



## Assessment of health and neuropsychological implications of substance abuse on cognitive development among adolescent in Kano metropolis

Abdullahi, Garba Abdullahi<sup>1</sup>

Email: [aagarba@maaun.edu.ng](mailto:aagarba@maaun.edu.ng); [abdullahigarba50@gmail.com](mailto:abdullahigarba50@gmail.com)

Tel: +2348032616153

Sani, Abdullahi<sup>2</sup>

[abdulsanic2@gmail.com](mailto:abdulsanic2@gmail.com)

08037734912

<sup>1</sup>Department of Sociology, Maryam Abacha American University of Niger (MAAUN)  
Maradi, Niger Republic

<sup>2</sup>Department of Mathematics and Statistics, Hassan Usman Katsina Polytechnic, Katsina  
Nigeria

### Abstract

Substance abuse among adolescents continues to be a major problem worldwide and Nigeria like other nations, continue to exhibit a low level of development to these effects. Many people at one time or the other have taken drugs without prescription by a Medical Personnel and often times for non-medical reasons. Primary data was collected using structured questionnaire from a sample of 190 adolescents aged 11 to 19 years who have been abusing drugs for at least one year. Descriptive cross-sectional design was used. Data obtained from the questionnaires was presented using frequencies, tables, percentages and analyzed using the statistical package for social sciences (SPSS) version 26.0. Quantitative variables were summarized as means standard deviation and two (2) hypotheses were tested using analysis of variance. The result shows that drug abusers have general satisfaction over their feelings they may have about their memory over the past two weeks. They were generally pleased with their memory ability. The result of the hypothesis shows that there is significant between tobacco consumption and feelings that people may have about their memory over the past two weeks. There is significant between tobacco consumption and the common memory mistakes that people make over the past two weeks. The study has important implications for policy makers to initiate primary preventive measures that would be focused towards the reduction of Health and Neuropsychological implication of psychoactive substance abuse on adolescent cognitive development.

**Keyword:** Substance, adolescents, Memory, Neuropsychological, Implications.

### Introduction



The drug and substance abuse problem is a global plague, affecting both developed and developing nations worldwide. It is a problem that affects virtually every aspect of a nation's political, social and economic life. Over the past decades till now, there has been a lot of global effort in combating this social malady. Such efforts basically address the problem through supply control measures and demand reduction activities (NDLEA, 2014).

In dealing with drug and substance abuse problem in Nigeria, the government has put in place several Legislations against the abuse and trafficking in narcotic drugs and Psychotropic Substances. At the International scene, Nigeria has been a party to numerous bilateral and multilateral treaties as well as United Nations Conventions on Drug Control. The two earlier Conventions in 1961 and 1971 on Narcotic Drugs and Psychotropic Substances paved way for the emergence of a clearer treaty i.e. the United Nations Convention against illicit trafficking in Narcotic Drugs and Psychotropic Substances of 1988 (NDLEA, 2014 Survey Report).

The use of drugs could be beneficial or harmful depending on the mode of use (Hernandez & Araiza, 2014, 2-83). They are often term as chemical modifiers of the living tissues that could bring about physiological and behavioral changes. Drugs are thus chemical substances taken into the body or applied to the body surface not as food but for the prevention, control and treatment of diseases symptoms or for diagnostic purposes (Mustapha, 2001).

Adolescence may be a period of heightened vulnerability for substance abuse effect on the brain Cognitive deficits resulting from these substances related neural insults have potentially harmful implications for subsequent academic, occupational, and social functioning extending into adulthood. Therefore, neurocognitive squealed from heavy drinking and drug use are important to explicate (Mooney-leber & Gould, 2018a).

The drug and substance abuse problem is a global plague, affecting both developed and developing nations worldwide. It is a problem that affects virtually every aspect of a nation's political, social, psychological and economic life. Over the past decades till now, there has been



a lot of global effort in combating this social malady. Such efforts basically address the problem through supply control measures and demand reduction activities (NDLEA, 2014).

While several decades of research with adults have shown that chronic heavy drinking is associated with adverse consequences on the adult brain, this relationship has only recently been explored in the adolescent brain. Understanding the effects of alcohol and drug use on adolescent neurocognition is crucial, being that rates of use increase dramatically between ages 12 and 18. Epidemiological studies have shown that past month alcohol use increases from 17% to 45% between 8 and 12 grade, and illicit drug use prevalence expands from 8% to 22%. Lifetime rates indicate that 73% of youth have used alcohol and 48% have used illicit drugs by their senior year of high school. In the past year, 23% of youth meet diagnostic criteria for a substance use disorder (alcohol or drug abuse or dependence) by age 20 (Sanders, 2020).

