

## Patterns and Self-Reported Effects of The Use of New Psychoactive Substances (NPS) among Students of Nnamdi Azikiwe University, Awka, Anambra State

Chijioke Maxwell Ofomata<sup>1\*</sup> and Onyebuchi Precious Okoji<sup>2</sup>

<sup>1</sup>Department of Forensic Sciences, Faculty of Pharmaceutical Sciences, Nnamdi Azikiwe University, Awka, Anambra State, Nigeria

<sup>2</sup>Department of Clinical Pharmacy and Pharmacy Management, Faculty of Pharmaceutical Sciences, Nnamdi Azikiwe University, Awka, Anambra State, Nigeria

### ABSTRACT

New Psychoactive Substances (NPS) represent a significant public health concern in Nigeria, with increasing prevalence and diverse implications for various population groups, including students. A high occurrence of this problem has been found among the student population in Nigeria with few reports on university students, especially in South Eastern Nigeria. Hence, this study aimed to examine the prevalence of NPS use and its resultant effects on students in Nnamdi Azikiwe University, Awka, Anambra state. A structured self-administered questionnaire was used to obtain information from randomly selected undergraduate students in the Faculty of Law, Pharmaceutical Sciences, and Management Sciences. Collated data was analyzed using Statistical Package for Social Sciences (version 27). Thirty-three (8.9%) participants out of three hundred and seventy students consented to use NPS. The proportions of female and male students were 54.3% and 45.7%, respectively. The highest substance taken was Colos which was seen to be used by 3% of the population. Most of the students who used these NPS said they were influenced by the media (15.9%) with peer influence as the highest driver for the use of NPS (33.33%), followed by emotional issues (27.27%). 21.2% and 182% agreed that having negative physical and mental effects from the use of NPS. In addition, 15.2% of the users believe that their Academic performance was affected negatively by the use of NPS. For proposed interventions, 3.24% of the participants believed that stricter punishment for offenders should be used to address the issue of NPS use. Other intervention strategies include; public awareness on the use of NPS, restriction on the sale of NPS, and Enlightenment on the dangers involved in NPS use, to mention but a few.

### \*Corresponding author

Chijioke Maxwell Ofomata, Department of Forensic Sciences, Faculty of Pharmaceutical Sciences, Nnamdi Azikiwe University, Awka, Anambra State, Nigeria.

**Received:** March 03, 2025; **Accepted:** March 06, 2025; **Published:** March 16, 2025

**Keywords:** NPS (New Psychoactive Substance), Students, Colos, Schools, Reported Effects

### Introduction

NPS are defined as “narcotic drugs or psychotropic substances made available or used from the early to mid-2000s for their psychoactive properties” by Peacock et al. [1]. They are substances produced “to mimic the effects of traditional drugs (e.g., synthetic cathinone’s and SCRA receptor agonists) or pre-existing drugs used in novel ways (e.g., nitrous oxide and ketamine)” [2]. The United Nations Office on Drugs and Crime also defined NPS as “substances of abuse, either in a pure form or a preparation, that are not controlled by the 1961 Single Convention on Narcotic Drugs or the 1971 Convention on Psychotropic Substances, but which may pose a public health threat” [3]. The UNODC added that “the term “new” does not necessarily refer to new inventions— several NPS were first synthesized decades ago — but to substances that have recently become available on the market”. Lately, the use of psychoactive substances has been a major global issue and public health priority, with possible detrimental consequences for economic development.

It has become a growing problem in the university system, especially due to its undesirable effects on education, health,

and well-being of students who are the most active group in the society. Nigeria, like many other countries, has witnessed a surge in the prevalence and availability of NPS, contributing to complex health and social issues within communities across the country. Studies have highlighted the widespread use of NPS among various population groups, including commercial road transport workers, secondary school students, and commercial bus drivers [4-6].

In light of these concerns, this study aims to conduct a comprehensive review of New Psychoactive Substances and their effects on the student population, with a specific focus on Nnamdi Azikiwe University, Awka, Anambra State. By synthesizing existing literature and incorporating insights from relevant studies, this research seeks to provide valuable insights into the prevalence, motivations, consequences, and potential interventions related to NPS use among university students in Nigeria.

### Material and Methods

#### Study Design

This study utilized a descriptive cross-sectional study design. This study was carried out among students in Nnamdi Azikiwe University, Awka, Anambra state in Nigeria. The study was conducted in three out of the fourteen Faculties, namely:

Pharmaceutical Sciences, Law and Management Sciences. The research design will consist of a questionnaire distributed to second year to fifth year students of the focus Faculties. The questionnaire would be self-administered and be collected back after the respondents finish filling them at the spot.

