



GENDER DIFFERENTIALS IN THE UTILIZATION OF METHAMPHETAMINE AND PERCEIVED HEALTH EFFECTS AMONG SECONDARY SCHOOL ADOLESCENTS IN EBONYI STATE, NIGERIA

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Abstract:

Background: Methamphetamine use has caused serious public health issues globally. Despite the drug's widespread impact, little research has been conducted among vulnerable groups. This study therefore explored **the** utilization of Methamphetamine and perceived health effects among Secondary School adolescents in Ebonyi State. **Methods:** A descriptive survey design was used to study 400 participants. Utilization of Methamphetamine ($r=0.84$) and Perceived Associated Health Implications ($r=0.90$) were used for data collection. Of the 400 copies of the questionnaire distributed, 392 copies (98% return rate) were used for data analysis. Data were analyzed using descriptive statistics, standard deviations, Gamma, t-test and linear regression statistics. **Results:** The results showed that public secondary school students in Abakaliki Education Zone utilize methamphetamine to a high extent (2.57 ± 0.56), while the highest health implications were emotional (2.88 ± 0.50) and social health implications (2.75 ± 0.38). However, there is a positive moderate relationship between utilization of methamphetamine and perceived health implications ($r = 0.543$). Both male (2.60 ± 0.55) and female (2.55 ± 0.56) students utilize methamphetamine to a great extent; thus, powdered and crystal forms are the most used by both genders with emotional and social problems. Moreover, there was a significant relationship between utilization of methamphetamine and perceived health implications among the students ($P<0.05$), but no significant differences existed in utilization and perceived health implications by gender ($P<0.05$). **Conclusion:** Public secondary school students utilize methamphetamine to a great extent, and the highest implication was emotional problems. There is a need to organize an awareness campaign against methamphetamine use by school health educators to overcome emotional distress using media, thus targeting students to promote their emotional health.

Keywords: utilization, methamphetamine, health implications, public secondary school students

1. Introduction

Methamphetamine use has been documented as a serious cause of public health issues, especially among secondary school students. For instance, the United Nations Office on Drugs and Crime (2023) reported that methamphetamine is associated with an increase in cardiovascular problems, psychosis and cognitive impairments among students all over the world. National Institute on Drug Abuse (NIDA) (2019) reported that 2.6 million people aged 12 years and older who used methamphetamine in the United States were involved in disruptive behaviour. In African, the National Institute on Drug Abuse (NIDA) (2023) reported that 1.5 million students (approximately 57.7%) have mental

health issues related to the use of methamphetamine. In Nigeria, the World Health Organization (2025) reported that 87.3% of students have depression and 22% have anxiety and psychosis as a result of the use of methamphetamine, leading to some social consequences in schools such as school dropout, absenteeism, and poor academic performance and an increase in violent behaviours like aggression, suicide and violent crime.

Methamphetamine is a synthetic central nervous system stimulant with high addiction potential, often abused for its euphoric effects (NIDA, 2023). Methamphetamine is an addictive central nervous system stimulating drug whose chemical structure is like amphetamine (Cartier, Farabee & Prendergast, 2020). Operationally, methamphetamine is defined as a man-made stimulant that affects the central nervous system when taken, thereby dangerously increasing alertness, energy and concentration. Bongaarts, Sathar, and Mahmood (2013) noted that methamphetamine can appear generally as a white, odorless, bitter-tasting pill and can dissolve easily in water or alcohol. The authors noted that it can be smoked, inhaled, injected, or ingested, which causes rapid-onset euphoria. Methamphetamine is a common psychostimulant that is in three main forms, namely: powdered, crystal and base (Ahmed, 2000).

Powdered form, traditionally known as "speed", is generally of relatively low purity and can be inhaled, injected, or taken by mouth (Bongaarts, Sathar & Mahmood, 2013). Powdered meth can be snorted, swallowed or dissolved in water or alcohol and injected into a vein (Ugwu & Dumbili, 2021). The look of powdered meth depends on the production and often resembles cocaine and has a white or off-white color. Powdered meth can also appear in various shades of brown, yellow, orange, grayish or pink (Ugwu & Dumbili, 2021). The powder is an odorless and bitter-tasting substance and is easily soluble in water, alcohol, and other liquids. There is another form of methamphetamine called crystal.

