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HEALTHFUL SCHOOL ENVIRONMENTAL RELATED FACTORS AS PREDICTORS OF LEARNING OUTCOMES AMONG PUPILS IN AKINYELE LOCAL GOVERNMENT AREA OF OYO STATE

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Abstract

Nigeria's educational system, notably in primary schools, faces challenges like dilapidated infrastructure, impacting learning outcomes. Therefore, this study in Akinyele Local Government Area, Oyo state, aimed to assess how healthful school environments affect primary students' learning outcomes. The study used a descriptive survey research design and employed purposive and random sampling techniques to select the participating schools and respondents. Data was collected using a reliable 20-item questionnaire. A total of five hypotheses were tested in the study using appropriate test statistics of multiple regression analysis and the findings of the study revealed that healthful school environmental related factors of school environment, sewage / refuse disposal, classroom ventilation, building structure and water supply jointly predicted learning outcomes again, school environment; building structure; water supply and sewage/refuse disposal significantly predicted learning outcome of the respondents. However, classroom ventilation had no significant prediction on learning outcome of selected primary school pupils in Akinyele Local Government Area. It was recommended that school authorities in Akinyele Local Government Area should ensure that school environments are made clean at all time. Efforts should be made by the teaching staff in Akinyele Local Government Area to ensure that they inculcate good refuse disposal habit on the pupils.

Keywords: healthful; sewage, refuse-dump; Akinyele Local Government, Learning Outcomes, environment

Background

Education has been widely recognized as a crucial driver of national development and individual growth, with research supporting its positive impact (Organisation for Economic Co-operation and Development, (OECD), 2019). It is known to contribute to economic growth, poverty reduction, and social mobility, making it a vital tool for global development (United Nations Educational, Scientific and Cultural Organization, (UNESCO), 2020). Various international summits have emphasized the importance of education for all children, prompting collaborative efforts from governments, communities, and development partners. This has resulted in progress, including increased school enrolment and completion rates, reduced numbers of out-of-school children, and a narrower gender gap in access to education. It is crucial to recognize that effective learning is influenced not only by classroom activities but also by other factors such as family background, school environment, student's personality, teacher factors, and community and peer influence. Therefore, creating an optimal learning environment requires considering these diverse factors in

addition to classroom instruction. The socio-economic, cultural, and environmental factors have been found to influence students' learning and academic performance (Hertzog, Morgan & Hanson, 2020). Therefore, it is crucial to consider all variables that can impact a student's educational performance in order to create an enabling environment for learning. This includes providing a conducive school environment with regular water supply, appropriate waste disposal systems, well-ventilated buildings, and adequate security measures. Access to sufficient water within the school premises is essential for various purposes such as drinking, cleaning, and sanitation. A shortage of water supply can hinder teaching and learning activities, affecting learning outcomes and the school's reputation (World Bank, 2020). Additionally, a proper waste disposal system is important for maintaining health and wellness in the school environment, preventing disease outbreaks, and ensuring a conducive learning environment.

Statement of the Problem

Despite the awareness on the importance of healthy school environment and the benefits accruable both to staff and students, many schools within Ibadan metropolis are yet to embrace the provision of a healthy school environment by putting in place healthful school environment, this, invariably is not only impacting on the physical health of staff and students in such schools, it is also affecting the learning outcomes/performance of the pupils. A National study of the school health system in Nigeria by the Federal Ministries of Health and Education revealed that only 14% of head teachers indicated that pre-enrolment medical examination was mandatory in their schools. The drive for financial gain and benefit which has become a paramount motivator to many proprietors have taken over a significant number among them, such that little or no attention is paid to the creation of a healthy school environment or the provision of a healthful school environmental factors that can enhance performance of students in school. In other words, so much is paid in terms of fees, but little is gotten in terms of services provided by the schools.

The main purpose of this study is to investigate how healthful environmental school factors (that is, water supply within the school, sewage and refuse disposal system, classroom ventilation and school buildings) would predict learning outcomes among primary school pupils in Ibadan metropolis. This is with the view to being able to empirically ascertain whether these factors actually predict learning outcomes or not and to eventually be able to make useful recommendations for stakeholders.

It is also the purpose of this study to investigate the extent to which each of the healthful school environmental factors contribute to learning outcomes among primary school pupils. Furthermore, the study was aimed at filling the gap in literature and contribute to the existing ones, especially in the area of healthful school environment. Finally, it is the purpose of this study to be able to make practical recommendations to stakeholders in respect of healthful school environmental factors that should be in place in schools to facilitate learning outcomes among students.

This study would be of significant importance to education policy makers, school proprietors and proprietresses in that it will provide empirical findings regarding how healthful school environmental factors predict learning outcomes among primary school pupils in Ibadan metropolis. It would be informative in categorically establishing the relative contribution of each of the variables of interest in the study to predict learning outcome among primary school pupils in Ibadan metropolis. This study would add to the volume of existing literature on the subject

matter and particularly indigenous literature as it were. This study would also serve as baseline data for further research work.

Objective of the study

The general objective of this study is to investigate and establish how school environmental factors predict learning outcomes among primary school pupils in some selected primary schools in Akinyele local government area.

Research hypotheses

The following hypotheses were tested in the study:

Ho 1: There will be no significant joint prediction of healthful school environmental related factors (school environment, sewage / refuse disposal, classroom ventilation, building structure and water supply) on learning outcome among selected primary school pupils in Akinyele Local Government Area.

Ho 2: There will be no significant relative prediction of school environment factors on learning outcome among selected primary school pupils in Akinyele Local Government Area.

Ho 3: There will be no significant relative prediction of sewage / refuse disposal on learning outcome among selected primary school pupils in Akinyele Local Government Area.

Ho 4: There will be no significant relative prediction of classroom ventilation on learning outcome among selected primary school pupils in Akinyele Local Government Area.

Ho 5: There will be no significant relative prediction of building structure on learning outcome

Among selected primary school pupils in Akinyele Local Government Area.

Ho 6: There will be no significant relative prediction of water supply on learning outcome among selected primary school pupils in Akinyele Local Government Area.

Methods

The study employed the descriptive survey research design. This design was adopted because it is useful in preliminary and explorative studies to enable researchers to gather information, summarize, present and interpret data for the purpose of clarification. The target population for this study consisted of all primary school teachers in Akinyele Local Government Area of Oyo State. Sampling means selecting a given number of participants from a defined as representative of that population. In selecting the number of schools from where respondents were drawn for this research work, the researcher adopted the probability simple random sampling method. To start with, a list of primary schools around Akinyele Local Government was made after which the ballot method (odd - even) was used to determine the schools from where respondents would be selected. After the ballot selection, only schools that were even numbers on the list were selected. Thus, the respondents for the study were drawn from such schools that were selected. On the whole, a total of fifteen (15) schools were selected, from where a total of one hundred and fifty (150) teachers were drawn as sample for the study.

	Number of teachers per school	Number of teachers selected in each school
St. Mathew's Anglican Primary School, Ajibode	15	10
Community Primary School Laaniba	14	10
Lakoto, Community Primary School	15	10
Idi-Ose Primary school, Moniya	12	10
Alagogo Primary school, Moniya	15	10
Ojopoode, Primary school, Ojopoode	15	10
St Mathias Anglican Primary School	15	10
Lakitipi Primary school, Moniya	18	10
Igbo-Oloyin Primary school, Igbo-Oloyin	14	10
St Mary Catholic Primary school, Ojoo	14	10
Hamadiyya Primary school, Moniya	15	10
Community Primary school, Ojoo	18	10
Irin-iko Primary school, Ojoo	15	10
Agbeja Community Primary school, Moniya	13	10
Alagbagba Primary school, Akinyele	14	10
Total	222	150

A self-developed likert-format questionnaire, containing twenty (20) items was used as instrument. The questionnaire was in two parts, the first part contained items that tapped for the demographic variables of the participants, while the second part contained the 20 items that asked about the school's healthful environmental factors. The responses ranged from Strongly Agreed through Strongly Disagreed, with the instruction that respondents were to choose the option that best represents their view/position on the particular statement. The face and content validity of the research questionnaire was established. This was done with the assistance of the researcher's project supervisor who brought her expertise to fore in validating the research instrument before use. Permission was sought from the authorities of the schools that have been randomly selected to participate in the study and on an agreed date, the researcher went to the schools with the research instruments to be administered on the participants. Research ethics were adhered to strictly all through the period of data collection. The researcher along with four (4) research assistants gathered the data over the period of four weeks. The questionnaire forms were taken to each of the schools on agreed date and handed over to the school head-teachers who in turn assisted in handing them over to the respondents in each of the schools. The questionnaire forms were collected back from the school head-teachers after they had been responded to. The collected data was analysed using step-wise multiple

regression analysis. With all the six (6) hypotheses developed for the study tested at 0.05 level of significance.

Results

This chapter presents results of the analyses and discussion of findings. The results and discussion of findings were presented based on demographic characteristics of the respondents and hypotheses as follow:

Demographic Characteristics of the Respondents:

Table 2. Socio-demographic characteristics of the respondents

Variable	Frequency	Percent (%)
Sex:		
Male	65	44.1
Female	85	55.9
Total	150	100.0
Position:		
Class Teacher	98	65.3
Head Teacher	33	22.0
Assistant Head Teacher	19	12.7
Total	150	100.0
Teaching Experience:		
1-10 years	129	86.0
11-20 years	14	9.3
21-30 years	7	4.7
Total	150	100.0

As shown in table 4.1, 65 (44.1%) were male, while 85 (55.9%) were female. This implied that most of the respondents are female. In addition, 98 (65.3%) respondents were Class Teachers, 33 (22.0%) were Head Teachers, while 19 (12.7%) were Assistant Head Teachers. This means that most of the respondents were Class Teachers. Also, 129 (86.0%) respondents had 1-10 years teaching experience, 14 (9.3%) had 11-20 years, while 7 (4.7%) respondents had 21-30 years. This implied that most of the respondents had 1-10 years teaching experience.

Hypothesis:

Hypothesis 1: There will be no significant joint prediction of healthful school environmental related factors (school environment, sewage / refuse disposal, classroom ventilation, building structure and water supply) on learning outcome among selected primary school pupils in Akinyele Local Government Area.

Table 3: Summary of regression about joint prediction of healthful school environmental related factors on learning outcome

R=.727
R2=528
Adj. R2=512
Std. Error=1.40894

Model	Sum of Squares	Df	Mean Square	F	Sig. (p value)	Remark
Regression	320.018					
Residual	285.855	5 144	64.004			
Total	605.873	149	1.985	32.242	.000	Sig.

As indicated in table 4.2, it was found that the linear combination of the effect of healthful school environmental related factors was tested significant on learning outcome (F(s.144)-32.242, p<0.05). The result yielded a coefficient of multiple regression of R=0.727 and multiple R-square of 0.528. The result also revealed that Adjusted R2-0.512; indicating that about 51.2% of variance was accounted for by the independent variables. This implied that healthful school environmental related factors of school environment, sewage / refuse disposal, classroom ventilation, building structure and water supply jointly predicted learning outcome among selected primary school pupils in Akinyele Local Government Area. The null hypothesis was therefore rejected.

It means that environmental related factors of school environment, sewage/ refuse disposal, classroom ventilation, building structure and water supply had impact on poor learning outcome of primary school pupils in Akinyele Local Government Area. The outcome of this study is in line with the assertion of Odok, Ekuri and Edim (2014) that healthful school environment is an important sub-division of the school health programme which emphasizes provision of healthful living environment in the school community that favours effective teaching-learning process.

Hypothesis 2: There will be no significant relative prediction of school environment on learning outcome among selected primary school pupils in Akinyele Local Government Area.

Table 4: Summary of regression about relative prediction of school environment on learning outcome

Variables	Unstandardized coefficients B Std. Error	Standardized coefficients Beta (3)	t (p	Sig. value)	Remark
(Constant) School environment	.475 .127 .965 .051	.176	492 2.504	.624 .013	Sig.

Table 4 showed the school environment, the unstandardised regression weight (B), the standardized error of estimate (SEB), the standardized coefficient, the t-ratio and the level at which the t-ratio is significant. As indicated in the table, school environment

(B-0.176, t-2.504, p<0.05) was tested on learning outcome. This implied that school environment significantly predicted learning significant outcome of selected primary school pupils in Akinyele Local Government Area. Hence, the null hypothesis was rejected. The indication is that school environment was a strong factor that had significant impact on poor learning outcome of primary school pupils in Akinyele Local Government Area. The outcome of this study is in consonance with the assertion of Moronkola (2012) that healthful school environment embraces all efforts to provide at school, physical, emotional and social conditions which are beneficial to the health and safety of students.

Hypothesis 3: There will be no significant relative prediction of sewage / refuse disposal on learning outcome among selected primary school pupils in Akinyele Local Government Area.

Table 5: Summary of regression about relative prediction of sewage / refuse disposal on learning outcome

Tables Variable__1	Tables B__2	Tables Std. Error__3	Tables Standardized coefficients Beta (B)__4	Tables __5	Tables Sig. (p value)__6	Tables Remark__7
(Constant)	.475	.965		.492	.624	
Sewage/refuse disposal	.251	.049	.417	5.009	.000	Sig.

Hence, the null hypothesis was rejected. The indication is that sewage/refuse disposal was a strong factor that had significant impact on poor learning outcome of primary school pupils in Akinyele Local Government Area. The outcome of this study is consonance with the assertion of Akinkugbe, (1994) that healthful school environment embraces all efforts to provide at school, physical, emotional and social conditions which are beneficial to the health and safety of students.

Tables Variable__1	**Tables B__2**	**Tables Std. Error__3**	**Tables Standardized coefficients Beta (B)__4**	**Tables __5**	**Tables Sig. (p value)__6**	**Tables Remark__7**
(Constant)	.475	.965		.492	.624	
Sewage / refuse disposal	.251	.049	.417	5.009	.000	Sig.

Hypothesis 4: There will be no significant relative prediction of classroom ventilation on learning outcome among selected primary school pupils in Akinyele Local Government Area.

Table 6 showed the sewage/refuse disposal, the unstandardised regression weight (B), the standardized error of estimate (SEB), the standardized coefficient, the t-ratio and the level at which the t-ratio is significant. As indicated in the table, sewage/refuse disposal (B=0.417, t=5.009, p<0.05) was tested significant on learning outcome. This implied that sewage/refuse disposal significantly predicted learning outcome of selected primary school pupils in Akinyele Local Government Area.

Table 7: Summary of regression about relative prediction of classroom ventilation on learning outcome

Tables Variables_1	Tables B_2	Tables Std. Error_3	Tables Standardized coefficients Beta (B)__4	Tables __5	Tables (p__6	Tables Sig. value) Remark__7
(Constant)	.475	.965		.492		.624
Classroom ventilation	.006	.046	.010	.134		.893 Not Sig.

Table 7 showed the classroom ventilation, the unstandardised regression weight (B), the standardized error of estimate (SEB), the standardized coefficient, the t-ratio and the level at which the t-ratio is significant. As indicated in the table, classroom ventilation (B=0.010, t=0.134, p>0.05) was not tested significant on learning outcome. This implied that classroom ventilation had no significant prediction on learning outcome of selected primary school pupils in Akinyele Local Government Area. Hence, the null hypothesis was accepted. The indication is that classroom ventilation was not a strong factor that had significant impact on poor learning outcome of primary school pupils in Akinyele Local Government Area. The outcome of this study is not in line with the assertion of Odok et al. (2014) that, for the school to achieve its goals, there must be a healthful school environment, since teaching and learning process rely largely on a healthy school environment

Hypothesis 5: There will be no significant relative prediction of building structure on learning outcome among selected primary school pupils in Akinyele Local Government Area.

Table 8: Summary of regression about relative prediction of building structure on learning outcome

Tables Variable__1	Tables B__2	Tables Std. Error__3	Tables Standardized coefficients Beta (B)__4	Tables __5	Tables (p__6	Tables Sig. value)__7	Tables Remark__8
(Constant)	.475	.965		.492		.624	
Building structure	.319	.054	.364	5.863		.000	Sig.

Table 8 showed the building structure, the unstandardised regression weight (B), the standardized error of estimate (SEB), the standardized coefficient, the t-ratio and the level at which the t-ratio is significant. As indicated in the table, building structure (B-0.364, t=5.863, p<0.05) was tested significant on learning outcome. This implied that building structure significantly predicted learning outcome of selected primary school pupils in Akinyele Local Government Area. Hence, the null hypothesis was rejected. The indication is that building structure was a strong factor that had significant impact on poor learning outcome of primary school pupils in Akinyele Local Government Area. The outcome of this study is in line with the assertion of Moronkola (2017) that

a healthful school environment is that which takes care of the health and safety of learners and other members of the school community.

Hypothesis 6: There will be no significant relative prediction of water supply on learning outcome among selected primary school pupils in Akinyele Local Government Area.

Tables Variable__1	Tables B__2	Tables Std. Error__3	Tables Standardized coefficients Beta (B)__4	Tables __5	Tables (p__6	Tables Sig. value)__7	Tables Remark__8
(Constant)	.475	.965		.492		.624	
Building structure	.319	.054	.364	5.863		.000	Sig.

Table 9 showed the water supply, the unstandardised regression weight (B), the standardized error of estimate (SEB), the standardized coefficient, the t-ratio and the level at which the t-ratio is significant. As indicated in the table, water supply (B-0.417, t-6.815, $p<0.05$) was tested significant on learning outcome. This implied that water supply significantly predicted learning outcome of selected primary school pupils in Akinyele Local Government Area. Hence, the null hypothesis was rejected. The indication is that water supply was a strong factor that had significant impact on poor learning outcome of primary school pupils in Akinyele Local Government Area. The outcome of this study is consonance with the assertion of Olesen (2008) that healthful school environment embraces all efforts to provide at school, physical, emotional and social conditions which are beneficial to the health and safety of students.

Discussion of Findings

This study focused on healthful school environmental related factors as predictors of learning outcome of selected primary school pupils in Akinyele Local Government Area of Oyo State. Consequently, independent variables were tested in relation to dependent variable. The tested independent variables were school environment, sewage/ refuse disposal, classroom ventilation, building structure and water supply, while learning outcome served as the dependent variable. Five hypotheses were formulated and tested. The population for the study comprised primary school teachers in Akinyele Local Government Area of Oyo State.

The findings of the study revealed that healthful school environmental related factors of school environment, sewage / refuse disposal, classroom ventilation, building structure and water supply jointly predicted learning outcome among selected primary pupils in Akinyele Local Government Area. In addition, school environment significantly predicted learning outcome of selected primary school pupils. In the same vein, sewage/refuse disposal significantly predicted learning outcome of the respondents. Besides, classroom ventilation had no significant prediction on learning outcome of selected primary school pupils in Akinyele Local Government Area. Moreover, building structure significantly predicted learning outcome of the respondents. Also, water supply significantly predicted learning outcome of selected primary school pupils in Akinyele Local Government Area of Oyo State. Based on the

findings of this study, it was concluded that healthful school environmental related factors of school environment, sewage / refuse disposal, classroom ventilation, building structure and water supply jointly predicted learning outcome among selected primary school pupils in Akinyele Local Government Area. Also, school environment, sewage / refuse disposal, building structure and water supply independently had significant impact on learning outcome of the respondents; while classroom ventilation did not.

Recommendations

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

i. The school authorities in Akinyele Local Government Area should ensure that school environments are made clean at all times.
ii. Efforts should be made by the teaching staff in Akinyele Local Government Area to ensure that they inculcate good refuse disposal habit on the pupils.
iii. The building structures in all the schools in Akinyele Local Government Area should be properly maintained by the government.
iv. The government should also provide portable water to all the existing schools in Akinyele Local Government Area.
v. The government should cease to approve the establishment of schools whose proprietors have not put in place all the facilities/equipment that enhance healthful school environment and which consequently enhance positive learning outcomes.