### Study Population and Sample Size

The study was carried out among the Students in the Faculty of Pharmaceutical Sciences, Management Sciences and Law Faculty of the Nnamdi Azikiwe University, Awka. In the Faculty of management Sciences, four department was used as a case study for the faculty. The departments were; Marketing, Banking and Finance, Public administration and Business Administration.

The sample size was derived using Yamane's formula and using an estimated attrition rate of 5%. The study was carried out among undergraduate students of Nnamdi Azikiwe University in Anambra state. The sample size obtained for the study was three hundred and seventy (370) students which is the minimum number of respondents that can be used for this study, therefore due to the sensitive nature of the study; the sample size was overshoot to accommodate more responses for the statistical analysis. five hundred and twenty questionnaires were distributed in total while Three hundred and seventy questionnaires were retrieved here is the breakdown of the questionnaires retrieved – Pharmacy = 76, Law = 107, and Management sciences= 187

### Sampling Techniques

The study employed a convenience sampling technique to distribute the validated questionnaire to the eligible Students.

### Data Collection

The questionnaire was directly administered to the students and collected by hand immediately after they were done providing the necessary information.

### Data Analysis

Upon retrieval, the questionnaires were meticulously organized and scrutinized to ensure their overall quality and precision before the data analysis process. Data analysis was conducted employing the Statistical Package for Social Sciences (SPSS), specifically version 27.0. An initial step was the generation of frequency distributions to elucidate the socio-demographic characteristics of the respondents. Subsequently, a Chi-square analysis was executed to assess potential associations between variables, with statistical significance denoted by a P-value of less than 0.05.

### Limitations

The study sample was limited to students at Nnamdi Azikiwe University. A larger and more diverse sample could provide a broader perspective on NPS use among university students in Nigeria. Additionally, the study relied on self-reported data, which may be subject to bias. Some participants may have underreported or over-reported their NPS use due to social desirability bias or memory recall issues. The stigma associated with NPS might have influenced some participants' admission to its use.

### Results

#### Demographic Results

The demographic results (table 1) provides insights into the characteristics of the 370 respondents. It shows that the sample was slightly skewed towards males, with 54.3% male and 45.7% female respondents. Regarding academic level, the majority were from the 200 level (39.7%), followed by 400 level (26.5%), 300 level (23.5%), and 500 level (10.3%). Most respondents fell within the age range of 18-25 years (90.3%), with a smaller percentage under 18 years (7.3%) and an even smaller percentage in the 26-35 years range (2.4%). In terms of faculty distribution, Management Sciences had the highest representation (50.5%), followed by Law (29.0%) and Pharmaceutical Sciences (20.5%).

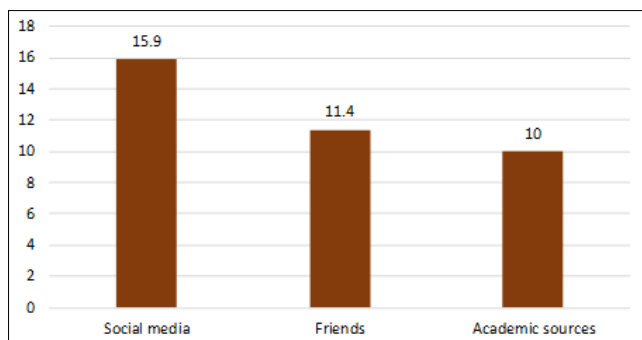
**Table 1: Demographic Results**

| S/N | Variable       | Options                 | Frequency | Percentage (%) |
|-----|----------------|-------------------------|-----------|----------------|
| 1   | Gender         | Male                    | 201       | 54.3           |
|     |                | Female                  | 169       | 45.7           |
|     |                | Total                   | 370       | 100.0          |
| 2   | Academic level | 200 level               | 147       | 39.7           |
|     |                | 300 level               | 87        | 23.5           |
|     |                | 400 level               | 98        | 26.5           |
|     |                | 500 level               | 38        | 10.3           |
|     |                | Total                   | 370       | 100.0          |
| 3   | Age range      | Under 18                | 27        | 7.3            |
|     |                | 18 - 25 years           | 334       | 90.3           |
|     |                | 26 - 35 years           | 9         | 2.4            |
|     |                | Total                   | 370       | 100.0          |
| 4   | Faculty        | Pharmaceutical sciences | 76        | 20.5           |
|     |                | Law                     | 107       | 29.0           |
|     |                | Management sciences     | 187       | 50.5           |
|     |                | Total                   | 370       | 100.0          |

