



OPEN ACCESS
International Journal of Applied Research in Social Sciences
P-ISSN: 2706-9176, E-ISSN: 2706-9184
Volume 6, Issue 7, P.No. 1387-1402, July 2024
DOI: 10.51594/ijarss.v6i7.1299
Fair East Publishers
Journal Homepage: www.fepbl.com/index.php/ijarss



Causes and effects of crystal methamphetamine usage among undergraduates in public tertiary institutions in Anambra State: Emerging technological resources for intervention and prevention

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Article Received: 15-02-24

Accepted: 30-04-24

Published: 16-06-24

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ABSTRACT

This study investigated the causes and effects of crystal methamphetamine usage among undergraduates at public tertiary institutions in Anambra State. It examined its potential intervention and prevention strategies using emerging technological resources. The study was conducted using a descriptive survey research design. Three research questions guided the research. The researchers used two questionnaires to collect data, distributing 200 copies randomly among undergraduate students. The researchers designed the questionnaire and validated by experts specifically for this study. Respondents' personal information was analyzed

using percentages, while mean and standard deviation were used to analyze the research questions. The findings revealed among others, that there are reasons behind crystal methamphetamine use among students at public tertiary institutions in Anambra State, Awka, and this use negatively impacts their academic performance and health. The findings also revealed that mobile applications, online counselling platforms and social media campaigns are the emerging technological resources for intervention and prevention. Recommendations were made, including that families should take the lead in combating drug abuse by collaborating with community organizations like town unions should work on preventing the production, sale, and use of methamphetamine within and outside the university environments. It was further recommended that educational institutions like public tertiary institutions in Anambra State could leverage emerging technologies such as mobile applications, online platforms, and social media campaigns to disseminate information about the harmful effects of drug use and provide resources for prevention and intervention.

Keywords: Crystal Methamphetamine, Causes, Effects, Usage, Emerging, Technological Resources, Intervention, Prevention.

INTRODUCTION

Background

The use of crystal methamphetamine (meth) among undergraduates in tertiary institutions is a growing concern worldwide, including in Nigeria. Public tertiary institutions in Anambra State, Nigeria, are no exception to this trend. As such, understanding the causes and effects of methamphetamine use among undergraduates in this institution is crucial for designing effective intervention and prevention strategies. Crystal methamphetamine, commonly referred to as meth, is a powerful and highly addictive stimulant drug that affects the central nervous system. Its usage poses significant risks to individuals' physical and mental health. It is associated with a range of negative effects, including academic impairment, social dysfunction, and adverse health outcomes (Goyal & Kaur, 2023; Nwadike, Okwu, & Roger, 2024). Among undergraduate populations, the misuse of methamphetamine presents a particularly concerning issue, with potential long-term implications for academic success and overall well-being.

Methamphetamine, commonly known as crystal meth or meth, according to Azizi, Kheirandish, Dabiri, and Lakzaee (2023), is a powerful and highly addictive stimulant drug that affects the central nervous system. Its use has been associated with various physical, psychological, and social effects, including but not limited to increased heart rate, elevated blood pressure, paranoia, hallucinations, and risky sexual behaviour. Despite these risks, its popularity among young adults, including students in tertiary institutions, continues to rise. In Public tertiary institutions in Anambra State, several factors may contribute to the prevalence of methamphetamine use among undergraduates. Socio-economic factors, peer influence, academic stress, and curiosity are the potential causes that warrant investigation (Osunkwo, Agbapuonwu, & Odira, 2024). Understanding these underlying factors is essential for developing targeted interventions that address the root causes of substance abuse.

In Nigeria today, despite the efforts of the National Drugs Law Enforcement Agency (NDLEA) and other agencies, the issue of drug trafficking and abuse continues to grow. Reports by

NDLEA suggest that substance abuse has become widespread in many states in Nigeria. Many disappointed and marginalized youths turn to drug abuse to cope with problems like unemployment, broken homes, failed marriages, and family issues (Ezegwu, Nwokeocha, & Chukwuemeka; Umezu, 2023). Among those at risk, one out of four drug users in Nigeria is a woman, and eighty thousand users resort to injecting substances. Additionally, abandoned young boys and young women in marriages or other relationships suffer greatly from drug abuse in different parts of Nigeria. Moreover, the high crime rate in the country is closely tied to the increasing problem of substance abuse (Adams & Hafsat, 2023; Haladu, 2023).

Drug abuse, particularly methamphetamine use, among university students can have severe long-term health effects. According to Oliaku and Ikezue (2023), the misuse of substances like methamphetamine can lead to various serious health issues, especially when consumed in large quantities or combined with other substances. Firstly, the use of drugs or alcohol, including methamphetamine, can result in dehydration-induced seizures. This occurs when the body loses excessive amounts of water, leading to an imbalance in electrolytes and triggering seizures. Additionally, substance abuse can compromise the immune system, making individuals more susceptible to infections and other health complications.