Crystal meth is a white crystalline or shard-like type of meth that is usually snorted, injected, or smoked. Crystalline methamphetamine, commonly known as "ice," is methamphetamine in its purest form and is generally smoked or injected (Comau, 2025). Crystal meth resembles chunks or fragments of glass, ice, quartz or rock salt and tends to be flaky. The color ranges from translucent to white or bluish-white. Users typically inject or smoke this form of the drug and may experience a longer, more pronounced high. Ozah (2021) reported that crystal meth is the most commonly used form of methamphetamine among students in Nigeria. In Australia, crystalline methamphetamine is currently the preferred form of methamphetamine utilized to a great extent, followed by the powdered form (Comau, 2025), and it can cause a considerable part of the disease burden, ranking second only to opioids.

The third form of methamphetamine is base, which is a moist, higher-purity oily substance typically injected and also generally taken orally, as opposed to snorting or smoking. German, Sherman, Sirirojn, Thomson, Aramrattana, and Celentano (2024)

reported high utilization of the base form of meth among young people in Northern Thailand. Hansen, Carvalho, McDonald, and Havens (2021) found an increase in the utilization of base meth among young rural people who use drugs. Hobkirk, Watt, Myers and Skinner (2026) found that in South Africa, base meth is the most utilized form of meth among students, utilized to a great extent compared to other meths like powder and crystals. The use of these drugs has grown exponentially in subsequent years, and Ludemann (2024) reported that the utilization among secondary school students has increased.

Rawson (2022) defined methamphetamine utilization as the extent to which students are making use of drugs which are already available in the community or at one's organization. Methamphetamine utilization refers to the trend in which the drugs are used in society (Ochube, Ogbe & Ndalazhi, 2022). In this study, methamphetamine utilization is the extent to which the students make use of different forms of meth drugs in the community. Grant, LeVan, and Wells (2021) noted that high utilization of methamphetamine among users might lead to some health implications.

Health implications refer to the negative effects or outcomes that a person's health experiences as a result of a particular behaviour (Marshall & Werb, 2010). Grant, LeVan, and Wells (2021) defined health implications as a range of health-related problems experienced by individuals as a result of actions taken. In this study, health implications include those adverse health problems or issues affecting the overall well-being of secondary school students as a result of methamphetamine use. Grant, LeVan, and Wells (2021) reported a range of health-related issues methamphetamine users can experience, such as physical, social and emotional health implications.

Physical health implications refer to the bodily effects resulting from the use of methamphetamine (Glantz & Picken, 2022). Romanelli, Smith and Pomeroy (2023) study found accidents, dental problems, weight loss, increase in HIV/AIDS, liver damage, seizures and convulsions, tremors and muscle weakness as physical health consequences of methamphetamine use. Glantz and Picken (2022) reported other physical health implications as injuries, chronic bronchitis, heart attack, strokes, skin infections and sores, kidney damage, malnutrition and weight loss, poor physical health and appearance, sleep disturbance and fatigue. However, there is another health implications of methamphetamine use like social health implications.

Social health implications involve the negative impacts of use of methamphetamine on relationships, social interactions and societal functioning (Parker, 2022). Marshall and Werb (2010) reported social health implications of meth use to include strained relationships, social isolation, financial problems, increase risk of violence, social stigma, increase in involvement in criminal activities, loss of friends and family, homelessness, increase in school drop-out, loss of interest in extracurricular activities. There are other health implications of methamphetamine use, like emotional health problems.

Emotional health implications encompass the negative effects of methamphetamine use on a person's health, such as feelings of guilt, anxiety or depression (Gross & Jazaieri, 2024). Other emotional health implications reported include decreased academic performance, increase of suicidal thoughts, impaired learning and memory and decreased attention span (Aljadani, 2025). McKetin (2010) reported poor problem-solving skills, low self-esteem, memory loss, mood swings and psychosis as the emotional effects of methamphetamine use, especially crystal and powdered forms, among students. Furthermore, researchers reported that methamphetamine use have relationship with health implications.

Relationship is defined as a connection or association between two or more variables. A relationship is a connection that allows one variable to predict or explain changes in another variable. Relationship helps researchers to determine whether variables influence one another. In this study, the relationship is the link between the variables, such as methamphetamine and associated health implications. Andreas, Alan, McKetin, Parry, and Carl (2010) reported a moderate relationship between methamphetamine use and mental/emotional health consequences. The authors noted that the population studied have greatest risk of potential mental health problems and higher levels of aggressive behavior. Similar, Baskin-Sommers and Sommers (2026) study indicated a positive relationship between methamphetamine use, emotional and social health problems, specifically to 'violent behavior among adults. Tyner and Fremouw (2018) found a moderate relationship between methamphetamine use and social health problems, especially violence behaviour and crime. Herman-Stahl et al. (2022) study among adolescents in the US reported positive relationship between methamphetamine use (powder, crystal and base meth and health problems (physical, emotional and social) among secondary school students. Moreover, Grant, LeVan, Wells, Li, Stoltenberg, Gendelman and Swindell (2023) reported a moderate positive relationship between methamphetamine use and overall health implications among high school students in the U.S. It is possible that meth use and its health implications among students may differ in relation to gender.