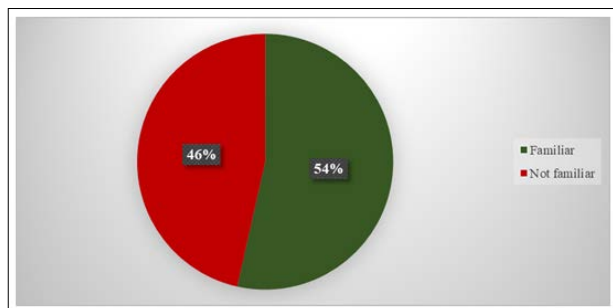
Awareness and use of New Psychoactive Substances (NPS)

**Table 2: NP Awareness and Use**

| S/N | Variable                                                                                                | Options                       | Frequency | Percentage of study participants (%) |
|-----|---------------------------------------------------------------------------------------------------------|-------------------------------|-----------|--------------------------------------|
| 1   | Are you familiar with the term "New Psychoactive Substances (NPS)" like: Spice, Colos, K2, Black mamba? | Yes                           | 198       | 53.5                                 |
|     |                                                                                                         | No                            | 172       | 46.5                                 |
|     |                                                                                                         | Total                         | 370       | 100.0                                |
| 2   | How did you first learn about NPS?                                                                      | Social media                  | 59        | 15.9                                 |
|     |                                                                                                         | Friends                       | 42        | 11.4                                 |
|     |                                                                                                         | Academic sources              | 37        | 10.0                                 |
|     |                                                                                                         | No responses                  | 232       | 62.7                                 |
|     |                                                                                                         | Total                         | 370       | 100.0                                |
| 3   | Have you ever used NPS? (Like: Spice, Colos, K2, Black mamba, etc)                                      | Yes                           | 33        | 8.9                                  |
|     |                                                                                                         | No                            | 337       | 91.1                                 |
|     |                                                                                                         | Total                         | 370       | 100.0                                |
| 4   | If yes, please specify the ones you have used (if known)                                                | Arizona                       | 1         | 0.3                                  |
|     |                                                                                                         | Black mamba                   | 2         | 0.5                                  |
|     |                                                                                                         | Colorado (a type of cannabis) | 11        | 3.0                                  |
|     |                                                                                                         | Dry pawpaw leaves with gin    | 1         | 0.3                                  |
|     |                                                                                                         | Alcohol                       | 1         | 0.3                                  |
|     |                                                                                                         | Marijuana                     | 7         | 1.9                                  |
|     |                                                                                                         | monkey tail                   | 2         | 0.5                                  |
|     |                                                                                                         | Nitric oxide                  | 5         | 1.4                                  |
|     |                                                                                                         | spice                         | 1         | 0.3                                  |
|     |                                                                                                         | Total                         | 370       | 100.0                                |
| 5   | How frequently have you used NPS in the past year?                                                      | Rarely                        | 9         | 2.4                                  |
|     |                                                                                                         | Occasionally                  | 15        | 4.1                                  |
|     |                                                                                                         | Regularly                     | 2         | 0.5                                  |
|     |                                                                                                         | Never used                    | 2         | 0.5                                  |
|     |                                                                                                         | No response                   | 342       | 92.4                                 |
|     |                                                                                                         | Total                         | 370       | 100.0                                |
| 6   | If you have used NPS, please describe the patterns of your usage (e.g., weekends, special occasions):   | No response                   | 345       | 93.2                                 |
|     |                                                                                                         | Birthdays                     | 1         | 0.3                                  |
|     |                                                                                                         | during exams                  | 1         | 0.3                                  |
|     |                                                                                                         | Everyday                      | 3         | 0.8                                  |
|     |                                                                                                         | Once                          | 2         | 0.5                                  |
|     |                                                                                                         | parties                       | 2         | 0.5                                  |
|     |                                                                                                         | special occasion              | 9         | 2.4                                  |
|     |                                                                                                         | weekends                      | 5         | 1.4                                  |
|     |                                                                                                         | weekly                        | 1         | 0.3                                  |
|     |                                                                                                         | whenever I see                | 1         | 0.3                                  |
|     |                                                                                                         | Total                         | 370       | 100.0                                |



**Figure 1:** Percentage of NPS Knowledge Sources



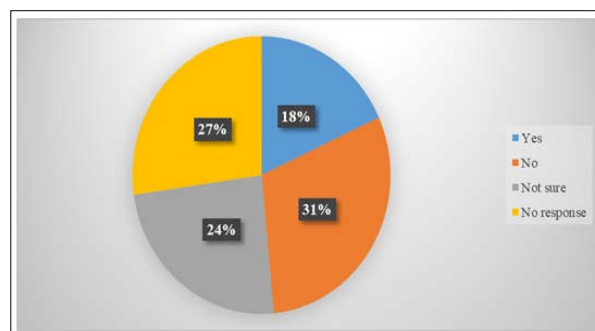
**Table 3:** What do you know New Psychoactive Substances (NPS) to be?

