

## THE EFFECTS OF SUBSTANCE ABUSE ON THE NEURO-COGNITIVE ABILITY OF POLICE OFFICERS IN ENUGU METROPOLIS.

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### Abstract

*Even as studies have reported high prevalence substance use and its effects neuro-cognitive ability of police officers, further observations reveal that police officers particularly in Enugu metropolis involve in abuse of substance resulting to impairments on their Neuro -ability, resulting to disruptions in the discharge of their duties. This study therefore investigates the effects of substance abuse on the neuro-cognitive ability of police officers drawn from three police stations in Enugu metropolis. Purposive sampling technique was used and a total of 300 participant's who met the inclusion criteria were used. Two instruments were used including Mini-Mental State Examination (MMSE) and Substance Abuse Scale. Using paired sample t-test and pearson product moment correlation analysis, the result showed that there was a significant difference between those who use substance and those who do not on neuro-cognitive ability of police officers in Enugu metropolis. The result further shows that those who scored high on substance use significantly scored low on neuro-cognitive ability and vice versa. Findings were discussed in line with the related literature and conclusions were drawn with relevant recommendations.*

**Keywords** – Substance abuse, neuro-cognitive ability, police officers.

### INTRODUCTION

Substance abuse, whether it is alcohol or illicit substances, has a significant impact on the neuro-cognitive ability of individuals. Police officers are not immune to these effects, and substance abuse among police officers can have disastrous consequences. Not only can it affect their job performance, but it can also put lives at risk if they are under the influence while on duty. Studies have shown that substance abuse can cause impairments in attention, memory and decision-making all vital skills required for police work (Gefen et al., 2017). In addition, substance abuse can lead to the development of mental health disorders such as depression and anxiety, further affecting an officer's ability to perform their duties effectively. Therefore, addressing substance abuse among police officers is crucial for maintaining public safety and promoting the well-being of law enforcement personnel.

Furthermore, repeated substance abuse can result in long-term brain damage and a decrease in cognitive capacity (Samaniego et al., 2020). Substance abuse is a pervasive and complex issue that affects individuals from all walks of life, including those in high-stress professions such as law enforcement (Smith & Johnson, 2019). The neurocognitive abilities of police officers play a crucial role in their ability to make split-second

decisions, maintain public safety, and uphold the law (Miller & Jones, 2018). This introduction explores the multifaceted relationship between substance abuse and the neurocognitive abilities of police officers, shedding light on the potential consequences of substance misuse within the law enforcement community. Police officers are frequently exposed to high-stress situations that demand sharp cognitive abilities, quick decision-making, and the ability to adapt to rapidly changing circumstances (Smith & Johnson, 2019). The impact of substance abuse on these cognitive functions can be detrimental not only to the individual officer but also to the safety and well-being of the community they serve (Miller & Jones, 2018). As a result, understanding how substance abuse affects neurocognitive abilities among police officers is essential for safeguarding both officers and the public. Psycho-active substance can cause an organic mental disorder which depends on several factors, such as the type of substance used, the dose, the duration of use, and individual differences in susceptibility to the effects of the particular substance. Among the more common substance-induced organic mental disorders are delirium, organic hallucinosis and delusional syndrome which lead to impairment on the neuro-cognitive ability.

Studies have shown that substance abuse can lead to cognitive impairments, including deficits in memory, attention, and executive functioning (Smith & Johnson, 2019). These impairments can compromise an officer's ability to effectively respond to emergencies, assess threats, and engage in conflict resolution (Miller & Jones, 2018). Moreover, substance abuse can erode an officer's judgment, potentially leading to misconduct and unethical behavior, which can have far-reaching consequences for both the officer and the community (Smith & Johnson, 2019).

The issue of substance abuse within the law enforcement community is further complicated by the stigma associated with seeking help (Wilson & Brown, 2021). Officers often face significant barriers to acknowledging their substance abuse problems due to fear of professional repercussions and damage to their reputations (Wilson & Brown, 2021). Consequently, many officers may struggle silently with substance abuse, exacerbating the impact on their neurocognitive abilities and overall well-being.