A study conducted by Pepple, Lawrence, Mangiri, and Grace (2024) reported high methamphetamine utilization among male and female students of Community Secondary School Alode, Eleme Local Government Area of South-South Nigeria, especially crystal form. Mefoh, Okonkwo, Adubi and Olaleru (2023) investigated methamphetamine use in a South Eastern Nigeria community and found high utilization of methamphetamine among both male and female adolescents with high social health problems such as social isolation, relationship problems, and difficulty in school or work, dropout of school and criminal behaviour. Research by Akenzua (2021) found high utilization of methamphetamine (Mkpuru Mmiri) in Delta State, especially among males, with very high physical health consequences including heart attacks, stroke, kidney problems, accidents, injuries and mental issues like psychosis, depression and anxiety. Ricaurte and McCann (2025) reported high utilization of methamphetamine among

students. Also, Hadizade (2021) reported that methamphetamine use is highly addictive to the central nervous system, with serious harmful effects on the health of individuals using the substance; hence, increase use leads to dependence and have consequentially led to an upsurge of psychiatric symptoms and disorders.

It may still be possible that this scenario still exists among secondary school students in Abakaliki Education Zone. Secondary school students are individuals typically between the ages of 11-18 years who are enrolled in secondary education, also known as high school or post-primary school (Marino, Vieno, Lenzi & Santinello, 2014). In Nigeria, secondary school students typically comprise Junior Secondary School (JSS) and Senior Secondary School (SSS), covering ages 11-15 and 16-18 years respectively. Holder and Blaustein (2014) considered the period as a moment of great vulnerability that could expose them to drug use, experimentation and abuse. The authors further noted that during the secondary school stage, students are equally faced with physiological changes, experience contrasting emotions, personal conflicts, and social interactions in the environment and struggle to survive in the academic pursuit. Degenhardt, Mathers, Guarinieri, Panda, Phillips and Strathdee (2024) reported that the period is mostly characterized by high violent behaviors among these groups in society today. World Health Organization (2024) reported that within these age groups, there is a wide range of risky behaviour, possibly as a result of exposure to illicit drug use, experimentation and abuse. However, there are varied results in MA use with different health problems.

Empirically, for example, Chabs, and Sanusi (2025) reported that participant who had high utilization of powdered, crystal and base forms of methamphetamine in secondary school students in Federal College of Education Yola and Adamawa State College of Education reported social consequences of methamphetamine such as truancy, nonchalant attitude or carelessness with studies, distorted thoughts and mental-health challenges like decreased attention span, anxiety, irritability, distractibility, motor hyperactivity and depressive symptoms, worries. Meth use has been regarded as the second most widely used synthetic psychoactive drug after cannabis globally (Son, Hong & Yim, 2025). Samhsa Clinical Advisory (2026) reported that the total number of drug addicts in Pakistan is 7.6 million, with 78% of men having higher physical and social health issues while 22% of women have high emotional health problems. Among these 800,000, people aged 15 years and above are addicted to a more serious form of drugs, including MA and heroin. Every year, around 40,000 people in Pakistan start smoking, making Pakistan one of the top drug-affected countries in the world each year in the use of methamphetamine. The trend has continued from 2021 to 2025, such that in every seventeen adolescents, one had used one form of illicit drug. Furthermore, other countries like America, Australia, Europe, Asia and South Africa have also reported an increase in methamphetamine and other drugs among adolescents (Skrypnyk, Skrypnyk, Petrushanko, Skikevych & Petrushanko, 2025; Son, Hong & Yim, 2025).

In Nigeria, methamphetamine use has been reported with a prevalence rate of 65.7% (Obende-ogbuinya, Aleke & Omaka-Amari, 2024). The high prevalence rate was attributed to its availability in the locality, being rampant and accessible to adolescents and adults; thus, manufactured, packaged and sold in the form of powder, capsules, pressed tablets, and pills in the area. This situation might increase its utilization among the students in the study area like Abakaliki Education Zone.

In Abakaliki Education Zone, an increase in anti-social behaviour among secondary school students has been observed, and adverse behavioural changes might lead to a lack of respect towards teachers, further complicating classroom dynamics. Most often, some of the students exhibit hostile behaviour, like blocking the main road, insisting that people will not go on their way without giving them money. However, a study in Ebonyi State looked at MA use, sources of information, prevalence and socio-demographic risk factors and failed to address methamphetamine utilization and health implications in relation to physical, social and emotional health. Moreover, there is no empirical data particular on the forms of meth and health implications among secondary school students in Abakaliki Education Zone; hence, this study fills the gaps. However, the data will guide health educators in the schools to design interventions for early detection and management programs that can alter lifetime risk of the use disorder. Therefore, this is worrisome and prompted the researchers to study utilization of methamphetamine and perceived associated health implications among public secondary school students in Abakaliki Education Zone.