| Options                                   | Frequency | Percentage of study participants (%) |
|-------------------------------------------|-----------|--------------------------------------|
| No responses                              | 259       | 70.0                                 |
| Addictive drugs                           | 6         | 1.6                                  |
| Affects peoples psyche                    | 3         | 0.8                                  |
| bad Substances                            | 1         | 0.3                                  |
| Colos                                     | 1         | 0.3                                  |
| dangerous substances                      | 15        | 4.1                                  |
| destructive                               | 1         | 0.3                                  |
| drug that alters senses                   | 1         | 0.3                                  |
| drug that destabilizes                    | 2         | 0.5                                  |
| drugs                                     | 13        | 3.5                                  |
| drugs for wrong purpose                   | 1         | 0.3                                  |
| enhancement drugs                         | 1         | 0.3                                  |
| good for the health                       | 1         | 0.3                                  |
| hard drugs                                | 34        | 9.2                                  |
| hard Substance                            | 2         | 0.5                                  |
| heightens one emotions to forget problems | 1         | 0.3                                  |
| illegal                                   | 2         | 0.5                                  |
| illegal drugs                             | 5         | 1.4                                  |
| illicit drugs                             | 4         | 1.1                                  |
| illicit substances                        | 2         | 0.5                                  |
| influences normal mental state            | 1         | 0.3                                  |
| new psychotropics                         | 1         | 0.3                                  |

|                                                                    |     |       |
|--------------------------------------------------------------------|-----|-------|
| normal drugs                                                       | 2   | 0.5   |
| pose a threat to health                                            | 1   | 0.3   |
| recreational drugs                                                 | 1   | 0.3   |
| stimulants                                                         | 2   | 0.5   |
| stuffs people take to carry out activities they couldn't initially | 2   | 0.5   |
| substance of abuse                                                 | 1   | 0.3   |
| synthetic hard drugs                                               | 1   | 0.3   |
| they numb emotions                                                 | 1   | 0.3   |
| toxic substances                                                   | 1   | 0.3   |
| weed                                                               | 1   | 0.3   |
| Total                                                              | 370 | 100.0 |

**Table 4:** Academic Impact of NPS Use

| S/N | Variable                                                                    | Options                                                     | Frequency | Percentage of NPS users (%) |
|-----|-----------------------------------------------------------------------------|-------------------------------------------------------------|-----------|-----------------------------|
| 1   | Do you believe that your academic performance has been affected by NPS use? | Yes                                                         | 6         | 18.18                       |
|     |                                                                             | No                                                          | 10        | 30.3                        |
|     |                                                                             | Not sure                                                    | 8         | 24.24                       |
|     |                                                                             | No response                                                 | 9         | 27.27                       |
|     |                                                                             | Total NPS users                                             | 33        | 100                         |
| 2   | If yes, please describe the perceived impact on your academic performance   | A decline                                                   | 1         | 3.03                        |
|     |                                                                             | can't focus for a long period                               | 1         | 3.03                        |
|     |                                                                             | confidence                                                  | 1         | 3.03                        |
|     |                                                                             | decline                                                     | 2         | 6.06                        |
|     |                                                                             | good grades                                                 | 1         | 3.03                        |
|     |                                                                             | good performance in exams                                   | 1         | 3.03                        |
|     |                                                                             | it has improved                                             | 1         | 3.03                        |
|     |                                                                             | positive: I retain information. Negative: too much headache | 1         | 3.03                        |
|     |                                                                             | Total NPS users                                             | 33        | 100                         |



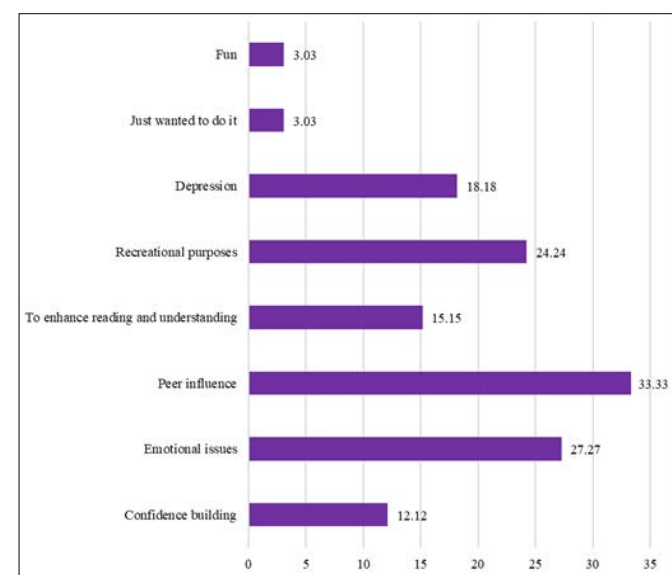
**Figure 3:** Does NPS affect your Academics?