Furthermore, the misuse of methamphetamine can induce psychotic behaviour, characterized by hallucinations, paranoia, and delusions. These symptoms can severely impair cognitive function and decision-making abilities, leading to risky behaviours and further exacerbating health risks. Serious cardiovascular conditions are also associated with methamphetamine use among students. These conditions may include heart attacks and collapsed veins, which can have life-threatening effects if not promptly addressed. Moreover, prolonged methamphetamine use can place excessive strain on the liver, potentially leading to liver overexertion or failure. This organ is crucial for detoxifying the body and metabolizing substances, and its impairment can result in a range of adverse health outcomes (Ray, Bonorden, Pandit, Nkhata, & Bishayee, 2023; Wijesinghe, Walsh, Stauffer, Hamler, & Sawh, 2023).

Beyond the immediate health effects of drug abuse, such as addiction and physical harm, there are broader implications that can affect various aspects of a student's life, including academic performance, social relationships, and prospects. The causes of drug abuse often intertwine with these broader implications. For instance, academic stress, pressure to succeed, or difficulty coping with academic challenges can contribute to drug abuse among students. Students may turn to drugs as a coping mechanism to alleviate stress or enhance academic performance, albeit temporarily (Zhou, Bambling, Bai, & Edirippulige, 2023). However, the use of drugs can impair cognitive function, memory, and concentration, ultimately hindering academic performance and jeopardizing prospects. In essence, the causes of drug abuse are multifaceted and interconnected with broader implications for academic performance, social relationships, and prospects (Nguyen et al., 2023).

Individuals with a history of mental health disorders are more prone to developing substance abuse issues compared to those without such a history (Faber, Khanna Roy, Michaels, & Williams, 2023; Hong, Queiroz, & Hoskin, 2023). Research suggests that 60% of adolescents undergoing treatment for substance abuse disorder also meet the criteria for other mental illnesses (Pender et al., 2023). It is common for individuals diagnosed with substance abuse

disorder also to receive diagnoses for other mental health conditions and vice versa (Hong et al., 2023). Experiencing elevated levels of stress, irrespective of its source, heightens susceptibility to substance abuse. Substance abuse can be viewed as an unhealthy coping mechanism for stress. Exposure to stressors during childhood or prolonged periods in life can trigger chemical changes in the brain, increasing the likelihood of developing addictive behaviours later on (Grabowska, Ziemichód, & Biała, 2023).

The environment plays a significant role in shaping an individual's lifestyle, choices, and preferences. Children and adolescents exposed to drug or alcohol abuse at home are more inclined to initiate substance use compared to those not exposed (Schwandt, 2023). This underscores how environmental factors influence behaviour. Additionally, various social and environmental factors contribute to addictive behaviour. Childhood trauma is strongly linked to adult substance dependency. Childhood, a critical period for brain development, witnesses the formation, modification, or discard of neural pathways in response to environmental stimuli. Events like experiencing abuse, neglect, parental loss, or having a family member with a mental or physical illness during childhood significantly elevate the risk of substance abuse disorders in adulthood (Copeland, Halvorson-Phelan, McGinnis, & Shanahan, 2023; Lawrence et al., 2023)

Also, peer pressure, especially among teens and adolescents, consistently influences the likelihood of developing substance dependency. Many individuals who develop substance dependencies were initially encouraged to use substances by their peers (Awoniyi, 2023). Supportive familial or spousal relationships play a crucial role in aiding substance abuse recovery and reducing the likelihood of developing mental illness or substance abuse disorders (Heiden-Rootes et al., 2023). This support can encompass emotional encouragement, practical assistance, and understanding from family members or partners, which can significantly contribute to an individual's overall well-being. In the context of emerging technological resources for tackling substance abuse issues among students, supportive familial or spousal relationships can be leveraged in several ways. Firstly, technology can facilitate communication and connection among family members, even if they are physically distant. Virtual support groups or online counselling sessions can provide a platform for family members to share experiences, seek advice, and offer encouragement to one another (Awoniyi, 2023; Heiden-Rootes et al., 2023).

Emerging technological resources present innovative opportunities for tackling substance abuse issues among university students. Mobile applications, online platforms, and virtual support networks offer avenues for delivering education, counselling, and support services in a format that resonates with digital-native populations (Monarque, Sabetti, & Ferrari, 2023). Leveraging these resources effectively can enhance outreach efforts, facilitate early intervention, and provide ongoing support to students struggling with substance abuse., technological tools such as mobile applications or web-based platforms can be utilized to provide educational resources and support materials for both individuals struggling with substance abuse and their family members. These resources may include information about addiction, coping strategies, and guidance on how to effectively support a loved one through recovery. Additionally, emerging technologies such as telemedicine and online therapy platforms offer convenient and accessible avenues for individuals to receive professional support and counselling services. Family therapy sessions

conducted virtually can help improve communication, resolve conflicts, and strengthen familial bonds, all essential components of a supportive environment conducive to recovery (Dave, Jaffe, & O'Shea, 2024).

Furthermore, technological innovations in monitoring and tracking behaviours, such as wearable devices or smartphone applications, can provide valuable insights into an individual's progress in recovery. Family members can use these tools to monitor adherence to treatment plans, track mood fluctuations, and provide timely intervention or support when necessary. Clinical collaboration between technology developers and mental healthcare providers is essential for successfully integrating technology into therapy (Fabbrizio et al., 2023; Roos & Slavich, 2023). By working together, mental healthcare providers and technology developers can ensure that digital mental health tools complement traditional therapy methods, support care continuity, and optimize treatment outcomes, especially for students engaging in the use and abuse of crystal methamphetamine.