Along with these neuromaturational changes, it is suggested that increased myelination allows for smoother, more efficient communication between frontal-subcortical brain regions, allowing for better top-down cognitive control in adolescence (Wetherill & Tapert, 2010).

This study therefore, seek to appraise the importance of adolescent cognitive development as such, focused on adolescent in the Kano Metropolis, who in their formative years are more vulnerable to peer influence, environmental overwhelming and the menace of substance abuse. In this regard, Base on the observed spread of substance abuse and very low information pertaining to its health as well as neuropsychological implications and preventive measures, the incidence has encouraged the researchers to study this phenomenon. It is a study which will assess the extent of the phenomena of abuse of other types of unconventional drugs which are of utmost important as the situation causes more harm in silence but seems to have been neglected while leaving a huge gap.

### **Objectives of the study:**

1. To investigate whether there is significant relationship between tobacco consumption and feelings that people may have about their memory over the past two weeks.



2. To find out whether there is significant relationship between tobacco consumption and common memory mistakes that people make over the past two weeks.

### Research Questions:

1. Is there any significant relationship between tobacco consumption and feelings that people may have about their memory over the past two weeks?
2. Is there any significant relationship between tobacco consumption and common memory mistakes that people make over the past two weeks?

### Hypotheses:

1.  $H^1_0$ : There is no significant relationship between tobacco consumption and feelings that people may have about their memory over the past two weeks.
2.  $H^2_0$ : There is no significant relationship between tobacco consumption and common memory mistakes that people make over the past two weeks.

### Methodology

This study will be descriptive cross-sectional in design, with mixed methods of data collection; quantitative and qualitative. This research work goes with mixed method that is, using both quantitative and qualitative methods of data collection. Only adolescents aged 11 to 19 up to 25 years who have been abusing drugs for at least one year will be included in the study. While sampling procedures entails the various steps taken in selection of the sample and it may also differ depending on the purpose of the research and nature of the data to be collected (Nyakemwa, 2016). Samples for quantitative data collection were obtained using multi-stage sampling technique. A review of records revealed that, in each of the eight Local Government Areas, at least 40 drug abuse joints were available, making a total of 240 drug abuse joints in the whole area of Kano Metropolis where a sample 190 participants was taken which represent the minimum sample size. Categorical variables are summarized as frequencies and percentages. Quantitative variables will be summarized as means and standard deviation. The statistical package for social sciences (SPSS) version 26.0 was used to analyze the data.

## Results

**Table 1: Scale 1 response for MMQ-Satisfaction: Feelings that people may have about their memory over the past two weeks.**

S/N	Statement	1 2 3 4 5					Sum	Mean	SD.	Remark	Conc.
		SD	D	UD	A	SA					
1	I am generally pleased with my memory ability	9	9	29	47	96	782	4.1158	1.6158	Agreed	Satisfied
2	There is something seriously wrong with my memory.	10	29	18	39	94	748	3.9368	1.4368	Disagreed*	Satisfied
3	If something is important I will probably remember it.	9	9	28	67	77	764	4.0211	1.5211	Agreed	Satisfied
4	When forget something I fear that may have a serious memory problem, like Substance Use Disorder (SUD).	19	9	19	57	86	752	3.9579	1.4579	Disagreed*	Satisfied
5	My memory is worse than most other people of my age.	20	9	10	67	84	756	3.9789	1.4789	Disagreed*	Satisfied
6	I have confidence in my ability to remember things.	9		18	56	107	822	4.3263	1.8263	Agreed	Satisfied
7	I feel unhappy when I think about my memory ability.	10	9	30	38	103	785	4.1316	1.6316	Disagreed*	Satisfied
8	I worry that others will notice that my memory is not very good.	19	9	19	40	103	769	4.0474	1.5474	Disagreed*	Satisfied
9	When I have trouble remembering something, I am not too hard on myself.	9	9	27	48	97	785	4.1316	1.6316	Agreed	Satisfied
10	I am concerned about my memory.	9	9	37	66	69	747	3.9316	1.4316	Disagreed*	Satisfied
11	My memory is really going downhill lately.	10	19	9	59	93	776	4.0842	1.5842	Disagreed*	Satisfied
12	I am generally satisfied with my memory ability.	9	9	19	27	126	822	4.3263	1.8263	Agreed	Satisfied
13	I don't get upset when I have trouble remembering something.	9	10	9	76	86	790	4.1579	1.6579	Agreed	Satisfied



