctly shaded. Higher scores indicate external locus of control, while lower scores indicate internal locus of control. The authors reported a six-week test-retest reliability coefficient of 0.63, 0.66, 0.71 for students respectively and a concurrent validity of 0.25 by correlating N-SLCS with Index of Self-Esteem (ISE). Afolabi and Akinmade (2013) also

obtained a Cronbach's alpha reliability coefficient of .57 among Nigerians, while Ndukaihe et al. (2018) obtained Cronbach's α reliability coefficient of .74.

The Barratt Impulsiveness Scale Revised (BIS-R-21) was developed by Kapitány-Fövény, et al. (2020). The BIS-R-21 is a revised and abbreviated version of the Barratt impulsiveness scale-11 (BIS-11, Patton, et al., 1995; Stanford et al., 2009). The scale provides a measure of trait-impulsivity in a self-report format that asks respondents to rate how often a series of statements apply to them. It has cumulative scores ranging from 30 (low in trait-impulsivity) to 120 (high in trait impulsivity) and has been shown to be reliable in both clinical and community samples. It has a Cronbach's alpha coefficient of from .79 to .83 (Patton et al., 1995). Idris and Ahmad (2019) adapted the instrument for use in Nigeria and reported an overall reliability index of $\alpha=0.830$ and validity value of $r=.76$ at 0.000 level of significance.

Procedure: First an application was made to the Federal Neuropsychiatric Hospital Yaba, management following the procedure for ethical approval to conduct the research. After due process was completed and permission gotten from the authorities, the data collection was embarked upon.

First an application was submitted to the authorities for ethical approval before permission was granted to carry out the study. Also, letters for informed consent were given out and signed by the participants. During the period of waiting for ethical approval, research assistants were recruited and introduced to the instruments to get acquainted with the nature and purpose of the instruments. All the research assistants were Post Graduate students of Psychology. The instruments were then put together and further approval obtained from the attending Psychiatrists and Psychologists who were on duty during the visits. The above listed instruments were printed, then stapled together and administered among the target population. The respondents were approached after their sessions with the doctors or psychologists and briefed on the research and its purpose while also seeking their consent with assured confidentiality and anonymity. A total of 150 questionnaires were administered, at the end of which only 113 (75% return rate) out of those retrieved were properly filled and found adequate for data analysis. Using the Statistical Package for Social Sciences (Version 26), descriptive and inferential statistics were employed to analyze the data. Pearson product-moment correlation and Multiple Regression analysis were computed to test the proposed hypotheses.

Results

Descriptive Statistics

Table 1: Showing study	Variables	Options	Frequency	Percentage (%)	Frequency the demographic characteristics of the participant
	Age	18-20 years	35	31.0	
		21-23 years	66	58.4	
		24-26 years	12	10.6	
		Total	113	100.0	
	Gender	Male	102	90.3	
		Female	11	9.7	
		Total	113	100.0	
	Academic Qualification	SSCE	24	21.2	
		OND	9	8.0	
		HND	16	14.2	
		BSC	57	50.4	
		Undergraduate	7	6.2	
		Total	113	100.0	

The descriptive statistics in Table 1 above show that participants were aged between 18 and 26 years. Furthermore, 35 of the participants (31%) fell between age bracket of 18-20 years; 66 belong to age bracket of 21-23 years (58.4%), and 12 fall between the age range of 24-26 years (10.6%). As regards gender, 102 (90.3%) were male, while only 11 (9.7%) were female. Based on academic qualification, 24 of them (21%) had O'Level (SSCE), 9 possessed National Diploma (ND 8%), 16 had Higher National Diploma (HND 14%) while 57 had bachelor's degrees (50.4%) and the remaining 7 were undergraduates (6%).