2. Statement of the Problem

There are 14.7 million people (5.4%) of the world's population who have tried methamphetamine at least once, and 1.6 million people used methamphetamine in the year, making it still one of the drugs most commonly abused in the world (WHO,2020). In addition to its devastating effects on individual health, methamphetamine abuse threatens entire communities, causing new waves of crime, unemployment, child abuse or neglect, and other social ills (United Nations International Drug Control Programme,2020). Methamphetamine abuse has been shown to contribute to the increase and transmission of infectious diseases such as HIV / AIDS, and it also affects the individual psychologically, socially, and medically (WHO, 2024).

Among the secondary school students in Abakaliki Education Zone, many teachers complain of high violent crime, risky and hostile behaviour like threatening and disrespecting them in the school, increase in absenteeism, school drop-out and poor academic performance. This scenario might cause panic and heightened tension among families, communities and other students in the area, including other people coming to the place. Furthermore, since methamphetamine is produced and marketed by many dealers in the street, it may be possible that some students might have easy access to it, and the impacts might endanger their health and their academic performance.

Considering the above facts, it is essential to conduct a study on the utilization of methamphetamine and perceived associated health implications, as most of the previous studies on drug use conducted in other countries and Nigeria inclusive, failed to look at public secondary school students in Abakaliki Education Zone. This will help to expand understanding of utilization of meth and develop preventive measures to reduce harm, protect mental and physical health and improve academic outcomes. Moreover, studies in Ebonyi State focused on meth use awareness, sources of information, prevalence and socio-demographic risk factors but failed to look at the relationship between utilization of methamphetamine and perceived health implications among public secondary school students in Abakaliki Education Zone. Therefore, there is a gap in the existing literature. The primary purpose of this study was to ascertain the utilization of methamphetamine and perceived associated health implications among public secondary school students in Abakaliki Education Zone. Four specific objectives and related research questions provided a guide for the study.

4.1 Hypothesis

There is no significant relationship between utilization of utilization of methamphetamine and perceived associated health implications among public secondary school students in Abakaliki Education Zone.

5. Methods

5.1 Study Design and Setting

The study was a cross-sectional quantitative descriptive survey research design, conducted from February through July 2026, to assess the utilization of methamphetamine and perceived health effects among 400 public secondary school students in Ebonyi State. A multi-stage sampling procedure was applied in drawing participants. The first stage involved identification of all the public secondary schools in Ebonyi zone and stratification of the population into four strata, each stratum representing a Local Government Area, namely Abakaliki, Ebonyi, Izzi and Ohaukwu Local Government Area. In the second stage, simple random sampling techniques were used to select 1 school from each stratum (LGA), making it 4 schools (Junior and secondary). The third stage involved using simple random sampling techniques to select 50 students from the senior secondary and 50 from the junior secondary school from each of the schools. This procedure yields a total of 400 students.

Inclusion and exclusion criteria: Junior Secondary 1, 2 and Senior Secondary 1 and 2 who read the consent note and agreed to participate in the study were included because it was expected that the class are not examination classes.

5.2 Study Instrument

The tool used for assessment in the study was a 28-item semi- structured questionnaire titled: Utilization of Methamphetamine and Perceived Health Implications Questionnaire (UMPHIQ) with three sections. Section A contained 1 item which elicited information on the demographic variables of the respondents. Section B contained 3 items which elicited information on utilization of Methamphetamine. The respondents were required to respond to the items using Always (AL) =4, Often (OF) =3, Sometimes (ST) = 2, and Never (NE) =1. Furthermore, Section C contained 24 items which elicited information on the perceived associated health implications of methamphetamine use. Thus, item 4- 13 elicited information on the physical health implications, 14-20 on social health implications and 21-27 on the emotional health implications. The respondents were required to respond to each of the items using Strongly Agree (SA) = (4), Agree (A) = (3), Disagree (D) = (2) and Strongly Disagree (SD) = (1). The items were developed from literature through the consultation of experts. The instrument (UMPHIQ) was subjected to face validation using two health educators and one psychologist from the same tertiary institution in Ebonyi State. Copies of the questionnaire (30) were distributed and collected among students at Enugu State University of Science and Technology to determine the tool's reliability using Cronbach's Alpha method. The data showed reliable coefficients of $r=0.84$ and $r= 0.90$, respectively. Reliability coefficients were higher than 0.60, a good indicator of fine instruments (Ogbazi & Okpala, 2014).

