



INFLUENCE OF SUBSTANCE ABUSE ON THE ACADEMIC PERFORMANCE OF SECONDARY SCHOOL STUDENTS IN SCIENCE SUBJECTS IN OYO TOWN, NIGERIA

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Abstract

The study examined the effect of substance abuse on the academic performance of secondary school students in science subjects in Oyo Town, Nigeria. A descriptive survey research design with a correlational approach was adopted. A sample of 250 students was selected from five public secondary schools using multistage sampling technique. Data were collected using a structured questionnaire titled Substance Abuse and Academic Performance Questionnaire (SAAPQ) and students' academic records. Descriptive statistics (frequency and percentage) and inferential statistics (Pearson Product Moment Correlation and regression analysis) were used for data analysis at 0.05 significance level. Findings revealed that a majority of students engaged in moderate to high levels of substance abuse, while most recorded average to low academic performance in science subjects. A significant negative relationship ($r = -0.62$, $p < 0.05$) was found between substance abuse and academic performance. Regression analysis further showed that substance abuse significantly predicted academic performance ($R^2 = 0.37$). The study concludes that substance abuse adversely affects students' academic outcomes. Recommendations were made for counselling, sensitization, and stricter drug control in schools.

Keywords: Substance abuse; Academic performance; Secondary school students; Science

Introduction

Secondary education occupies a critical position in a child's educational development, serving as a foundation for higher education, vocational training, and future careers. Similarly, science education is universally acknowledged as a vital catalyst for technological advancement, innovation, and national development. It plays a crucial role in developing the skilled workforce required for scientific progress, industrial growth, and economic prosperity (Tijani & Adeduyigbe, 2025). Despite the significance of both science education and secondary education, the academic performance of secondary school students in science subjects in Oyo Town has remained generally poor. Consequently, students' performance in science subjects has continued to attract significant attention from educators, policymakers, parents, and other stakeholders due to its implications for educational and national development. This persistent unsatisfactory underachievement may be



attributed to factors such as inadequate funding, shortage of qualified teachers (Tijani et al., 2025); bad study habits (Etokeren & Akporehwe, 2022); inadequate instructional resources (Ibe-Moses et al., 2024); substance abuse (Nwokorie, 2024). They all impacted to a very high extent on student's failure rate in examinations. Among these factors, substance abuse stands out as a serious issue with far-reaching implications for the academic achievement of adolescents.

Substance abuse is defined as the use of drugs for non-medical purposes in a manner that leads to harmful or adverse consequences for the individual. It could also be defined as excessive use of a drug in a way that is detrimental to self, society, or both (John & Griffin, 1990). Drug/substance on the other hand refers to any substance, other than food or water that alters an individual's feelings, thoughts, perceptions, or behavior. It is a chemical substance that is taken into the body or applied externally to produce a physiological effect which may be beneficial or harmful, depending on its use and impact on the body's systems. These drugs according to Ejodamen & Ogini (2021) can be obtained from plants, animals, or other natural sources and may exist in various forms, including solids and liquids. Substance abuse among secondary school students in Nigeria has emerged as a major educational and social concern due to its adverse effects on students' academic achievement and overall development. Although studies such as Atoyebi & Atoyebi (2013) reported high rates of substance use among undergraduates, evidence suggests that the problem is increasingly prevalent among secondary school students as well. Commonly abused substances include alcohol, tobacco, cannabis, marijuana, cocaine, tramadol, codeine, and other illicit drugs. According to Ajibola & Oluwatusin (2024), the widespread use of these substances among young people poses significant challenges to the education sector. Among secondary school students, substance abuse is often associated with poor concentration, reduced retention of learned information, low classroom participation, impaired problem-solving abilities, and poor academic performance, particularly in science-related subjects.

Meanwhile, the study of science subjects requires substantial cognitive engagement, critical thinking, and practical skills. Biology emphasizes careful observation, analysis, and effective retention of scientific knowledge. Chemistry demands a sound understanding of scientific concepts as well as competence in laboratory activities, while Physics requires strong analytical abilities and mathematical reasoning to comprehend abstract principles and solve complex problems. Failure to develop these skills may result in poor academic performance, weak understanding of key concepts, low examination scores, reduced interest in science, and limited opportunities for further studies and science-related careers. The submission aligns with Dada et al. (2026) who observed that the impairment of cognitive functions resulting from substance abuse may significantly hinder students' performance in these subjects.