**Table 5: Impact on Social and Interpersonal Relationships**

| S/N | Variable                                                                                                                    | Options                              | Frequency | Percentage of NPS users (%) |
|-----|-----------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-----------|-----------------------------|
| 1   | Please select the primary motivations that influenced your decision to use NPS: (multiple choices allowed)                  | Confidence building                  | 4         | 12.12                       |
|     |                                                                                                                             | Emotional issues                     | 9         | 27.27                       |
|     |                                                                                                                             | Peer influence                       | 11        | 33.33                       |
|     |                                                                                                                             | To enhance reading and understanding | 5         | 15.15                       |
|     |                                                                                                                             | Recreational purposes                | 8         | 24.24                       |
|     |                                                                                                                             | Depression                           | 6         | 18.18                       |
|     |                                                                                                                             | Just wanted to do it                 | 1         | 3.03                        |
|     |                                                                                                                             | Fun                                  | 1         | 3.03                        |
|     |                                                                                                                             | Total NPS users                      | 33        | 100                         |
| 2   | To what extent do you feel influenced by the social environment (friends, peers, social events) to use NPS?                 | Not influenced at all                | 7         | 21.21                       |
|     |                                                                                                                             | Slightly influenced                  | 7         | 21.21                       |
|     |                                                                                                                             | Moderately influenced                | 5         | 15.15                       |
|     |                                                                                                                             | Very influenced                      | 1         | 3.03                        |
|     |                                                                                                                             | Extremely influenced                 | 5         | 15.15                       |
|     |                                                                                                                             | Total NPS users                      | 33        | 100                         |
| 3   | To what extent do you believe media portrayals or representations of substance use influence student attitudes towards NPS? | Not influential at all               | 3         | 9.09                        |
|     |                                                                                                                             | Slightly influential                 | 10        | 30.3                        |
|     |                                                                                                                             | Moderately influential               | 7         | 21.21                       |
|     |                                                                                                                             | Very influential                     | 4         | 12.12                       |
|     |                                                                                                                             | Extremely influential                | 1         | 3.03                        |
|     |                                                                                                                             | Total NPS users                      | 33        | 100                         |

**Table 6: Motivation, Influence and Drivers for NPS Use**

| S/N | Variable                                                                                                                    | Options                              | Frequency | Percentage of NPS users (%) |
|-----|-----------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-----------|-----------------------------|
| 1   | Please select the primary motivations that influenced your decision to use NPS: (multiple choices allowed)                  | Confidence building                  | 4         | 12.12                       |
|     |                                                                                                                             | Emotional issues                     | 9         | 27.27                       |
|     |                                                                                                                             | Peer influence                       | 11        | 33.33                       |
|     |                                                                                                                             | To enhance reading and understanding | 5         | 15.15                       |
|     |                                                                                                                             | Recreational purposes                | 8         | 24.24                       |
|     |                                                                                                                             | Depression                           | 6         | 18.18                       |
|     |                                                                                                                             | Just wanted to do it                 | 1         | 3.03                        |
|     |                                                                                                                             | Fun                                  | 1         | 3.03                        |
|     |                                                                                                                             | Total NPS users                      | 33        | 100                         |
| 2   | To what extent do you feel influenced by the social environment (friends, peers, social events) to use NPS?                 | Not influenced at all                | 7         | 21.21                       |
|     |                                                                                                                             | Slightly influenced                  | 7         | 21.21                       |
|     |                                                                                                                             | Moderately influenced                | 5         | 15.15                       |
|     |                                                                                                                             | Very influenced                      | 1         | 3.03                        |
|     |                                                                                                                             | Extremely influenced                 | 5         | 15.15                       |
|     |                                                                                                                             | Total NPS users                      | 33        | 100                         |
| 3   | To what extent do you believe media portrayals or representations of substance use influence student attitudes towards NPS? | Not influential at all               | 3         | 9.09                        |
|     |                                                                                                                             | Slightly influential                 | 10        | 30.3                        |
|     |                                                                                                                             | Moderately influential               | 7         | 21.21                       |
|     |                                                                                                                             | Very influential                     | 4         | 12.12                       |
|     |                                                                                                                             | Extremely influential                | 1         | 3.03                        |
|     |                                                                                                                             | Total NPS users                      | 33        | 100                         |