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INFLUENCE OF IMAGERY USE ON CHILDREN-ATHLETES MENTAL TOUGHNESS IN SELECTED SECONDARY SCHOOLS IN IBADAN METROPOLIS

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Abstract

This study examined influence of imagery use on children-athletes mental toughness in selected secondary schools in Ibadan Metropolis. This research employed correlation survey design. The population for this study comprised of all secondary school students in Ibadan metropolis. The sample size for is three hundred (300), 209 male and 91 female children-athletes drawn from public and private schools in Ibadan North Local Government area of Oyo state. Simple random sampling techniques was used to select the three schools out of ten existing secondary schools in Ibadan North Local Government while proportionate sampling technique was used to select fifty percent (50%) of athletes in each of the selected schools. A standardized questionnaire was used to gathered information, the questionnaire had three Section A is designed to elicit information on demographic variables, section B was used to collect information on imagery use on children athletes, section C was on Sports Imagery Questionnaire for children (SIQ-C). The data collected was analysed using frequency counts and percentages, while the inferential statistics of regression was used to analysed the hypothesis. The results showed that there is a relationship between imagery used on children-athletes' mental toughness among the children in selected school in Ibadan ($F(6,293) = 3.656$, $p < 0.05$). It was recommended that teachers in secondary schools in Oyo State should be equipped with psychological skills such as imagery techniques use which will help children-athletes with less proficiency to learn, practice mental skills in improving psycho-physical conditions that will improve their performance.

Keywords: Imagery Used, Children-Athletes, Mental Toughness, Motivational General Arousal Imagery

Introduction

Imagery use has been a vital tool in determining athlete's performance in sports. The role played by imagery in sports cannot be over emphasized. Imagery has been in existence several years ago and has been used by athletes to enhance performance in sports. Imagery is a mental picture in itself because there is no how one will talk about imagery without talking about mental practice. For instance,

(during the career of the great Pele of Brazil, when he was nine years of age, he was involved in a football mini competition that was held in his home town dated to 1948-1950, he was able to use what he had pictured in his mind during practice to save his team from being defeated, with five goals in that match) (Lou et al., 2014).

Several athletes have used imagery in different form to attain greater height in sports. Considering what Pele has done in his tender age, it shows that imagery can be used to achieve greatness in sports competition. There is no particular way to practice imagery. It is left up to the individual preference and the present circumstance. It can be done on or off the field of play within a second or taking long duration. A shorter version of imagery is best implemented during match play. For instance, in soccer (Guarnera et al., 2016), a player will or may take few seconds to decide either to pass to his team mate or dribble the opponent, while longer specific imagery visualizations are usually designed for a quiet room prior to a competition. In this case, the player should be in a relaxed mood in order to assimilate what he has imaging. Before athletes begin imagery sessions, scripts are designed with detailed scenarios that highlight the physical setting, competitive context, specific performances and other particular areas that need to be thoroughly emphasized (Guarnera et al., 2016).

In another point of view, imagery has been designated as the state in which people imagine themselves while effecting abilities to deal with the forthcoming duty or improve performance. Imagery may be a consequence from both thoughtful and unconscious recall procedures; an individual sees an image, or experiences a movement as an image, without experiencing the real thing through a process. Imagery plays a significant role in this context, improving performance in motor tasks (Di Corrado et al., 2019). Young athletes are developing physically from early childhood to adolescence. It means they have different capabilities for adaptations to exercise and for the use of imagery or by using imagery, which is the formation of mental pictures that helps these young athletes to enhance the processing of information into their memory system. For instance, many children athletes have practiced the use of mental imagery during bike riding, rowing, swimming etc., since they are exerting energy while rehearsing for the game and it helps them facilitating actual competition. Consequently, participation of children and youth athletes is on the rise ((Simonsmeier and Buecker, 2017)) Hence the need to develop them. According to Cumming and Hall (2002) mental imagery should be treated similarly to physical practice given that research has suggested a functional equivalence between the two activities. Certain parts of the brain show a pattern of activity during imagery similar to that during performance.

Mental toughness is having the natural or developed psychological edge that enables athletes especially children to always cope better than opponents in game situation with the many demands (competition, training, lifestyle). Specifically, children need to be more consistent and better than their opponents in remaining determined, focused, confident, and in control under pressure (Lou et al., 2014; Cowden, 2016; Ye et al., 2016; Madigan and Nicholls, 2017). Furthermore, children who are mentally tough should develop an unshakable self-belief through imagery use so as to have qualities and abilities greater than opponents. The young athlete should have a total awareness, a total self-belief, learned from years of deliberate practice. They should know what it takes to get to the elite level and knows how to perform at that level (Richard 2017). According to Chen et al., 2015, it will

take a long time for a real belief in young athlete to build. The more they demonstrated their abilities to overcome specific challenges and reach certain targets, the more it raised their self-belief and confidence. They learned that they could achieve their goals. This belief is built on a very solid foundation; it's not about hoping and wishing, it's about knowing as a result of what the athletes have done.

Young athletes are aware of the concept of mental toughness, it is worthwhile to examine this construct at an age (11-14 years) when most are confronted with increasing stress and demand while also deciding if and how they will continue in sport (Côté & Fraser-Thomas, 2015). Over the course of McGee's coaching career, he has seen a mental trend: People who have been ill or injured and miss training might get to a race may be 85 to 90 percent prepared to perform up to their potential. They don't expect to do well, in most cases they do exceptionally well. Then they go away, train hard, have expectations for the next race, and don't do well. The weight of expectation without complementary training for the brain that undermines many athletes along the way (Farb, S. 2008). Therefore, this research work examines the impact of imagery variables that influence children athlete mental toughness.

Statement of the Problem

Children athletes with less proficiency need a thorough help. They may be helped to learn, refined, practice mental skills and strategies aimed at gaining personal control of weak state and improving psychophysical conditions that will improve their performance. Children engage in sports; some are able to perform well while some are not. It is also believed that some children have privilege to train under experienced and skilled coaches while some do not. In light of the above, these young athletes need to be trained thoroughly in order to actualize their potential. Imagery use as an independent variable is well known in earlier researches. Hence, imagery on children athletes tends to be a new area of research. However, the inability of imagery use exerts a significant influence on children's athletes' mental toughness. Therefore, it is core for this research to explore into imagery use as it influences children athlete's mental toughness among children athletes Ibadan North Local Government Area.

Hypotheses

One hypothesis was tested in this study:

- The independent variables (Cognitive General Imagery, Cognitive Specific Imagery, Motivational General Imagery, Motivational Specific Imagery, Motivational General Arousal Imagery, Motivational General Mastery Imagery) will have no significant influence on children athlete's mental toughness.

Methodology

This research employed correlation survey design. The population for this study comprised of all secondary school students in Ibadan metropolis. The study adopted purposive sampling techniques in the selection of the respondent. The sample size for this study is three hundred (300) male and female athletes drawn from public and private school in Ibadan North Local Government area of Oyo state. Simple random sampling techniques was used to select the three schools out of ten existing secondary school in Ibadan North Local Government namely international school University of Ibadan, Bodija International School, Awolowo avenue, Bodija and Abadina Grammar school, U.I. Ibadan. While proportionate sampling technique will be used to select fifty percent (50%) of athletes in each of the selected schools.

Research Instrument

A standardized questionnaire was used for the study. The questionnaire is in three sections namely: A, B, C, section. Section A is designed to elicit information on demographic attributes of the testes. Section B will be used to collect information on imagery use on children athletes. Here, Sports Imagery Questionnaire for children (SIQ-C) is used to gather information. Any statement that explains an imagery situation that is often used should be given a high number, the statements will be scored from 1-5 likert scale format namely: Not at all, A little bit, Sometimes, Often and very often. Section C will use Standardized Sports Psychology Questionnaire (SSPQ) to gather necessary information on mental toughness of children athletes. The instrument will be design in line with the same modified Likert scale used above

Data Collection Procedures

The approval to carry out the research work was sought and collected from the Oyo State Ministry of Education. The consent letters were sent to all the parents with the approval and help of the sampled schools authorities. The questionnaire was administered, and also, all the necessary guidelines that guide the respondents in answering the question was clearly stated. They are allowed to tick the appropriate responses that best represent their opinions. The researcher ensured that the questionnaires were collected on the spot immediately they were filled and this facilitated high rate of returns.

Procedure for Data Analysis

Completed copies of the questionnaires were collected, collated, coded, and analysed using descriptive statistics of frequency counts, percentages to analyse the demographic data of the respondents and to answer research question while inferential statistics of multiple regressions will be used to test the hypotheses at 0.05 alpha level.

Results

Table 1: Distribution of respondents by age

Age	Frequency	Percentage
9-12years	37	12.3
13-16years	104	34.7
17-20yeas	73	24.3
21years and above	86	28.7
Total	300	100.0

The table above shows the distribution of respondents according to age. The table revealed that 37 (12.3%) were between 9 and 12 years of age, 104 (34.7%) were between the ages of 13 and 16years, 73 (24.3%) were between the ages of 17 and 20years while 86 (28.7) were 21years and above. This shows that majority of the respondents were between the ages of 13 and 16years.

Table 2: Distribution of respondents by gender

Gender	Frequency	Percent
Male	209	69.7

Female	91	30.3
Total	300	100.0

Table 3 above shows the distribution of respondents according to their gender. Out of the 300 respondents, 209 (69.7%) were male while 91 (30.3%) were female. This shows that majority of the respondents were male.

Hypotheses Testing

The following hypotheses were tested in this study:

Hypothesis 1: Hypothesis 1: The independent variables will not significantly influence children's athletes' mental toughness.

Table 3: Regression table showing the joint influence of imagery use on children athletes' mental toughness

R = .735
Multiple R = .540
Multiple R^2 adjustment = .534
Standard Error Estimate = 2.03755
Analysis of Variance

Model	Sum of square	Df	Mean square	F	P
Regression	1544.420	6	257.40	3.656	.000
Residual	20632.980	293	70.4197		
Total	22177.400	299			

From the table above, it was found that the joint influence of imagery use on children athletes was significant (F (6,293) = 3.656, p< 0.05). The independent variable also yielded a coefficient of multiple regression (R) of 0.540 indicating that about 54% of variance is accounted for by the independent variables. Therefore the hypothesis was accepted.

Discussion of the Findings

The study investigated influence of imagery use on children athletes' mental toughness among secondary school students in Ibadan metropolis. The result from the hypothesis one revealed that the independent variables (Cognitive General Imagery, Cognitive Specific Imagery, Motivational General Imagery, Motivational Specific Imagery, Motivational General Arousal Imagery, Motivational General Mastery Imagery) had significant influence on children athlete's mental toughness. The results of this finding corroborate the previous researches (Monsma and Overby, 2004; Munroe-Chandler et al, 2007) that imagery techniques like motivation general, specific and mastery influence children sports performance. However, relationship between the variables could, for example be observed through latent growth modelling (Conroy & Coatsworth, 2004; Duncan & McAuley, 1993; Kort-Butler & Hagewen, 2011). As well, the relationship between motivational general–mastery imagery use and achieved performance may be mediated by self-confidence and self-efficacy, which may in turn have positive effects on performance at competition through maintaining a positive attitude and facilitating mental toughness according to reports of Bull, Shambrook, James, & Brooks, 2005).

The independent variables (Cognitive General Imagery, Cognitive Specific Imagery, Motivational General Imagery, Motivational Specific Imagery, Motivational General Mastery Imagery, Motivational General Arousal Imagery had significant relative influence on children athlete's mental toughness. With Cognitive general imagery as the highest contribution of 64.1%, cognitive general imagery significantly predict performance at competition and facilitate productive learning processes followed by motivational general imagery with 56.4% these finding is supported by the applied model of imagery by Bell, Hardy & Beattie (2013), which predicts that the use of MG-I imagery would increase or maintain levels of mental toughness in training. This was followed by submission of Frank, Land, & Schack (2016), that motivational general mastery imagery with a contribution of 29.5% MG-M imagery has been found to support athletes in maintaining a positive attitude and handling setbacks, then cognitive specific imagery with a contribution of 27.9%. Motivational specific imager has the lowest contribution of 18.4%.

Conclusion

This study concluded that there was a relationship between imagery used on children-athletes mental toughness among the children in selected school in Ibadan. Also, cognitive general imagery, cognitive specific imagery, motivational general imagery, motivational specific imagery, motivational general mastery imagery and motivational general arousal imagery has a joint and independent significant influence on children athlete's mental toughness in selected schools in Ibadan. It was further revealed that children athlete in individual sports make better use of imagery than children in team sports and that male children athlete tends to have better mental toughness than female children athlete.

Recommendations

Based on the findings, the following recommendations were made:

i. Teachers in schools should be equipped with psychological inventories such as imagery use which will help children athlete with less proficiency to learn, practice mental skills in improving psycho physical conditions that will improve their performance.
ii. It is imperatives to organize a seminar, symposium that will serve as a forum of educating physical education teachers and coaches on the mechanism that allows imagery to work effectively on children athlete's performance.
iii. There is need to engage the service of a certified sports psychologist to render an effective coping mechanism to improve the level of confidence in female children athlete's mental toughness
iv. There should be imagery use awareness through its inclusion in the co curricula program designed in secondary schools.

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PREVALENCE AND PERCEIVED CONTRIBUTORY FACTORS TO OVERWEIGHT AMONG UNDERGRADUATES OF FACULTY OF LAW, LEAD CITY UNIVERSITY, IBADAN

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Abstract
This study examined the prevalence and perceived contributory factors to overweight among undergraduates of Faculty of Law, Lead City University, Ibadan. Descriptive survey research design was adapted in this study. Disproportionate stratified and simple random sampling techniques were used to select 100 respondents; A research instrument titled "Prevalence and Perceived Contributory Factors to Overweight among Undergraduates of Faculty of Law, Lead City University, Ibadan" was use to collect data for the study. Descriptive statistics of frequency counts, percentages and inferential statistics of Pearson product moment correlation and regression were used for the analysis. The result revealed that there was a prevalence of overweight

(42.0%) among undergraduates of Faculty of Law, Lead City University, Ibadan. Diet (r=0.390), alcohol consumption (r=0.401) and physical inactivity (r=0.264) had significant relationship with overweight of the respondents, while smoking (r=0.179) did not. There was a significant joint contribution of diet, smoking, alcohol consumption and physical inactivity to overweight among the respondents ($F_{(4,95)}$=12.578, p<0.05). Also, diet (ß=0.325, p<0.05), alcohol consumption (ß=0.389, p<0.05) and physical inactivity (ß=0.176, p<0.05) had significant relative contributions to overweight among the respondents, while smoking (ß=0.096, p>0.05) did not

Keywords: Undergraduates, Prevalence, Perceived**,** Contributory Factors, Overweight.
World count: 170

Introduction

An increasing health challenge of public health concern is a condition referred to as overweight. Overweight is a lifestyle condition that is above a weight considered normal or desirable. It is defined as abnormal or excessive fat accumulation in the body, often measured using body mass index (BMI) (Jensen, 2020). Globally, there is a rising prevalence of overweight in both developed and developing countries. The rate has tripled in developing countries over the past 20years simply due to rapid urbanization with increased consumption of high calorie foods and adoption of a more sedentary lifestyle (Ramu & Neild, 2019). Studies have shown high percentage of the world's population is overweight and obese with United State of America 50%, Australia 37% Western Europe 30% and India 17%.

The Study further reported that an increase in overweight and obesity levels was associated with an increased risk of developing cancer, cardiovascular diseases, non-insulin dependent diabetes, severe articular dysfunction and hypertension worldwide (Spratt & Woodmansee,2019). Also, studies revealed approximately 40% of South African population were overweight and obese; Cameroon had 20% of urban population and 1.8% of rural population (Al-Raddadi, et al, 2019). It is obvious from these reports that the challenge of overweight is becoming an alarming issue and there is need to stem the progression. Body Mass Index (BMI) is a simple index of weight for height that is commonly used to classify underweight, overweight and obesity. It is defined as a person's weight in kilograms divided by the square of height in meters (kg/m^2).

A BMI over $25kg/m^2$ is referred to as overweight while over 30kg/m as obese (AlRodhan, Y. AlAbdeen, E. Saleh et al, 2019). Prevalence is the proportion of a population who have a specific characteristic in a given time which may be reported as a percentage (Adom, Kengne, A. De Villiers & Puoane, 2019). Contributory factor is also described as one of the things which caused a problem to happen or exist. However, the contributory factors of overweight are multi-dimensional ranging from diet, smoking, alcohol consumption, lack of exercise, environmental factors (inadequate facilities, stress, poor sleep), economic factors and genetics (hormonal, heredity) etc. For the purpose of this study, factors such as diet, alcohol consumption, cigarette smoking, physical inactivity and their relationship with overweight shall be looked into. The prevalence of overweight cannot be over-emphasized. Several studies reported prevalence of overweight among school children (Ganle, Boakye &

Baatiema, 2019), undergraduate students in Jordan, Iraq and Kumasi, Ghana (Santos, Silva & Silva et al, 2019).

In Nigeria, from 35 studies revealed 25% and 14.3% with prevalence higher in females compared to men and consistently higher among urban dwellers compared to rural dwellers (16.4% and 12.1%) (Firouzbakht, Riahi & Hajian-Tilaki et al, 2019). Further study revealed 21 million and 12 million Nigerians were overweight and obese aged 15 years above in 2020 accounting for prevalence of 20.3% and 11.6% respectively (Al-Lahham, Jaradat & Altamimi et al, 2019). Therefore it is of the utmost urgency to curb occurrence of overweight and obesity in order to promote healthy living. Alcohol intake or consumption is a contributory factor to the development of overweight. Studies have shown that drinking more than seven times per week was associated with increased risk of weight gain and development of overweight and obesity (Narciso, Silva & Rodrigues et al, 2019). Excessive alcohol consumption is the third leading cause of premature death in the United States (Santos, Silva & Silva et al, 2019). 1 gram of alcohol provides 7.1kcal and the increased energy intake in alcohol can certainly promote a positive energy balance and ultimately weight gain (Firouzbakht, Riahi & Hajian-Tilaki et al,2019). Smoking is also a contributory factor to overweight. It is the leading preventable cause of death in developed countries (Al-Lahham, Jaradat & Altamimi et al, 2019). Smoking decreases capacity of individual to perform exercise due to impact on lung function as well as induce distribution of body fat and central obesity in the body (Oses& Sanchez, et.al, 2019).

Diet plays an important role in the development of human growth. Dietary habit or lifestyle goes a long way in the development of overweight and obesity. Studies have shown that lifestyle changes and nutritional habits such as irregular meal patterns, mainly skipping breakfast, consumption of foods and beverages of low nutritional value, intake of refined carbohydrates are all contributory factors to the development of overweight and likelihood of various diseases particularly heart diseases, type 2 diabetes, breathing difficulties certain types of cancer and osteo-arthritis (Ortiz-Dosal, Rodil-García & Salazar-Olivo,2019).Physical inactivity or sedentary lifestyle is also considered a contributory factor in the development of overweight. Physical activity refers to all movements caused by skeletal muscles that cause energy consumption. It decreases fat around the waist and total body fat, as well as slowing the development of abdominal obesity. It also increase the metabolic rate which results in increased energy expenditure (Musaad & Haynes, 2017).

Undergraduates are often referred to students in the tertiary institution undergoing study for the first degree especially a bachelor's degree. Lead City University, Ibadan is a private university in Oyo State, Nigeria. It is one of the rapidly developing tertiary institutions in south-west Nigeria. The population of the students are also overwhelming including males and females, young adults and adults. The environment is very conducive for learning with adequate provision of housing for those who can afford it. It is based on this that this study examined the prevalence and perceived contributory factors to overweight among undergraduates of Faculty of Law, Lead City University, Ibadan, Oyo State.

Statement of the Problem

Overweight and obesity have been established as one of the public health concern in the 21st century (Jensen, 2020). Globally, the prevalence of overweight and obesity among children and adolescents has significantly increased over the last three decades particularly in Africa, Eastern Mediterranean Region and Asia (Oses, Sanchez, Portillo, C. M. Aguilera & Labayen, 2019). It has been established and reported that more than 1.9 billion adults aged 18years or more were overweight, with 650 million obese. Remarkably, the World Health Organization member nations, including Nigeria, have targeted halting the rise by 2025 (Ortiz-Dosal, Rodil-García & Salazar-Olivo, 2019).The frequency of consumption of energy dense snacks and sugary beverages has increased considerably particularly among adolescents and young adults.