In the context of the foregoing, it is crystal clear that science subjects are central to students' academic and career development, especially in Biology, Chemistry, and Physics, evidence suggests that many secondary school students struggle to acquire the required cognitive, conceptual, and practical skills needed for effective learning and good performance. This persistent challenge has been linked to poor academic outcomes and reduced interest in science-related careers. However, there remains a gap in existing studies, particularly in clearly establishing how factors such as substance abuse specifically influence students' performance in individual science subjects at the secondary school level. Most available studies tend to focus on general academic performance or tertiary education, leaving limited empirical evidence on secondary school

students in the Nigerian context. This study therefore seeks to address this gap by examining the effect of substance abuse on the academic performance of secondary school students in science subjects.

Statement of the Problem

Substance abuse among secondary school students has become a growing educational and social challenge, with evidence showing widespread use of alcohol, tobacco, cannabis, marijuana, tramadol, codeine, and other illicit drugs. These substances are known to negatively affect students' mental alertness, memory retention, and problem-solving abilities, all of which are essential for success in science subjects such as Biology, Chemistry, and Physics. Although previous studies have examined substance use among undergraduates and general academic performance, there is still limited empirical evidence on how substance abuse specifically affects secondary school students' achievement in individual science subjects in the Nigerian context, particularly in Oyo Town. This existing gap necessitates further investigation, hence the need for this study to examine the effect of substance abuse on the academic performance of secondary school students in science subjects.

Research Questions

- i. What is the extent of substance abuse among secondary school students in Oyo Town?
- ii. What is the academic performance level of secondary school students in science subjects in Oyo Town?
- iii. What is the relationship between substance abuse and students' academic performance in science subjects among secondary school students in Oyo Town?

Methodology

Research Design

The study adopted a descriptive survey research design with a correlational approach. The design was considered appropriate because it enables the researcher to systematically collect data from secondary school students and examine the relationship between substance abuse and their academic performance in science subjects (Biology, Chemistry, and Physics) as they naturally occur, without manipulating any variables. It also allows for the description of existing conditions and the determination of the extent to which substance abuse influences students' academic outcomes in the study area.

Population of the Study

The population of the study comprised all Senior Secondary School students of science in public secondary schools in Oyo Town, Oyo State, Nigeria. These students are considered appropriate because they are actively engaged in science subjects such as Biology, Chemistry, and Physics, which form the focus of this study.

Sample and Sampling Techniques

A multistage sampling technique was adopted in selecting a sample of 250 students across 5 public secondary schools in Oyo Town. First, the schools were selected through stratified sampling to ensure proper representation. Secondly, 50 students were selected from each of the chosen schools

using simple random sampling techniques. This was done in order to ensure that every student has an equal chance of being selected and that the sample is representative of the population.

Instrumentation

The main instrument for data collection was a well-structured questionnaire titled “*Substance Abuse and Academic Performance Questionnaire (SAAPQ)*”. The questionnaire was designed to obtain information on students’ substance abuse patterns and their academic engagement in science subjects (Biology, Chemistry, and Physics). In addition, students’ academic performance records in science subjects were obtained from school records with appropriate permission.

Validity of the Instrument

The instrument was subjected to face and content validation by experts in Educational Research, Measurement and Evaluation, and Science Education. These experts assessed the items for clarity, relevance, and adequacy in measuring the intended variables. Their suggestions and corrections were incorporated into the final version of the instrument.

Reliability of the Instrument

The reliability of the instrument was determined through a pilot study conducted outside the study area. The data collected was analyzed using Cronbach’s Alpha method to determine internal consistency. A reliability coefficient of 0.78 was obtained which is above 0.70 benchmark considered acceptable for use in research studies.

Data Analysis

Data collected was analyzed using both descriptive and inferential statistics. Descriptive statistics such as frequency counts, percentages, and mean scores were used to answer the research questions. Inferential statistics such as Pearson Product Moment Correlation and multiple regression analysis were used to test the hypotheses at a 0.05 level of significance.

Results and Discussion

Research Question I: What is the extent of substance abuse among secondary school students in Oyo Town?