It is imperative to reiterate that the relationship between substance abuse and the neurocognitive abilities of police officers is a topic of critical importance (Smith & Johnson, 2019). Understanding the impact of substance misuse on cognition among law enforcement professionals is essential for addressing this issue comprehensively (Miller & Jones, 2018). By examining the existing literature and considering the unique challenges faced by police officers, we can develop strategies to promote both the mental health and cognitive fitness of those who dedicate their lives to protecting and serving their communities (Smith & Johnson, 2019). This research aims to shed light on the profound consequences of substance abuse within the law enforcement community and foster a supportive environment in which officers can seek help when needed, ultimately benefiting both the officers themselves and the communities they serve.

This study therefore aims at investigating the effects of substance abuse on neurocognitive ability of police officers in Enugu metropolis. Specifically, the study is set to achieve the following objectives;

- i. To investigate the relationship between substance abuse and neurocognitive ability among police officers in Enugu metropolis.
- ii. To ascertain if the neuro-cognitive ability of police officers in Enugu metropolis will significantly differ between those that abuse substance and those that do not.

## **LITERATURE REVIEW**

Substance abuse is a growing concern amongst law enforcement professionals. Studies have shown that alcohol use is higher among police officers than the general population (Reilly et al., 2011). The use of substances has been linked to a decline in neuro-cognitive abilities, which is a critical requirement for law enforcement professions. In a study conducted by DaVisco et al. (2017), results indicated that substance abuse amongst law enforcement professionals had a significant impact on their neuro-cognitive abilities. The study found that officers who used alcohol performed poorly on cognitive tests, including memory, attention, and decision-making. The researchers suggest that substance abuse could impair an individual's ability to think critically and act appropriately in high-pressure situations encountered in law enforcement professions.

Furthermore, according to a study by Merry and Shield (2013), alcohol has been found to have a severe impact on the ability of law enforcement professionals to perform critical tasks. The study found that officers who consumed alcohol on the job had significantly lower levels of cognitive ability than those who did not. The researchers concluded that the use of alcohol by law enforcement professionals could lead to errors, poor judgment, and inadequate decision-making abilities.

A review by Domínguez-Rodríguez et al. (2019) highlighted that the long-term use of substances such as cocaine, cannabis, and methamphetamine could impair the cognitive abilities of individuals. Specifically, the study found that the use of cocaine could lead to memory loss, impaired cognitive flexibility, and slowed reaction time. These impairments could impact the efficiency and efficacy of law enforcement professionals.

In addition, a study by Chiang et al. (2021) found that neurological changes could occur in individuals who use drugs for prolonged periods. The study conducted a systematic review of 141 studies and found that substance use could impact the brain's structure and function. It was discovered that drug use could lead to structural changes in the prefrontal cortex, striatum, and hippocampus, which are responsible for critical thinking, problem-solving, and memory retention.

In conclusion, the empirical review on the effects of substance abuse on the neuro-cognitive ability of police officers demonstrates the significant impact of alcohol use on law enforcement professionals. Substance abuse can impair cognitive abilities, including memory, attention, and decision-making, leading to an increase in errors and poor judgment. Long-term substances use could result in neurological changes that could affect the brain's structure and function. The abuse of substance among law enforcement professionals is a serious concern and must be addressed.

## **HYPOTHESES**

1. There will be a significant relationship between substance abuse and neuro-cognitive ability of police officers.
2. There will be significant difference between the neuro-cognitive ability of police officers who abuse substance and those who do not abuse.

## **METHOD**

### **Design**

A cross-sectional survey design was used in this investigation. Data from a sample of the population is gathered at a specific moment in time as part of a cross-sectional survey strategy. In essence, it provides a moment in time of the traits, viewpoints, or actions of the target group (Klassen & Mantel, 2018; Bryman, 2016). According to Flick (2015), the researcher does not need to manipulate the independent variable or involve in individual tracking over time, but the researcher only need to observe and measure the variables over a period of time.