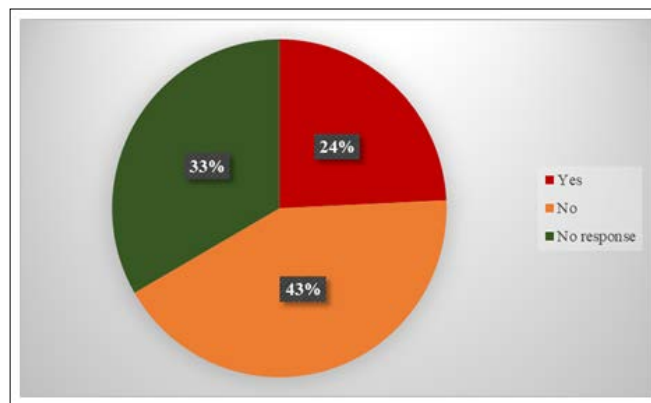


**Figure 4:** Motives behind the Initiation of NPS (in percentages)

**Table 7: Health-Related Consequences**

| S/N | Variable                                                                                         | Options                   | Frequency | Percentage of NPS users (%) |
|-----|--------------------------------------------------------------------------------------------------|---------------------------|-----------|-----------------------------|
| 1   | Have you experienced any mental or physical health challenges that you can attribute to NPS use? | Yes                       | 8         | 24.24                       |
|     |                                                                                                  | No                        | 14        | 42.42                       |
|     |                                                                                                  | No response               | 11        | 33.33                       |
|     |                                                                                                  | Total NPS users           | 33        | 100                         |
| 2   | How would you describe the physical effects of NPS use on your health?                           | I feel better             | 1         | 3.03                        |
|     |                                                                                                  | More awareness            | 1         | 3.03                        |
|     |                                                                                                  | more energy               | 1         | 3.03                        |
|     |                                                                                                  | stayed awake and ate less | 1         | 3.03                        |
|     |                                                                                                  | energized                 | 1         | 3.03                        |
|     |                                                                                                  | No noticeable effects     | 12        | 36.36                       |
|     |                                                                                                  | Negative effects          | 2         | 6.06                        |
|     |                                                                                                  | body heat                 | 1         | 3.03                        |
|     |                                                                                                  | headaches                 | 1         | 3.03                        |
|     |                                                                                                  | Fell sick                 | 1         | 3.03                        |
|     |                                                                                                  | Tremors                   | 1         | 3.03                        |
|     |                                                                                                  | Total NPS users           | 33        | 100                         |
| 3   | Has the use of NPS had any impact on your mental health and well-being? Positive or negative?    | Positive, more awareness  | 1         | 3.03                        |

|   |                                                                               |                                             |   |       |
|---|-------------------------------------------------------------------------------|---------------------------------------------|---|-------|
|   |                                                                               | Positive, boosts libido                     | 1 | 3.03  |
|   |                                                                               | Positive, built my confidence               | 1 | 3.03  |
|   |                                                                               | Positive, confidence                        | 1 | 3.03  |
|   |                                                                               | Positive, high esteem                       | 2 | 6.06  |
|   |                                                                               | Positive, I read better                     | 1 | 3.03  |
|   |                                                                               | Positive, mental alertness                  | 1 | 3.03  |
|   |                                                                               | Positive, my retention capacity is enhanced | 1 | 3.03  |
|   |                                                                               | Positive, sharper brain, happiness          | 1 | 3.03  |
|   |                                                                               | Positive, smarter                           | 1 | 3.03  |
|   |                                                                               | Positive; I read well                       | 1 | 3.03  |
|   |                                                                               | No impact                                   | 4 | 12.12 |
|   |                                                                               | Negative, aggression                        | 2 | 6.06  |
|   |                                                                               | Negative, sleepless nights                  | 1 | 3.03  |
|   |                                                                               | Negative, thinking                          | 1 | 3.03  |
| 4 | How has NPS use influenced your sleep patterns?                               | Improved sleep                              | 8 | 24.24 |
|   |                                                                               | No impact                                   | 5 | 15.15 |
|   |                                                                               | Disrupted sleep                             | 7 | 21.21 |
|   |                                                                               | Not sure                                    | 3 | 9.09  |
| 5 | Have you experienced changes in appetite or nutrition as a result of NPS use? | Increased appetite                          | 8 | 24.24 |
|   |                                                                               | No impact                                   | 3 | 9.09  |
|   |                                                                               | Decreased appetite                          | 6 | 18.18 |
|   |                                                                               | Changes in nutritional habits               | 2 | 6.06  |
|   |                                                                               | Not sure                                    | 1 | 3.03  |

