

IMPACT OF SOCIO-DEMOGRAPHIC ON PHARMACOLOGICAL ERGOGENIC AIDS USE AMONG UNIVERSITY ATHLETES IN ENUGU STATE, NIGERIA

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Abstract - The study investigated impact of socio-demographic on pharmacological ergogenic aids use among university athletes in Enugu State, Nigeria. The study had three specific objectives with three corresponding research questions and two null hypotheses guided the study. An ex-post factor research design was adopted. The population for the study consisted of 345 university athletes in Enugu State, Nigeria, with the University of Nigeria, Nsukka, having 230 athletes and Enugu State University of Science and Technology, Enugu, having 115 athletes. The entire population was used as sample. The instrument used for data collection was a researcher-designed questionnaire titled Socio-demographic correlate of pharmacological ergogenic aids use questionnaire (SCPEAUQ)". The SCPEAUQ was validated by five experts and yielded a reliability index of .87. A total of 329 (95%) returned valid copies of SCPEAUQ were used for data analysis. Frequency, percentage, and chi-square were used to analyze data concerning all the research questions and test the null hypotheses. It was found that 82.0 per cent of university athletes in Enugu State, Nigeria, use pharmacological ergogenic aids. The findings of the study showed no significant relationships between pharmacological ergogenic aids and socio-demographic variables of age and gender. It was recommended among others that an institution-centered seminar and workshop on pharmacological ergogenic aids use be organized by sports experts, especially sports psychologists and managers, to complement training activities and improve sport performance of athletes.

Keywords: Pharmacological ergogenic aids, athletes, university

Introduction

Ergogenic aids use is a phenomenon that is associated with athletes worldwide. The use of ergogenic aids in the general population has increased in the past decades, becoming more evident among athletes, where the prevalence of use is reported to range between 65 and 88 per cent despite the lack of evidence supporting their alleged benefits (Mas et al., 2019). Frączek, Warzecha, Tyrała and Pięta (2016) reported that 48.2 per cent of athletes declared using ergogenic aids to enhance their performance, including 36.7 per cent periodically and 11.5 per cent regularly in Poland. De-Oliveira et al. (2023) reported that 7.1 per cent used pharmacological aids. In Africa, ergogenic aids that are used among athletes are also evident. Gwilliams (2015) reported that the highest self-reported ergogenic aid used by athletes was sports drinks (80%) followed by vitamins (68%) and carbo-loading (62%); also 79 per cent of athletes/runners believed that their chosen ergogenic aid improved their performance, while 9 per cent did not think their performance was improved, and 9 per cent were uncertain; the most frequently perceived benefits of ergogenic aids were 'delayed fatigue' and 'providing an energy boost'.

In Nigeria, there have been reports of cases of athletes who tested positive to ergogenic aids and performance enhancing drugs in athletics. Alex-Hart, Opara and

Okagua (2015) revealed that 30.6 per cent of their respondents had ever taken alcoholic drinks in Port Harcourt, Nigeria before the survey while Ogunsola and Fatusi (2016) reported that about two-thirds of athletes in Osun State, Nigeria had used ergogenic aids and performance enhancing drugs in both rural (65.7%) and urban areas (66.0%) respectively.

Enugu State is not left out, as there is a high prevalence of the use of ergogenic aids among athletes in the State. For instance, Manyike et al. (2016) revealed that the prevalence of current use for ergogenic aids and psychoactive substances in Enugu State ranges from 0.4 to 34.9 per cent while that for life use ranges from 0.8 to 63.5 per cent. For the fact that these substances can increase physical performance, they are known as ergogenic aids. Ergogenic aids have been defined by difference authors. According to Yunusa et al. (2014), ergogenic aids are anything that improves or is thought to improve physical performance. An ergogenic aid is any agent used to enhance energy production and/or utilization (Günay, 2014). Story and Klein (2015) viewed ergogenic aids as substances, strategies and treatment that seem to improve performance in sports or competitive athletics. In this study, ergogenic aids are conceptualized as any substance used in enhancing energy utilization, including energy production, control, and efficiency among university athletes in Enugu State, Nigeria.