Statement of the Problem

The misuse of crystal methamphetamine among undergraduates poses a significant concern for public health and academic institutions. Despite increasing awareness of its harmful effects, there remains a lack of comprehensive understanding regarding the causes and effects of crystal methamphetamine usage among undergraduates at public tertiary institutions in Anambra State. Additionally, there is a need to explore the potential of emerging technological resources for intervention and prevention strategies in addressing this issue.

Purpose of the Study

The main purpose of the study is to determine the causes and effects of crystal methamphetamine usage among undergraduates in public tertiary institutions in Anambra State and the emerging technological resources for intervention and prevention. Specifically, the study sought to examine:

- a) Causes of crystal methamphetamine usage among students in public tertiary institutions in Anambra State.
- b) Effects of crystal methamphetamine usage among students in public tertiary institutions in Anambra State. Utilization of emerging technological resources for intervention and prevention of crystal methamphetamine usage among students in public tertiary institutions in Anambra State.

Research Questions

The following research questions guided the study.

- a) What are the primary causes of crystal methamphetamine usage among students in public tertiary institutions in Anambra State?
- b) What are the effects of crystal methamphetamine usage on the health and well-being of students in public tertiary institutions in Anambra State?
- c) How can emerging technological resources be effectively utilized for intervention and prevention of crystal methamphetamine usage among students in public tertiary institutions in Anambra State?

MATERIALS AND METHODS

Study Design and Participants

This study used a descriptive survey design to investigate the topic. The study population comprised 79,100 undergraduate students from all nine tertiary institutions in Anambra State. A sample size of 791 undergraduate students (357 males and 434 females) was selected using disproportionately stratified random sampling. The institutions were categorized based on their type: university, college of education, and polytechnic. From each type, three faculties/schools were randomly selected using simple random sampling, resulting in nine faculties/schools. Then, three departments were randomly chosen from each of the nine faculties/schools, leading to 27 departments. From each department, 30 students were randomly selected to participate in the study.

Description of the Study Area

The research was conducted in Anambra State, one of the five states in Nigeria's South-East geopolitical zone. The state comprises 21 Local Government Areas and has nine tertiary institutions. Anambra State, located in the South-East geopolitical zone of Nigeria, serves as a compelling area of study. Anambra State has a diverse socio-cultural landscape, vibrant urban centres, and a sizable population of young people pursuing higher education in its public tertiary institutions. The state boasts of public tertiary institutions, including universities, colleges of education, and polytechnics, providing a diverse and representative sample of undergraduate students for research purposes. With a total student population of approximately 79,100 across these institutions, Anambra State offers a significant demographic pool for studying substance abuse trends among undergraduates. Furthermore, Anambra State presents unique socio-cultural factors that may contribute to the prevalence of crystal methamphetamine usage among students.

Data Collection Tools and Procedure

The data collection instruments used in this study were the "Causes and Effects of Crystal Methamphetamine Usage Questionnaire" (CECMUQ) and the "Emerging Technological Resources for Intervention and Prevention Questionnaire." (ETRIPQ). These instruments underwent validation by three experts. Each questionnaire comprised two parts. Part 1 solicited demographic information from respondents, including institution, age, and gender. Part 2 contained the actual questionnaires on causes and effects of crystal methamphetamine usage with ten items and the Emerging Technological Resources for Intervention and Prevention Questionnaire with ten items. The reliability of the instruments was assessed using the split-half method, yielding a reliability index of 0.801 for CECMUQ and 0.76 for ETRIPQ. The researcher distributed copies of the instruments to participants with the assistance of six research assistants.

Data Analysis

Analyzing the respondents' responses, their answers were tallied, and means were calculated. This means that all the individual scores given by respondents were added together and then divided by the total number of respondents to find the average score. Once the mean score for each response was determined, a threshold was established to evaluate whether the responses were acceptable. In this case, if the mean score for a particular response fell below 2.50, it was deemed unacceptable. Conversely, it was considered acceptable if the mean score was above 2.50. This approach provides a straightforward method for interpreting the data. Responses with mean scores below 2.50 indicate a negative or unfavourable perception. In contrast, those with mean scores above 2.50 reflect a positive or favourable perception.

RESULTS

Research Question 1

What are the primary causes of crystal methamphetamine usage among students in public tertiary institutions in Anambra State?

Table 1 revealed the primary causes driving crystal methamphetamine usage among students in public tertiary institutions in Anambra State. The responses reveal a spectrum of motivations behind the substance's use among students. Coping with stress and peer influence are prominent factors, along with a belief in enhancing academic/work performance. Curiosity, emotional escape, and the pursuit of alertness also drive usage. Some view it as self-medication for mental health, while accessibility and media/cultural influence contribute to initiation.