They are exposed to this changed lifestyle early in life that it is seen as the best form of life to live. However, undergraduates of Lead City University Ibadan are not left out. Observations made by the researchers among undergraduates of Law, Lead City University showed that they hardly have time for recreation due to tight academic programme, as well as also being prone to consumption of available snacks in the school environment. Based on this premise, the study intends to examine the prevalence and perceived contributory factors to overweight among undergraduates of Law, Lead City University, Ibadan.

Research Question

i. What is the prevalence of overweight among law undergraduate student of Lead City University?

Hypotheses

The following hypotheses were tested:

i. **:**There will be no significant relationship between contributory factors of lifestyle, diet,
   a. Physical activity and overweight among undergraduates of Faculty of Law, Lead City University, Ibadan.
ii. **:**There will be no significant perceived joint contribution of lifestyle, diet and physical
   a. activity to overweight among undergraduates of Faculty of Law, Lead City University, Ibadan.
iii. **:** There will be no significant perceived relative contribution of lifestyle, diet and Physical activity to overweight among undergraduates of Faculty of Law, Lead City University, Ibadan

Methodology

This study adopted a descriptive survey research design The population of this study comprised of all male and female undergraduates from the Faculty of Law, Lead City University, Ibadan, Nigeria.

The sample size for this study was one hundred students (100). The sampling techniques were:

Stage I: Disproportionate stratified sampling technique was used to consider 20 respondents from each of the levels (100 – 500L)

Stage II: Simple random sampling technique was used to select the respondents randomly.

Prevalence and Perceived Contributory Factors to Overweight among Undergraduates of Faculty of Law, Lead City University, Ibadan. A self-developed questionnaire titled "Prevalence and Perceived Contributory Factors to Overweight among Undergraduates of Faculty of Law, Lead City University, Ibadan" (PPCFOUFLLCUI) was used as instrument for the study. Also, standard weighing scale was used to measure the respondents' weights while stadiometer (improvised) was used to measure the respondents' height.

To ensure proper validity of the instrument, a draft copy of the instrument was presented to the experts in the field of the study. Based on the corrections and suggestions, appropriate and necessary correction was effected in order to validate the instrument before its administration. The reliability of the instrument was be carried out by conducting a pilot study for the purpose of determining their internal consistency and reliability. Ten (10) respondents from the Department of Criminology, Lead City University that was not part of the study area but have similar characteristics. The collected data was subjected to reliability test and yielded a value of 0.84.

One hundred (100) self-structured questionnaire was administered to the respondents who were undergraduates from the population. The researchers made use of five (5) trained research assistants. A letter of introduction was collected from the Head of Department of Kinesiology, Sport Science and Health Education for proper identification of the researchers' during the field work. The questionnaire was administered to the respondents and proper explanation necessary to fill the instrument was given by the researchers and research assistants. The administered questionnaire were retrieved immediately. The completed questionnaire were collated, sorted and coded. Also the respondents' weight and height was measured in order to calculate the Body Mass Index (B.M.I). The completed questionnaire were collected and analysed using both demographic data, descriptive and inferential statistics. Descriptive statistics of frequency count, percentages was used to analyse demographic data and the research question. Inferential statistics of Pearson Product Moment Correlation (PPMC) was used to test hypothesis 1, while multiple regression was used to analyse hypotheses 2 and 3 at 0.05 level of significance.

Results

These present the results of the analysis and discussion of findings.

Demographic Data Analysis

The following are the socio-demographic characteristics of the respondents.

Table 1: Distribution of the Respondents by Sex

Sex	Frequency	Percent
Male	30	30.0
Female	70	70.0
Total	100	100.0

Source: Field Survey, 2022

Table 1 revealed that 30 (30%) respondents were male, while 70 (70.0%) were female. This means that most of the respondents were female.

Table 2: Distribution of the Respondents by Age

Age	Frequency	Percent
16-25 years	80	80.0
26-35 years	18	18.0
36 years and above	2	2.0
Total	100	100.0

Source: Field Survey, 2022

Table 2 revealed that 80 (80%) respondents were in the age range of 16-25 years, 18 (18.0%) were between 26-35 years, while 2 (2.0%) were 36 years and above. This means that most of the respondents were in the age range of 16-25 years.

Table 3: Distribution of the Respondents by Level

Level	Frequency	Percent
100 level	20	20.0
200 level	20	20.0
300 level	20	20.0
400 level	20	20.0
500 level	20	20.0
Total	100	100.0

Source: Field Survey, 2022

Table 3 revealed that 20 (20%) respondents were sampled from each of the academic levels. This means that an equal number of 20 (20%) respondents were selected from each of the levels.

Research Question

One research question was answered:

Research Question1**:** What is the prevalence of overweight among undergraduates of Faculty of Law, Lead City University?

Table 4: Summary of Result on the Prevalence of Overweight

Class	BMI (Range)	Frequency	Percent
Underweight	18.5 and below	8	8.0
Normal / Healthy Range	18.5 – 24.9	34	34.0
Overweight	2.50 – 29.9	42	42.0
Obese	30.0 and above	16	16.0

Source: Field Survey, 2022

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able 4 revealed that 8 (8.0%) respondents were underweight, 34 (34.0%) had normal / healthy range, 42 (42.0%) were Overweight, while 16 (16.0%) were obese. It implied most of the respondents were overweight. This means that there is prevalence of overweight among the respondents.

Hypotheses
The following hypotheses were tested in the study.

Hypothesis 1: There will be no significant relationship between diet, smoking, alcohol consumption, physical inactivity and overweight among undergraduates of Faculty of Law, Lead City University, Ibadan.

Table 5: Summary of Correlation Analysis of Relationship between Diet, Smoking, Alcohol Consumption, Physical Inactivity and Overweight

Variables	Mean	Std. Dev.	Overweight	Diet	Smoking	Alcohol Consumption	Physical Inactivity
Overweight	7.97	1.51	1				
Diet	5.80	1.33	.390**	1			
Smoking	8.23	2.18	.179	.005	1		
Alcohol Consumption	12.63	2.20	.401**	.002	.175	1	
Physical Inactivity	8.32	1.25	.264**	.325**	.095	.069	1

N=100

Sig. (2-tailed):

Diet=0.000

Smoking=0.075

Alcohol Consumption=0.000

Physical Inactivity=0.008

Correlation is significant at 0.05 alpha level (p<0.05)

Table 5 showed that diet (r=0.390, p<0.05), alcohol consumption (r=0.401, p<0.05), physical inactivity (r=0.264, p<0.05) were independently tested significant on overweight, while smoking (r=0.179, p>0.05) did not. It was further established that diet, alcohol consumption and physical inactivity had positive correlation with overweight, Moreover, it was revealed in this table that correlation coefficient's magnitude of diet and physical inactivity was weak respectively, while alcohol consumption was moderate. The positive relationship of diet, alcohol consumption and physical inactivity implied that, an increase in each of the variables would influence overweight of undergraduates in the study area.

Hypothesis 2: There will be no significant joint contribution of diet, smoking, alcohol consumption and physical inactivity to overweight among undergraduates of Faculty of Law, Lead City University, Ibadan.

Table 6: Summary of Regression Analysis of Joint Contribution of Diet, Smoking, Alcohol Consumption, Physical Inactivity to Overweight

R=.588
R^2=.346
Adj. R^2=.319
Std. Error=1.24409

Model	Sum of Squares	Df	Mean Square	F	Sig. (*p* value)	Remark
Regression	77.872	4	19.468	12.578	.000	Significant
Residual	147.038	95	1.548			
Total	224.910	99				

Source: Field Survey, 2022

As shown in table 6, it was found that the linear combination of diet, smoking, alcohol consumption and physical inactivity was tested significant on overweight ($F_{(4,95)}$=12.578, p<0.05). The result yielded a coefficient of multiple regression of R=0.588 and multiple R-square of 0.346. The result also revealed that adjusted R^2=0.319; indicating that about 31.9% of variance was accounted for by the independent variables. This means that, there was a significant joint contribution of diet, smoking, alcohol consumption and physical inactivity to overweight .The null hypothesis was therefore rejected.

Hypothesis 3: There will be no significant relative contributions of diet, smoking, alcohol consumption and physical inactivity to overweight among undergraduates of Faculty of Law, Lead City University, Ibadan.

Table 7: Summary of Regression Analysis of Joint Contribution of Diet, Smoking, Alcohol Consumption, Physical Inactivity to Overweight

	Unstandardized Coefficients		Standardized Coefficients		
Variables	B	Std. Error	Beta	T	Sig.
(Constant)	9.055	1.241		7.295	.000
Diet	.367	.099	.325	3.695	.000
Smoking	.066	.059	.096	1.127	.263
Alcohol	.266	.058	.389	4.594	.000
Physical inactivity	.213	.107	.176	1.987	.050

Table 7 showed diet, smoking, alcohol consumption and physical inactivity, the unstandardized regression weight (ß), the standardized error of estimate (SEß), the standardized coefficient, the t-ratio and the level at which the t-ratio was significant. As indicated in the table, diet (ß=0.325, t=3.695, p<0.05), alcohol consumption (ß=0.389, t=4.594, p<0.05) and physical inactivity (ß=0.176, t=1.987, p<0.05) were independently tested significant on overweight among undergraduates, while smoking (ß=0.096, t=1.127, p>0.05) did not. This means that diet, alcohol consumption and physical inactivity had significant relative contributions overweight among undergraduates, while smoking did not. The null hypothesis which stated that there will be no significant relative contributions of diet, alcohol consumption and physical inactivity to overweight among undergraduates of Faculty of Law, Lead City University, Ibadan was therefore rejected.

Discussion of Findings

The findings of this study on socio-demographic characteristics revealed that most of the respondents were female, with majority in the age range of 16-25 years; while an equal number of 20 (20%) respondents were selected from each of the levels. In addition, it was established that most of the respondents were overweight. This means that there was a prevalence of overweight among undergraduates of Faculty of Law, Lead City University, Ibadan. The outcome of the present study on the prevalence of overweight was in line with a previous study which indicated that the prevalence of overweight continues to be high, as are associated comorbidities and healthcare costs (Spratt & Woodmansee, 2019). The finding of this present study was also in congruence with a previous study in a cross-sectional survey from 21 European countries, which found a high prevalence of overweight/obesity in western and southern Europe (Elías-Boneta, Toro, Garcia, Torres & Palacios, 2015).

The findings of this study revealed that diet, alcohol consumption and physical inactivity were independently tested significant on overweight of undergraduates of Faculty of Law, Lead City University, Ibadan, while smoking did not. It was further established that diet, alcohol consumption and physical inactivity had positive correlation with overweight of undergraduates of Faculty of Law, Lead City University, Ibadan. Moreover, it was revealed in this table that correlation coefficient's magnitude of diet and physical inactivity was weak respectively, while alcohol consumption was moderate. The positive relationship of diet, alcohol consumption and physical inactivity implied that, an increase in each of the variables would influence overweight of undergraduates in the study area.

In addition, it was found that the linear combination of diet, smoking, alcohol consumption and physical inactivity was tested significant on overweight among undergraduates of Faculty of Law, Lead City University, Ibadan. This means that, there was a significant joint contribution of diet, smoking, alcohol consumption and physical inactivity to overweight among undergraduates of Faculty of Law, Lead City University, Ibadan. This showed that diet, smoking, alcohol consumption and physical inactivity were jointly perceived as factors contributing to overweight. The outcome of the present study on the prevalence of overweight was in line with the outcome of a study which revealed that biological factors such as age and parental obesity were significantly associated with overweight and obesity (Ahmed, Omar, Nada, Jafar, Moath and Bayan, 2009).

Moreover, the finding of this study revealed that diet, alcohol consumption and physical inactivity were independently tested significant on overweight among undergraduates of Faculty of Law, Lead City University, Ibadan, while smoking did not. This means that diet, alcohol consumption and physical inactivity had significant relative contributions overweight among undergraduates of Faculty of Law, Lead City University, Ibadan, while smoking did not. This showed that diet, alcohol consumption and physical inactivity were relatively perceived as factors contributing to overweight among the respondents. The finding of this study on relative contribution to overweight was in line with the outcome of a study which revealed that biological factors such as age and parental obesity were significantly associated with overweight and obesity (Ahmed, Omar, Nada, Jafar, Moath and Bayan, 2009).

Conclusion

It was concluded in this study that there was a prevalence of overweight among undergraduates of Faculty of Law, Lead City University, Ibadan. It was also

concluded in this study that diet, alcohol consumption and physical inactivity had significant relationship with overweight of undergraduates of Faculty of Law, Lead City University, Ibadan, while smoking did not. Conclusion was further made that there was a significant joint contribution of diet, smoking, alcohol consumption and physical inactivity to overweight among the respondents. It was equally concluded that diet, alcohol consumption and physical inactivity had significant relative contributions to overweight among undergraduates of Faculty of Law, Lead City University, Ibadan, while smoking did not.

Recommendations

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

i. The University Clinic in collaboration with the student affairs unit should organise periodic sensitization programme on health consequences of being overweight.
ii. An effective health education programme should also be organised contributory factors to overweight and its health consequences.
iii. The university should set up monthly exercise routine programme for the students as this will enable the students to get used to it which could be of benefits to them, especially the overweight.

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NUTRITIONAL THERAPY FOR PREGNANT AND NURSING MOTHERS

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Abstract

The health of both foetus and infant depends largely on the adequate intake of nutrition of the mother; because nutrition is one of the critical aspects of health for growth and development. It has been revealed that Adequate intake of nutrition during and after pregnancy is associated with improved infant, child and maternal health, stronger immune systems, safer pregnancy and childbirth, lower risk of non-communicable diseases (such as diabetes and cardiovascular disease), and of course longevity of both mothers and the babies. Nutritional therapy therefore, is a fundamental programme designed for patients seeking relief from all sorts of diseases and health conditions in order to pursuing health promotion and wellness. The study concluded that nutritional therapy serves as natural therapy for the maintenance and optimal health of the mothers and their babies.

Keywords*:* Foetus, Nutrition, Nutritional Therapy, Nursing Mothers, Pregnant Mothers

Introduction

Sustaining the infant's health depends largely on the adequate intake of nutrition of the mother during and after pregnancy. Nutrition is one of the critical aspects of health for growth and development. Adequate intake of nutrition during and after pregnancy is associated with improved infant, child and maternal health, stronger immune systems, safer pregnancy and childbirth, lower risk of non-communicable diseases (such as diabetes and cardiovascular disease), and of course longevity of both mothers and the babies (World Health Organization, WHO, 2020). However, overcoming hunger and malnutrition in all its forms (including under-nutrition, micronutrient deficiencies, overweight and obesity) is about more than securing enough food to survive: what women eat especially during and after pregnancy must also be nutritious. Selecting appropriate nutrition for themselves (mothers) and their babies are major concerned and a critical issue for most of the nursing mothers; they face problems of what and who to recommend good nutrition for them. Also, the key obstacle is the high cost of nutritious foods and the low affordability of healthy diets for vast numbers of families; the rapid pace of development and globalization has contributed to significant and widespread changes in lifestyle and dietary habits of pregnant and nursing mothers.

Meanwhile, a healthy diet during and after pregnancy contains adequate energy, protein, vitamins and minerals that are obtained through the consumption of a variety of foods, including green and orange vegetables, meat, fish, beans, nuts, pasteurized dairy products and fruits. By and large, proper nutrition during and after pregnancy is not only important for mothers, but also advantageous to the health of the infants. Women with poor nutrition put themselves and their growing babies at a greater risk of infections and death.

In fact, prenatal care is recognized as a critical time for nursing mothers; most of them encounter series of illness and health challenges such as nipple pain, soreness

and irritation, sore breasts, milk problems (Newton, 2017). Other problems encountered according to Furman and Schanler (2018), are breast infection, tenderness, heat and redness in one area of the breast, a lump that can be felt close to the skin, and yeast infections. Alta (2019), also reiterated that digestive problems such as constipation, diarrhoea, bloating, reflux, food allergies/intolerances; weight problems; cardio-vascular health; hormonal imbalances/women's health; skin conditions and mental health such as low mood, anxiety, fatigue, poor concentration were the major health challenges of pregnant and nursing mothers. It is therefore important for nursing mothers to eat a balanced diet from different sources of nutrients for their health benefits and that of the new born baby.

Understanding their plights and influences on breastfeeding duration is very essential for nutritionist in order to design appropriate and effective nutritional therapy to support nursing mothers to reach their breastfeeding goals, this would assist them to decide on how and what to feed their babies; also, nursing mothers would be entitled to good information that will solve their problems and live a healthier life including their babies. This paper however, aims at addressing the underlying cause of pregnant and nursing mother's health challenges and offer suggestions through nutritional therapy as a revised lifestyle plan which includes appropriate foods, nutrients and supplements.

Definition of Nutrition

Nutrition is the food consumed by human beings in which body utilizes it. People eat food to live, grow, keep healthy and well, and get energy for work and play. It is the science that interprets the nutrients and other substances in food in relation to maintenance, growth, reproduction, health and disease of an individual. Olubayo-Fatiregun (2017), viewed nutrition as the process of taking in food and using it for growth, metabolism, and repairing of the body system; she stated further that nutrition has the stages in which food is being processed; such stages are categorized into ingestion, digestion, absorption, transport, assimilation, and excretion. However, ***"food"*** is a substance either plant or animal origin, taken to supply energy, produce growth and maintains life. Foods to human beings have much importance benefits such as economic, health, social and psychological importance (Breda, 2016).

Concept of Nutritional Therapy

Nutritional Therapy is a system of healing based on the belief that food, in its whole and natural form, provides the substance needed to obtain and maintain a vibrant state of health for an individual. Nutritional Therapy uses food to prevent and reverse diseases that are most affected the societies including diabetes, obesity, heart disease, arthritis, and depression. Nutritional Therapy is a fundamental programme designed for patients seeking relief from all sorts of diseases and health conditions in order to pursuing health promotion and wellness of such patients. In order for food to be therapeutic, it must be nutrient-dense, measured in part by the **nutrients and anti-nutrients,** contained in consumed foods. According to Alta (2019), nutritional therapy is the treatment of a medical condition, such as diabetes mellitus, through changes in diet, by adjusting quantity, quality and methods of nutrient intake. Such nutrients and diets are capable of influencing the body's functioning, protect against numerous diseases, restore health and also determining the people's response to changes in the environment. This of course, focuses on natural unprocessed foods that help boost overall health of pregnant mothers and that of their babies. It is designed in a way that

it is nutritionally balanced and sustainable according to sustainable development goals. However, it is important to understand that nutritional therapy does not replace the conventional medicines but may compliment them.

Benefits of Nutritional Therapy for Pregnant and Nursing Mothers

The therapeutic nutrition for pregnant and nursing mothers goes beyond weight control for both the baby and the mother. They are specially designed to promote a healthy lifestyle and improve maternal and fetal health. The benefits are as follows: -

(1) Nutritional Therapy Eases High Blood Pressure

High Blood Pressure (HBP) could be controlled through lifestyle modifications such as counting calories, keeping a check on one's portion sizes, regulating sleepy cycle, regular exercise and a good healthy diet. The nutritional diets that will assist the pregnant and nursing mothers to control high blood pressure levels are avoidance of alcohol consumption, smoking and other sedentary lifestyle habits. However, a healthy diet can take people to a long way in terms of controlling high blood pressure and preventing its consequences. Interestingly, Garima (2019), revealed the acronym "DASH" nutritional therapy for pregnant women with high blood pressure. DASH is an acceptable ways of eating plan for controlling high blood pressure. DASH simply means ***Dietary Approaches to Stop Hypertension***. Pregnant women and nursing mothers are encouraged to include fruits, vegetables, fish, whole grains, nuts, legumes and low-fat dairy products in their eating patterns. All of these foods are high in key nutrients that are required for keeping blood pressure under control. They are less in salt, which is a key to controlling blood pressure level. DASH diet for women with high blood pressure excludes consumption of red meat, desserts, sugar-sweetened and caffeinated beverages. The basic nutrients needed to control high blood pressure among pregnant and nursing mothers are:

- Avoid Salt (sodium): Sodium, which is high in salt, is one of the worst minerals for high blood pressure patients. This is because salt makes the body retain water. The extra stored water in the body during or after pregnancy can exacerbate blood pressure levels. Apart from adding less salt to the food, nursing mothers can also reduce sodium intake by avoiding processed, packaged, canned and junk foods.
- Eat more Potassium: Potassium is known to negate the effects of sodium on high blood pressure. Potassium helps pregnant mothers to easing tension in blood vessel walls as foetus taps directly from the mother; this in turn helps in lowering high blood pressure. The needed nutrients that are very rich source of potassium for pregnant and nursing mothers include bananas, avocados, dried fruits, prunes, soya-beans and kidney beans to mention a few.
- Eat more Magnesium: Magnesium is another micronutrient that has found to be beneficial for reducing both systolic and diastolic blood pressure during and after pregnant. Leafy and green vegetables, fruits, nuts and seeds, legumes and seafood are nutritional therapy acclaimed for pregnant and nursing mothers.
- Eat more Fibre: Fibre is one of the nutritional therapy that can help in reducing blood pressure and inflammation in the body during pregnancy. Eating more fibre helps in keeping baby full for longer and, also reduce appetite of nursing mothers. Fibre-rich foods are excellent for keeping constipation at bay. They help in forming bulk of stools and ease bowel movement.