Table 1: Extent of Substance Abuse among Students

Level of substance use	Frequency	Percentage (%)
Low ($X = 1.00 - 2.59$)	90	36
Moderate ($X = 2.60 - 3.39$)	110	44
High ($X = 3.40 - 5.00$)	50	20
Total	250	100

x = Mean score

Table 1 presents the extent of substance abuse among the 250 respondents. The findings reveal that 36.0% of the students fall within the low level of substance use, while 44.0% are within the moderate level, and 20.0% are in the high level category. This indicates that a substantial

proportion of students (64.0%) are already within moderate to high levels of substance involvement. This pattern is consistent with earlier studies such as Oshikoya & Alli (2006), who reported increasing exposure of Nigerian students to substance use, and Atoyebi & Atoyebi (2013), who observed a rising trend of drug use among adolescents in educational settings.

The present finding also aligns with Nwokorie (2024), who noted that substance use among secondary school students is becoming widespread and often exists at moderate to severe levels, thereby posing risks to academic and behavioural outcomes. Similarly, Ajibola & Oluwatusin (2024) reported that substances such as alcohol, tobacco, cannabis, tramadol, and codeine are commonly abused among young people, contributing to declining academic focus and engagement. Furthermore, Dada et al. (2026) emphasized that such levels of substance involvement negatively affect students' cognitive functioning, which is essential for learning science subjects. Overall, the current results corroborate earlier findings that substance abuse among students is not only prevalent but also at a level capable of significantly undermining academic performance.

Research Question II: What is the academic performance level of secondary school students in science subjects?

Table 2: Academic Performance of Students in Science Subjects

Performance Level	Frequency	Percentage (%)
High (60 – 100%)	70	28.0
Average (50 – 59%)	100	40.0
Low (Below 50%)	80	32.0
Total	250	100.0

Table 2 presents the academic performance levels of the 250 respondents in science subjects. The results show that 70 students (28.0%) fall within the high-performance category, scoring between 60% and 100%. This indicates that only a minority of the students demonstrate strong academic achievement in science subjects such as Biology, Chemistry, and Physics. This finding is consistent with earlier studies by Atoyebi & Atoyebi (2013), which reported generally low academic outcomes among Nigerian students exposed to adverse behavioral influences such as substance use.

Furthermore, 100 students (40.0%) fall within the average performance category (50%–59%), representing the largest proportion of respondents. This pattern aligns with the observations of Nwokorie (2024), who noted that a significant number of secondary school students tend to perform at a borderline level in science subjects, often due to environmental and behavioral factors affecting learning. In addition, 80 students (32.0%) recorded low performance (below 50%), indicating a considerable proportion of students are underperforming in science subjects. This agrees with the findings of Dada et al. (2026), who emphasized that impaired cognitive functioning - often linked with substance abuse - negatively affects students' ability to grasp science concepts.

Overall, the distribution reveals that while some students perform well, the majority (72.0%) fall within the average and low performance categories, highlighting a general need for improvement in students' academic achievement in science education. This overall trend corroborates the position of Tijani & Adeduyigbe (2025), who stressed that poor academic performance in science subjects remains a persistent challenge in Nigerian secondary schools, largely influenced by behavioural and environmental factors including substance abuse.

Research Question III. What is the relationship between substance abuse and students' academic performance in science subjects?

Table 3a: Pearson Product Moment Correlation Table showing the Relationship between Substance abuse and Academic Performance

Variables	N	r-value	p-value	Remark
Substance Abuse	250	- 0.62	0.000	Significant
Academic Performance	250			

Table 3a presents the relationship between substance abuse and academic performance among the 250 respondents using the Pearson Product Moment Correlation (PPMC) analysis. The PPMC is widely used to determine the strength and direction of the relationship between two continuous variables which in this case are substance abuse (independent variable) and academic performance (dependent variable). The result shows an r-value of - 0.62, indicating a moderate negative relationship between substance abuse and students' academic performance. This implies that as the level of substance abuse increases among secondary school students, their academic performance tends to decrease, particularly in science subjects such as Biology, Chemistry, and Physics. This finding is consistent with earlier studies by Atoyebi & Atoyebi (2013), who reported that increased exposure to drug use among students is associated with declining academic achievement, and Nwokorie (2024), who also found a significant negative influence of substance abuse on students' academic outcomes in secondary schools.