Table 1

Analysis Showing the Causes of Crystal Methamphetamine Usage among Undergraduate students in Public Tertiary Institutions

S/N	ITEMS	Mean	S.D	Decision
1	I use crystal methamphetamine as a way to cope with stress in my life.	3.34	1.22	Agree
2	I started using crystal methamphetamine because I wanted to fit in with my peers.	3.34	1.34	Agree
3	I use crystal methamphetamine to enhance my academic or work performance.	3.55	1.35	Agree
4	I began using crystal methamphetamine due to curiosity or experimentation.	2.87	1.17	Agree
5	I use crystal methamphetamine to escape from problems or negative emotions.	3.29	0.95	Agree
6	Peer pressure influenced my decision to start using crystal methamphetamine.	2.78	1.06	Agree
7	I use crystal methamphetamine because it helps me stay awake or alert for longer periods.	2.84	1.07	Agree
8	I use crystal methamphetamine as a form of self-medication for mental health issues.	2.92	1.05	Agree
9	I started using crystal methamphetamine because of easy access or availability.	2.89	1.10	Agree
10	I use crystal methamphetamine because of the influence from media portrayals or cultural norms.	3.57	1.34	Agree

Source: Field survey 2024.

Research Question 2

What are the effects of crystal methamphetamine usage on the health and well-being of students in public tertiary institutions in Anambra State?

Table 2 revealed that all the questionnaire items were above the mean decision rule of 2.50, this indicates that the effects of crystal methamphetamine usage on the health and well-being of students in public tertiary institutions in Anambra State can be harmful. The study revealed the harmful effects of crystal methamphetamine usage on various aspects of individuals' lives. Participants reported likely negative impacts of crystal methamphetamine usage on physical health, including cardiovascular issues and dental decay. Psychological distress, such as anxiety and depression, was also common among users. Academic performance declined due to impaired cognitive function and disrupted sleep patterns. Mental well-being deteriorated, leading to mood swings and irritability. Relationships suffered as a result of the drug's addictive nature, often causing conflicts and isolation. Financial difficulties arose from the cost of obtaining the drug and the potential loss of income. Changes in eating and sleeping patterns were observed, further affecting overall well-being. Physical withdrawal symptoms made cessation challenging, while risky behaviours, such as criminal activity and unsafe sexual practices, posed additional risks. Finally, social isolation and withdrawal were prevalent due to stigma and changes in behaviour.

Table 2

Mean Score Analysis Showing the Effects of Crystal Methamphetamine Usage on the Health and Well-Being of Students in Public Tertiary Institutions

S/N	ITEMS	Mean	S.D	Rank	Decision
1	Crystal methamphetamine usage has negatively impacted people's physical health.	3.23	1.22	4	Agree
2	People have experienced psychological distress as a result of crystal methamphetamine usage.	3.26	1.34	3	Agree
3	Crystal methamphetamine usage has led to a deterioration in people's academic performance.	3.53	1.35	1	Agree
4	I have noticed a decline in my mental well-being due to crystal methamphetamine usage.	3.09	1.31	6	Agree
5	Crystal methamphetamine usage has negatively affected people's relationships with family and friends.	3.40	1.35	2	Agree
6	I have seen people experience financial difficulties as a result of crystal methamphetamine usage.	2.66	1.16	9	Agree
7	Crystal methamphetamine usage has led to changes in my eating and sleeping patterns.	2.95	1.04	7	Agree
8	I have experienced physical withdrawal symptoms when attempting to stop or reduce crystal methamphetamine usage.	2.89	1.10	8	Agree
9	Crystal methamphetamine usage has caused me to engage in dangerous behaviours.	3.40	0.83	2	Agree
10	I have experienced social isolation or withdrawal as a result of crystal methamphetamine usage.	3.10	0.99	5	Agree

Source: Field survey 2024.

Research Question 3

How can emerging technological resources be effectively utilized for intervention and prevention of crystal methamphetamine usage among students in public tertiary institutions in Anambra State?

Table 3

Mean Score Analysis Showing how emerging technological resources can be effectively utilized for intervention and prevention of crystal methamphetamine usage among students in public tertiary institutions

S/N	ITEMS	Mean	S.D	Decision
1	I believe that mobile applications can provide valuable information and resources for educating students about the risks of crystal methamphetamine usage.	3.23	1.22	Agree
2	Online platforms, such as websites or social media, can be effective channels for promoting awareness campaigns and prevention programs targeting crystal methamphetamine usage among students.	3.26	1.34	Agree
3	Telemedicine services, such as online counselling or therapy sessions, can offer accessible support and guidance to students struggling with crystal methamphetamine addiction.	3.53	1.35	Agree
4	Wearable devices, such as fitness trackers or smartwatches, could be utilized to monitor physical health indicators and detect potential signs of crystal methamphetamine usage among students.	3.09	1.31	Agree
5	Mobile-based interventions, such as text message reminders or notifications, can help students stay motivated and engaged in substance abuse prevention programs.	3.40	1.35	Agree
6	Virtual reality (VR) technology could be employed to simulate real-life scenarios and consequences of crystal methamphetamine usage, promoting empathy and understanding among students.	2.66	1.16	Agree
7	Online support groups or forums can provide a safe and anonymous space for students to share their experiences, seek advice, and offer support to one another in overcoming crystal methamphetamine addiction.	2.95	1.04	Agree
8	Educational webinars or online workshops conducted by experts in the field of substance abuse prevention can enhance students' knowledge and skills in recognizing and addressing crystal methamphetamine usage.	2.89	1.10	Agree
9	Gamification techniques, such as reward systems or challenges integrated into mobile applications, can incentivize students to participate in prevention efforts and adopt healthier behaviours actively.	2.40	0.83	Agree
10	Collaborative platforms, such as online databases or shared repositories, can facilitate the exchange of best practices and resources among educators, healthcare professionals, and policymakers working on crystal methamphetamine prevention initiatives.	3.10	0.99	Agree

Source: Field Survey 2024.