2. Nutritional Therapy Lowers High Cholesterol

Cholesterol travels through the blood on proteins called lipoproteins. Low Density Lipoprotein (LDL), is sometimes referred to poor cholesterol. A high LDL level leads to a build-up of cholesterol in the arteries. However, high density lipoprotein (HDL), is sometimes called the good cholesterol. The levels of cholesterol, and triglycerides, naturally increase during pregnancy. This is because, as the pregnancy develops, there is an increase flowing of nutrients to the placenta to support the growth and development of the baby. Extra cholesterol is needed to fuel the rapid growth of both baby and placenta; it is also needed for the production of oestrogen and progesterone, hormones that play a key role in a healthy pregnancy. Mindy (2019), submitted that high cholesterol during pregnancy can lead to pregnancy-induced hypertension, which can threaten the life of both the mother and child. Also, she stated that low cholesterol can lead to premature labour and low birth weight. It is therefore expected that pregnant women and nursing mothers need some cholesterol for optimal wellness. But if there is too much of it in the blood, it can stick to the walls of the arteries and narrow or even block air passage; this ironically puts them at high risk for coronary artery disease and other heart diseases. In order to maintain the normal level of cholesterol during and after pregnancy, there is need for nutritional therapy which this aspect addresses. Diets recommended for optimal cholesterol for pregnant and nursing mothers are as follows: -

- **They should limit their foods with cholesterol: As stated above, h**igh cholesterol levels during pregnancy are necessary to make steroid hormones, such as estrogen and progesterone; which are vital for carrying a pregnancy to term. In order to have normal cholesterol; pregnant and nursing mothers are charged to eat foods that are rich in cholesterol such as animal origin, such as liver and other organ meats, egg yolks, and whole milk dairy products (Mindy, 2019).
- Pregnant and nursing mothers are expected to **eat plenty of soluble fibre.** Foods rich in soluble fibre helps prevent the digestive tract from absorbing cholesterol. These foods rich in soluble fibre are whole-grain cereals such as oatmeal and oat bran; fruits such as apples, bananas, oranges, pears, and prunes; legumes such as kidney beans, lentils, chick peas, black-eyed peas, and lima beans.
- E**at lots of fruits and vegetables.** A diet rich in fruits and vegetables can increase important cholesterol-lowering compounds in the diet of pregnant and nursing mothers. These compounds, called plant sterols, and perhaps work like soluble fibre.
- In order to maintain optimal level of wellness during and after pregnancy, mothers are recommended to **eat fish that are high in omega-3 fatty acids.** These acids would not lower the LDL level, rather assisting to increase the HDL level of pregnant and nursing mothers (Änne and Keelin, 2011). They are also capable to protect both foetus' and mother's heart from blood clots and inflammation.
- **Pregnant and nursing mothers should limit alcohol consumption: Invariably, a***lcohol* use appears to be the most harmful *during the* first three months of *pregnancy*; however, *drinking alcohol* anytime *during pregnancy* can be harmful. Therefore, there is no safe time during pregnancy to drink. All types of alcohol are equally harmful, including all wines and beer, coolers and *liquor*. According to Centres for Diseases Prevention and Control (2020), alcohol in the mother's blood passes to the baby through the umbilical cord.

Too much alcohol can also increase the risk of heart diseases that raising the blood pressure and triglyceride level.

3. Nutritional Therapy Improves Well-being

Diets and lifestyle are important determinants of wellbeing of both mother and offspring starting from the pre-conception period. Wellbeing is a state of being comfortable, healthy, or happy during and after pregnancy. Maintaining good nutrition and a healthy diet during and after pregnancy is critical for the health of the mother and unborn child. What mother eats during pregnancy influences not only mother's own health and wellbeing, also for the development of the baby; meanwhile there is also substantial evidence that mother's diet in pregnancy can have a lasting impact on the long-term health and wellbeing of the child later in life (WHO, 2020). CDC (2020), suggests that nutrition therapy supports optimal gestational weight gain (i.e. neither insufficient nor excessive), reduces the risk of anaemia in late pregnancy, increases birth weight, and lowers the risk of preterm delivery.

4. Nutritional Therapy Increases Immunity of both the Mothers and Foetus

On a daily basis, pregnant and nursing mothers are prone to expose to some potential harmful microbes of all sorts. Unfortunately, many pregnant women are more susceptible to common colds, tummy bugs, infections, and flu due to a slightly weakened immune system during pregnancy. National Centre for Complementary and Integrative Health, (NCCIH, 2019), stated that a healthy diet will boost the immune system of both the mother and the foetus; and enhance regular functioning immune system. As noted by Childs, Calder, and Miles (2019), immune system is a network of complex stages and pathways in the body that protects both the mother and baby against those harmful microbes as well as certain diseases. It also recognizes foreign invaders like bacteria, viruses, and parasites and takes immediate action. For instance, vitamin C and foods like citrus fruits, chicken soup, and tea with honey are nutritional therapies recommended for pregnant and nursing mothers for boosting immunity of the foetus. They also need to be drinking plain water, adding lemon juice or drinking beverages that are free of caffeine and sugar. Besides, breast milk is the food naturally designed to best meet the needs of human babies. It has all the necessary nutrients, in just the right amounts, and is easy to digest. So, Breast milk also helps build and support the baby's immune system. Therefore, the first milk that comes out of the breasts after birth helps to protect some infectious agents and; literally give babies a head start in preventing and fighting such infections. Furthermore, Breast milk also is made up of other proteins, fats, sugars and even white blood cells that work to fight infection in many different ways (McCarthy, 2020). Therefore, pregnant and nursing mothers are encouraged to ensure that the following nutritional therapies to be included in their diets; such as ***cooking with vegetables or chicken stocks*** such as spinach in their daily menu. This not only boosts the immunity but also increase their breast milk production; Citrus fruits: ***citrus fruits*** like grape, oranges, sweet lime among others are also rich source of vitamin C.

5. It systematically balances hormones of pregnant and nursing mothers

Hormone is a biological compound used by multicellular organisms to organize, coordinate, and control the functioning of their cells and tissues. These chemicals are capable to control mothers' behaviour and their metabolism, which are necessary for both mother and infant to survive and reproduce. Hence, the secretion

and yielding of milk by nursing mother after giving birth is secreted by hormone; the milk is therefore produced by the mammary glands, which are contained within the breasts. The breasts, unlike most of the other organs, continue to increase in size after childbirth (Complementary & National Healthcare Council, CNHC, 2019). However, maternal breast milk provides vitamins, minerals, protein, and anti-infectious factors; antibodies that protect the infant's gastrointestinal tract are supplied, resulting in a lower rate of enteric infection in breast-fed than in bottle-fed babies. The nutritional status of the mother is important throughout this period. The mother's daily caloric intake must increase significantly in order to replenish the mother's nutrient and energy stores. Whilst hormones are made from components of the food the pregnant and nursing mothers eat, choosing the right sort of foods and nutrients encourages their hormonal balance. Nutrients recommended for pregnant and nursing mothers to balance blood sugar hormonal maintenance according to Angellique, (2020), are as follows:

- ❖ Eat a combination of protein and fibre with every meal and snack. Good sources of protein include meat, fish, eggs, lentils, chick peas, beans, quinoa, nuts and seeds. Good sources of fibre are whole grains (e.g. whole meal bread, brown rice, and whole grain pasta), vegetables, pulses and fruit.
- ❖ Eating vegetables like broccoli, brussels sprouts, cabbage, cauliflower, collard greens, mustard greens, and watercress.
- ❖ Sprinkle of seeds; Seeds like pumpkin, sunflower and sesame seeds are high in healthy fats as well as magnesium
- ❖ Avoid long gaps between meals: aim to eat a meal or small snack roughly every 4 hours
- ❖ Limit your intake of confectionery, refined carbohydrate, baked goods, fruit juices and other sugary foods

6. Nutritional Therapy Assists in Stress Reduction

Stress is a complex phenomenon and each individual mother has her own level of stress tolerance during and after pregnancy. Stress is a continuous feeling of worry about work or personal life that prevents the individual from relaxing. In the human body, stress influences the immune system, contributing to infections, allergies and serious illnesses. Most of the pregnant or nursing mothers encounter stress when they feel under a great deal of emotional strain, hormonal changes, physical problems, haemorrhage, orthostatic stress/upright tilt, heat exposure etc. and unable to cope with certain pressures in life. However, stress creates greater physiological demands during and after pregnant. Therefore, pregnant and nursing mothers need more energy, oxygen, circulation, and more metabolic cofactors to maintain healthy gestational period; these could be derived from nutrients such as vitamins and minerals. Healthy foods are capable to elicit an emotional response when eaten; cut levels of cortisol and adrenaline; assist tame stress in several ways; and boost levels of serotonin, a calming brain chemical (Angellique, 2020). The following nutritional therapy recommended to reduce stress includes: -

(a) ***Vitamin C:*** Consuming foods high in vitamin C, such as oranges and other citrus fruits, can reduce stress and boost the immune system. Intake of this vitamin can help lower the levels of cortisol, a stress hormone, and blood pressure during high-anxiety situations.

(b) ***Complex Carbohydrates:*** Complex carbohydrates, such as whole grains, fruits, and vegetables, can induce the brain to increase serotonin production

and stabilizing blood pressure as a way to reduce stress during and after pregnancy. This also enables nursing mothers stabilizing their nursing period.

(c) ***Magnesium:*** Obtaining an adequate amount of magnesium is essential for avoiding headaches and fatigue. Oral magnesium can also successfully relieve premenstrual mood changes of nursing mothers. Additionally, increased magnesium intake has been found to improve sleep quality in pregnant women. Natural diets sources of magnesium include spinach or other leafy greens, salmon, and soya beans.

(d) ***Omega-3 Fatty Acids:*** Fatty fish (such as salmon and tuna) and nuts and seeds (such as flaxseeds, pistachios, walnuts, and almonds) are rich in omega-3 fatty acids, which have been shown to reduce surges of stress hormones and also confer protection against heart disease, depression, and premenstrual syndrome. Also, walnut is rich in higher blood levels of omega 3 fatty acids that have been linked with better mood and lower rates of depression.

7. It Reduces the Risk of Functional Diseases of Foetus and the Mothers

Functional diseases refer to any condition that result from the abnormal function of cells, tissues, and organs. The functional disorders can be found alone, but it is common to find more than one, often several, in the same patient. They are frequently found clustered in families with various symptoms. Such symptom is cognitive that are feature of fibromyalgia and chronic fatigue syndrome; they are also commonly associated with other forms of functional neurological disorders such as functional weakness, non-epileptic attack disorder, functional tremor, functional bowel disorder among others. For instance, Functional bowel disorders in pregnant women have a minimal impact on quality of life; while other illness may exacerbate the growth and development of foetus. An increased prevalence of cardiovascular disease (CVD) has been found in women of childbearing age, with the presence of CVD in pregnant women posing a difficult clinical scenario in which the responsibility of the treating physician extends to the unborn foetus. As pregnant mothers need more floating of blood regularly so also they need to be eating the right types of fat and avoiding the unhealthy ones in order to help reducing the build-up of plaque in their blood vessels. Infants and children under the age of five are at risk of developing iron deficiency anaemia because of their increased requirements for rapid growth and diets that are often lacking in sufficient absorbable iron during pregnancy. Iron deficiency, with or without anaemia, may have important health consequences for young children, including increased perinatal mortality, delayed mental and physical development, negative behavioural consequences, reduced auditory and visual function, and impaired physical performance(WHO, 2018). World Health Organization further noted that maternal short stature and iron deficiency anaemia, increase the risk of death of the mother at delivery, contribute to at least 18% of maternal deaths in low- and middle income countries. Maternal under-nutrition also increases the probability of low birth weight, which in turn increases the probability of neonatal deaths due to infections and asphyxia.

Basic Nutritional Therapy for Pregnant and Nursing Mothers

Nutrition Therapy requires systematic and valuable approaches that are holistic, safe, and effective in order to maintain wellness of both pregnant mothers and the infants. The nutritional therapy should be determined individually based on pre-pregnancy weight, diet history, height, activity level, singleton or multiple

pregnancies, time of gestation, and weight gain goals. Basic nutritional therapy recommended for pregnant and nursing mothers include:

(a) Carbohydrates: Carbohydrates diet is expected to constitute approximately 50% of the diet for most pregnant and nursing women. Carbohydrates are important for energy production, and they spare protein from being used as energy. The carbohydrate group provides much of the fibre necessary to help prevent constipation and haemorrhoids. Also, eating carbohydrates by pregnant and nursing mothers help to provide energy to support the growth and development of a baby and, after delivery, breastfeeding. The best sources of carbohydrates are whole grains, milk, yogurt, beans, peas, fruits, and vegetables, which also are good sources of fibre. Whole grains, fruits, vegetables, milk, yogurt, beans, and peas contain carbohydrates.

(b) Protein: Protein is required for the growth of maternal and fetal tissue. The effects of a protein deficiency on the outcome of pregnancy are difficult to assess. Most women who have low protein intakes also have a caloric deficit. Protein provides the body with amino acids. Amino acids are the building blocks of proteins which are needed for growth, development, and repair and maintenance of body tissues. Protein provides structure to muscle and bone, repairs tissues when damaged and helps immune cells fight inflammation and infection during and after pregnancy. According to WHO (2018), protein helps build a baby's muscles, bones, and other tissues, especially in the second and third trimesters of pregnancy. The recommended proteins intake during the second and third of pregnancy and while breastfeeding is 71grams daily. Healthy sources of protein include lean meat, poultry, fish, beans, peanut butter, beef, pork, eggs, soya beans and other legumes.

(c) Fibre: Fibre is a nutrient that helps ease the constipation commonly associated with pregnancy. Whole grains (like whole-wheat bread, whole-grain cereals, and brown rice) and fruits, vegetables, and legumes (beans, split peas, and lentils) are good nutritional therapy for pregnant and nursing mothers.

(d) Calcium: Calcium helps build strong bones and teeth, and perhaps plays the significant role in the healthy functioning of the circulatory, muscular, and nervous systems. Pregnant and breastfeeding women should get 1,000 mg of calcium per day. Healthy sources of calcium include low-fat dairy products, calcium-fortified orange juice and cereals, and spinach.

(e) Folic acid: Folic acid helps the healthy development of a baby's brain and spinal cord. It's also needed to make red blood cells and white blood cells. Women who get 400 micrograms (0.4 milligrams) of folic acid daily prior to conception and during early pregnancy can reduce the risk that their baby will be born with a neural tube defect (a birth defect involving incomplete development of the brain and spinal cord). Folic acids are naturally found fortified cereals, leafy green vegetables, citrus fruits, beans, and nuts.

***(f) Iodine*:** Iodine helps the body's thyroid gland make hormones that help with growth and brain development of foetus. Not getting enough iodine during pregnancy can put a baby at risk for thyroid problems and cognitive delays, some of which can be severe. Pregnant or lactating women should use iodized salt in their cooking and eat foods high in iodine, like seafood cheese, yogurt, milk and dairy products.

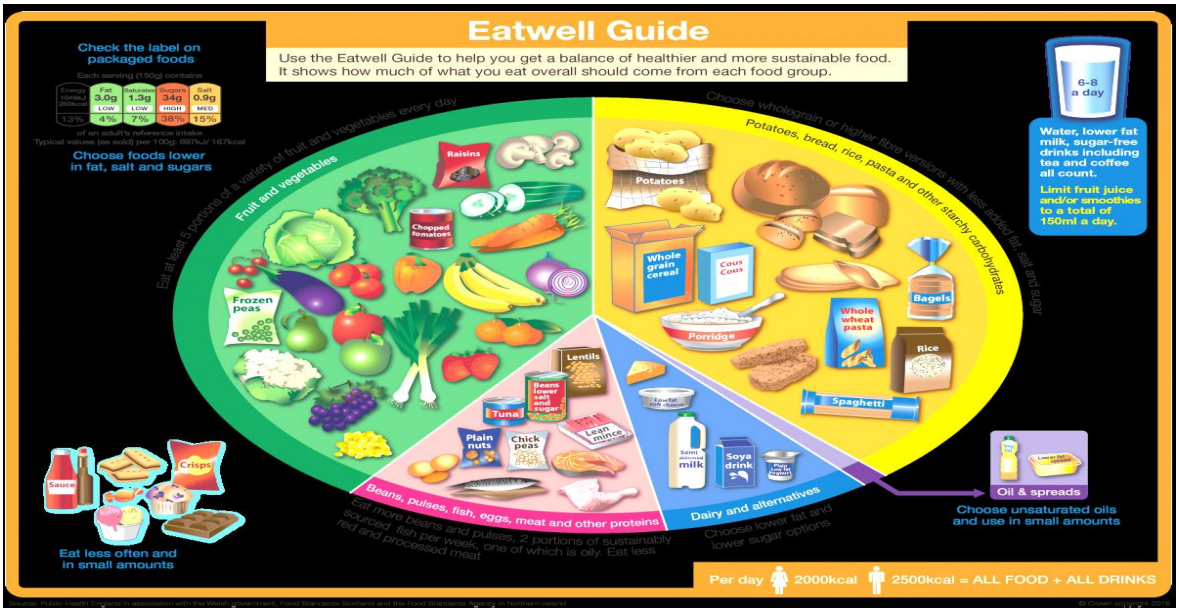
(g) Iron: Eating a diet rich in iron and taking a daily iron supplement while pregnant or breastfeeding helps prevent iron-deficiency anaemia. Women who do not get enough iron may feel tired and are at risk for infections. Good dietary sources of iron include lean meats, fortified cereals, legumes (beans, split peas, and lentils), and leafy green vegetables. Iron intake by pregnant and nursing mothers would assist the blood transport oxygen throughout the body and prevents anaemia in infant.

(h) ***Vitamin A:*** Vitamins are food components that help support overall health and play important roles in cell metabolism and neurological functions. **Vitamins** aid in energy production, wound healing, bone formation, immunity, and eye and skin health of foetus and the mother. However, there is need to design nutritional therapy for pregnant and nursing mothers in such a way that Vitamin A helps develop a baby's heart, eyes, and immune system. Prenatal vitamins should not contain more than 1,500 micrograms (5,000 IU) of vitamin A and pregnant women should not take vitamin A supplements. ***Note that too little and too much of vitamin A can harm a developing foetus.*** Good sources of vitamin A include milk, orange fruits and vegetables (such as cantaloupe, carrots, and sweet potatoes), and dark leafy greens.

(i) ***Vitamin B6:*** Vitamin B6 helps form a baby's red blood cells; breaks down protein, fat, and carbohydrates; and is needed for normal brain development and function. Good sources of vitamin B6 include poultry, fish, whole grains, fortified cereals, and bananas.

(j) ***Vitamin B12:*** Vitamin B12 plays an important role in the formation of a baby's red blood cells, as well as brain development and functioning. Vitamin B12 is only found in animal products like meat and eggs, so nutritional therapy is important for pregnant and nursing mothers who are breastfeeding; such sources of vitamin B12 includes lean meats, poultry, and fish, and fat-free and low-fat milk.