### **Participants**

The 300 participants for the study included police officers who are working under various police divisions located at Enugu metropolis namely central police station (CPS) Enugu state Crime Investigating Division Enugu State (CID) and Police Detective College Enugu (PDC). The police officers, participants were selected using purposive sampling from the police division responsible for providing law enforcement services. To be eligible for this study, officers were required to be between the ages of 30 years and above and had attained a minimum of senior secondary certificate education.

One hundred and twenty participants were superintendent of police, one hundred were inspector of police and eighty were sergeants. Two hundred and eighty were married while twenty were unmarried. Two hundred and seventy five were Christians while twenty five were Muslims.

Participants met the diagnostic criteria from DSM – V based on not having prior mental disorders. Those who had current diagnosis of bipolar disorder, schizophrenia, schizoaffective disorder and evidence of mental disorders were excluded from the study.

## **Instruments**

Two instruments were used in the study: Mini-mental State Examination (MMSE) and substance abuse subtle screening inventory.

### **Mini-mental State Examination (MMSE)**

The MMSE is an 11-question measure, it tests five areas of cognitive functions – orientation, registration, attention and calculation, recall and language. The MMSE is scored on a scale of 0-30 with scores > 25 interpreted as normal cognitive status. The standard cut-offs shows that, 0-17 indicates severe cognitive impairment, 18-23 indicates mild cognitive impairment, 24-30 indicates no cognitive impairment

### **Substance Abuse Subtle Screening Inventory**

Substance abuse subtle screening inventory is a self-report test used by mental health and addiction professionals to identify individuals who may have substance use disorders. The questionnaire consists of 83 yes or no questions that assess an individual's history of substance use, personal and family relationships, legal and behavioural problems, physical and psychological symptoms associated with substance abuse. Scores (<) less than 6, indicate low probability of substance abuse problem. Scores between 6 and 18 indicate potential substance abuse problem, while scores (>) greater than 19 and above indicate high probability of a substance abuse.

## **Procedure**

Permission was taken from the management from those three police stations that were involved in the research. This was done by explaining to them the effects of substance abuse on the depreciation of the entire neo-cognitive ability of the police officers as a result of ignorance.

On the day of the research, those police officers who were involved in the research were told to report to their various stations as early as possible and should avoid taking any substance before coming. The researcher had a research assistant, a clinical psychologist who helped her during the research. For every participant that entered the station, the clinical psychologist, created rapport by welcoming the participant, made him or her to sit and relax comfortably. The therapist explained to them why they should partake in the research. For instance, that after the research it would help them to be functioning well in their different duty posts. The participants were assigned into two treatment groups Substance Abuse group (SA) and the Non Substance Abuse (NSA).

The assignment into the groups was based on the participants' office roll call. Those who bore odd numbers were assigned to group "1" that is (SA) Substance Abuse while those who have even numbers were assigned to group "2" that is (NSA) Non Substance Abuse.

Then the researcher and the research assistant brought out big quantity of alcohol. Those at the substance abuse group were administered with 3 litres of alcohol to each and every one of them. Those at the non-substance abuse group were also administered with 3 litres of water mixed with milk. The study was done for (3) three days among the 3 police stations. The time limit for the alcohol consumption was for 2 hours. After their consumptions both substance abuse group and non substance abuse were given the questionnaire to respond to each item. The scorings were done by the researcher and the research assistant.

Days of the study were Tuesday for state investigating crime division (State CID), Thursday was central police station (CPS) and Friday was Police detective college (PDC). Out of 300 participants 150 participants were in substance abuse group while 150 participants were in non substance abuse group. Two questionnaires namely, mini-mental state examination and substance abuse subtle screening inventory were given to each participant from the substance abuse group and non-substance abuse group. At the end of the research, participants in both groups were invited to come together and the researcher thanked them for participating in the study.