The findings of the study, as shown in Table 3, revealed the potential of emerging technological resources in combating crystal methamphetamine usage among students. Mobile applications offer a promising avenue for providing educational content and raising awareness about the risks associated with the drug. Online platforms, including websites and social media, effectively disseminate prevention programs and engage students in dialogue. Telemedicine services provide accessible support for students struggling with addiction. At the same time, wearable devices enable early detection of substance usage through health monitoring. Mobile-based interventions, such as text message reminders, encourage participation in prevention efforts, and virtual reality technology promotes empathy and understanding of substance abuse consequences. Online support groups offer peer support, while educational webinars enhance students' knowledge of prevention strategies. Collaborative platforms facilitate knowledge

exchange among stakeholders, fostering collective action against substance abuse. These findings highlight the importance of leveraging technology to address the complex challenges of substance abuse prevention among students.

DISCUSSION

Causes of Crystal Methamphetamine Usage among Students in Public Tertiary Institutions

The study's findings reveal a spectrum of causes behind substance use among students. Coping with stress and peer influence are prominent factors, along with a belief in enhancing academic/work performance. Curiosity, emotional escape, and the pursuit of alertness also drive usage. Some view it as self-medication for mental health, while accessibility and media/cultural influence contribute to the initiation.

The findings are in agreement with previous research on substance abuse and addiction. Firstly, coping with stress emerges as a prevalent motive, which is consistent with studies like Zeng and Wei (2023), which noted that individuals with a history of mental health disorders are more prone to substance abuse as a coping mechanism. Similarly, Nelsen, Kayaalp, and Page (2023) highlighted that elevated stress levels increase susceptibility to substance abuse, supporting the idea of substance use as a maladaptive coping mechanism. Secondly, peer influence plays a significant role in initiating crystal methamphetamine usage, echoing the findings of various studies on peer pressure and substance abuse. Social dynamics and the desire to fit in with peers can strongly influence individuals' decisions to start using drugs (Sibley et al., 2023).

Furthermore, the belief that crystal methamphetamine enhances academic or work performance reflects a common misconception among substance users, as noted in previous studies (Okonkwo, Okonkwo, Onyemaechi, Okpaleke, & Nwankwo, 2023). This belief may stem from the perceived effects of the drug on cognitive function and energy levels. Curiosity and experimentation, emotional escape, and the pursuit of alertness are additional motives identified in the study, which are consistent with the multifaceted nature of substance use. These findings are supported by existing literature on the various reasons individuals may initiate drug use (Okonkwo et al., 2023; Scott, 2023). Moreover, the study highlights the role of self-medication for mental health issues, accessibility, and media/cultural influence in driving crystal methamphetamine usage, which resonates with previous research on the environmental and societal factors contributing to substance abuse. These findings emphasize the importance of comprehensive intervention strategies that address the multifaceted nature of substance abuse and addiction (Volkow & Blanco, 2023). By understanding the various motivations behind drug use, policymakers and healthcare professionals can develop targeted interventions to prevent and address substance abuse effectively.

Effects of Crystal Methamphetamine Usage on the Health and Well-Being of Students in Public Tertiary Institutions

The findings of the study align with previous research on substance abuse and addiction. Firstly, the study highlights the negative impacts on physical health, including cardiovascular issues and dental decay, which is consistent with the findings of Kalaiyani (2023). This aligns with the Substance Abuse and Mental Health Services Administration, which noted that

methamphetamine usage can lead to various physical health problems (Patil, Hosmani, Bommanavar, Alshahrani, & Khan, 2024).

Secondly, the study identifies psychological distress among users, such as anxiety and depression, which is in line with the observations of Duncan et al. (2024) regarding the serious mental health implications of substance misuse. Moreover, the study's findings on the decline in academic performance due to impaired cognitive function resonate with previous research indicating the detrimental effects of substance abuse on cognitive abilities (Thoradeniya, 2024). Furthermore, the study underscores the deterioration in mental well-being and relationships among users, which corroborates the findings of Isabel and Felipe (2023) on the negative impact of substance misuse on individuals' overall well-being and social interactions. Additionally, the study's observations on financial difficulties and changes in eating and sleeping patterns are consistent with existing literature on the socio-economic consequences and behavioural changes associated with substance abuse (Rastegari, Haghdoost, Baneshi, Azizian, & Mehrolhassani, 2023). Moreover, the findings align with previous research highlighting the challenges of cessation and the heightened risk of engaging in dangerous activities among substance users (Stewart, Copeland, & Cherry, 2023). Thus, the findings of the study provide valuable insights into the multifaceted impacts of crystal methamphetamine usage on individuals' lives, encompassing physical, psychological, social, and behavioural dimensions.