(k) ***Vitamin C:*** Vitamin C plays an important role in tissue growth and repair, and in bone and tooth development of baby. Vitamin C also helps the body absorb iron. Good sources of vitamin C include citrus fruits, broccoli, tomatoes, and fortified fruit juices. Vitamin C helps wounds heal sustained during labour, and assists to fight off germs that may likely impostors during course of delivery. The chart below illustrates the Nutritional therapy that would guide the pregnant and nursing mothers plan well for their diets:



Source: Shannon, (2014).

Figure 1: Shows Nutritional Therapy Guide (NTG) for Pregnant and Nursing Mothers

Conclusion

Adequate eating of diets by pregnant and nursing mothers serve numerous functions. For instance, it provides materials that are metabolized to supply the energy required for the absorption and translocation of nutrients, synthesis

of cell materials, movement and locomotion of baby and the mother, excretion of waste products, and for all other activities taken in the body system. Adhere to the instructions and guidelines of nutritional therapist assists pregnant and nursing mothers effectively curtail pregnancy-related complications and improved healthier birth delivery. The study also concluded that nutritional therapy provides materials from which all the structural and catalytic components of the living cell during and after pregnancy can be assembled together for proper growth and functioning of body system in mother and baby.

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SELF-ESTEEM AS CORRELATE OF SPORTS PARTICIPATION AMONG PUBLIC SECONDARY SCHOOL STUDENTS IN OLUYOLE LOCAL GOVERNMENT AREA, OYO STATE

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Abstract
The researchers observed that not many studies in Oluyole Local Government Area (LGA), Oyo State have explored the influence of self-esteem on sports participation among public secondary school students despite numerous benefits of sports participation. Hence, this study examined self-esteem as correlate of sports participation among public secondary school students in Oluyole LGA, Oyo State. Descriptive survey research design was used. Population comprised all public secondary school students in Oluyole LGA. Sample size (n = 1,133 male and female) was selected through simple random sampling technique. Rosenberg Self-esteem Scale (RSES) by Rosenberg, (1963) as well as a validated self-developed questionnaires were used for data collection. Data were analysed with descriptive and inferential statistics. One research question was answered and one hypothesis was tested at 0.05 alpha level. Findings of this study revealed that level of sports participation among the respondent was moderate (weighted mean=2.50). There was a significant positive relationship between self-esteem ($r=0.129$, $p<0.05$) and sports participation. It was concluded that level of sports participation among the students was moderate. Self-esteem also had significant positive relationship with sports participation among the respondents. Recommendations were made based on the conclusion of the study.

Keywords: Sports participation, Oluyole Local Government Area, self-esteem, School, Students, Sports

Introduction

Sports is one of the most noticeable co-curricular activities in schools. It is described as a physically demanding and skilled sport where a team or a person

competes against another for entertainment value (Steinberg, 2018). In addition to teaching students about teamwork, it raises their self-esteem. The act of engaging in an event is known as participation (Oxford Learner's Dictionaries, 2018). Therefore, engaging in leisure or competitive sports for the purpose of maintaining physical and mental well-being might be considered sports participation. For those that participate, sports engagement can also mean playing multiple sports at different levels for varied purposes. It is simply the act of participating in various sports, including but not limited to, badminton, football, hockey, table tennis, basketball, tennis, swimming, cycling, and athletics. People from all walks of life participate in sports for a variety of reasons, including but not limited to the following: to have fun, recreation, competition in contests, socializing, skill development, and much more (Oladejo, 2017). This participation could take the form of clubs or teams, or it could take place in schools.

Sports, whether team or individual, are another option. Secondary school students, according to Ike (2020), are in their adolescence. Adolescence is a transitional stage that can be difficult for most male and female teenagers. As a result, they may have low self-esteem, especially when it comes to their ability to perform academically, athletically, and physically. The body goes through a plethora of changes during adolescence that impact the adolescent's physical, emotional, and social development because of pubescence. Students that actively participate in secondary school athletics will acquire lifelong abilities that will prevent them from ever feeling depressed or having poor self-esteem (Ahmed, Yan Ho, Van Niekerk, Morris, Elayaraja, Lee and Randles, 2017). As a result, teenagers' engagement in sports has been shown to improve their health-related metrics and overall well-being (Dev and Uthaman, 2022).

In addition to helping shape the body and mode of character and keeping young people fit and healthy, sports participation or participating in sports offers secondary school students several other benefits. Given the numerous benefits of sporting activities, one would think that most secondary school students would find time to participate in sports; however, this is not the case for a variety of reasons, including social, economic, physical and psychological factors. Psychological factors include perceived competence, self-efficacy, attitude, enjoyment, body image, self-esteem, and beliefs (Bang, Won and Park, 2020). This study focused on self-esteem as correlates of sports participation among public secondary school students in Oluyole LGA, Oyo state.

One of the fundamental motivators for participating in sports is self-esteem. (Eromo and Levy, 2017) describe self-esteem as an evaluation of one's own personal worth that takes into account both cognitive (self-efficacy) and emotional (self-worth) aspects. There are three levels of self-esteem: extremely high, high, and low (Weber State University, 2023). Individuals who have low self-esteem believe they are not very good. At the general or domain-specific levels, as well, is possible. While global self-esteem is an appraisal of one's worth generally, domain-specific self-evaluations are self-assessments within more narrowly defined domains, such as intellectual, social, or beauty self-esteem (Edmonds and Rose, 2022). According to early psychological and philosophical conceptions, an individual's total self-esteem is determined by averaging their various self-evaluations, which are then weighted by how significant they believe they are (Edmonds and Rose, 2022). Nevertheless, it is

now clear that domain-specific self-evaluations are influenced by overall self-esteem as well; people with greater overall self-esteem tend to see their specialized attributes more favourably as a consequence (Orth and Robins, 2022).

Participating in sports enables people to obtain a multitude of benefits. For example, participating in sports might help people learn to value other people and their own bodies (Habyarimana, Tugirumukiza, and Zhou, 2022). Additionally, it supports the healthy growth of the body and mind, which raises self-esteem and confidence (Kim, Im, Lee and Heo, 2022). Adolescence is a transitional period that may be challenging for both boys and girls, especially in terms of their physical appearance, athletic ability, and intellectual aptitude. As a result, both genders may suffer from low self-esteem at this time (Moksnes and Reidunsdatter, 2019). Pre-college athletics can assist cultivate lifetime skills that can help lessen some of the negative effects one may experience in college, such depression and poor self-esteem. By lowering anxiety and depression, sports participation supports psychological advantages (Shield, Eklund and William, 2020).

Higher levels of satisfaction and self-esteem have been linked to sports engagement, according to research (Popkin, Bayomy and Ahmad, 2019). Participation in sports has also been linked positively to self-esteem (Oladejo, 2017). In order to investigate the potential relationship between sports engagement and self-esteem in adolescents and children, researchers (Bang, Won, and Park, 2020) employed a longitudinal approach; they found that sentiments of self-esteem were positively correlated with perceived sports skill. Other studies further showed that those who engaged in team sports as opposed to individual sports reported having a better sense of their own sports and those who did so also had higher levels of self-esteem (Infantes-Paniagua, Palomares, Fernández-Bustos and Contreras Jordan (2021).

Results showed that sports participation was positively associated with physical competence, physical appearance, physical self-esteem, and general self-esteem in the sample. The study of Raboshakga (2019) also looked at the relationship between adolescent sports participation and self-esteem and the potential mediating role of physical self-esteem, which is similar to sports self-concept. Overall research indicates that playing sports was associated with improved self-esteem in those who also had favourable relationships with the underlying components of social competence and acceptability (Popkin, Bayomy and Ahmad, 2019; Goh, Jones and Copello, 2019).

Similar findings have been made by research on college students who play sports and have greater self-esteem. One such study, which looked at college self-esteem in relation to pre-college sports participation, found that among the 220 college females analysed, prior sports participation was positively correlated with both self-esteem and the intervening variables (Lee, Kim and Uhm, 2021). Likewise, sports participation was positively correlated with both peer acceptance and sports self-concept, according to research on college students that looked at the relationship between sports participation and positive self-esteem through the mediating variables of perceived peer acceptance and sport self-concept (Seiffge-Krenke, 2019). Additionally, a statistically significant association between the self-esteem of those who played sports before attending college and those who did not was discovered. To

put it another way, undergraduate students who reported having played sports in the past also seemed to have greater levels of self-esteem (William, 2021).

Statement of the Problem

Sports participation contributes to positive development of mind and body, leading to higher self-esteem and self-confidence. Despite the various advantages of playing sports, observation indicates that secondary school students are becoming less involved in them. This trend may be tied to issues with boys' and girls' identities and self-concepts. The need to display one's body to others, having a negative body image, being inactive, fearing one's femininity, and lacking basic skills competency are a few issues that have been noted. Prior study in a different local government area examined the connections between sports participation and self-esteem (Oladejo, 2017). Furthermore, it was discovered that there as a paucity of studies on self-esteem and sports participation among public secondary school students in the Local Government Area. Hence, this study investigated self-esteem as correlate of sports participation among public secondary school students in Oluyole Local Government Area of Oyo State.

Purpose of the Study

The purpose of this study was to investigate self-esteem as correlate of sports participation among public secondary school students in Oluyole Local Government Area of Oyo State. Specifically objectives were to:

a. establish the level of sports participation among public secondary school students in Oluyole Local Government Area of Oyo State.
b. determine the relationship between self-esteem and sports participation among public secondary school students in Oluyole Local Government Area of Oyo State.

Research Question

What is the level of sports participation among public secondary school students in Oluyole Local Government Area of Oyo State?

Hypothesis

1: There is no significant relationship between self-esteem and sports participation among public secondary school students in Oluyole Local Government Area of Oyo State.

Methodology

The research design used in the study was a descriptive survey. All of the secondary school students in Oluyole Local Government Area, Oyo State, were population for the study. 1,133 people were chosen as a sample using a random sampling technique of fish bowl and without replacement method. Five hundred and seventy-nine (579) female students and seventy-four (754) male students made up the respondents. Both the junior and senior students made up these. To collect data, structured questionnaires were employed. Sections A, B and C comprised the three sections of the questionnaire. Demographic data was covered in Section A. In Section B data on independent variables were gathered using two a standardized scales that had been appropriately adapted, while a self-developed and validated questionnaire was used to collect information on the dependent variable (sports participation) in section C.

The Rosenberg Self-esteem Scale (RSES) by Rosenberg in 1963 was used in section B. Furthermore, the dependent variable of sports participation was measured in Section C using a self-developed and validated questionnaire called the Sports Participation Scale (SPS). The Cronbach Alpha technique was employed to ascertain the instrument's internal consistency. Each of the included reliability coefficients (RSES = 0.92 and SPS = 0.92) was included. Utilizing frequency counts and percentages as descriptive statistics, the study topic and the demographic data were examined. The two hypothesis was tested using inferential statistics of the Pearson Moment Correlation Coefficient (PPMC). The hypothesis was tested at the 0.05 alpha level.

Results

Table 1: Demographic Characteristics of the Respondents (n=1,133)

Variables		**Frequency**	**Percentage**
Sex	Male	754	67.0%
	Female	379	33.%
	Total	**1,133**	**100.0%**
Age	13-15 Years	627	55.0%
	16-18 Years	506	45.0%
	Total	**1,133**	**100.0%**

Table 1 indicates that most of the respondents 754 (67.0%) of the respondents were male, while 379 (33.0%) were female. In addition, the table further shows that 627 (55.0%) respondents were in the age range of 13-15 years, while 506 (45.0%) were in the cohort of 16-18 years.

Research Question

The research question below was answered in this study:

Research Question 1: What is the level of sports participation among public secondary school students in Oluyole Local Government Area of Oyo State?

Table 2: Result on Level of Sports Participation among Public Secondary School Students

S/n	Statement	Very often	Often	Sometimes	Never	Mean	Std. Dev.
1	I participate in ball games such as football and volleyball.	1093 (96.5%)	29 (2.6%)	6 (0.5%)	5 (0.4%)	3.95	0.29
2	I involve in racket games such as badminton, tennis, and table tennis.	8 (0.7%)	5 (0.4%)	6 (0.5%)	1114 (98.3%)	1.04	0.29
3.	I engage in short distance races like 100m, 200m, 400m and relay race	21 (1.9%)	26 (2.3%)	1064 (93.9%)	21 (1.9%)	2.04	0.33
4.	I involve in the middle race like 800m, 1,500m	7 (0.6%)	4 (0.4%)	9 (0.8%)	1113 (98.2%)	1.03	0.28
5.	I engage in field events such as the long jump, high jump, javelin, discus, and shot put.	6 (0.5%)	1096 (96.7%)	20 (1.8%)	11 (1.0%)	2.97	0.25
6.	I set an exercise routine to achieve my strength desired goal.	1094 (96.6%)	13 (1.1%)	18 (1.6%)	8 (0.7%)	3.94	0.37
7.	Participation in sports gives me a sense of competence.	28 (2.5%)	1091 (96.3%)	9 (0.8%)	5 (0.4%)	3.01	0.22
8.	I feel relieved from body aches or tension whenever I engage in sports.	17 (1.5%)	1093 (96.5%)	15 (1.3%)	8 (0.7%)	2.99	0.24
9.	I have a quick recovery from injury when I participate in sports	9 (0.8%)	1102 (97.3%)	22 (1.9%)	0 (0.0%)	2.99	0.17
10.	I attend sports seminars to acquire more knowledge on how to improve in Football and Athletics.	4 (0.4%)	4 (0.4%)	26 (2.3%)	1099 (96.9%)	1.04	0.26
						Weighted mean=2.50	

Decision Rule: High = 3.50 - 4.00, Moderate = 2.50-3.49, Low 1.50 -2.49, Very Low = 1.00-1.49

Table 2 shows that every item with a weighted mean value of 2.50 met the 2.50 criterion of 2.50; indicating that the level of sports participation among public secondary school students in Oluyole Local Government Area of Oyo State was moderate.

Hypothesis

The following hypothesis was tested in the study.

1: There is no significant relationship between self-esteem and sports participation among public secondary school students in Oluyole Local Government Area of Oyo State.

Table 4: Correlation Analysis on Relationship between Self-esteem and Sports Participation

Variables	Mean	Std. Dev.	Sports participation	Self-esteem	N	Sig. (p value)	Remark
Sports Participation	24.97	0.91	1	0.129	1133	0.000	Significant
Self-esteem	25.88	0.72	0.129	1			

Correlation is significant at 0.05 alpha level (p<0.05)

Table 4 showed that self-esteem has significant relationship with sports participation among public secondary school students in Oluyole Local Government Area (r=0.129, p<0.05). It was further revealed that self-esteem had positive correlation with sports participation; while correlation coefficient's magnitude was weak. This means that there was a significant positive relationship between self-esteem and sports participation among public secondary school students in Oluyole Local Government Area of Oyo State. The null hypothesis was therefore rejected.

Discussion of Findings

The findings of this study found that the level of sports participation among public secondary school students in Oluyole Local Government Area of Oyo State was moderate. The finding of the hypothesis revealed that there was a significant relationship between self-esteem and sports participation. Hence, the result showed that self-esteem had significant relationship with sports participation among public secondary school students in Oluyole Local Government Area of Oyo State. Self-esteem had a positive correlation with sports participation; though, the correlation coefficient's magnitude was weak. The positive relationship of self-esteem with sports participation implied that, an improvement in self-esteem of the respondents would influence their participation in sports. The result of the study was in consistence with previous studies which found relationship with self-esteem and sports participation among secondary school students in Ibadan North Local Government Area of Oyo State (Oladejo, 2017). Furthermore, studies conducted on college students have also linked sports participation with higher self-esteem (Lee, Kim and Uhm, 2021). A statistically significant correlation was also found in self-esteem among those who participated in sports prior to college and those that did not. In other words, undergraduate students who showed having prior sports experience also indicated having higher levels of self-reported self-esteem (William, 2021).

Conclusion

This study focused on relationship between self-esteem and sports participation among public secondary school students in Oluyole Local Government Area of Oyo State. Consequently, it was concluded based on the outcome that the level of sports participation among public secondary school students in Oluyole Local

Government Area was moderate. Self-esteem also had significant positive relationship with sports participation among the respondents.

Recommendation

Based on conclusion of the study, the following suggestions were made:

i. The Local Government Area's Youth and Sports Development Department should step up efforts to plan recurring sports programmes so as to increase grassroots involvement from the current state to a higher level.
ii. In order to increase its impact on secondary school students in Oluyole LGA participating in sports, the respondents' self-esteem has to improve, which can be achieved by appreciating the students' performance instead of praising their appearance.

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INTEGRATING ANTI CORRUPTION CRUSADE IN SPORTS INDUSTRY

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Abstract

*Corruption is a phenomenon rife in the world and field of sports that has eaten deep into the fabric of the most nations, Nigeria a peculiar case. It has become child play activity where everyone is allowed to display his prowess with impunity. Winning is no longer something you sweat for with physical exertion but the highest bidder in various forms of manipulation, luring, gambling and the likes. Sport is becoming another venture that draws the attention of all and sundry as ways of enriching ones purse and becoming popular not only in the field but across board. This popularity in the field of sports has snowballed into trading in various forms of corruption and bribery which is no more a closed door task but a broad day robbery This paper therefore attempts to unravel the nitty-gritty of the word "**corruption**" in general and into sport its causes, types and means of combating and ameliorating the deplorable scene in the cosmos.*

Key words: Corruption; sports, impunity, prowess, winning.

Introduction

Corruption is no longer news in the world as it abounds nearly in every segment of public/private sector. These include companies, politics, universities and colleges, the police force, Nigeria football, churches, on line customer's services etc. The common practices are embezzlement, bribery, looting, rigging, rituals, sexual harassment, money laundry and match fixing.

In support, Uzochukwu (2019) affirms that corruption is Nigeria's biggest challenge and it is clear to every citizen that the country has an extremely high level of corruption as it is found in every sector of society. What then is corruption? In its simplest form, corruption has been defined as "dishonest, illegal or immoral behaviour, especially from someone with power" (Longman Dictionary of English). Treisman (2000:399) defines it as the misuse of public office for private gain", and Ashforth & Anand (2003, in Den Nieuwenboer & Kaptein, 2008:134) suggest that corruption is the misuse of authority for personal, sub unit and/or organizational gain". It is the illegitimate use of power to benefit a private interest (Morris 1991). Corruption is also the offering of a bribe to an official so that truth will be hidden. It involves the embezzlement of public funds for personal use, any, act that is considered to be criminal in nature according to the law of a particular society (Uzochukwu, 2019).

However, the position and rank of our country (Nigeria) in corruption is alarming and disgusting as it rather soiled and reduced her recognition at the

international scene. Table one below shows the position of Nigeria among the sampled nations by Transparency international for good fifteen years. It indicates that Nigeria was on high level of corruption between year 2000 and 2005, with significant improvement.

YEAR	NO OF COUNTRIES	RANK	POSITION	PERCENTAGE
2000	90	90	1st	100
2001	91	90	2nd	98.9
2002	102	101	2nd	99
2003	102	101	2nd	99
2004	146	144	3rd	98.6
2005	158	151	8th	95.6
2006	163	142	21st	87.1
2007	180	147	33rd	81.2
2012	176	139	37th	78.9
2013	177	144	33rd	81.3
2014	174	136	38th	78.2
2015	168	136	32nd	80.9
2016	176	136	40th	77.3
2017	176	148	26th	84.1
2018	180	144	36th	80
2019	176	140	34th	78.9
2020	164	141	22nd	87.2
2021	175	140	32nd	78.8
2022	180	146	34th	80.2
2023	168	134	33rd	87.2

Table I: Corruption perception index.

In years 2006, 2007, 2012, 2014, 2018, 2020 and 2022 respectively. Notwithstanding, the corrupt practice of the country is not encouraging and totally dismal in all sphere of human endeavours.

Based on the complex and embarrassing stage the country is wading through on corruption and corrupt practices, it is high time this is ripped in the bud before long. As corrupt practices keep waxing stronger in the complex society in nearly all private and public establishments, particularly in the area of sports at local, state, national and international levels, urgent and probable measures be employed to alleviate and reduce the menace (corruption) in the society if not into total extinction. Hence, this paper focuses on how anti-corruption crusade can be integrated into sport industry.