Table 2: Summary of Inter-Correlations Variables

Variables	Mean	SD	SUD	Age	IM	LC
Substance use disorder (SUD)	8.12	1.81	1.00			
Age	21.19	1.91	.768*	1.00		
Impulsivity (IM)	71.97	15.18	.433**	-.113	1.00	
Locus of control (LC)	16.32	5.35	.469**	.389	.125	1.00

** Correlation is significant at the 0.01 level (2-tailed).

The correlation result from Table 2 above shows a significant positive relationship ($r = 0.77$, $p < .01$) between age and substance use disorder. Hence, increases in age were associated with increases in substance use disorder scores. Also, a significant positive relationship ($r = 0.43$, $p < .01$) between impulsivity and substance use disorder. Hence, increases in impulsivity were associated with increases in substance use disorder scores. Meanwhile, there was a non-significant negative relationship ($r = -0.11$, $p > .05$) between impulsivity and age, meaning that while impulsivity increased, age decreased. Finally, the result showed a significant positive relationship ($r = 0.47$, $p < .01$) between locus of control and substance use disorder. As such, increases in locus of control scores were associated with increases in substance use disorder scores, meaning that the more external the locus of control the higher the probability of substance use disorder.

Table 3: Summary of Hierarchical Multiple Regression Predicting Substance Use Disorder

Model	Predictor	B	SE B	β	t	P
1	Age group	-.875	.333	-.242	-2.630	0.010
2	Age group	-.707	.305	-.196	-2.317	0.022
2	Impulsivity	.049	.010	.411	4.863	0.00
3	Age group	-.680	.270	-.188	-2.516	0.013
3	Impulsivity	.043	.009	.360	4.768	0.00
3	Locus of control	.141	.025	.418	5.577	0.00
4	Age group	-.663	.273	-.183	-2.429	0.017
4	Impulsivity	.044	.009	.371	4.752	0.00
4	Locus of control	.142	.025	.421	5.588	0.00
4	Impulsivity $\times$ Locus of control	.001	.002	.046	.597	0.552

The regression coefficient ($\beta = -.24$, $t = -2.63$, $p < .05$) in Model 1 showed that age group significantly predicted substance use disorder. This negative beta coefficient indicates that as age increased, substance use disorder scores decreased. This implies that younger participants reported significantly higher substance use disorder scores than older participants. Thus, the hypothesis that younger participants will significantly report a higher and more frequent use of substance than older participants is confirmed. Therefore, the first hypothesis was accepted.

In the second model, impulsivity was entered and significantly improved the model, accounting for an additional 16.7% of the variance in substance use disorder, $\Delta R^2 = .167$, F change = 23.645, $p < .001$. The regression coefficients in Model 2 showed that both age group ($\beta = -.196$, $t = -2.317$, $p < .05$) and impulsivity ($\beta = 4.863$, $p < .001$) significantly predicted substance use disorder. Therefore, the second hypothesis was accepted.

In the third model, locus of control was entered and further significantly improved the model, accounting for an additional 17.2% of the variance in substance use disorder, $\Delta R^2 = .172$, F change = 31.11, $p < .001$. Therefore, the third hypothesis was accepted.

In the fourth model, the interaction term between impulsivity and locus of control was entered. The result showed that the interaction term did not significantly improve the model, $\Delta R^2 = .002$, F change = .356, $p > .05$. Also, the interaction term did not significantly predict substance use disorder ($\beta = .05$, $t = 0.60$, $p > .05$). This indicates that although age group, impulsivity, and locus of control had significant predictive value for substance use disorder, the interaction between impulsivity and locus of control did not make a significant additional contribution to the prediction of substance use disorder. Therefore, the fourth hypothesis was rejected.

Table 4: Hierarchical Multiple Regression showing the predictive value of age group, impulsivity, locus of control, and impulsivity $\times$ locus of control on substance use disorder

Model	Predictors Entered	R	R ²	Adjusted R ²	ΔR^2	F Change	P
1	Age group	.242	.059	.050	.059	6.917	0.010
2	Age group, Impulsivity	.475	.225	.211	.167	23.645	0.00
3	Age group, Impulsivity, Locus of control	.630	.397	.381	.172	31.108	0.00
4	Age group, Impulsivity, Locus of control, Impulsivity $\times$ Locus of control	.632	.399	.377	.002	.356	0.552