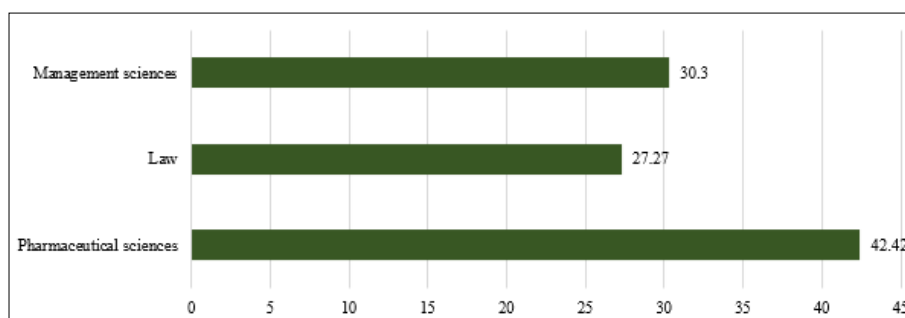


**Table 8: Potential Interventions and Preventive Measures to address NPS-related challenges among students**

| S/N | Variable                                                                                                       | Options                              | Frequency | Percentage of study participants (%) |
|-----|----------------------------------------------------------------------------------------------------------------|--------------------------------------|-----------|--------------------------------------|
| 1   | Do you think there is enough information and awareness about the risks associated with NPS use among students? | Yes                                  | 48        | 13.0                                 |
|     |                                                                                                                | No                                   | 56        | 15.1                                 |
|     |                                                                                                                | Not sure                             | 13        | 3.5                                  |
|     |                                                                                                                | No response                          | 253       | 68.4                                 |
|     |                                                                                                                | Total                                | 370       | 100.0                                |
| 2   | If no, what additional information do you think should be provided?                                            | campaign against NPS                 | 1         | 0.27                                 |
|     |                                                                                                                | conference                           | 1         | 0.27                                 |
|     |                                                                                                                | consequences should be publicized    | 5         | 1.35                                 |
|     |                                                                                                                | dangers involved                     | 6         | 1.62                                 |
|     |                                                                                                                | death risks                          | 2         | 0.54                                 |
|     |                                                                                                                | how to free addicts                  | 1         | 0.27                                 |
|     |                                                                                                                | info on how to identify the drugs    | 1         | 0.27                                 |
|     |                                                                                                                | more awareness on the dangers of NPS | 1         | 0.27                                 |
|     |                                                                                                                | public enlightenment                 | 4         | 1.08                                 |
|     |                                                                                                                | restriction of these substances      | 1         | 0.27                                 |
|     |                                                                                                                | should be taught to freshers         | 1         | 0.27                                 |
|     |                                                                                                                | using billboards to tell the dangers | 1         | 0.27                                 |
|     |                                                                                                                | Strict punishment for offenders      | 12        | 3.24                                 |
|     |                                                                                                                | No response                          | 333       | 90                                   |
|     |                                                                                                                | Total                                | 370       | 100.0                                |

### Correlation Between Use of NPS and Demographics

The chi-square cross-tabulation between the use of New Psychoactive Substances (NPS) and demographics reveals significant associations between NPS use and various demographic factors among the participants. For the faculty, there is a significant association between faculty and NPS use ( $\chi^2 = 25.962$ ,  $df = 2$ ,  $p < 0.001$ ). Specifically, Pharmaceutical Sciences had the highest proportion of NPS users (18.4%) compared to Law (8.4%) and Management Sciences (5.3%). Similarly, for gender, there is a significant association between gender and NPS use ( $\chi^2 = 13.605$ ,  $df = 1$ ,  $p < 0.001$ ), with males (13.9%) more likely to use NPS than females (2.9%). Regarding the year of study, there is a significant association between year of study and NPS use ( $\chi^2 = 21.644$ ,  $df = 3$ ,  $p < 0.001$ ), with higher usage rates among 200 level students (6.8%) compared to other levels. Lastly, for age, there is a significant association between age and NPS use ( $\chi^2 = 15.004$ ,  $df = 2$ ,  $p < 0.001$ ), with the highest usage rates among those aged 18-25 years (8.4%). These findings suggest that demographic factors such as faculty, gender, year of study, and age are associated with NPS use among students.