Emerging Technological Resources Being Effectively Utilized for Intervention and Prevention of Crystal Methamphetamine Usage among Students in Public Tertiary Institutions

The findings of the study revealed the potential of emerging technological resources in combating crystal methamphetamine usage among students. Mobile applications offer a promising avenue for providing educational content and raising awareness about the risks associated with the drug. Online platforms, including websites and social media, effectively disseminate prevention programs and engage students in dialogue. Telemedicine services provide accessible support for students struggling with addiction. At the same time, wearable devices enable early detection of substance usage through health monitoring. Mobile-based interventions, such as text message reminders, encourage participation in prevention efforts, and virtual reality technology promotes empathy and understanding of substance abuse consequences. Online support groups offer peer support, while educational webinars enhance students' knowledge of prevention strategies. Collaborative platforms facilitate knowledge exchange among stakeholders, fostering collective action against substance abuse. These findings highlight the importance of leveraging technology to address the complex challenges of substance abuse prevention among students.

The findings of the study are supported by previous research in the field. Firstly, mobile applications have been recognized as effective tools for delivering educational content and raising awareness about substance abuse, as noted by Monarque et al. (2023). These applications offer a user-friendly platform for disseminating information and engaging students in prevention efforts. Secondly, online platforms, including websites and social media, have been identified as valuable channels for delivering prevention programs and facilitating dialogue about substance abuse, which aligns with the findings of (McKinley et al., 2023). These platforms provide

accessible resources and support materials for individuals struggling with addiction and their families, enhancing outreach efforts and promoting early intervention (Subramaniam et al., 2023).

Moreover, telemedicine services offer convenient access to support for students grappling with substance abuse, as highlighted by Lin et al. (2023). These services provide counselling and guidance in a format that resonates with digital-native populations, bridging geographical barriers and increasing the reach of intervention efforts. Additionally, wearable devices enable early detection of substance usage through health monitoring, as Kazanskiy, Khonina, and Butt (2024) suggested. These technological innovations offer insights into individuals' progress in recovery and provide valuable data for healthcare professionals and educators working on substance abuse prevention initiatives. These interventions promote student engagement and motivation, fostering a sense of accountability and commitment to healthier behaviours. Virtual reality technology has also emerged as a promising tool for promoting empathy and understanding of substance abuse consequences, which aligns with the current study's findings. By immersing individuals in simulated environments, virtual reality experiences offer a unique perspective on the impact of substance abuse, enhancing empathy and awareness among users.

CONCLUSION AND RECOMMENDATIONS

Conclusion

In conclusion, this study provides valuable insights into the causes, effects, and potential interventions related to crystal methamphetamine usage among students in public tertiary institutions in Anambra State. The findings reveal a multidimensional spectrum of motivations driving substance use, including coping with stress, peer influence, and the belief in enhancing academic or work performance. Additionally, curiosity, emotional escape, and accessibility contribute to initiation. These diverse motivations emphasize the complex nature of substance abuse among students and highlight the need for comprehensive intervention strategies.

Furthermore, the study sheds light on the detrimental effects of crystal methamphetamine usage on various aspects of individuals' lives. Participants reported negative impacts on physical health, psychological well-being, academic performance, relationships, and overall lifestyle. These findings underscore the urgent need for targeted prevention and intervention efforts to address the harmful consequences of substance abuse among students. Moreover, the study reveals the potential of emerging technological resources in combating crystal methamphetamine usage among students. Mobile applications, online platforms, telemedicine services, wearable devices, and virtual reality technology offer promising avenues for raising awareness, supporting, and facilitating dialogue about substance abuse prevention. These technological innovations present valuable tools for enhancing outreach efforts, promoting early intervention, and fostering collective action against substance abuse.

Recommendations

Based on the findings of the study, the following recommendations were made:

- a) In collaboration with relevant government agencies and non-profit organizations specializing in substance abuse prevention, educational institutions should lead the development and implementation of educational initiatives. They should involve educators, counsellors, and

experts in substance abuse prevention to ensure that the programs are comprehensive and effective.

- b) Educational institutions and healthcare organizations should work closely with mental health professionals and addiction specialists to enhance support systems and interventions. They should allocate resources to establish telemedicine services, online support groups, and counselling centres on campus. Healthcare organizations should provide trained professionals to deliver counselling and therapy sessions and ensure these services are accessible to students.
- c) Educational institutions should collaborate with technology experts and developers to utilize emerging technological resources. They should develop partnerships with tech companies or startups specializing in healthcare technology to create mobile applications, online platforms, and wearable devices tailored to address substance abuse prevention among students. These initiatives should be supported by funding from government agencies and private organizations.
- d) Government agencies, educational institutions, healthcare organizations, policymakers, and community organizations. Government agencies should facilitate the establishment of collaborative platforms and initiatives to address substance abuse prevention among students. Educational institutions, healthcare organizations, policymakers, and community organizations should actively participate in these collaborations. Regular meetings, workshops, and conferences should be organized to promote knowledge exchange and collaboration among stakeholders.