14	I worry that I will forget something important.	10	10	10	50	110	810	4.2632	1.7632	Disagreed*	Satisfied
15	I am embarrassed about my memory ability.	10	10	18	59	93	785	4.1316	1.6316	Disagreed*	Satisfied
16	I get annoyed or irritated with myself when I am forgetful.	0	9	28	49	104	818	4.3053	1.8053	Disagreed*	Satisfied
17	My memory is good for my age.	10	10	37	93	40	713	3.7526	1.2526	Agreed	Satisfied
18	I worry about my memory ability.	10	9	38	93	40	714	3.7579	1.2579	Disagreed*	Satisfied
<b>Grand mean</b>								4.0754	1.5754		

Source: Researcher’s computation, 2022

Table 1 contains the results tested the feelings that people may have about their memory over the past two weeks. The responses were remarked as either agreed or disagreed where those that agreed were classified as those that were satisfied with their memory while those that disagreed were classified as those that were not satisfied with their memory with the condition that the Likert options were in ascending order (SD = 1, D = 2, UD = 3, A = 4 & SA = 5). The remarks that were marked with asterisk (\*), are the Likert options for the questions that oppose the memory ability and were arranged in descending order (SD = 5, D = 4, UD = 3, A = 2 & SA = 1). These remarks look different from the former in which those that disagreed with the statement were classified as those that are also satisfied. Responses with the average less than 2.5 were classified as those that agreed for ascending scale and disagreed for descending scale.

The result shows that the grand mean was 4.0754 with a standard deviation of 1.5754 which indicates the respondents’ general satisfaction over their feelings they may have about their memory over the past two weeks. They were generally pleased with their memory ability with the mean  $\bar{X} = 4.12$  and the standard deviation  $SD = 1.62$ . There is nothing seriously wrong with their memory with the mean of 3.94 and the standard deviation 1.44 and if something is important they will probably remember it with the mean of 4.02 and the standard deviation 1.52.



Majority of the drug or substance abusers don't fear whether they may have a serious memory problem, like Substance Use Disorder (SUD) with the mean of 3.96 and the standard deviation 1.46 and they believe that their memory is not worse than most other people of their age at the mean of 3.98 and the standard deviation 1.48. They have confidence in their ability to remember things at the mean of 4.33 and the standard deviation 1.83.

However, drug users feels they don't experience unhappy moment when they think about their memory ability (mean = 4.13 SD = 1.6). They don't worry that others will notice that their memory is not very good with the mean of 4.05 and the standard deviation 1.55 and when they have trouble remembering something; they are not too hard on themselves with the mean of 4.13 and the standard deviation 1.63.

Drug users were not concerned about their memory with the mean of 3.93 and the standard deviation 1.43. Similarly, their memory is not really going downhill lately with the mean of 4.08 and the standard deviation 1.58. They are generally satisfied with their memory ability with the mean of 4.32 and the standard deviation 1.83. They don't get upset when they have trouble remembering something (mean = 4.16 SD = 1.66. Users do not worry that they will forget something important with the mean of 4.26 and the standard deviation 1.76 and they are not embarrassed about their memory ability with the mean of 4.13 and the standard deviation 1.63.

Moreover, they don't get annoyed or irritated with themselves when they are forgetful with the mean of 4.31 and the standard deviation 1.81. Drug users believed that their memory is good for their age with the mean of 3.75 and the standard deviation 1.25 and they don't worry about their memory ability with the mean of 3.76 and the standard deviation 1.26.

### **Hypothesis 1**

$H_0^1$ : There is no significant relationship between tobacco consumption and feelings that people may have about their memory over the past two weeks.



**Table 2 summary of the output results**

N	R	R Square	df1	df2	Alpha	F	P-value	Decision
190	.661	.437	5	184	.05	28.530	.000	Significant

Source: SPSS Output, 2022

Table 2 was the results of the hypothesis testing the relationship between tobacco consumption and feelings that people may have about their memory over the past two weeks. The correlation coefficient and the coefficient of determination were 0.661 and 0.437 respectively which shows positive relationship with the p-value of 0.000 which is less than the significant level ( $p < 0.05$ ). This shows that the result was significant and the null hypothesis was rejected that is there is significant between tobacco consumption and feelings that people may have about their memory over the past two weeks.

### Hypothesis 2

$H_0^2$ : There is no significant relationship between tobacco consumption and the common memory mistakes that people make over the past two weeks.