There are various classifications of ergogenic aids used by athletes all over the world but this study is focused on pharmacological ergogenic aids. Pharmacological ergogenic aids include performance enhancing drugs, both legal and illegal. They have been used by sports competitors for many years and can be very effective (Robert, 2015). However, pharmacological aids should be used with caution as even the legal ones can have unpleasant side effects. Before one is tempted to try any pharmacological aid, it is important to do sufficient research to find out the effectiveness of the products, any possible side effects and if the drug is legal. Some pharmacological supplements include creatine, amphetamines and anabolic Steroid (Robert, 2015). For the present study among university athletes, the socio-demographic correlates of age and gender were investigated. The study was conducted in universities in Enugu State, specifically the University of Nigeria, Nsukka, and Enugu State University of Science and Technology. Athletes in these institutions, like in other parts of Nigeria, may use ergogenic aids to enhance performance, gain recognition, and achieve success in sports (Uramah, 2013). However, concerns exist regarding the health risks associated with pharmacological ergogenic aids use, including cardiovascular issues, hormonal imbalances, and psychological dependence. Additionally, outstanding sports performances have, in some cases, been linked to performance-enhancing substances. While specific cases in Enugu State may not be well-documented, the increasing reliance on pharmacological ergogenic aids raises questions about their impact on athletes' health and achievements. This study, therefore, aims to examine the socio-demographic factors influencing pharmacological ergogenic aids use among university athletes in Enugu State.

Statement of the Problem

The use of pharmacological ergogenic aids among athletes is a serious national and international concern. Sports have become a lucrative business, with champions gaining financial rewards, recognition, and self-esteem. In pursuit of excellence, some athletes resort to performance-enhancing substances when they feel unable to meet expected standards. This issue transcends race, culture, education, and socio-economic status, posing a significant public health challenge with widespread societal consequences. Regrettably, the use of pharmacological ergogenic aids may be more prevalent among

university athletes due to performance incentives. Factors influencing their use include financial rewards, belief in drug effectiveness, and inadequate training facilities. Athletes may resort to these aids due to competition pressures and insufficient preparation. However, misuse can lead to severe health issues such as allergic reactions, nervous system disorders, and kidney damage, ultimately harming athletic performance. Understanding the relationship that accounts for the use of pharmacological ergogenic aids among athletes along with socio-demographic is key to designing mitigating strategies to the menace. Sadly, research is lacking in establishing these correlates of pharmacological ergogenic aids that are used among university athletes in southeast Nigeria. This necessitated the need to carry out study on the socio-demographic correlates of pharmacological ergogenic aids that are used among university athletes in Enugu State, Nigeria.

Purpose of the Study

The purpose of this study was to investigate socio-demographic correlates of pharmacological ergogenic aids that are used among university athletes in Enugu State, Nigeria. Specifically, this study sought to find out the:

1. proportion of university athletes in Enugu State who use pharmacological ergogenic aids.
2. proportion of university athletes in Enugu State who use pharmacological ergogenic aids based on age.
3. proportion of university athletes in Enugu State who use pharmacological ergogenic aids based on gender.

Research Questions

The following research questions were posed the study:

1. What is the proportion of university athletes in Enugu State who use pharmacological ergogenic aids?
2. What is the proportion of university athletes in Enugu State who use pharmacological ergogenic aids based on age?
3. What is the proportion of university athletes in Enugu State who use pharmacological ergogenic aids based on gender?

Hypotheses

The following hypotheses were tested at .05 level of significance:

H₀₁: There is no significant difference in the proportion of university athletes in Enugu State who use pharmacological ergogenic aids based on age.

H₀₂: There is no significant difference in the proportion of university athletes in Enugu State who use pharmacological ergogenic aids based on gender.