Furthermore, the p-value of 0.000 is less than the 0.05 level of significance, indicating that the relationship is statistically significant. This means that the observed relationship did not occur by chance; hence, the null hypothesis is rejected. The result confirms that substance abuse has a significant negative influence on students' academic performance. This aligns with the findings of Ajibola & Oluwatusin (2024), who reported that substance use impairs students' concentration and learning capacity, while Dada et al. (2026) emphasized its detrimental effect on cognitive functioning required for science learning. Similarly, Tijani & Adeduyigbe (2025) observed that behavioural factors such as substance abuse significantly undermine students' academic success, particularly in science education.

Table 3b: Regression Analysis of Substance Abuse on Academic Performance

Predictor	B	Beta	t-value	Sig	Decision
Substance Value	-0.58	-0.61	-11.20	0.000	Significant

$$| R = 0.61 | R^2 = 0.37 | \text{Adjusted } R^2 = 0.36 | F = 125.44 | p < 0.05 |$$

Table 3b presents the regression analysis of substance abuse on academic performance among the 250 respondents. The result shows a regression coefficient (B) of -0.58 and a standardized beta value of -0.61, indicating a strong negative influence of substance abuse on students' academic performance. This implies that an increase in substance abuse leads to a corresponding decrease in academic performance among secondary school students in science subjects. The t-value of -11.20 and p-value of 0.000 further confirm that this relationship is statistically significant, meaning that substance abuse is a strong predictor of academic performance.

When juxtaposed with earlier findings, this result strongly reinforces the correlation outcome in Table 3b, where a moderate negative relationship ($r = -0.62$) between substance abuse and academic performance was established. Both findings are consistent and indicate that substance abuse not only correlates with poor academic performance but also significantly predicts it. This aligns with the studies of Atoyebi & Atoyebi (2013), who reported a similar inverse relationship between drug use and academic achievement, and Nwokorie (2024), who found that substance abuse significantly contributes to students' academic underperformance in secondary schools. Furthermore, the coefficient of determination ($R^2 = 0.37$) indicates that substance abuse explains 37% of the variation in students' academic performance, while the remaining 63% may be attributed to other factors such as study habits, teaching quality, and availability of instructional resources. This finding corroborates Ajibola & Oluwatusin (2024), who noted that substance use impairs cognitive functioning and learning capacity, and Dada et al. (2026), who emphasized its detrimental effect on students' ability to process and retain scientific concepts. Similarly, Tijani & Adeduyigbe (2025) highlighted that behavioural factors such as drug use significantly undermine academic success in science education. Overall, the regression result provides strong empirical support that substance abuse is a significant predictor of poor academic performance among secondary school students.

Conclusion

This study examined the effect of substance abuse on the academic performance of secondary school students in science subjects in Oyo Town. The findings revealed that substance abuse is fairly prevalent among students, with a considerable proportion engaging in moderate to high levels of substance use. The study also showed that students' academic performance in Biology, Chemistry, and Physics is generally unsatisfactory, as most students fall within the average and low performance categories. Furthermore, the results established a significant negative relationship between substance abuse and academic performance, indicating that increased involvement in substance use leads to a decline in students' academic achievement.

The regression analysis further confirmed that substance abuse is a significant predictor of academic performance, accounting for a meaningful proportion of the variation in students' outcomes. Based on these findings, it is evident that substance abuse poses a serious threat to effective learning and academic success in science education. Therefore, addressing substance use among secondary school students is essential for improving their academic performance and enhancing overall educational outcomes in Oyo Town.

Recommendations



Based on the findings of this study, the following recommendations are made:

- (i) School authorities should intensify continuous sensitization programmes on the dangers of drug use and its negative effects on students' academic performance in Biology, Chemistry, and Physics.
- (ii) School guidance counselors should provide regular counselling sessions aimed at identifying students involved in substance use and offering timely behavioural intervention and support.
- (iii) Parents and guardians should be more actively involved in monitoring their children's behaviour, peer groups, and academic progress to discourage exposure to drugs and related substances.
- (iv) School management and government agencies should strengthen policies that restrict access to illicit drugs within and around school environments to reduce exposure and usage among students.

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