References

- Adams, A. K., & Hafsat, K. D. (2023). Assessing the nature and trends of commonly abuse substance and crime among youths in Nigeria. *Jalingo Journal of Social And Management Sciences*, 5(1), 210-218.
- Awoniyi, O. (2023). Influence of culture on adolescents' indulgence in substance abuse: an examination of traditional Nigerian contexts. *International Journal of Human Kinetics, Health and Education*, 8(2).
- Azizi, S., Kheirandish, R., Dabiri, S., & Lakzaee, M. (2023). Adverse effects of methamphetamine on vital organs of male rats: Histopathological and immunohistochemical investigations. *Iranian Journal of Basic Medical Sciences*, 26(5), 549.
- Copeland, W. E., Halvorson-Phelan, J., McGinnis, E., & Shanahan, L. (2023). Adult mental health, substance use disorders, and functional outcomes of children resilient to early adversity. *American Journal of Psychiatry*, 180(12), 906-913.
- Dave, S., Jaffe, M., & O'Shea, D. (2024). Navigating college campuses: The impact of stress on mental health and substance use in the post COVID-19 era. *Current Problems in Pediatric and Adolescent Health Care*, 101585.
- Duncan, Z., Kippen, R., Sutton, K., Ward, B., Quinn, B., & Dietze, P. (2024). Health service use for mental health reasons in a cohort of people who use methamphetamine experiencing

- moderate to severe anxiety or depression. *International Journal of Mental Health and Addiction*, 22(1), 543-559.
- Ezegwu, D. T., Nwokeocha, M. I., & Chukwuemeka, N. G. Newspapers Framing Of National Drug Law Enforcement Agency (Ndlea) Activities In Nigeria.
- Fabbrizio, A., Fucarino, A., Cantoia, M., De Giorgio, A., Garrido, N. D., Iuliano, E., . . . Zimatore, G. (2023). *Smart devices for health and wellness applied to tele-exercise: an overview of new trends and technologies such as IoT and AI*. Paper presented at the Healthcare.
- Faber, S. C., Khanna Roy, A., Michaels, T. I., & Williams, M. T. (2023). The weaponization of medicine: Early psychosis in the Black community and the need for racially informed mental healthcare. *Frontiers in Psychiatry*, 14, 1098292.
- Goyal, N., & Kaur, G. (2023). *Crystal meth abuse: A pretty state of affairs*. Paper presented at the AIP Conference Proceedings.
- Grabowska, K., Ziemichód, W., & Biała, G. (2023). Recent studies on the development of nicotine abuse and behavioral changes induced by chronic stress depending on gender. *Brain Sciences*, 13(1), 121.
- Haladu, A. (2023). Causes and consequences of substance abuse in Nigeria: a review. *Billiri Journal of Multidisciplinary Research*, 1(1), 86-93.
- Heiden-Rootes, K., Meyer, D., Mancini, M., Ferber, M., Eikenberry, J., Wang, W., . . . Karrir, S. (2023). Helping families heal in substance use treatment: A qualitative study about the role of peer support specialists with client families. *Journal of Substance Use and Addiction Treatment*, 148, 209024.
- Hong, C., Queiroz, A., & Hoskin, J. (2023). The impact of the COVID-19 pandemic on mental health, associated factors and coping strategies in people living with HIV: a scoping review. *African Journal of Reproduction and Gynaecological Endoscopy*, 26(3), e26060.
- Isabel, P. G. S.-S., & Felipe, M. V. (2023). Psychological well-being as correlates to relapse risk among people with stimulant use disorders: basis for after-care program. *Psychology and Education: A Multidisciplinary Journal*, 13(2), 176-199.
- Kalaivani, M. (2023). Methamphetamine substance abuse and Dental Considerations: a modern era crisis. *Korean Journal of Physiology and Pharmacology*, 27(3).
- Kazanskiy, N. L., Khonina, S. N., & Butt, M. A. (2024). A review on flexible wearables-Recent developments in non-invasive continuous health monitoring. *Sensors and Actuators A: Physical*, 114993.
- Lawrence, D. M., Hunt, A., Mathews, B., Haslam, D. M., Malacova, E., Dunne, M. P., . . . Pacella, R. (2023). The association between child maltreatment and health risk behaviours and conditions throughout life in the Australian Child Maltreatment Study. *Medical Journal of Australia*, 218, S34-S39.
- Lin, C., Pham, H., Zhu, Y., Clingan, S. E., Lin, L. A., Murphy, S. M., . . . Mooney, L. J. (2023). Telemedicine along the cascade of care for substance use disorders during the COVID-19 pandemic in the United States. *Drug and Alcohol Dependence*, 242, 109711.
- McKinley, C. E., Lilly, J., Liddell, J. L., Knipp, H., Solomon, T. A., Comby, N., . . . Goldberg, M. (2023). Developing the Weaving Healthy Families Program to promote wellness and