**Table 3 summary of the output results**

N	R	R Square	df1	df2	Alpha	F	P-value	Decision
190	.504	.254	5	184	.05	12.535	.000	Significant

Source: SPSS Output, 2022

Table 3 was the results of the hypothesis testing the relationship between tobacco consumption and the common memory mistakes that people make over the past two weeks. The correlation coefficient and the coefficient of determination were 0.504 and 0.254 respectively which shows positive relationship with the p-value of 0.000 which is less than the significant level ( $p < 0.05$ ). This shows that the result was significant and the null hypothesis was rejected that is there is significant between tobacco consumption and the common memory mistakes that people make over the past two weeks.





## Discussion of Findings

The findings revealed that drug users have general satisfaction over their feelings they may have about their memory over the past two weeks, they were generally pleased with their memory ability, there is nothing seriously wrong with their memory and if something is important they will probably remember. Drug or substance users forget to go to school on time almost all the time but they have trouble remembering telephone number they just looked up. Drug/substance users don't misplace something they use daily, like their keys or glasses because they take drug or substance, they sometimes recall the name of someone they just seen. Similarly, they forget an appointment but they never forget what they were just about to do. They never forget to run an errand, in conversation, people doesn't have difficulty coming up with a specific word that they want that is, they were able to come up with a specific word that they want during conversation.

Tricks or strategies used to help them remember things in the /last two weeks include; timer or alarm, ask someone to help them, saying something out loud in order to remember it, such as a phone number they just looked up, repeating something to themselves at increasingly long and longer intervals so they will remember, creating an acronym, they write a note or reminder for themselves but they don't create a rhyme out of what they want to. The results of the hypothesis tested shows that there is no significant relationship between tobacco consumption and feelings that people may have about their memory over the past two weeks. Secondly, there is significant relationship between tobacco consumption and common memory mistakes that people make over the past two weeks.

## Conclusion

Drug abusers have general satisfaction over their feelings they may have about their memory over the past two weeks. They were generally pleased with their memory ability. there is no significant relationship between tobacco consumption and feelings that people may have about their memory over the past two weeks. Similarly, there is significant relationship between tobacco consumption and common memory mistakes that people make over the past two weeks.



## Recommendations

1. Clinicians working in the area, especially those not familiar with the culture of the people should be alerted to the possibility of psychoactive substance use disorders,
2. Interventional measures should be instituted early to prevent psychoactive substance use disorders.

## References

- Hernandez, A. E., & Araiza, S. M. (2014). *Beliefs About Substance Abuse Among Adolescents : What Works ?* California State University, San Bernardino.
- Mooney-leber, S. M., & Gould, T. J. (2018a). *The long-term cognitive consequences of adolescent exposure to recreational drugs of abuse.* 481–491. <https://doi.org/10.1101/lm.046672.117.25>
- Mustapha, M. (2017). *Substance Abuse Among Youths in Kashere Town: A Theoretical and Empirical Analysis.* Idi, 192–203
- NDLEA, 2014 Report. (2014). *Drug Demand Reduction* (pp. 1–71). NDLEA, Nigeria.
- Nyakemwa, M. O. (2016). *A Study of the Causes and Effects of Drug and Substance Abuse Among Students in Selected Secondary Schools in Starehe Sub County, Nairobi County By Mondester Nyakemwa Ongwae a Research Project Submitted in Partial Fulfilment for the Requirement of the Awa* [University of Nairobi]. [http://erepository.uonbi.ac.ke/bitstream/handle/11295/98538/Ongwae\\_A Study of the Causes and Effects of Drug and Substance Abuse Among Students in Selected Secondary Schools in Starehe Sub County, Nairobi County.pdf?sequence=1&isAllowed=y](http://erepository.uonbi.ac.ke/bitstream/handle/11295/98538/Ongwae_A%20Study%20of%20the%20Causes%20and%20Effects%20of%20Drug%20and%20Substance%20Abuse%20Among%20Students%20in%20Selected%20Secondary%20Schools%20in%20Starehe%20Sub%20County,%20Nairobi%20County.pdf?sequence=1&isAllowed=y)
- Sanders, R. A. (2020). *Adolescent Psychosocial , Social , and Cognitive Development.* 34(8), 2–8.
- Wetherill, R., & Tapert, S. F. (2010). *Adolescent Brain Development , Substance Use , and Psychotherapeutic Change EVIDENCE-BASED TREATMENT FOR ADOLESCENT SUBSTANCE USE.* d, 1–12.