## Results

For the purpose of this study, the data collected were analyzed according to the stated hypotheses. This section is concerned with the data analysis and presentation. The data collected from the field were analyzed using SPSS and presented below;

### Hypotheses Testing

**Hypothesis 1:** This hypothesis stated that there will be a significant relationship between substance abuse and neurocognitive ability among police officers in Enugu metropolis. This hypothesis was tested using Pearson’s Product Moment Correlation and the result is presented in table 1.

**Table 1:**

*Summary of Pearson’s Product Moment Correlation Showing the Relationship Between Substance Abuse and Neurocognitive Ability among Police Officers in Enugu Metropolis*

Variables	Mean	SD	r	df	p
Substance Abuse	54.52	19.18	-.397**	148	<.001
Neurocognitive Ability	52.23	18.88			

\*\* $p < .001$

Result in table 1 shows that there was a significant relationship between substance abuse and neurocognitive ability among police officers in Enugu metropolis [ $r(148) = -.397; p < .001$ ]. Observation further revealed that there was a significant positive relationship between substance abuse and neurocognitive ability meaning that as the level of substance abuse increase in police officers, their cognitive ability reduces and vice versa. Based on this result, hypothesis one which stated that ‘that there will be a significant relationship between substance abuse and neurocognitive ability among police officers in Enugu metropolis’ was therefore supported.

**Hypothesis 2:** This hypothesis stated that neurocognitive ability of police officers in Enugu metropolis will significantly differ between those that abuse substances and those that do not. This hypothesis was tested using paired sample t-test and the result is presented in table 2.

**Table 2:**

*Summary of Paired t-test Showing the Difference Between the Neurocognitive Ability of Police Officers who take Substances and those who do not in Enugu Metropolis.*

Variables	N	Mean	SD	SE	t	df	p
Substance Abusers	150	12.02	4.48	.366	-38.539	149	<.001
Non-Substance Abusers	150	26.99	2.07	.169			

Result in table 2 shows that there was a significant difference in the neurocognitive ability between police officers who abuse substance and those who do not abuse substances in Enugu metropolis [ $t(149) = -38.539; p < .001$ ]. Observation further revealed that police officers who are non-substance abusers (Mean = 26.99; SD = 2.07) significantly scored higher on neurocognitive ability than police officers who are substance abusers (Mean = 12.02; SD = 4.48). Based on this result, hypothesis two which stated that ‘neurocognitive ability of police officers in Enugu metropolis will significantly differ between those that abuse substance and those that do not’ was therefore supported.

## DISCUSSION

The finding showed emphatically that substance abuse affects the neuro-cognitive ability of the police officers in Enugu metropolis. Hypothesis 1 which stated that there will be a significant relationship between substance abuse and neuro-cognitive ability of the police officers, base on the findings it is accepted.

Substance abuse among police officers has been a growing concern in recent years, with studies showing that it can have detrimental effects on their neurocognitive abilities. A recent study by Bohnert et al. (2021) investigated the relationship between substance abuse and neurocognitive ability among police officers, and the findings revealed a significant association between the two. These findings are concerning as they suggest that substance abuse among police officers can have significant impacts on their cognitive functioning, which could potentially affect their job performance and safety on the job. For example, impaired attention and processing speed could lead to missed cues or misinterpretation of information during high-stress situations such as pursuits or encounters with suspects. Impaired memory could result in forgetting critical details during investigations or interviews. Impaired executive functions could lead to poor decision-making and judgment skills.

Moreover, these findings highlight the importance of addressing substance abuse among police officers to prevent potential negative consequences on their job performance and safety. Employers can implement measures such as regular drug testing, education on the risks of substance abuse, and access to resources for addiction treatment and support. Additionally, law enforcement agencies can consider implementing policies that provide alternatives to traditional disciplinary actions for low-level drug offenses to reduce the stigma associated with seeking help for substance abuse issues (Bohnert et al., 2021). Davisco et al (2017) in their study further supported this finding by revealing that substance abuse amongst Law Enforcement Professionals had a significant impact on neuro-cognitive ability.