Methods

The study adopted an Ex-post facto research design. Bernstein, Penner, Clarke-Stewart and Roy (2006) opined that this design examines relationships among variables to describe research data more fully, to test predictions, to evaluate theories, and to suggest new hypotheses about why people think and act as they do. The population for this study consisted of 345 university athletes in Enugu State, Nigeria with the University of Nigeria, Nsukka, having a population of 230 athletes, (UNN Sports Council, 2023), and Enugu State University of Science and Technology, Enugu, having a population of 115 athletes (Industrial and Statistics Department, ESUT, 2023). The total population was used as sample. The instrument used for data collection was researcher-designed questionnaire

titled “socio-demographic correlate of pharmacological ergogenic aids use questionnaire (SCPEAUQ)”. The SCPEAUQ was validated by five experts. The reliability of the instrument was tested using athletes in Nnamdi Azikiwe University and yielded a reliability index of .87. Copies of the instrument were administered to the respondents personally by the researcher and research assistants. Three hundred and forty-five (345) copies of the questionnaire were administered, but 329 copies of the instrument were collected from the respondents on the spot, which yielded a very high return rate (94.5%). Data collected and collated were analyzed using frequencies and percentages for research questions, while chi-square was used to test the hypotheses at .05 level of significance.

Results

Research Question One: What is the proportion of university athletes in Enugu State who use pharmacological ergogenic aids? Data answering this research question are contained in Table 1.

Table 1: Proportion of Pharmacological Ergogenic Aids Use among University Athletes in Enugu State (n=329)

s/n	Pharmacological Ergogenic Aids	Yes		No	
		f	%	f	%
1.	Coffee	285	86.6	44	13.4
2.	Marijuana	269	81.8	60	18.2
3.	Tramadol	270	82.1	59	17.9
4.	Indian hemp	255	77.5	74	22.5
Cluster		82.0		18.0	

Key: 0–44%=less than half; 45–49%=nearly half; 50%=half; 51–69%=more than half; 70%=two-third; 71–79%=more than two-third; and 80% & above=Majority.

Result in Table 1 shows that overall, majority (82.0%) of university athletes in Enugu State use pharmacological ergogenic aids.

Research Question Two: What is the proportion of university athletes in Enugu State who use pharmacological ergogenic aids based on age? Data answering this research question are contained in Table 2.

Table 2: Proportion of Pharmacological Ergogenic Aids Use among University Athletes in Enugu State Based on Age (n=329)

s/n	Pharmacological Ergogenic Aids	18 – 25 years (n=204)		26 – 35 years (n=125)	
		Yes	No	Yes	No
		f (%)	f (%)	f (%)	f (%)
1.	Coffee	173 (84.8)	31 (15.2)	112 (89.6)	13 (10.4)
2.	Marijuana	162 (79.4)	42 (20.6)	107 (85.6)	18 (14.4)
3.	Tramadol	164 (80.4)	40 (19.6)	106 (84.8)	19 (15.2)
4.	Indian hemp	149 (73.0)	55 (27.0)	106 (84.8)	19 (15.2)
Cluster		79.4	20.6	86.2	13.8

Key: 0–44%=less than half; 45–49%=nearly half; 50%=half; 51–69%=more than half; 70%=two-third; 71–79%=more than two-third; and 80% & above=Majority.

Result in Table 2 shows that overall, more than two-third (79.4%) of university athletes aged 18 – 25 years and majority (86.2%) of university athletes aged 26 – 35 years in Enugu State use pharmacological ergogenic aids.

Research Question Three: What is the proportion of university athletes in Enugu State who use pharmacological ergogenic aids based on gender?

Table 3: Proportion of Pharmacological Ergogenic Aids Use among University Athletes in Enugu State Based on Gender (n=329)

s/n	Pharmacological Aids	Ergogenic	Male (n=200)		Female (n=129)	
			Yes f (%)	No f (%)	Yes f (%)	No f (%)
1.	Coffee		175 (87.5)	25 (12.5)	110 (85.3)	19 (14.7)
2.	Marijuana		174 (87.0)	26 (13.0)	95 (73.6)	34 (26.4)
3.	Tramadol		172 (86.0)	28 (14.0)	98 (76.0)	31 (24.0)
4.	Indian hemp		164 (82.0)	36 (18.0)	91 (70.5)	38 (29.5)
		Cluster	85.6	14.4	76.4	23.6

Key: 0–44%=less than half; 45–49%=nearly half; 50%=half; 51–69%=more than half; 70%=two-third; 71–79%=more than two-third; and 80% & above=Majority.