Sub-titles of the study

For the purpose of this study the following items are to be properly examined:

i. Corruption in sport. ii. Causes of corruption in sport. iii. Types of corruption in sports. iv. Anti-corruption crusade in sport industry

Corruption in sports

Corruption is classified into three in the field of sports, namely ‘black’ corruption, ‘white’ corruption and ‘grey’ corruption (Heidenheirmer,1989) ‘Black’ corruption is the type of activity that is widely condemned by all levels of society

(like the fixing of sporting contests); 'white' corruption is the behaviour that is almost ignored by society, seen an activity that doesn't necessarily warrant punishment (for example, games man ship); in between the two (for example, doping offences and the punishments in sports in that the width of this 'grey' area varies between sports and between countries-until this 'grey' area is standardized or eradicated corruption in sport will continue to be an issue to be tackled by all that involved and affected by it. With the above clarification, corruption in sport may be defined as given below.

Maenning (2005) suggests that in sport, corruption may take the form of behaviour by athletics who refrain in the sport in the level of performance normally required in the sport in question to win the competition and instead intentionally permit others to win, or behaviour by sporting officials who consciously perform their allocated tasks in manner at variance with objectives and moral values of the relevant club, association, competitive sports in general and/or society at large". Despite the fact that this author fails to recognize or acknowledge doping as a form of corruption in sport and that any form of corruption is known to the perpetrator only, his definition is widely used and accepted when talking about corruption in sport. Corruption in sport is equally considered from illegal point of view " corruption in sport involves any illegal, immoral or unethical activity that attempts to deliberately distort the result of a sporting contest for the material gain of love or more parties involved in that activity" (Gorse & Chadwick, 2009).

Having defined corruption in sport, as in other areas of society, is no longer a new phenomenon. The Olympic Games in 388BC recorded the first case of corruption in sport when Eupoles of Thessale bribed three of his competitors in a fighting tournament, including the reigning Olympic champion Phormion of Halikarnasses allowing him to win the gold medal at the event (Maennig, 2005). Notable cases in the modern era of sport include the fixing of 1919 World Series by members of the Chicago white Sox who took bribes from gamblers, Ben Johnson's infamous failed drugs tests in the 1980s and the match fixing Scandal that rocked Italian football a few years ago.

Recently, in Nov 2010, Nigerian Sports received the biggest humiliation around the globe when the former Director General of the National Sports Commission, Dr Amos Adamu received a three year ban and 10,000 Swiss France (*E*6,341) fine from world football governing body, FIFA is ethic committee after being found guilty of breaching bribery rules (Uzochukwu, 2019). In similar view, in October 2016, former super eagles attacker, Daniel Amokache also raised an alarm over how Nigerian youths were forced by some coaches to pay as much as #250,000 each to get into the national 11-17 team (Golden Eaglets). (Akpodonor, 2019). Maenning (2005) offers an overview of the most important documented cases of attempts at corruption in modern sport of the 21st century, with the majority of corruption cases allocated into two distinct categories.

Table 2 enumerates some of the most prominent cases of corruption (attempts) since 2005.

TABLE 2A	Corruption	Suspicious facts/soccer matches.
2008	Africa-Cup	30,000$ offer for match manipulation received by Namibian national team players.
2007	Europe	UEFA investigates on 15 cases of manipulated matches.
2006	Italy	Manipulations at 8 out of 20 clubs in first division.
2005	France	Players of FC Metz receive offer for manipulation.
2004	South Africa	34 of the 40 best qualified referees manipulate first division.

Table 2b: Corruption - (Suspicious) facts/outside of soccer.
Official positions: Until 2003: South Korea: sale of NOC memberships
Location of Federations: 2006: Chungwon Chous, president WTF rents his mother's estate as WTF domicile for 700,000 & per annum.
Location of Competitions: 2004: Successful orchestration of bribery for London 2012 against 10c member slawkow
Construction of sport facilities: 2002/3: Allianz- Arena Munchen
TV- transmission: Attorney asks for imprisonment for up to 4 and half years for ISSM officials who bribed international sport officials.
Manipulation outside soccer: Tennis world wide; 5 Italian Tennis- professionals banned and punished with fines because of betting. Badminton, Olympic Champion 2004 Zhang Ning owes her medal to a team internal arrangement. Similar practices in table-tennis.

Causes of Corruption

Causes of corruption in sport may arise from the following three principal factors- Athletes, Coaches/Team manager and Officials.

I. **Athletes (**i) Winning at all cost syndrome: (a). Monetary and scholarship award. (b). Breaking of national / international record.
II. **Coaches/ Sports Organizers:** Enhancing ones status: fear of losing one's job.
III. **Officials:-** (a). Intimidation from the high level. (b). Acceding to highest bidder and fear of unknown

Athletes

- **Winning at all cost syndrome:** Whatever efforts and means of achieving this singular honour pushes the winners to venture into strategies that would give them unequal advantages over opponents, whether in negative or positive form. According to Hughes & Coakley (1991), athletes do not tend to view their over conformity as being deviant and suggest that "through positive deviance people do harmful things to themselves and perhaps others while motivated by a sense of duty and honour".
- **Monetary and scholarship reward:** This monetary award is consonant with the views of Oke (1985) & Ojo (2017), that monetary prizes put on wining syndrome have made athletes resolute and resilient to click the awards whether in positive/negative form not minding the consequence.

- **Breaking of National/International Record:** Athletes do struggle not only to win but to lay an indelible mark by erasing the record of their predecessors and replacing it with outstanding one to be very difficult to be erased in nearest time by other successors. For this to be attained, athletes go extra miles to perform the magic that may arouse and arrest the minds of the fans and spectators in the world (Prokop, 1965).

II. **Coaches/Sports organizers**

- **Enhancement of one's status:** Coaches and sports organizers always willing to win and avoid defeat just to maintain their status quo. Going by this, they collide with the athletes in the use of substances not ethical to the rules of the game.
- **Fear of losing job:** The job of a coach and sport manager is at risk the moment the athletes and teams are not measuring up to the standard again. They equally engage athletes and players in fraudulent acts and employ the services of machineries and non-qualified players to influence the success of an event.

III. **Officials**

- **Intimidation from the high level:** The referee is in the position to determine the outcome of an event in favour of the team with best performance but with the issue of lobbying and match fixing, the referee concurs to the highest bidder. .
- **Accede to highest bidder and fear of unknown:** Pressure from both teams in an attempt to win a match by offering bribe to the officiating officials. This often troubles the minds of the officials which team to favour with this offer. A winner must emerge in a final match of this nature and the officials equally face the music if the highest bidder is unflavoured.

Types of Corruption in Sport

Maenning (2005) suggests that types of corruption in sport can generally be divided into two categories namely competition corruption and management corruption.

Firstly competition corruption involves activities by athletes and or those officials who have a direct responsibility for the outcome of a sporting contest (i.e. a referee or umpire). The second category, 'management corruption' involves non-governing bodies that include the awarding of host city Stalus for major sporting events, negotiation and allocation of rights (e.g. broadcasting, merchandising), the awarding of contracts for construction of sporting venues and the governance of sport.

Using these two categories of corruption in sport as a foundation, a typology can be introduced that will form the basis for further collection of data and analysis's of the interested individuals. This is set out in Table 3.

Competition corruption	Management corruption
Use of performance – enhancing substances	Vote rigging and undue influence in election
Use of illegible athletes/players	Embezzlement
Selection of athletes/players	Bribery
Underpayment of players allowances by handlers	
Match fixing	
Gambling	
Points sharing	

Table 3: Proposed typology

Competition Corruption

- **Use of performance – Enhancing substances:** As results of winning syndrome, many athletes in collaboration with the coaches do engage in the use of some substances – anabolic steroids; blood doping amphetamines etc. to enhance their performance with undue advantage over other athletes. Many Nigerian sports people apprehended for this purpose were given meted punishment in variance; e.g. those received lifetime bans include Chioma Ajunwa, Folasade Abigail; Osayemi Damola, Chukwuemeka and Chika Amalaha among others (Pilot Africa 2012; Laura 2014).
- **Use of illegible Athletes/Players:** The coaches perpetrate this act by using under age/over-age, and non bonafide athletes that are outstanding in their various sporting events to participate or represent a chosen institution which is contrary to the ethical operation of the game.
- **Slashing/underpayment of players allowance by coaches:** Some coaches have thrown their conscience away to the point of removing certain percentage from the athletes' allowance. Any athlete that refuses this order may not be in the good book of such rapacious coach. This is done perfectly through the sport captain or leader and non-compliant will be threatening with "**decamp saga**" anytime a final screening is pronounced.
- **Match Fixing:** Match fixing has been existing for a very long time before the modern Olympic Games. This action occurs between players and officials; between coaches and players and among the players. It always involves agreement between the two parties (teams) on the amount (bribe) to be given by other team before their team can cooperate either to win or lose as the case may be. This is equally not good enough as a weaker team may be awarded victory at the detriment of the defeated team.

Management Competition

- **Vote Rigging and undue influence in election:** Anywhere election is conducted in the world there is always traces of rigging either in fractional or large part for the purpose of attaining the ulterior motives. Sport organizers, sport governing bodies (IOC, FIFA etc.) can use whatever method or device to edge out strong opposition during election into offices. The pranks may range from time and date of election delay tasks, financial capacity of the counterpart, punctuality to commitment. This would be smartly and perfectly carried out without any trace of suspicious.
- **Embezzlement:** Those in the position of authority always alleged with case of embezzlement, misappropriation, fraudulence and the like. Funds or money earmarked for a project – awarding of contracts for construction of sporting

events, awarding of host city for major sporting events, negotiation and allocation of rights may not be properly managed or part of it used for their own personal business. Fines received from athletes, coaches and officials that connived in the use of drug enhancing performance may be squandered or not properly remitted to the appropriate quarters.

- **Bribery:** Granting of hosting right for institutions, states and countries bidding for big event (NUGA, NICEGA, NICOGA, National Sports Festival, Nation Cup, Olympic Games and World Cup) always involved enduring and herculean task from both parties. This starts with visitation of each institution, State and Country bidding for the host by the constituted bidding committee of each sport governing bodies. Final award of the hosting right may not be based on the quality, visibility and security guarantee of the centre but on highest bidder and political connection/undertone (Gorse and Chaduick, 2009).

Combating corruption in sports through anti-corruption crusade

Corruption is in appalling situation around the world, Africa and specifically, Nigeria that the launched anti-graft agencies are in bidding to its spread instead of cutting the wings from mounting high. Corruption in sport is also in the increase that certain punitive measures have to be taken immediately to counteract its big explosion. It is a fact that government set up several anti-graft agencies to douse the ugly scene. Among these include:

- EFCC (Economic and Financial Crimes Commission); ICPC (International Corrupt Practices and other related offences Commission); PACAC (Presidential Advisory Committee Against Corruption); SPIP (Special Presidential Investigation Panel for recovery of Public Property); CSOS (Collision of Civil Society Organization); NASUGA (National Support Groups for Good Governance)

In the area of sports, the following anti-graft agencies are set up to combat corruption in sporting industry across the globe and to be adopted in Nigeria sports, namely: The INTERPOL Match – fixing Task Force (IMFIF); CIBS (Centre for the international Business of sports) designed to analyse and evaluate the impact of corruption in sport on sport marketing strategy); FIFA (Federation of International Football Association); IOC (International Olympic Committee); WADA (World Anti-Doping Agency); NOC (Nigeria Olympic Committee); IAAF (International Amateur Athletic Federation).

Therefore, in the area of sport industry, there is proper need to integrate anti-corruption crusade at local, state, national and international levels. This could be achieved by strictly adhering to these guidelines:

All sports association and bodies at local, state sports council and national sports commission are to work together and condemn the use of drugs enhancing performance at any level among athletes and motivating factors – coaches and sports managers.

- All perpetrators of infamous acts among the athletes, coaches and officials in each association (NFF, ATN, ASAN etc.) are made to face wrath of law.
- A campaign group having representative from each sport at local state and national level be mounted to educate athletes about their right and privilege in sporting arena, implication of drug to their career and healthy and devoid of necessary intimidation and threats from coaches and sport bodies.

- In selecting athletes representing the nation in international competition – AFN, NFF, ASAN, NOC etc. due processes must be followed to avoid prejudice and preference.
- The INTERPOL match – Fixing Task Force (IMFTF) must be allowed to perform their duties thoroughly to avoid players and officials fixing matches for their selfish end and put end to gambling in sports which has a similar process to match fixing.
- All athletes are to be properly oriented and educated about winning at all cost syndrome, its consequence and be made to embrace the use of natural strength via regular and steady training not necessarily winning but well representation.
- Committees in charge of host right award, construction of sport centres, procurement of facilities and equipment etc. should be people of good repute and financial transparency to avoid embezzlement and financial misappropriation.
- A strong committee comprising of highly disciplined personality be put in place on moderate allowance for the athletes, coaches, officials and managers to preclude covetousness and reckless spending.

Conclusion

Corruption is a cankerworm that has eaten deep into the fabric of the world and Nigerian society in particular that everybody handles it with levity hand. Corruption cuts across all segments of private and public establishment and is alarming in sport industry. We all have a significant role to play – athletes, coaches, officials, organizers and fans in bringing this ugly scene and corrupt practices in sport to a halt.

A winning at all cost syndrome cum use of substances enhancing sport performance in the midst of athletes and drive forces be properly addressed along with match fixing and betting mounting of anti-graft agencies in sporting industry through the combined and collaborate efforts of these sporting bodies – NFF, AFN, ASAN, IAAN, NOC, IOC, FIFA e.tc would go a long way in redeeming the battered and unhealthy areas therein.

Suggestions

Based on the need to preclude steady perpetration of corruption in sport industry and integration of anti-corruption crusade to further strengthen the combating efforts, the following suggestions are proffered:

- Use of ergogenic and winning at all cost syndromes by athletes should be discouraged but embrace participation spirit instead.
- Coaches, athletes and officials engaging in match fixing should be discouraged and perpetrators to be sanctioned.
- The procedure for the selection of sporting venues be more transparent, as well as introducing freedom of information acts in sport.
- Stiffer penalties be meted on the athletes and club officials guilty of sport corruption as deterrent to others e.g. 5 years in prison and interdiction from sporting events.
- Sport leaders of honest and visible commitment be saddled with sport assignment and task devoid of corruption.
- Anti-corruption crusade in sport should be made to cut across board – local, state and national level and be done quarterly.

- Selection of athletes into state or national camp be placed on merit and coaches to avoid playing prank with female athletes.

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DOPING PRACTICE AND ASSOCIATED FACTORS AMONG STUDENT-ATHLETES IN LAGOS STATE NIGERIA

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Abstract

The study examined the practice of doping and associated factors among student athletes in Lagos State Nigeria. 162 student athletes who have represented their institution in sport competition were purposively selected to participate in the study. Data were collected through structured questionnaire and analysed using frequency measures, chi-square and t-test. The findings of the study revealed that there is significant practice of doping among student athletes in the study area. Gender also has significant effects on doping practice. Some of the common substance abused are tramadol®, alcohol, codeine, marijuana, alcoholic herbal bitters like daberu®, agbara®, bajinatu®, baby oku®, eru jeje®, alomo®, yahoo® among others. Associated factors identified for doping practice include peer influence, desire to feel good, dealing with stressors, such as pressure to perform, injuries, physical pain, improving sexual performance and depression among others. The reason student athletes practice doping are for performance enhancement, for pleasure, for pain relief, and for sexual performance. it is recommended that sport organisations like NUGA, NIPOGA and NICEGA should take issue of doping serious in their competitions by putting strict punishment on athletes and institutions found guilty of doping. Also, students athletes should be rewarded athletes each time they are tested negative or shun lifestyle that can lead to abuse of drug.

Keywords: Doping Practice, Substance Abuse, Associated factors, performance enhancement, student-athletes

Introduction

Doping is an unethical practice that involves abusing drugs in order to have an undue advantage over other athletes competing. Doping is the intentional and unintentional consumption of a substance or product that contains ban substances either in liquid, powdery, gaseous, tablet form, or intravenously that is capable of altering the body mechanism to give the athlete advantage over others with considerable negative health consequences. According to Federation International de Football Association (FIFA), (2021), doping is a situation whereby players take "prohibited" substances to boost their performances. Prohibited substances in this context include steroids, cocaine, amphetamines, or any substance that is on the World anti-doping agency (WADA) prohibited list (FIFA anti-doping report, 2021).

According to Murray (2010), doping is generally used to refer to the use of certain substances or scientific techniques that could improve the physical or mental health conditions of a contestant before and during the competition thus enhancing his or her sports performance. These substances and techniques are normally prohibited as they are considered as unfair means of winning against those who exhibit their natural potential in sports performance (Ityodugh, Seer-Uke & Tyoakaa, 2019). Doping is as old as sport but its origin can be traced as far back as the ancient Olympics where competitors would drink magic portions or eat special foods to gain an edge over their co-competitors (Bamidele & Bamidele, 2018).

Doping apart from giving the athlete an undue advantage over other athletes, it also presents serious health consequences. Worried by the increasing rate of doping among athletes, efforts were made by different sports organizations to check doping among athletes participating in the competition, but little success was recorded. The World Anti-Doping Agency (WADA) was formed 1999 as an international independent agency by the sports movement and governments of the world. WADA was designed to harmonize anti-doping policies and ensure the standards are the same for all athletes as well as publishing a list of, and testing for, banned substances in athletes. WADA produced and regularly updates the World Anti-Doping Code that includes a prohibited drug list. This list dictates what is and is not acceptable within sport. The list also includes banned drugs both in and out of competition, and those banned only in competition only

The practice of doping is not limited to professional athletes, student athletes also abuse drugs for reasons not limited to performance enhancement, but while much effort is put in checking doping among professional athletes at the national and international competitions, little is done by organisations in charge of tertiary institutions sport competitions. These organisations do not pay attention to doping among the athletes during competitions, with this, many student athlete abuse drugs to enhance their performance. Many student athletes take marijuana, tramadol and other social drugs to improve performance, boost confidence, delay fatigue and in some cases to relax and relieve pain. The use of performance-enhancing and social drugs by athletes raises a number of ethical and health concerns, because of these, many sports organizations have come to ban the use of performance-enhancing drugs and have very strict consequences for people caught using them. But unfortunately, this practice still strives and gaining momentum as among student athlete.

Doping encourages gamesmanship which means winning by any means possible as against sportsmanship which means winning with dignity, through hard work, consistent training, discipline, and diligence. Doping is an unethical practice in which the consequences outweigh the benefits derived from it. One of the negative effects of substance abuse is psychological and physical dependence with severe withdrawal symptoms, which means the athlete will be practically unable to function psychologically and physically without the drugs and quitting may be impossible without experiencing severe withdrawal symptoms.

While the doping searchlight is on common conventional drugs like cocaine, ephedrine, amphetamines, and methamphetamines among others, little attention is given to local recreational drugs that student-athletes use to boost performance, relieve pains or induce sleep. Student-athletes abuse these substances ignorantly with little concern about the components of the drugs and its effect on their health and career. These substances may have stimulant or depressive effects on the athletes and in some cases lead to muscle hypertrophy and increase muscular strength, for instance, Tramadol, cough syrup, coffee, tobacco and marijuana which are commonly abused by youth contain cocaine, codeine, nicotine respectively which are ban substance in sport.

In Nigeria, there is a dearth of empirical studies on doping practices and associated factors among student-athletes, most works done on doping are focused on professional athletes. Though, there is variable evidence for substance abuse among student-athletes, to what extent is this practice? What are the factors responsible for

this practice? The answer to these questions among other questions is the primary concern of this study. This study would contribute to the body of knowledge by information on the extent of substance abuse among student-athletes, it would also help policymakers and sports administrators to tackle doping from another angle by motivating and continuing to educate student-athletes on how this practice can ruin their health and career. It would also be of benefit to sports directors, and coaches in various tertiary institutions to monitor and encourage their athletes to stay clean from drugs. It would also help health educators, counsellors and other organizations dealing with drug abuse orientate athletes on the possible risks they are susceptible to.