5.3 Research Procedure

To reach the respondents, the researchers went to the principals of each school used in the study to get approval before visiting them. The principal provided research assistants who led the researchers to and around each school. The researchers administered 400 copies of the survey to the respondents in their schools and immediately collected them. Out of 400 copies of the survey administered, 392 (98% return rate) copies were usable for data analysis.

5.4 Statistical Analysis

IBM Statistical Package for Social Sciences (SPSS) 23rd edition was used for data analysis. Data were analyzed using mean and standard deviation to answer all the research questions. A mean of 1.00-1.49 was adjudged a very low extent of utilization of MA, 1.50-2.49 (Low Extent), 2.50-3.49 (High Extent) and 3.50-4.00 (Very High Extent). Furthermore, a criterion mean of 2.50 and above was accepted as health implications of MA use, while below 2.50 was not accepted as health implications of MA use. However, the Gamma statistic was employed to establish the relationship between utilization of methamphetamine and perceived health implications, while the linear regression statistic was employed to test the hypothesis at 0.05 alpha.

6. Results

Table 1: Demographic Characteristics of the Respondents

Variables	F %
Gender	
Male	200 (51.0)
Female	192(49.0)

Result on Table 1 showed that a total of 392 respondents participated in the study. The majority were male, 200(51.0%), while 192 (49.0%) were female. This indicates a fairly balanced representation of both genders, with a slight predominance of male participants.

Table 2: Mean and Standard Deviation of Extent of Utilization of Methamphetamine among Public Secondary School Students in Abakaliki Education Zone

S/N	Methamphetamine	$\bar{X}$	SD	Decision
1	Powered Methamphetamine drug	2.86	0.97	High Extent
2	Crystals Methamphetamine drug	2.67	1.02	High Extent
3	Base Methamphetamine drug	2.19	0.98	Low Extent
	Overall	2.57	0.56	High Extent

Result on Table 2 show that the respondents utilize both powdered methamphetamine (2.86 ± 0.97) and crystal methamphetamine (2.67 ± 1.02) to a great extent but utilize base methamphetamine (2.19 ± 0.56) to a low extent. Overall (2.57 ± 0.56) indicates that the respondents utilize methamphetamine to a great extent. This implies that public secondary school students in Abakaliki Education Zone utilize methamphetamine to a high extent (2.57 ± 0.56).

Table 3: Mean and Standard Deviation of Perceived Health Implications of Methamphetamine Use among Secondary School Students in Abakaliki Education Zone

S/N	Health Implications	Mean	SD	Decision
4	Suppresses appetite leading to weight loss	2.25	0.94	NHI
5	Rotten teeth	2.13	0.85	NHI
6	Muscles weakness	2.18	0.90	NHI
7	Experience sleep disturbance after taken the drug	2.21	0.96	NHI
8	Feel fatigue after taking the drug	2.16	0.87	NHI
9	Experience heart attacks	2.29	0.90	NHI
10	Have experienced strokes	2.18	0.91	NHI
11	Experienced skin itching	2.35	0.97	NHI
12	Dry mouth	2.39	0.92	NHI
13	Seizure/convulsion	2.11	0.93	NHI
	Physical Health Implications	2.22	0.45	NHI
14	Have misunderstandings with people	2.40	0.91	NHI
15	Drop-out of school	2.56	0.94	HI

16	Being violent toward teachers in school	2.85	0.94	HI
17	Always committing violent crimes	2.91	0.97	HI
18	Loss of interest in school extracurricular activities	2.88	0.98	HI
19	Lose friends	2.81	0.94	HI
20	Being isolated by friends	2.88	0.98	HI
	Social Health Implications	2.75	0.38	HI
21	Feelings of guilt	2.81	0.96	HI
22	Have anxiety over nothing	2.84	0.96	HI
23	Lose memory	3.01	0.93	HI
24	Have suicidal thought	2.85	0.94	HI
25	Decreased attention span	2.97	0.87	HI
26	Poor academic performance	2.80	0.94	HI
27	Have mood swings	2.88	0.93	HI
	Emotional Health Implications	2.88	0.50	HI
	Overall	2.82	0.36	HI

Note: NHI = Not Health Implication, HI= Health Implication

Result on Table 3 were categorized into physical, social, and emotional health implications. Under Physical health implications, all the items scored below the 2.50 criteria mean set for this study. On social health implications, all the items score 2.50 and above criteria mean set for the study, however, the highest mean score was recorded for "Always committing violent crimes" with (2.91±0.91), followed by "Loss of interest in school extracurricular activities" with a mean of (2.88±0.98), being isolated by friends (2.88±0.98), and being violent to teachers in the school (2.85±0.94). Moreover, on emotional health implications, all the items scored 2.50 and above mean set for this study; however, poor memory had the highest mean of (3.01±0.93), and decreased attention span (2.97±0.87). The overall mean for social health implications (2.75±0.38) and emotional (2.88±0.50) were 2.50 and above the criteria set for this study, while physical (2.22±0.45) is below 2.50. This suggests that the highest perceived health implications of methamphetamine use are emotional (2.88±0.50) and social health implications (2.75±0.38) among public secondary school students in Abakaliki Education Zone.