## Discussion

The prevalence of NPS use among students at Nnamdi Azikiwe University was found to be 8.9%, indicating a significant level of NPS use among the student population. This finding is consistent with the study by Okorie et al. (2021) at the University of Port Harcourt, which found a high prevalence (range of 1.3% -74%) of psychoactive substance use among undergraduates. Abdurahman et al (2019) also found a prevalence of 54% among male adolescents in southwest Nigeria while Oluwafunmilayo et al. found a prevalence of 33.7% among adolescents in government secondary schools [7]. The higher prevalence of NPS use found in this study suggests that NPS use may be a growing concern among university students and highlights the need for targeted interventions to address this issue. The patterns of NPS use among students at Nnamdi Azikiwe University varied, with motivations including peer influence, emotional issues, and recreational purposes. This finding is consistent with the study by Damiri et al. which found that factors such as peer pressure and escaping from problems influenced substance use among university students [8]. However, the specific substances being used varied between studies, with this study identifying substances like Spice, Colos, K2, and Black mamba, while Damiri et al. found that cannabis, synthetic cannabinoids, and amphetamines were the most commonly used illicit drugs [8].

The study also identified several key factors that influence both the initiation and sustained use of NPS among students. Peer influence emerged as a significant factor, with many students reporting that they were introduced to NPS through their peers. This finding aligns with the social learning theory, which suggests that individuals learn behaviors through observation and imitation of others within their social networks. Emotional issues also played a role in influencing NPS use among students. Many students reported using NPS as a way to cope with stress, anxiety, or other emotional challenges. This suggests that NPS use may serve as a form of self-medication for some students, providing them with temporary relief from emotional distress. This finding is consistent with studies by Adesida et al., and Duru et al., which also found that emotional issues were significant factors in substance use among students [9,10]. Additionally, some students reported using NPS for recreational purposes, indicating that they may use these substances as a way to enhance social experiences or to experiment with new sensations. This finding is in tandem with studies by Adesida et al., and Donald, which also found recreational purposes to be a common motivation for substance use among students [9,11].

NPS use was found to have a negative impact on academic performance, with some students reporting difficulties in concentration and impaired cognitive function. This is consistent with previous research indicating that substance use can interfere with learning and memory, leading to lower grades

and academic achievement. The academic consequences of NPS use are particularly concerning given the competitive nature of university education and the importance of academic success for future career prospects. NPS use can also have significant social consequences for students. Changes in relationships with friends, family dynamics, and romantic relationships were reported by some students, indicating that NPS use can strain interpersonal relationships and social connections. Additionally, social stigma and judgment from others due to NPS use were reported by a majority of students, highlighting the negative perceptions and stereotypes associated with substance use. The study also identified several health-related consequences associated with NPS use. Mental health challenges, such as increased aggression, sleep disturbances, and changes in appetite, were reported by some students. These findings are consistent with previous research indicating that substance use can have detrimental effects on mental health. Physical health challenges, such as headaches, tremors, and body heat, were also reported, indicating that NPS use can have a range of physical effects on the body. Academic difficulties can hinder students' ability to achieve their educational goals and can impact their future career prospects. Social consequences, such as strained relationships and social stigma, can affect students' mental well-being and social integration. Health-related consequences can have both immediate and long-term effects on students' physical and mental health, impacting their overall quality of life.

One key intervention identified was the need for more information and awareness about the risks associated with NPS use among students. Many students reported a lack of knowledge about NPS and their potential dangers, suggesting that education and awareness campaigns could be effective in reducing NPS use. These campaigns could include information about the risks of NPS use, how to identify NPS, and where to seek help for substance use problems. Addressing peer influence and the social environment was also identified as an important intervention strategy. Students reported that their peers played a significant role in their decision to use NPS, suggesting that interventions aimed at changing social norms and attitudes towards NPS use could be effective. Peer education programs and peer support groups could help students resist peer pressure and make healthier choices regarding substance use. Providing access to counseling and support services was identified as another important intervention strategy. Many students reported using NPS as a way to cope with stress and other emotional issues, suggesting that addressing underlying mental health issues could help reduce NPS use. Strengthening policies and enforcement measures was also identified as a key intervention strategy. Students suggested that stricter punishment for offenders could deter NPS use and reduce the availability of these substances on campus. Additionally, restricting the availability of NPS on campus and enforcing existing policies regarding substance use could help reduce NPS-related challenges among students.

## Conclusion

In conclusion, the findings of this study shed light on the prevalence, patterns, and impacts of NPS use among students at Nnamdi Azikiwe University. The study revealed a concerning level of NPS use among students, with peer influence and emotional issues being key drivers of initiation and sustained use. The academic, social, and health-related consequences of NPS use underscore the need for comprehensive interventions. Education and awareness campaigns, peer education programs, and access to mental health services are crucial for addressing the underlying factors contributing to NPS use. Strengthening policies and enforcement measures can also play a significant role in reducing the availability and use of NPS on campus. Overall, the findings highlight the importance of taking a holistic approach to address NPS-related challenges among students, with a focus on prevention, intervention, and support services to create a safer and healthier campus environment.

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