Methods

The study adopted the descriptive survey design and the population includes all student-athletes at Lagos State University (LASU), University of Lagos (UNILAG), and Lagos State University of Education (LASUED). The respondents are athletes that have competed in the Nigeria University Games (NUGA). A total of 162 athletes LASU (n= 58), UNILAG (n= 53), and LASUED (n=51) were selected from the sample size using a purposive sampling technique. Data were collected through a structured questionnaire, the questionnaire was structured to elicit demographic information about the athletes and questions relating to drug abuse, the kinds of drugs or substances the student-athlete abuse, frequency of abuse of these substances, and reason for abuse formed part of the items on the questionnaire. Data entry and analysis were done using IBM Statistical Package for Social Sciences (SPSS) version 26. Data collected were analysed using descriptive statistics of frequency count and percentage and inferential statistics of chi-square of independence were used to analyse the relationship between the variables and drug abuse and a t-test was used to test the level of significance of these variables.

Results

Table 1: Prevalence of Doping and Gender of Dopers

Prevalence of Doping	**Frequency**	**Percentage**	**$\chi 2$**
I have abused drug at least once in my life	94	58	57.22
I have never abuse drug	68	42	
Gender of Dopers	**Frequency**	**Percentage**	**t-test**
Male	53	56	43.18
Female	41	44	

The result of this study revealed that of the 162 student athletes sampled, 94 (58%) abuse at least one form of drug. Also, 53 (56%) of the 94 student athletes that abuse drug are male while 41 (44%) are female. Result of t-test analysis reveals that gender significantly influence drug use among student athletes. It reveals that male student athletes use drugs more significantly higher than their female counterparts.

Table 2: Distribution of substance abuse by sport type

Type of sport	**Percentage**	**F value**	**Sig**
Team sport	52	9.62	0.043
Duo sport	36		
Individual sport	12		

Team sports have the highest number of athletes engaged in the practice of drug abuse (52%), followed by individual sport (36%) and then duo sport (12%). The team sports in this study are football, basketball, handball and volleyball. Judo, taekwondo, tennis and athletics were categorized under individual game while badminton, table tennis was categorized as duo game. Further analysis reveals that sport type significantly influence $F= 9.62$; $P< 0.05$ drug abuse.

Table 3: Common substances abused by student athletes

Substance	Frequency	Percentage	Ranking
Tramadol	87	33.2	7th
Codein	179	71.6	2nd
Marijuana (weed)	198	79.2	1st
Alcoholic herbal bitters	29	11.6	10th
Branded Alcohol	120	48	5th
Rophynol	48	19.2	8th
Caffeine (coffee)	113	45.2	4th
Unbranded alcohol	176	70.4	3rd
Cigarette	89	35.6.	6th
Inhalant (glue, spirit)	47	18.8	9th
Herbs	7	2.8	11th

Table 3 present the common substance abused by student athletes. The substances are tramadol, codeine, marijuana, branded alcohol, unbranded alcohol, rophynol, caffeine, cigarette, inhalant, local herbs and alcoholic herbal bitters like daberu®, agbara®, bajinatu®, baby oku®, eru jeje®, alomo®, yahoo® among others.

Table 4: Associated factors of doping among student athletes

Factors		Frequency	Percentage
Psychological reasons			
	To improve performance	61	24.4
	Weight control	32	12.8
	Frustration	41	16.4
	Sex performance	119	47.6
	To gain confidence	98	39.2
	To feel good	101	40.4
Sociological reasons			
	Peer pressure	78	31.2
	To feel among	59	23.6
	Coach influence	21	8.4
Medical reasons			
	To relieve pain	117	46.8
	To treat malaria	10	4.0
	Treatment of pile	87	34.8
	To relieve stress	95	38.0

The factors associated with substance abuse among student athlete are psychological reason such as improving performance, weight control, frustration, sex performance, to gain confidence and also to feel good. The sociological factors are; peer pressure, coach influence and just to feel among. The medical factors are to relieve pain, to relieve stress. To treat malaria and to treat pile.

Discussion

The results of this study revealed that there is a significant practice of doping among student athletes in Lagos State Nigeria. Fifty eight percent of student athletes under this study agreed to have practiced doping at least once in life time for whatever

reason. The high doping practice among these athletes can be linked to the increasing rate of drug abuse among youths in the society. Since these athletes fall within this age group, they are also not immune from the evil of drug abuse in the society. The result of this study agreed with the findings of Chiang, Shamsuddin, and Mahmood (2018), who reported high practice of doping among Malaysian student athletes. Similarly, Ityodugh, Seer-Uke and Tyoakaa (2019) reported doping practice among secondary school athletes in Benue state. Molobe (2012) and Oshikoya (2006) also reported that majority of their respondents' abuse one from of drug or the other.

A good number of the athletes are not ignorant of the effect of drugs abuse on their health and career, this finding is in variation with the findings of Akindutire, Adegboyega & Olanipekun (2012), Adegboyega 2012 who reported that most athletes abuse drugs without knowledge of its consequence on their health and career. Team sport has the highest number of athletes involved in the practice of drug abuse; this could be attributed to frequent training and participation in competitions which may lead to stress, vulnerability to injury and desire to continue training with the injury. It could also be as a result of the number of players involved in the game. Further analysis of the result also shows that gender influence practice of drug abuse among undergraduates, male athletes abuse drug more than the female athletes and this is also in agreement with the findings of Adenaike, Surakat, Adegboye & Sennuga (2014), and Essien (2010), the scholars posited that gender influence practice of drug abuse and that male gender abuse drug more their female gender.

Results indicated that drugs mostly abused by student athletes are tramadol®, paracetamol, rophynol, alcohol, codeine, caffeine, marijuana, cigarette, satchel herbal bitters. It was discovered that different brands of herbal bitters such as daberu®, agbara®, bajinatu®, baby oku®, eru jeje®, alomo®, yahoo® top the list of commonly abused drugs by these athletes. These athletes abuse drug ignorantly with little concern about it components and its effect on their career and health. These substances may have stimulant, depressive, analgesic or euphoric effect on the athlete and in some cases muscle hypertrophy and increased muscle strength. Tramador®, cough syrups, coffee, tobacco and marijuana which are commonly abused by youth all contain cocaine, codeine, nicotine respectively which are ban substance in sport.

According to the report of Anionye and Onyeneke (2016), herbal bitters have stimulant and immune-modulatory effect on the body system. This explains why these alcoholic beverages are taken for sexual performance. Some of the athletes abuse these herbal alcoholic beverages because of the stimulant effect which help to enhance performance. Salisu, Anyanwu, Uwuigbe and Izekor (2012), reported that continuous administration of certain dose of alomo bitters on rat impairs and causes the testes of the rat to be swollen, increase the level of testosterone level. Other studies such as Kayode, Kayode & Nwonuma (2018), Eric, Oboma, Indighe, Onuoha & Beredugo (2018) and Bamidele, Adegbolagun, Subair & Emikpe (2018), who tested the effect of different brands of herbal bitter on different species of rat all reported that administration of these herbal bitters causes damage to the testes and also increase sex hormone, this partly explain why it is taken to boost sex performance. Increase in testosterone level above the normal level found in the human body has been shown to increase muscle strength and mass. Herbal bitter drinks have been identified in this study as the most commonly abused drugs among undergraduate athletes because of their availability and affordability. These herbal

bitter drinks come in different brands and a satchel or two of such herbal bitter drink is enough to get the desired result for taking it due to its high ethanol content.

The study also attempted to determine the factors that drive student athletes to abuse drugs. Many reasons were identified by the study as contributing to drug abuse. These reasons were categorized as psychological reasons, sociological reasons and medical reasons. The psychological reasons identified by the respondents are: Performance enhancement, weight control, frustration, sex performance and to gain confidence among others. The sociological reasons include: peer pressure, to get high, to feel among while medical reasons for abusing drugs identified by the respondents include: to relieve pain, to treat malaria, for treatment of pile (jedijedi), to relieve stress among others.

The findings of this study also revealed that majority of drug users were influenced by psychological factors such as sex performance, performance enhancement, surprisingly sociological factors such as peer influence, euphoria feeling and medical factors such as treatment of pile, dealing with stress and injury recorded mean score higher than performance enhancement. Many researchers such as Akindutire *et al*., 2017, Akindutire and Olanipekun 2015, Adegboyega 2014, and Bells 2006 identified performance enhancement as the major reason athletes abuse drugs, the finding of this study corroborate their reports.

Conclusion and Recommendations

Based on the findings of this study there is high practice of doping among student athletes, a good percentage of these athlete abuse for reasons other than performance enhancement. Drug is largely abuse by these categories of athletes majorly for sociological reasons such as peer pressure, habituation, and euphoria feeling among other, also for pleasure, as analgesic, for medical reasons and as aphrodisiac. This study also established that doping practice is higher among male student athlete than female athletes. The commonly abused drugs identified include tramadol®, paracetamol, rophynol, alcohol, cough syrup, caffeine, marijuana, cigarette, satchel herbal bitters. It was discovered that different brands of herbal bitters such as daberu®, agbara®, bajinatu®, baby oku®, eru jeje®, alomo®, yahoo®, kogbebe®, ogidiga®, kerewa®, koboko®, dadubule®, osomo®, orimalu®, gallant® among others.

Based on the findings of this study, it is recommended that sport organisations like NUGA, NIPOGA and NICEGA should take issue of doping serious in their competitions by putting strict punishment on athletes and institutions found guilty of doping. Also, contingency management of drug abuse should be adopted, which involves rewarding athletes each time they are tested negative or shun lifestyle that can lead to abuse of drug. The Health Education departments in higher institution should organize drug education programmes for athletes to dissuade student athletes from taking these substances.

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MANAGEMENT OF SPORTS IN NIGERIA: INDIVIDUAL AND ADMINISTRATOR'S PERSPECTIVES

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Abstract

This paper examined the difference between the leader as an administrator and the individual as a person (the traits of the leader and those of an individual). It is obvious that the role played by the leader is somewhat different from that of the individual who is not in a leadership position. For the individual to be chosen as a leader; he or she should be conceived as having certain personal characteristics that are natural. These are physical features – height, weight, physique, health, appearance and intelligence. Qualities like emotional stability, knowledge of human relations, empathy, objectivity, motivating skills, technical skills, communicative skills and social skills make the leader. Contemporary leaders (managers) need to equip themselves with necessary technical, human occupational political and leadership skill; but some of these leaders fall into what is called mere individuals; those who would not lead or manage according to the tenet of a manager; are self-centred. Their emotional stability, social skills and so on would enable them to lead appropriately.

Keywords: Leader, individual, sport, quality, characteristic, management

Introduction

A leader is one who is responsible, who is responsive, who is reliable and who is reasonable (Inengite, 2013). He or she should be above intelligence, and must be experienced, besides he or she should show innate ability to grapple with issues and situations (Nwokocha, 2007). A leader according to Haruna (2006); must take a firm stand in upholding good principles and for this to be done, it would take more than brilliance and passion, credibility, as well as conviction. But who is this leader? Popoola (2013) stated: from the moment you have one person who answers to you, you have become a leader. Resourcefulness he reiterated is one of the hallmarks of a good leader. It is about using what is available to achieve a desired goal; it is about looking at what you have and making it what you want or need to have he retorted.

Function of the Leader

Bhagwan & Bhushan (2006) posited: one had never observed any leader who was able to state adequately or intelligently why he or she was able to be a leader, nor any statement of followers that acceptably expressed why they followed. Nevertheless, Dunn (2007) and Tamunomiebi (2002) stated that the leader has, as part of his or her function, putting together the ideas of all group members, by assigning and organizing the work. This is done by the leader focusing on developing and

maintaining good interpersonal relationships (Wesson, et al, 2009). The advocates of democratic "leadership" feel that the essential function of the leader is to work toward unity and cohesiveness in the (an) organization (Inengite, 2013). In line with the above functions, Bhagwan & Bhushan (2003) presented four main functions that a leader should perform: (a) the determination of objectives; (b) the manipulation of means; (c) the control of the instrumentality of action; and (d) the stimulation of coordinated action.

Some of the important functions of duties of a leader were summarized by Daniyan (2003) as follows:

a. To set goals for the organizations;
b. To give direction about how to achieve the goals;
c. To coordinate the work to be done toward achieving greater efficiency;
d. To supervise the followers or workers in their assignments;
e. To keep inventory of all the important resource of the organization;
f. To ensure judicious use of all the important resource of the organization;
g. To see the welfare and care of the workers or followers so that they can perform more efficiently and effectively.

Qualities of the leader

It is somewhat difficult to lay-down as to what the qualities of a leader should be. Almost every literature on the subject of leader quality would have a long list of the qualities which a leader should or must possess. Omobowale (1998) stated: there was credible and realistic view of the progressive degeneration of the Nigerian polity on the social, political, religious, and economic and any other sphere. This decline seems to still continue. The decline rests on what Obasanjo (2006) termed bad leadership, corruption and political instability. The leaders could be lacking long-term record of effectiveness, they could be full of ego, they may not be approachable, might not have been excellent in work, and not sharing with others, thus, cutting themselves off while trying to build their own empire of self-aggrandizement (Inengite, 2013). That was the reason why Asagba (2003) posited: the success or failure of any enterprise and the programme they run, is influenced to a large extent, by the quality of leadership that evolves from the leader.

For one to be eligible for the leadership of a state or organization, the qualities of love for humanity, selflessness and the ability to identify with different shades of opinion, by learning to accommodate divergent views, irrespective of colour, creed or religion of the followers should be considered (Omobowale, 1998). A good leader would have willingness to assume responsibility (Eims, 1996; Bhagwan & Bhushan, 2005; Ikotun, 2007). Besides, the leader would have to demonstrate continuing personal growth (Tamunomiebi, 2002); be disposed towards action (Inengite, 2013), be a good listener and ask pointed questions (Robbins & Coulter, 1999). He or she should also use institutional resources - should not try to do it all, and acting to know it all himself or herself (Sum, 2007). Such a leader according to Tully (2008) should be hospitable to bad news as well as good ones. He or she should be decisive, unerring, improvement conscious and a good public relation man or woman it was retorted.

The leader and the individual

Every now and then, across the length and breadth of the nation, be it in the public and private domain, there are agitations, with people complaining of the leaders not performing to expectation. These complaints lead to a question being asked; is the leader and the individual one and the same person? The Encarta Dictionary (2012) saw an individual as a specific person, distinct from others in a group. Leaders are conceived as persons blessed with certain personal characteristics that account for their executive success (Omobowale, 1998).
As presented by Bhagwan & Bhushan (2006) the natural traits that leaders possess include physical features; like height, weight, physique, health, appearance and intelligence. These are what make individuals they concluded. On the other hand, such individuals would need to acquire other qualities that would make leaders. These qualities include: emotional stability, knowledge of human relations, empathy (Inengite, 2013); objectivity, motivating skills, technical skills, communicative skills and social skills (Sum, 2007).

The difference between

It is often said that you cannot give what you do not have. Popoola (2013) stated: leadership begins where you are and with what you have! That, if you cannot be trusted where you are now, you cannot be trusted in a higher position. Thus, self-leadership is the beginning of all leadership (Inengite, 2013). That was why Bolarinwa (2011) said: everything rises and falls on leadership; and that leadership truly develops from the inside out. Accordingly, if you can become the leader you ought to be on the inside, you would (will) be able to become the leader you want to be on the outside he retorted.

Every day, and as the years go by individuals and or a group of people would form organizations in line with what Oribabor (2003) said of what an organization is: that when two or three people come together for a purpose an organization is formed. If and when these organizations are formed, such organizations would need what should be an essential, for the organization. This is management (Tamunomiebi, 2002). Weihrich, Cannice & Koontz (2008) stated that management is facilitated by a useful and clear organization of knowledge. Thus, management can be broken down into five managerial functions - planning, organizing, staffing, leading and controlling (DuBrin, 2000).
Managers are charged with the responsibility of taking actions that would enable individuals to make their best contributions to group objectives (Tamunomiebi, 2002). A manager thus, is someone whose primary activities are part of the management process (Oribabor, 2003). Specifically, a manager is someone who plans, makes decisions, organizes, staffs, lead, motivates, and controls organizational resources (Robbins & Coulter, 1999). In essence, they are the organizational members who coordinate, integrate, oversee, and direct the work of other members (Bucher & Krotee, 2002).

There are different kinds of managers. According to Bucher & Krotee (2002) these managers range from first-line to top management in positions and status. Some possess warm, friendly personalities that foster a relaxed working environment and are popular with their staff, whereas others are cold and responsive to human needs. Be that as it may; how many of the managers or leaders of organizations, especially, of the sports sector could be said to have such virtues. Some managers are sufficiently training to assume management roles. That notwithstanding

contemporary managers need to equip themselves with the necessary technical, human, occupational, political, and leadership skills that are required for what Drucker (1980) noted as most *"crucial resource"* for developed nations, as well as one of the most needed resources in countries that are struggling to develop.

Not surprising though, some of the leaders fall into what can be called mere individuals: those who would not lead or manage according to the tenets of a manager. They are self-centred (Inengite, 2013). These groups of managers always think of themselves (Adeniran, 2007); he said, self is single-handedly the most powerful motivator and sustainer of many works and projects that many people are engaged in. According to Akanni (2010) self can go to any extent to make all the costly sacrifices and adjustments if at the end there would be somebody that he or she would be more than. Self loves to out-play, out-give or out-love, but would never do them for the sake of the company or organization or see such a virtue to be pursued (Weihrich et al, 2008).

These self-centred leaders or managers are those that can be called individuals. Following pertinent questions in relation to who the leader and the individual are Akanni (2010) asked:

- Do you actually love your job and the organization you work for from the depth of your heart or are you only trying to out-play some others?
- Are you a mere competitor, who gets more fire to run when others are about to take your place?
- Are you only trying to outwit others by working more hours, giving more money, attending more programmes and working longer days?
- Would you have slept if no one else was there, as an alternative, to you in your office, department or organization?
- Do you actually have your department at heart personally, implicitly and exclusively?
- Is your office your personal and private choice when all eyes are not on you?

These questions asked should probe into the fabrics of leaders and would be ones, thus Inengite (2013) asked:

- What is your motive for wanting to be used as a leader?
- What makes you cry for effectiveness?
- Is it because you are tired of being small?
- Is it because those that started in your department after you have hit the success mark that makes you say, "whatever I must do to make it, I am ready to pay the price?"
- This desire for breakthrough in leadership that people are nursing, who is it for?
- Is it for self that is feeling bad that he has not achieved anything and therefore looking for something also to boast about among colleagues?
- Are you looking for something to show?
- Is that why you are so zealous and eager?
- This desire to lead and see people broke down under the power of your position, for whose interest is it?
- The desire to be seated on the highest seat in your department/organization, whose interest is it meant to serve? (Adapted from the Sunday School Lesson for Adults and Young Adults of the Nigerian Baptist Convention, 2011).

The manager or leader alongside he's or her management does require functional, effective, and efficient management; the leader needs to be qualified to assume such laudable positions (Ikotun, 2007). The qualifications of the leader, especially, sport managers are many and varied. Sound health and fitness for the job is requisite for any sports position (Bucher & Krotee, 2002). According to them, it is not uncommon, because of the stress of managerial position, to find health (including burnout) to be a contributing factor to resignation. Besides, a thorough knowledge and undertaking of the tasks and associated risk of the position are also keys to not only job qualification but also job satisfaction they retorted. Clearly, possession and command of the managerial skills, tasks, and competencies associated with the position and the willingness to accept responsibility are crucial qualifications at any managerial level including teaching, coaching, or directing a sport or activities programme (Inengite, 2013).

Just as the qualifications and abilities of managers (leaders) vary, so do the tasks and responsibilities. To complete management tasks successfully, certain skills are required, whether from top, middle, or front-line managers (DuBrin, 2000). The primary skills areas deemed crucial to effective and efficient management practice are technical, human (interpersonal), conceptual, political and leadership (Bucher & Krotee, 2002).

The sports domain seems to be a free for all comers' area in Nigeria, when every Tom, Dick and Harry would delve into, not minding the person`s qualifications or abilities - experience, communication skills and personal integrity (Inengite, 2013). The personal traits of leaders (honesty, trust, worthiness, fair-play, cooperativeness, confidence, intelligence, creativity, originality, being personable, being dedicated, showing professionalism, having good ethics and being decisive) are requisite to good leaders (DuBrin, 2000).