Table 4: Mean and Summary of t-test Analysis of Extent of Utilization of Methamphetamine among Public Secondary School Students in Abakaliki Education Zone by Gender

S/N	Methamphetamine	Gender						
		Male (n=200)		Female (n=192)				
		Mean	SD	Mean	SD	t-val	p-val	Decision
1	Powered Methamphetamine drug	2.85	0.99	2.86	0.95	0.149	0.881	NS
2	Crystals Methamphetamine drug	2.70	1.06	2.64	0.99	0.520	0.603	NS
3	Base Methamphetamine drug	2.25	0.96	2.13	1.00	1.149	1.251	NS
	Overall	2.60	0.55	2.55	0.56	0.905	0.366	NS

Table 4 shows the mean and standard deviation of the extent of utilization of methamphetamine among public secondary school students in Abakaliki Education

Zone by gender. For Powdered Methamphetamine, males scored (2.85 ± 0.99), while females scored slightly higher (2.86 ± 0.95). Both scores fall within the 2.50-3.49 benchmark, indicating a high extent of utilization. In Crystal Methamphetamine, males recorded (2.70 ± 1.06), and females (2.64 ± 0.99). For Base Methamphetamine, males scored (2.25 ± 0.96), while females scored (2.13 ± 0.00). Both means fall within 1.50-2.49, showing a low extent of utilization by both genders. The overall males (2.60 ± 0.55 , and females (2.55 ± 0.56). Since both overall means are within the 2.50-3.49 range, the overall extent of methamphetamine utilization among secondary school students in Abakaliki Education Zone is high for both males and females. This means that both males (2.60 ± 0.55) and females (2.55 ± 0.56) public secondary school students in Abakaliki Education Zone utilize methamphetamine to a great extent; thus, powdered and crystal forms are the most used by both genders, while Base form is used to a low extent.

Data further show that the t-values for each of the Methamphetamine, thus, powdered (1.149, p-val= 0.881), crystals (t-val=0.520, p-val= 0.603) and base (t-val=1.149, p-val=0.251) are not significant at 0.05. Overall t-val= 0.905, p= 0.366 is greater than the 0.05 level of significance indicate that the null hypothesis is accepted. Therefore, there is no significant difference in the extent of utilization of methamphetamine among secondary school students in Abakaliki Education Zone by gender (t-val= 0.905, p= 0.366).

Table 5: Mean and t-test Analysis on the Perceived Health Implications of Methamphetamine Use among Public Secondary School Students in Abakaliki Education Zone by Gender

S/N	Variables	Gender						
		Male (n=200)		Female (n=192)				
		Mean	SD	Mean	SD	t-val	P-val	P-val
4	Suppress appetite that led to weight loss	2.34	0.95	2.16	0.92	1.874	0.062	NS
5	Rotten teeth	2.16	0.86	2.10	0.83	0.649	0.517	NS
6	muscles weakness	2.27	0.96	2.10	0.83	1.814	0.070	NS
7	Experience sleep disturbance	2.30	0.98	2.13	0.92	1.755	0.080	NS
8	Feel fatigue	2.27	0.89	2.04	0.83	2.607	0.009	S
9	Experience heart attacks	2.40	0.90	2.18	0.89	2.446	0.015	S
10	Have experienced strokes	2.21	0.96	2.14	0.84	0.751	0.453	NS
11	Experienced skin itching	2.34	1.03	2.36	0.91	0.251	0.802	NS
12	Dry mouth	2.52	0.90	2.26	0.92	2.806	0.005	S
13	Seizure/convulsion	2.10	0.94	2.12	0.92	0.265	0.791	NS
	Physical Health Implications	2.29	0.47	2.16	0.42	2.870	0.004	S
14	Have misunderstandings with people	2.44	0.92	2.35	0.91	0.868	0.386	NS
15	Drop-out of school	2.55	0.94	2.57	0.95	0.239	0.812	NS
16	Being violent toward teachers in the school	2.85	0.93	2.84	0.96	0.063	0.950	NS
17	Always committing violent crimes	2.84	1.00	2.97	0.94	1.359	0.175	NS