- prevent substance abuse and violence: approach, adaptation, and implementation. *Families in Society*, 104(3), 245-261.
- Monarque, M., Sabetti, J., & Ferrari, M. (2023). Digital interventions for substance use disorders in young people: rapid review. *Substance Abuse Treatment, Prevention, and Policy*, 18(1), 13.
- Nelsen, S. K., Kayaalp, A., & Page, K. J. (2023). Perfectionism, substance use, and mental health in college students: a longitudinal analysis. *Journal of American College Health*, 71(1), 257-265.
- Nguyen, T., Pu, C., Waits, A., Tran, T. D., Ngo, T. H., Huynh, Q. T. V., & Huang, S.-L. (2023). Transforming stress program on medical students' stress mindset and coping strategies: a quasi-experimental study. *BMC Medical Education*, 23(1), 587.
- Nwadike, I. S., Okwu, F. B., & Roger, S. (2024). Managing abuse of hard drugs/methamphetamine (mkpuru mmiri) and its effect on mental health of university students in Nigeria. *Journal of Education in Developing Areas*, 31(4), 313-322.
- Okonkwo, C. O., Okonkwo, C. O., Onyemaechi, C., Okpaleke, U. V., & Nwankwo, E. A. (2023). Predictive impact of ego-identity on mkpuru mmiri (Methamphetamine) use among youths in Okpoko, Ogbaru local government area, anambra state, Nigeria. *Journal of Psychology and Behavioural Disciplines*, Coou, 2(3).
- Oliaku, C., & Ikezue, C. E. (2023). Causes, consequences and control of methamphetamine abuse among youths in Nigeria. *Nigerian Journal of Arts and Humanities (NJAH)*, 3(1).
- Osunkwo, A. C., Agbapuonwu, N. E., & Odira, C. C. (2024). Academic self-efficacy and substance use among undergraduate students of Nnamdi Azikiwe University, Awka, Anambra State.
- Patil, S., Hosmani, J., Bommanavar, S., Alshahrani, A. Y., & Khan, S. (2024). Meth mouth and its dental implications: a scoping review on toothless tale phenomena. *World*, 15(3), 271.
- Pender, E., Kostak, L., Sutton, K., Naccarato, C., Tsai, A., Chung, T., & Daughters, S. (2023). Resources for the assessment and treatment of Substance Use Disorder in adolescents. *WikiJournal of Medicine*, 10(1), 1-25.
- Rastegari, A., Haghdoost, A. A., Baneshi, M. R., Azizian, M., & Mehroolhassani, M. H. (2023). Identifying the Factors Affecting Methamphetamine Use: A Scoping Review. *Medical Journal of the Islamic Republic of Iran*, 37.
- Ray, A., Bonorden, M. J., Pandit, R., Nkhata, K. J., & Bishayee, A. (2023). Infections and immunity: associations with obesity and related metabolic disorders. *Journal of Pathology and Translational Medicine*, 57(1), 28-42.
- Roos, L. G., & Slavich, G. M. (2023). Wearable technologies for health research: Opportunities, limitations, and practical and conceptual considerations. *Brain, Behavior, and Immunity*, 113, 444-452.
- Schwandt, M. (2023). Early life adversity as a risk factor for alcohol use disorder. In *Alcohol and Alcohol-related Diseases* (pp. 643-663): Springer.
- Scott, R. (2023). Methamphetamine dependence in Australia—why is 'ice'(crystal meth) so addictive? *Psychiatry, Psychology and Law*, 1-34.

- Sibley, A. L., Baker, R., Levander, X. A., Rains, A., Walters, S. M., Nolte, K., . . . Bianchet, E. (2023). "I am not a junkie": Social categorization and differentiation among people who use drugs. *International Journal of Drug Policy*, *114*, 103999.
- Stewart, S. A., Copeland, A. L., & Cherry, K. E. (2023). Risk factors for substance use across the lifespan. *The Journal of Genetic Psychology*, *184*(2), 145-162.
- Subramaniam, G. A., Nolan, L., Huntley, K., Corbin, M., Crenshaw, K., Mandell, T., . . . Blackeney, Q. (2023). National institute on drug abuse: Dissemination of scientific knowledge to improve adolescent health. *Child and Adolescent Psychiatric Clinics of North America*, *32*(1), 157-167.
- Thoradeniya, M. (2024). Investigating mental health outcomes in young adults using ecstasy and methamphetamine: analysis of a seven-year longitudinal study.
- Umezu, E. M. (2023). National Drug Law Enforcement Agency (Ndlea) activities and control of illicit drugs consumption in Imo State. *Emerald International Journal of Scientific and Contemporary Studies*, *5*(1), 73-91.
- Volkow, N. D., & Blanco, C. (2023). Substance use disorders: a comprehensive update of classification, epidemiology, neurobiology, clinical aspects, treatment and prevention. *World Psychiatry*, *22*(2), 203-229.
- Wijesinghe, S., Walsh, A., Stauffer, J., Hamler, N., & Sawh, O. (2023). Intersection of emerging infectious diseases and substance use disorder: emerging trends, epidemiology, human immunodeficiency virus, hepatitis. *Physician Assistant Clinics*, *8*(3), 593-612.
- Zeng, X., & Wei, B. (2023). The relationship between the psychological capital of male individuals with drug abuse and relapse tendency: A moderated mediation model. *Current Psychology*, *42*(12), 10334-10343.
- Zhou, X., Bambling, M., Bai, X., & Edirippulige, S. (2023). Chinese school adolescents' stress experience and coping strategies: a qualitative study. *BMC Psychology*, *11*(1), 91.