A hierarchical multiple regression was performed to examine whether age group, impulsivity, locus of control, and the interaction between impulsivity and locus of control significantly predicted substance use disorder. In the first model, age group was entered as a predictor and significantly predicted substance use disorder, accounting for 5.9% of the variance, $R = .242$, $R^2 = .059$, Adjusted $R^2 = .050$, F change = 6.917, $p < .05$. In the second model, impulsivity was entered and significantly improved the model, accounting for an additional 16.7% of the variance in substance use disorder, $\Delta R^2 = .167$, F change = 23.645, $p < .001$. The third model, containing age group, impulsivity, and locus of control, explained 39.7% of the variance in substance use disorder, $R = .630$, $R^2 = .397$, Adjusted $R^2 = .381$, $F(3, 109) = 23.944$, $p < .001$. The regression coefficients in Model 3 showed that age group significantly predicted substance use disorder ($\beta = -.188$, $t = -2.516$, $p < .05$), impulsivity significantly predicted substance use disorder ($\beta = .360$, $t = 4.768$, $p < .001$), and locus of control significantly predicted substance use disorder ($\beta = .418$, $t = 5.577$, $p < .001$). This indicates that younger age group, higher impulsivity, and higher (external) locus of control significantly predicted higher substance use disorder scores.

Discussion

The present study investigated the relationship between locus of control, impulsivity and substance use disorder among a group of outpatients attending the substance use clinic at the Federal Neuropsychiatric Hospital, Yaba, Lagos. The sample had a predominance of males with only 11 females out of 113 patients in the study group. The proposed hypotheses were supported after the data was subjected to statistical analyses.

The research result showed that younger participants significantly reported a greater use of substance than older participants and were mostly diagnosed with substance use disorder than older participants. According to United States Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality (2014), early to late adolescence is a critical risk period for the initiation of substance use. This implies that age may be a contributing factor in the development or prevalence of substance use disorder. This relationship between age and substance use

disorder can vary depending on several factors, including the specific substances involved, cultural and societal influences, and individual differences. While it is true that certain substances may be more prevalent among younger individuals, the relationship between age and substance use disorder is complex and multifaceted. Other factors such as developmental problems, peer influences, stress and coping and accessibility to substances may play a role in the high rates of substance use disorder among young adults. Adolescence and early adulthood are periods of significant brain development and exploration, and individuals may be more susceptible to engaging in risk-taking behaviours, peer pressure and the desire to fit in with some social groups all of which can influence substance use patterns among younger individuals. The influence of friends and social networks with greater access to substances can contribute to both the initiation and maintenance of substance use. Also, young adults do face various stressors related to academic pressures, transition to adulthood, and identity formation. Substance use may thus be used as a maladaptive coping mechanism to deal with these stressors.

However, it is essential to recognize that substance use disorder can affect individuals of all ages, and there are significant individual differences within each age group. Factors such as genetic predisposition, family history, mental health conditions, and environmental influences also play a role in the development of substance use disorders.

The study also found a positive correlation between locus of control and substance use disorder. Locus of control refers to an individual's belief system regarding the causes of events in their lives and their control or lack thereof. Although it could be said that for people with substance use disorder, they attribute the reason for all their defeats and tendency to consume drugs and substances on external factors including family, friends, economic problems and issues of life and usually do not blame themselves. This finding agrees with the findings of Piko, Kovacs and Kriston (2011) who found that adolescents with high levels of substance use disorder tended to attribute the outcome of events in their lives to the influence of external factors, which is due to their inability to take responsibility for their actions. They concluded that behavioral control may play a particularly important role in prevention of adolescent substance use. This finding is also

consistent with the works of Fariba and Laila (2010), who examined locus of control (internal – external) on Narcotics Anonymous (N.A) and addicted people, in which they reported that drug-dependent individuals, given to drugs had more external locus of control, suggesting that they were likely to blame others for the outcome of their own actions. By understanding the role of locus of control in substance use, researchers and healthcare professionals can gain insights into the psychological factors that influence substance use behaviours. This knowledge can inform prevention efforts, treatment interventions, and the development of strategies to promote healthier behaviours and reduce substance use-related harms.