Result in Table 3 shows that overall, majority (85.6%) of male university athletes and more than two-third (76.4%) of female university athletes in Enugu State use pharmacological ergogenic aids.

Hypothesis One: There is no significant difference in the proportion of university athletes in Enugu State who use pharmacological ergogenic aids based on age. Data testing this hypothesis are contained in Table 4.

Table 4: Summary of Chi-square Analysis in the Proportion of University Athletes in Enugu State that Use Pharmacological Ergogenic Aids Based on Age (n=329)

Age	<u>N</u>	Yes O (E)	No O (E)	χ^2	df	p-value	Decision
18 – 25 years	204	148 (140.6)	56 (63.4)	8.957	1	.003	Rejected
26 – 35 years	125	96 (87.4)	29 (37.6)				

*Significant $P < 0.05$

Table 4 shows that there is a significant difference in the proportion of university athletes in Enugu State who use pharmacological ergogenic aids based on age ($\chi^2=8.957$; p -value=.003). Since the p -value of .003 is less than .05 level of significance, the null hypothesis was rejected. Therefore, the proportion of university athletes in Enugu State who use pharmacological ergogenic aids differed based on age.

Hypothesis Two: here is no significant difference in the proportion of university athletes in Enugu State who use pharmacological ergogenic aids based on gender. Data testing this hypothesis are contained in Table 5.

Table 5

Summary of Chi-square Analysis in the Proportion of University Athletes in Enugu State that Use Pharmacological Ergogenic Aids Based on Gender (n=329)

Gender	<u>n</u>	Yes O (E)	No O (E)	χ^2	df	p-	Decision
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				value			
Male	200	170 (158.7)	30 (41.3)	9.996	1	.002	Rejected
Female	129	91 (102.3)	38 (26.7)				

*Significant $P < 0.05$

Table 5 shows that there is a significant difference in the proportion of university athletes in Enugu State who use pharmacological ergogenic aids based on gender ($\chi^2=9.996$; p -value=.002). Since the p -value of .002 is less than .05 level of significance, the null hypothesis was rejected. Therefore, the proportion of university athletes in Enugu State who use pharmacological ergogenic aids differed based on gender.

Discussion

The finding in Table 1 shows that overall, majority (82.0%) of university athletes in Enugu State use pharmacological ergogenic aids. This finding is surprising as the high rate of usage may be attributed to various factors, including intense competition, the desire to excel, financial incentives, and pressure from coaches, peers, or institutions. Additionally, inadequate access to proper training facilities and support systems may push athletes toward using these substances as an alternative means to enhance performance. Furthermore, the high prevalence of pharmacological ergogenic aid use among university athletes suggests that awareness and enforcement of anti-doping regulations may be insufficient. The university environment, where the stakes for optimal performance are high, might foster a culture where athletes feel compelled to seek artificial performance enhancements to gain a competitive edge in national and international competitions. The findings align with existing concerns about the increasing use of performance-enhancing substances in collegiate sports worldwide. However, this study's findings contrast with research by Almeida et al. (2023), which reported lower usage rates of pharmacological ergogenic aids among athletes in Brazil. On the other hand, the findings support previous study (Christiansen et al., 2023) that has identified the growing trend of performance-enhancing drug use in competitive sports. The alarming rate observed in this study underscores the need for urgent interventions, including awareness campaigns, strict anti-doping policies, and improved access to training facilities to discourage the reliance on pharmacological aids among university athletes.

The finding in Table 2 shows that overall, more than two-third (79.4%) of university athletes aged 18 – 25 years and majority (86.2%) of university athletes aged 26 – 35 years in Enugu State use pharmacological ergogenic aids. Also, the result of the hypothesis tested in Table 4 shows a significant difference in the proportion of university athletes in Enugu State who use pharmacological ergogenic aids based on age ($\chi^2=8.957$; p -value=.003). These findings imply that the proportion of university athletes in Enugu State who use pharmacological ergogenic aids differed based on age. These findings are expected and not surprising. The significant difference based on age suggests that interventions aimed at reducing the use of pharmacological ergogenic aids among university athletes could benefit from being age-specific. For instance, younger athletes (aged 18–25 years) might have different motivations for using these substances compared to their older counterparts. Younger athletes may be more influenced by peer pressure, a desire for rapid improvement, or a lack of awareness of the health risks associated with ergogenic aid use. Addressing these factors through targeted education, mentorship programs, and awareness campaigns could help reduce usage rates in this age group. On