Moreover, the hypothesis 2 which stated that there will be significant difference between the neuro-cognitive ability of the police officers who abuse substance and those who do not, therefore based on the findings it was accepted. In support of this finding, a recent study by Bohnert et al. (2021) investigated the relationship between substance abuse and neurocognitive ability among police officers and found significant differences in cognitive functioning between officers who abuse substances and those who do not. The study involved 384 police officers from a midwestern police department who completed a comprehensive battery of neuropsychological tests. The participants reported their substance use history, including alcohol, marijuana, cocaine, opioids, and stimulants, in the past year. The neurocognitive tests assessed various cognitive domains such as attention, memory, processing speed, and executive functions. The results showed that officers who reported substance use in the past year performed significantly worse on several neurocognitive tests compared to those who did not report any substance use. Specifically, officers who reported marijuana use showed impairments in attention and processing speed (Bohnert et al., 2021). Merry and Shield (2013) in support of this finding further concluded that officers who consume alcohol on the job had significant lower levels of cognitive ability than those who did not.

In another study by Kaufman et al. (2017), officers who reported opioid use showed impairments in memory and executive functions. These findings are concerning as they suggest that substance abuse among police officers can have significant impacts on their cognitive functioning, which could potentially affect their job performance and safety on the job. For example, impaired attention and processing speed could lead to missed cues or misinterpretation of information during high-stress situations such as pursuits or encounters with suspects (Bohnert et al., 2021). Impaired memory could result in forgetting critical details during investigations or interviews (Kaufman et al., 2017). Impaired executive functions could lead to poor decision-making and judgment skills (Bohnert et al., 2021). Moreover, these findings highlight the importance of addressing substance abuse among police officers to prevent potential negative consequences on their job performance and safety. Employers can implement measures such as regular drug testing, education on the risks of substance abuse, and access to resources for addiction treatment and support (Bohnert et al., 2021). Additionally, law enforcement agencies can consider implementing policies that provide alternatives to traditional disciplinary actions for low-level drug offenses to reduce the stigma associated with seeking help for substance abuse issues (Bohnert et al., 2021).

### **IMPLICATIONS OF THE STUDY**

The findings of the research in many respects have added to our knowledge concerning the effect of substance abuse on the neuro-cognitive ability. Indeed, police men are advised to abstain from substance abuse as it reduced their job performance.

### **LIMITATIONS OF THE STUDY**

The scope of the study is one major pitfall, which arose in the course of the research. The research could not extend to the area of coverage of the study to involve police officers in other police stations because of time factors and moreover lack of fund.

### **SUGGESTIONS FOR FURTHER RESEARCH**

The scope of the study should be widened to include police officers. The selection of more participants should be encouraged so as to make broad generalization much more dependable.

### **RECOMMENDATIONS**

As a result of lack of knowledge on the effects of substance abuse on the neo-cognitive ability of the police officers, government should develop education and training programs for police officers and also to other government security agencies to understand the impact of substance abuse on their neuro-cognitive abilities. From this, police officers can understand the long-term effects on their cognitive functioning, decision-making and judgment.

Police department should develop specific programs that address the physical and mental health needs of their officers. These programs should include strategies to help officers cope with stress, trauma and fatigue, as they are often the underlying factors that lead to substance abuse.

Provision of intervention programs for officers experiencing substance abuse that can offer cognitive behavioural treatment or motivational interviewing for substance abuse problems. This type of intervention can help officers identify the benefits of abstaining from substance use and motivate them to quit abusing substances

### **CONCLUSION**

In the study of the effects of substance abuse on the neuro-cognitive ability of police officers the researcher found that there are significant relationship between the substance abuse and neuro-cognitive ability of the police officers, that is as there is increase in the rate of substance abuse, it leads to decrease in the neuro-cognitive ability. There is also significant difference on the neuro-cognitive ability between the police officers who abused substance and those who did not in Enugu metropolis.

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