Another finding of the study was that a significant relationship existed between impulsivity and substance use disorder. In other words, participants with high level of impulsivity significantly reported higher levels of substance use disorder. In line with this study is the research of Jurado, et.al (2020) who conducted research on the relationship between impulsivity, sensation-seeking, and drug use in aggressors and victims of violence. The results showed that the aggressors had high levels of gratification, automatism, attentional factor, disinhibition, and susceptibility to boredom which they made up for by using alcohol and/or tobacco. According to Vassileva & Conrod, (2019), impulsivity is implicated in virtually all substance-related and addictive disorders and many other forms of psychopathology, which has caused an explosion of research in this area over the last two decades and its implications for treatment. A meta-analysis by Stautz and Cooper (2013) found that impulsivity is a significant risk factor for the development of substance use disorders, with a medium-to-large effect size. Also, Birkley and Smith (2011) reviewed the literature and concluded that impulsivity predicts the initiation, escalation, and relapse of substance use. This implies that individuals who are predisposed towards rapid, unplanned reactions to internal or external stimuli without regard to the negative consequences had a higher chance of drug abuse and addiction which in turn could result in substance use disorder. This is because they have a low tendency to delay gratification, thereby indulging in behavior without calculating the consequences. It's important to note that the relationship between impulsivity and substance abuse is complex and can vary greatly

between individuals. A comprehensive assessment and personalized treatment plan are essential for effectively addressing these interrelated issues.

Furthermore, the study showed that locus of control and impulsivity jointly predicted substance use disorder as hypothesized. In line with this finding, Patel, et. al., (2022) carried out a cross-sectional study on the relationship of alcohol use pattern with locus of control and impulsivity among hospitalized alcohol use patients in Western India. They concluded that external locus of control and impulsivity have a strong association with alcohol use. This implies that individuals with an external locus of control tend to exhibit higher levels of impulsiveness, as they feel less personal control over their actions and outcomes.

Recommendations and Conclusion

The influence of impulsivity on substance abuse suggests that interventions should target preventive actions through psychoeducation and cognitive inhibition training to help young people think through their actions and its consequences before embarking on them. There is a need for parents and significant others to be reorientated in parenting practices that focus on cognitive inhibition, affectionate relationships and communication that encourage delayed gratification to reduce impulsivity. Also, young people should learn to take responsibility for their actions from an early age and to look within themselves for outsiders or circumstances. Counsellors in schools are also agents through whom children can learn self-efficacy by focusing on what they can change because it is within them. Psychologists and counsellors can be consulted for approaches that aim to foster a more internal locus of control, such as cognitive-behavioral therapy, and motivational interviewing are beneficial when combined with impulsivity-focused strategies (e.g., mindfulness therapy, behaviour modification). It is also recommended that Policy makers and educationists to include learning outcomes and various forms of reinforcement to encourage children and adolescents to imbibe attributes of delayed gratification. The fact that participants of younger ages reported a higher level of substance use than older participants highlight the need for continued age-sensitive efforts to prevent and delay substance use initiation, not only among adolescents but also among younger children.

These findings also illustrate the importance of providing timely and appropriate treatment and support services for children and adolescents who have a substance use disorder because they are at increased risk for initiating multiple substances. The correlation between locus of control, impulsivity and substance use disorder implies that an individual may indulge in substance abuse because of the tendency to attribute outcome of events to external factors other than oneself or a personality associated with making quick and irrational decisions to satisfy immediate gratifications. Psychoeducation in schools, hospitals and other facilities is also needful since these factors might influence one's vulnerability to substance use disorder. In addition, close persons, family members, significant others or care providers need a reorientation on parenting that focuses on maintaining affectionate relationships and communication that encourages young folks to take responsibility for their actions from an early age.

Limitations

The present study was limited by being a cross-sectional design in addition to using a clinical population which resulted in an almost all-male sample, which may not be representative of the surrounding community. The study participants were predominantly younger people, and this makes it difficult for the findings to be generalized to the middle and old aged. Therefore, it is suggested that future research ensure generalizability of findings by recruiting older participants. Future research can use a broader array of independent variables and involve a qualitative and longitudinal study to explore additional details of the risk factors of substance use disorder.

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