the other hand, older athletes (aged 26–35 years) may use pharmacological ergogenic aids due to increased competition pressure, the need to sustain peak performance, or the physical demands of prolonged athletic participation. The higher usage rate in this group suggests that efforts should focus on promoting alternative, safer training methods and encouraging adherence to natural performance enhancement strategies. Additionally, providing structured anti-doping education and implementing strict regulations within university sports programs could help curb the prevalence of ergogenic aid use across all age groups. Furthermore, sports authorities and university management should be aware of the age-related differences in ergogenic aid use and tailor their intervention strategies accordingly. For younger athletes, interventions should focus on early education and peer influence reduction, while for older athletes, the emphasis should be on long-term health risks and ethical considerations. Finally, the significant differences in usage across age groups highlight the need for age-specific policies and programs that discourage the use of pharmacological ergogenic aids in university sports. For example, mentorship initiatives where experienced, drug-free athletes guide younger competitors could be beneficial. The findings of this study align with those of Nour, Gina and Ayah (2021) which also reported that age influences the use of performance-enhancing substances among athletes. Contrarily, the findings disagree with those of Marjanne, Shelly, Anri, Nicole and Abreya (2019) who reported no significant relationship between age and the use of pharmacological ergogenic aids among athletes in Cape Town.

The finding in Table 3 shows that overall, majority (85.6%) of male university athletes and more than two-third (76.4%) of female university athletes in Enugu State use pharmacological ergogenic aids. Similarly, the result of the hypothesis tested in Table 5 shows a significant difference in the proportion of university athletes in Enugu State that use pharmacological ergogenic aids based on gender ($\chi^2=9.996$; p -value=.002). The implication of these findings is that the proportion of university athletes in Enugu State that use pharmacological ergogenic aids differed based on gender. These findings are expected and not surprising. The significant difference based on gender suggests that male and female athletes may have different motivations and influences when it comes to using pharmacological ergogenic aids. Male athletes may be more likely to use these substances due to greater exposure to competitive pressure, a stronger emphasis on physical strength and endurance, or cultural perceptions that associate masculinity with enhanced performance. Additionally, the influence of peer groups, societal expectations, and the desire to meet high-performance standards may contribute to the higher prevalence of use among male athletes. Conversely, while the usage rate among female athletes is slightly lower, it remains substantial. Female athletes may also experience pressure to enhance performance, particularly in sports where strength, endurance, and agility play a crucial role. However, factors such as concerns about health risks, differences in physiological responses, and societal attitudes toward drug use in sports may contribute to the relatively lower proportion of female athletes using ergogenic aids. This suggests that targeted interventions should be developed to address the specific needs and concerns of both male and female athletes. Furthermore, sports authorities and university management should recognize these gender-related differences and design educational programs and preventive measures that cater to each group. For male athletes, interventions could focus on promoting natural performance enhancement methods and educating them about the long-term consequences of ergogenic aid use. For female athletes, strategies should emphasize health awareness, risk reduction, and the promotion of safe alternatives for improving performance. The findings of this study align with those of Farouk et al. (2021)

which also reported a significant gender difference in the use of performance-enhancing substances among athletes. However, the findings contradict those of Chen (2021) who reported no significant relationship between gender and the use of pharmacological ergogenic aids among athletes.

Conclusion

Based on the findings of the study, it was concluded that majority of university athletes in Enugu State use pharmacological ergogenic aids. Additionally, there is a significant difference in the proportion of university athletes in Enugu State that use pharmacological ergogenic aids based on age and gender.

Recommendations

Based on the conclusion of this paper, the following recommendations are made:

1. An institution-centred seminars and workshops on pharmacological ergogenic aids use should be organized by sports experts especially sports psychologists and managers to complement training activities and improve sport performance of athletes.
2. A multidisciplinary approach to identification, prevention and management of pharmacological ergogenic aids use is paramount to improve performance status and health of athletes.

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