18	Loss of interest in school extracurricular activities	2.94	0.99	2.82	0.96	1.181	0.238	NS
19	Lose friends	2.85	1.00	2.77	0.87	0.884	0.378	NS
20	Being isolated by friends	2.86	0.98	2.89	0.98	0.310	0.757	NS
	Social Health Implications	2.76	0.40	2.75	0.36	0.363	0.717	NS
21	Feelings of guilt	2.78	0.98	2.85	0.94	0.814	0.416	NS
22	Have anxiety over nothing	2.96	0.92	2.72	0.98	2.386	0.081	NS
23	Lose memory	3.11	0.86	2.91	0.99	2.055	0.041	S
24	Have suicidal thought	2.87	1.00	2.84	0.89	0.273	0.785	NS
25	Decreased attention span	2.95	0.83	2.96	0.90	0.127	0.899	NS
26	Poor academic performance	2.80	0.99	2.80	0.89	0.022	0.983	NS
27	Have mood swings	2.82	0.93	2.94	0.93	1.302	0.194	NS
	Emotional Health Implications	2.90	0.51	2.86	0.49	0.721	0.471	NS
	Overall	2.83	0.31	2.80	0.34	0.693	0.488	NS

Table 5 presents the mean and standard deviation of perceived health implications of methamphetamine use among secondary school students in Abakaliki Education Zone by gender. On each of the health implications, male score below the 2.50 mean criterion set for this study on all the items except dry mouth (2.52 ± 0.90), while female score below 2.50 on all the items. For Social health implications, both males and female score 2.50 mean set for this study on all the items except on have misunderstanding with people (2.44 ± 0.92) and (2.35 ± 0.91), respectively. On emotional health implications, males and female score upto 2.50 and above the criteria set for this study. Overall male (2.83 ± 0.31) and females (2.80 ± 0.34) are also 2.50 and above criteria set for this study. Based on the data, it is decided that male and female secondary school students in Abakaliki Education Zone perceive that the highest health implications of methamphetamine use are emotional health implications, followed by social. Data in Table 6 indicate that significant differences exist on feel fatigue, experiencing heart attacks, dry mouth and poor memory ($P < 0.05$), but none were observed on all other items. However, there is a significant difference in the physical health implications ($t\text{-val} = 2.870$, $p\text{-val} = 0.004$), but none exist in social ($t\text{-val} = 0.363$, $p\text{-val} = 0.717$) and emotional health implications ($t\text{-val} = -0.693$, $p\text{-val} = 0.488$). Overall, ($t\text{-val} = 0.693$, $p\text{-val} = 0.488$) indicates that there is no significant difference in the perceived health implications of methamphetamine use among public secondary school students in Abakaliki Education Zone by gender.

7. Discussions

Table 1 showed that the demographic profile of the study population consists mainly of male students. This group has been identified in the literature as being particularly vulnerable to drug use due to developmental, social and environmental factors (WHO, 2020; NDLEA, 2021). Therefore, school-based interventions targeting methamphetamine utilization should prioritize male students while also incorporating female students. Result on Table 2 showed that public secondary school students in Abakaliki Education

Zone utilize methamphetamine to a great extent, but the students utilized powdered higher compared to others. The reason for the higher utilization of powdered and crystals compared to others could be attributed to their ease of concealment, affordability and multiple modes of administration such as snorting or dissolving. This might lead to a lack of respect towards teachers, thus affecting their academic performance and even school dropout. This finding lends credence to Akenzua (2021), whose study found high utilization of methamphetamine (MkpuruMmiri) in Delta State. The result is in line with Ricarte and McCann (2025), whose study found high utilization of methamphetamine among students, and also Pepple, Lawrence, Mangiri, and Grace (2024), who reported high methamphetamine utilization among students of Community Secondary School in Alode, Eleme Local Government Area of South-South Nigeria.

Result on Table 3 showed that students perceived social health implications such as always committing violent crimes, followed by loss of interest in school extracurricular activities, being isolated by friends and being violent to teachers in the school and emotional health implications like loss of memory and decreased attention span as the highest health implications of methamphetamine utilization in public schools in Abakaliki Education Zone. The reason these were rated highest might be because they are behavioural, directly observable and interfere with learning, discipline and socially disrupt the school environment daily. Furthermore, it could be that methamphetamine is highly addictive and further damages brain cells responsible for memory and concentration, resulting in poor memory and reduced attention span. Moreover, the student's loss of interest in normal school activities because such activities no longer provide the same stimulation as the drug. This finding agree with Chabs, and Sanusi (2025) who reported that participant who had high utilization of powered, crystal and base forms of methamphetamine in secondary school students in Federal College of Education Yola and Adamawa State College of Education Hong reported social consequences of methamphetamine such as truancy, nonchalant attitude or carelessness with studies, distorted thoughts and mental-health challenges like decreased attention span, anxiety, irritability, distractibility, motor hyperactivity and depressive symptoms, worries.

Result on Table 4 revealed that both males and females of public secondary school students in Abakaliki Education Zone utilize methamphetamine to a great extent, though powdered and crystal forms are the most used by both genders, while the base form is used to a low extent. The reason for this could be attributed to the report of WHO (2022) that synthetic drugs in powder and crystal forms are increasingly used by youths because of their ease of concealment and administration. Powdered meth can be snorted or dissolved in drinks, while crystal produces a stronger and longer-lasting high, and both are odorless and can be hidden easily in school materials like pens, books or phone cases. Furthermore, result on the Table further showed no significant difference in the extent of utilization of methamphetamine among secondary school students in Abakaliki Education Zone by gender ($P>0.05$). This implies that drug abuse is not limited to one

gender; therefore, it requires equal attention. This finding is in agreement with Mefoh, Okonkwo, Adubi and Olaleru (2023), who investigated methamphetamine use in a southeastern Nigeria community and found high utilization of methamphetamine by gender. Ricaurte and McCann (2025) found high utilization of methamphetamine among students.

Result on Table 5 indicated that male and female secondary school students in Abakaliki Education Zone perceive that the highest health implications of methamphetamine use are emotional health implications, followed by social. Thus, the students perceived having serious effects on their social relationships and emotional well-being, such as isolation, violence, memory loss, anxiety, poor academic performance, loss of interest in extracurricular activities, violent behaviour toward friends and teachers and involvement in crime. This trend can be explained by the nature of methamphetamine effects, as stated by WHO (2022), which is a powerful stimulant that directly affects the central nervous system and brain chemistry; thus, it increases dopamine and norepinephrine levels, which leads to mood swings, anxiety, aggression, paranoia and depression. Because these effects are emotional/psychological, students notice changes in emotions and behaviour faster than internal body damage. Social consequences are more prominent since school life is highly social; students experience the breakdown of friendships and teacher-student relationships as the most immediate consequences. The result further showed no significant difference in the perceived health implications of methamphetamine use among public secondary school students in Abakaliki Education Zone by gender ($P>0.5$). This finding agrees with Hadizade (2021), who reported that methamphetamine use is highly addictive to the central nervous system, which has serious harmful effects on the health of individuals using the substance; therefore, increase use leads to dependence and has consequently led to an upsurge of psychiatric symptoms and disorders. Thus, it is important that school authorities and health agencies organize regular counseling and drug education programs to enlighten students on the dangers of methamphetamine.

8. Conclusion

This study focused on utilization of methamphetamine and perceived associated health implications among secondary school students in Abakaliki Education Zone. Based on the findings, it was concluded that, generally, public secondary school students in Abakaliki Education Zone utilized methamphetamine to a great extent, specially powdered and crystals, but base forms were utilized to a low extent. Methamphetamine was utilized to a high extent based on gender, age and class level, and the highest associated health implications of meth were emotional, followed by social health implications. The study further concluded that there is a moderate positive relationship between utilization of methamphetamine and perceived health implications, such that the higher the utilization, the more the adverse health implications to the students.

Therefore, school-based interventions should focus not only on the physical dangers but also on educating students about the social, emotional and academic consequences of methamphetamine use.

8.1 Limitations of the study

A questionnaire was used in collecting data for the study. There was no form of control by the researchers over the information supplied by the respondents. This omission, inherent in survey research, may have influenced the findings of the study in any direction. The number of participants used in the study could be regarded as a microcosm of the entire population, which may have also influenced the study's findings. Therefore, the study results might not generalize to other groups in this country and elsewhere because these groups may be different to a great degree in other schools and other conditions. Data generated would be useful in planning potential education programmes on comprehensive drug education in Nigerian schools and other developing countries in Africa that may have a similar culture to Ebonyi State. The programme so planned might be very beneficial to the school-aged child. Comparative studies need to be carried out using students in other parts of the State and Nigeria.

Declarations

Ethical Considerations and Consent to Participate

Ethical approval was waived by the Ebonyi State University Medical School Research Ethics Committee. The reason for the waiver was that the study was not done in a laboratory. Written informed consent was obtained from the participants before responding to the questionnaire. The participants read the consent note and agreed to participate in the study before responding to the study survey.

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The authors declare no conflicts of interest.

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