No matter the organization; the form of administration and style of leadership in operation, personal traits and leadership traits of the managers could/would come in to play (Drucker, 2004). The sports domain is not left out. Truly, management of sports entails administrations, leaders and organizations achieving whatever goals or objectives set; which could be physical, emotional, psychological, mental, social etc. in nature (Okunrotifa, 2006). At the end of it all the fitness of individuals in the above areas highlighted is paramount. Sports require good management to attain these heights (Bucher & Krotee, 2002; Akanni, 2010).

The Collins English Dictionary (2000) explained: sports is an individual or a group activity pursued for exercise or pleasure often involving the testing of physical capabilities and taking the form of competitive games such as football, tennis, basketball and so on. Buttressing; Akan-an (2006), Okunrotifa (2006) and Outhart et al (2000) reiterated: sports generally involves – some form of physical activity, an element of competition, activities determined by rules, regulations and laws, and activities that involve some form of organization such as pitches, areas, tracks and courts.

Sport is also a medium for social integration and national unity. For this integration to be actualized, administration of sports should be well executed (Adedeji, 2005). Sport is viewed by government of all political persuasions as an important sphere in the forgoing of national character. That is why the National

Policy on Sports (2004) provided the structure for the organization of sports… and coordinating of the sports sectors. The policy would ensure the effective pursuit of the various national sports development goals and objectives (Inengite, 2013).

Similarly, the National Policy on Education (1998; 2008) has it as a necessary foundation to build: i) a free and democratic society; ii) a just and egalitarian society; iii) a united, strong and self-reliant nation; iv) a great and dynamic economy; and v) a land full of bright opportunities for all citizens. That is to say, every Nigerian shall have the right to equal educational opportunities irrespective of any real or imagined disability. For these all to be achieved, the leader or administrator as the case may be would have to be up and doing. He or she would have to have a personality trait that would stand the person out in all ramifications in the crowd as one who has concern or feelings for others (especially the subordinates in organizations including those of sports across the nation).

People with such traits would be those whom Adedeji (2005) talked about. He said: it would not be difficult knowing if they (the leaders) are being called into leadership. The following are the indications:

a. If you are always eager to solve other people`s problems, it is likely you are a candidate for leadership.
b. If you have genuine concern for people in difficulties, and you often like to do something to cushion or alleviate the challenges, then, you could be a candidate for leadership.
c. If you always derive joy sharing what you have with those who do not, have, then leadership may be your service.
d. If you dislike seeing people fail in their endeavours and you often like to lend them hands, in order for them to succeed, then you are for leadership.
e. If you like exhorting and encouraging people to become better achievers, then you have a trait that a leader should have.
f. If it is not difficult for you to rejoice, sincerely, for those who rejoice, then you can help others to succeed in life. That marks you for leadership.
g. If you are not bitter when peers or colleagues are making more progress, and you still voluntarily contribute to their progress, then, you are a tool for leadership.
h. If you are eager to support other people to fulfil their destinies, then leadership is your calling.
i. When you render assistance without expecting reward from people you help, then, you are into leadership.
j. If your natural endowments, spiritual gifts and acquired abilities tilt towards assisting others, then you are called into leadership (Adedeji, 2005).

In the alternative leader's act by the styles of leadership they would find themselves. The leaders would be autocratic, democratic, laisses-faire driven transactional and so on. Nevertheless, the leader who may be implementing such leadership styles would have to do so with the view of achieving set goals and objectives earmarked for the organization he or she is involved in; not as an individual but as a leader. Thus, the leader and the individual in the development and management of sports should be distinctively separated in Nigeria.

Conclusion

Despite the array of definition adduced for the term leadership, and the various functions and

qualities open for the leader to adopt the fact remains that the leader is not the person as the individual that he or she is. That is because what a person does in today's prominent position of leadership is simply a projection or amplification of who he or she used to be in seasons of obscurity. Thus, if a person cannot manage a business of N500,000.00 now, that person cannot manage a ₦5Milllion enterprise (Popoola, 2013). In other words, leaders and managers should be what they are there for: leading or managing according to the tenets of manager/leader; they should not be self centred. They should have - emotional stability, knowledge of human relations, empathy, objectivity, motivating skills, technical skills, communicative skills and social skills. Thus, the leader and the individual in the development and management of sports in Nigeria would be distinctively separated.

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HEALTH BENEFIT OF MUSHROOM CULTIVATION THROUGH SAWDUST AND ELEPHANT GRASS TO MAN.

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Abstract

Mushroom has long been valued as tasty nutritional food by different societies worldwide. Mushrooms are considered a food source of digestible protein thus they are highly nutritive, as they contain good quality protein, vitamin and minerals. Mushroom is well known for its nutritional and medicinal importance, but it cultivation is not well practised due to limited availability of the traditional substrate (sawdust). Elephant grass is used in this project so as to provide an easier method for mushroom cultivation and other available substrates for its cultivation, so the desirable health benefits will be achieved. The ramification rate was also recorded at 3 days interval. Fair ramification was recorded for sawdust substrate but no ramification for the elephant grass substrate. The substrates were therefore checked the next day and a fair ramification was noticed on the elephant grass but good ramification on sawdust substrate Since both substrate serves as a good medium to cultivate edible mushroom, its cultivation should be encouraged to all and sundry especially in the rural areas of the developing countries as a means of livelihood and to promote food production prevent illness thereby promoting health of individuals in the society.

Key words: Mushroom, sawdust, elephant grass, ramification, health benefits.

Introduction

The word ‘Mushroom’ can be used for a wide variety of fungi with or without stem and the term is used even more genetically to describe both fleshing fruiting bodies of some *Basidiomycota* depending upon the content of the word (Volks, 2001). Mushroom has long been valued as tasty nutritional food by different societies worldwide. The relationship between Mushroom and Man can be traced far back into antiquity. Early civilization by trial and error, built up a practical knowledge of those suitable to eat and those that were poisons and to be avoided. Running parallel to this more specifically but not exclusively in the orient was identification that certain Mushroom could have profound health benefit. Mushrooms are considered a food source of digestible protein thus they are highly nutritive, as they contain good quality protein, vitamin and minerals (Khanna and Garcha, 1984). Apart from serving as a protein food, for which they are most popular in Nigeria, Mushrooms are also medicinal and have some biotechnology based functions (Taniguchi, 2000). Mushrooms are low calorie food with very little fat and are highly suitable for obese people, with no starch and very low sugar; they are the delight of the diabetes (Bano, 1976). Mushroom contain digestible crude protein, all essential amino acids, vitamins (especially Provitamin D_2) and minerals; they are high in potassium and low in sodium, saturated fats and calories. Although they cannot totally replace meat and other high-protein food in the diet, they can be considered an important dietary supplement and a healthy food. Also, mushroom have become more and more important foodstuffs because of their possible preventive roles against human lifestyle related diseases such as hyperlipidemia and diabetes (Tang *et al.*, 2007).

Pleurotus pulmonarius are edible mushroom which are members of higher fungi with gills, fleshy (*Ascomycota*) or woody (*Basidiomycota*)-those that have a cap or pileus and gills (PV Hung & NNY Nhi, 2012) on the underside of the cap. They are characterized by having heterotrophic mode of nutrition. Edible mushroom refers to both epigeous and hypogenous fruiting bodies (Chang & Hayes, 1976) of microscopic fungi that are already commercially cultivated under controlled condition.

Pleurotus pulmonarius is saprobic in nature, growing in shelf like clusters on dead and living woods causing a white root. *Pleurotus pulmonarius* is usually found at higher altitudes than *Pleurotus ostreatus* which prefers the lowland, river and valleys. *Pleurotus pulmonarius* and *Pleurotus ostreatus* grow on a variety of hardwoods, with *Pulmonarius* primarily a spring mushroom and *Pleurotus ostreatus* growing most prevalently in the summer to fall (Weigand-Heller AJ, Kris-Etherton PM, Beelman RB 2012). The cap of *Pleurotus pulmonarius* is 2-12cm convex, becoming flat or somewhat depressed; lung-shaped (hence its Latin name) to semicircular, or nearly circular if growing on the tops of logs; somewhat greasy when young and fresh; fairly smooth; whitish to beige or pale tan, usually without dark brown colouration; the margin in rolled when young, later wavy and, unlike *Pleurotus ostreatus*, very finely lined. It has gills running down the stem; close or nearly distant whitish. The stem some timers absent or rudimentary but often present 1.7cm long and up to 1.5cm thick eccentric or lateral or central. The flesh is thick, white with mild taste; the odour is distinctive but hard to describe (Quelet, 1972).

The spore print is whitish, greyish or lilac. Microscopic features; spores 8.14 x $2.5.5^{4}$µ smooth; cylindrical to long elliptical (Guzman *et al.*, 1994). *Pleurotus pulmonarius* have been of several benefits in food, medicine and other beneficial purpose in the environment. The mushroom substrate may be defined as a kind of lignocelluloses material which supports the growth, development, and fruiting of

mushroom mycelium. The process of preparation of the substrate is broadly termed 'composting'. The final product of 'composting' is called the 'compost' or prepared substrate. The elephant grass (*Pennistum purpureum*) was adopted because of its nutrient composition, containing ±3% Protein, ±12% Lignin, ±23% hemicellulose, and ±18% cellulose. Elephant grass (also known as Napier grass or Uganda grass) is a tall grass that originally came from Africa in 1913(Ferreira *et al*., 2010).). It grows in dense clumps of up to 10feet tall. In the savannahs of Africa it grows along lake beds and rivers where the soil is rich. The elephant grass is yellowish or purple in colour, the stems are coarse and hairy and about 1inch thick near the base. The leaves are 2-3 feet long, pointed at the ends, and about 1inch wide. The edges of the leaves are razor-sharp (Ferreira *et al.*, 2010).

The elephant grass should be dried for hay before using, up to now, not enough research has been done in order to make useful and endless amounts of grass. It has been tested in the Cameroon by Poppe in 1987 with satisfactory results. In Zambia, it is used for Agaricus compost (Ferreira *et al* 2010).).

Justification

Mushroom is considered to be as a complete and safest food and suitable for all age groups child or aged people. It is one of the good sources of Protein, which contain less of carbohydrate and fat. Many people suffer from protein-malnutrition as sufficient requirement of proteinaceous supplement is not available in daily diet due to the availability and cost of proteins food items in markets in recent times. In recent years, the importance of mushroom as a good source of protein is much felt and lot of emphasis is being given for popularization of cultivation as a commercial venture to augment the protein supply. Mushroom is well known for its nutritional and medicinal importance, but it cultivation is not well practised due to limited availability of the traditional substrate (sawdust). Elephant grass is used in this project so as to provide an easier method for mushroom cultivation and other available substrates for its cultivation, so the desirable health benefits will be achieved.

Aims and Objectives

a. To cultivate mushroom using the wood shaves (sawdust) as the conventional substrate.
b. To cultivate the mushroom using the elephant grass as a substitute substrate so as to reduce the cost and availability of a cheaper substrate.
c. To know the yield of mushroom on each substrates and the rate of growth on each substrate.
d. To cultivate *Pleurotus pulmonarius* on elephant grass
e. To make it readily available for desirable health benefits for humans most especially in Nigeria.

Mushroom Physiology

The mushroom mycelium is triggered to form small primordia: hyphal knots with astonishing vigour. As the primodia grow, the cells in the primodia will start to differentiate: they will form stem, crop, gills and basidia, each with different hyphae (Oei, 2003).The nutrients for the mushrooms are transported through the mycelium water; evaporation is thus essential for good growth. The function of the fruit bodies is to produce and dispense as many spores as possible. Some mushrooms form ripe spores even when the fruit bodies are still very small (e.g. many strains of Winter

Oyster mushrooms). Others, like the white button mushrooms, release no spores until the cap comes free from the stem (Okhuoya, (2000).

Substrate Characteristics

The material on which the mycelium grows is called substrate. The properties of a substrate determine which fungi and microbes can grow it. Also, environmental factors such as humidity of the air, ventilation, temperature, shade or sun and internal condition of the substrate play an important role in determining whether a mycelium can grow into the substrate.

The better the substrate meets the demand of a specific mushroom and the less suitable it is for others, the more selective it is. Oei, (2003), stated that selectivity depends on available nutrients, it compactness, water content and water activity, pH (acidity) and it microbial activity. To create a selective substrate, the following should be considered important, through mixing, fermentation and heat treatment.

Heat Treatments

Most substrates are given a heat treatment before spawning. It is an important measure to control pest and diseases. Oei (2003) stipulated 5 types of heat treatment employed in mushroom cultivation; sterilization under high pressure, semi-sterilization under low pressure, heat treatment of dry material, pasteurization by stream, and pasteurization by immersion in hot water.

Nutritional Analysis of Wild and Cultivated Mushroom

Not many of the local wild food resources have had their nutrient contents analysed, but are known many of them contain good quantities of proteins, carbohydrate, fats, minerals and vitamins (Ola-Adams, 1995). Classically trained nutritionists have stated that mushrooms are of little food value and have base their assessment on the fact that mushrooms are low in calories. It is unfortunate that this misrepresentation has persisted although it is due in large part to an early lack of concrete nutritional information and a general cultural bias. Studied done in the last twenty years clearly show that mushrooms are nutritionally sound food that are of even greater value to vegetarians (Chilton, 1993).

Chilton (1993) gives complete nutritional analyses of over 50 species of wild and cultivated mushrooms. They find that on average, dried mushroom contain 10% water, all of the essential amino acids, 2 – 8% fat, 3 – 28% carbohydrate, 3 – 32% fibre and approximately 10% minerals. They consider mushroom to be “good sources of several vitamins including thiamine, riboflavin, niacin and biotin”. *Pleurotus species* contain 1.16 – 4.8 thiamine, 108.7 niacin, 4.7 riboflavin and 0.0 ascorbic acid (Oei, 2003).

Mushrooms are also collected from forests. They are added to sauces and relishes for flavouring, often they are consumed as meat substitutes. Mushroom contains protein (1014mg/100g), carbohydrate (9.6mg/100g), fat (1.7mg/100g), calcium (20mg/100g), phosphorus (100mg/100g), iron (1.5mg/100g) (Ola-Adams, 1995).

Chilton (1993) looks more closely at the actual bio-availability or digestibility of mushrooms. He recognizes that some of the protein and much of the carbohydrates

are bound up in mushroom cell wall. These cell walls “contains many large carbohydrate polymer such as glucans, chitins, chitosans and mamans, but this polymers are linked together with covalent bonds that cannot be attached by our digestive enzymes, therefore, suspects that a large percentage of the carbohydrate in mushroom cannot be utilized as nutrients by humans and function only as roughage”. He concludes that thorough chewing and cooking will breakdown many cell walls but not all. Therefore, it is fair to say that mushrooms in a cooked or processed form, represent a valuable food source.

Health benefits of Mushroom to Human

Several studies done on animals and in vitro suggest P. pulmonarius and its extracts may have possible medicinal applications for a wide range of conditions. A polysaccharide called β-D-Glucan from P. pulmonarius reduces sensitivity to pain in mice, and could be an "attractive" basis for new analgesic medications.[Lavi, Iris; Levinson, Dana; Peri, Irena; Nimri, Lili; Hadar, Yitzhak; Schwartz, Betty (2010).] In a different study on mice, a glucan from P. pulmonarius showed potent anti-inflammatory and analgesic properties. A methanol extract of P. pulmonarius displayed anti-inflammatory and antitumor activity comparable to the standard reference drugs diclofenac and cisplatin, respectively. [Iris et al., 2010]

A 2010 study concluded that extracts of P. pulmonarius may slow the proliferation of cancer cells with high galectin-3 levels, while at the same time downregulate tumour cell adherence - which is directly related to the progression and spread of cancer. Pattar & Manohar (2010).] Extracts of P. pulmonarius added to the diet of mice delayed carcinogenesis, suggesting that these extracts may be useful as an adjuvant to cancer therapies. Ramesh, Ch. Pattar, Manohar 2010). An orally administered hot water extract of P. pulmonarius had a significant antihyperglycemic effect, halted the progression of diabetes, and reduced the mortality of alloxan induced diabetic mice by approximately 50%. It showed a synergistic effect with the antidiabetic drug glibenclamide, supporting the possibility of effective combination therapy of glibenclamide and P. pulmonarius for diabetes (Lavi, Iris; Nimri, Lili; Levinson, Dana; Peri, Irena; Hadar, Yitzhak; Schwartz & Betty (2011).

P. pulmonarius may be effective in the treatment of hay fever by inhibiting the release of histamine. Powdered P. pulmonarius mushrooms caused a significant reduction in sneezing and nasal rubbing when fed in water to sensitized mice, although the effect gradually builds up over a matter of weeks. When they were given 500 mg/kg a day, a significant effect was observed after two weeks, and it was four weeks before a significant change was observed at 200 mg/kg. Ramesh, et al. (2010). Extracts of P. pulmonarius attenuated the development of acute colitis in a mouse model, suggesting a possible clinical use in the treatment of colitis. A further study by the same authors concluded that the extracts also inhibit colon cancer formation associated with colitis in mice. Ramesh, et al. (2010).

Methodology

The experiment was carried out at the Department of Pure and Applied Biology laboratory, Ladoke Akintola University of Technology, Ogbomosho, Oyo State, Nigeria.

Materials used are weighing balance, spatula, beaker, conical flask, hot plate, spirit lamp, ethanol, cotton wool, sieve, autoclave, masking tape, potato dextrose agar

(PDA), N.P.K fertilizer, calcium carbonate ($CaCo_3$), forceps, aluminium foil, McCartney bottles, dry gin bottles, paddy grain, sorghum, distilled water, heat resistant nylon bag, rubber bands, measuring cylinder, sawdust, electronic scale.

The media Potato dextrose Agar (PDA) was prepared according to the manufacturer specification. 39g of PDA was dissolved in 1litre of water contained in a conical flask. The flask was corked with cotton wool and put on hot plate for the mixture to homogenize.

Homogenization

Homogenization is the uniform dissolving of agar in water. It is done to avoid crust particle of the agar in the mixture. After proper homogenization, the mixture was poured into the McCartney bottles to about half of the bottles. The McCartney bottles were corked firmly with cotton wool and then transfer to the autoclave.

Sterilization

Sterilization of the McCartney bottles containing the molten PDA was carried out in the autoclave at 121℃ for 15minutes. This was done to ensure that both the medium and the bottles are sterilized.

Slant Preparation and Inoculation

After autoclaving, the bottles were brought out of the autoclave and placed in a slant position to solidify. The strain of *P. pulmonarius* used was gotten from Federal Institute of Industrial Research (FIIRO), Oshodi, Lagos State, Nigeria. The strain was inoculated into the slant bottles with the aid of forceps and was carried out in an inoculating room under aseptically conditions. The inoculated slant bottles were then incubated at room temperature (20-25℃).

Spawn Preparation

The mushroom 'seed' (propagation material) is generally referred to as spawn. According to Webster's dictionary, define spawn as the mycelium of fungi, especially mushroom grown to be eaten, used for propagation. Material used for spawning process includes; sorghum, paddy grain and $CaCo_3$. The sorghum was mixed with $CaCo_3$ and boiled for 60minutes. The same procedure was done for paddy grain. The mixtures were then air dried to lower the temperature. After cooling, it was introduced into the dry gin bottles and the mouth of the bottles was corked with cotton wool and sterilized.

Substrate Preparation

Two types of substrates were used:

1. Sawdust which serve as a control and was gotten from New Sabo market saw mail near LAUTECH.
2. Elephant grasses were gotten from Faculty of Agriculture demonstration field, LAUTECH.

   Other materials used include; N.P.K., $CaCo_3$ and distilled water.

   The sawdust (50kg) was sieve to remove woodchips and stones. Rice bran, $CaCo_3$ (0.5kg) and N.P.K fertilizer (2.5kg) were mixed thoroughly with the fine sawdust and water is added to mixture and the moisture content was adjusted to 60-65%. The mixture were packed inside the heat resistance nylon bag and sterilized.

The elephant grasses were cut into smaller sizes about 5cm, dried under the sun and soaked for 24-48hour(s). A squeeze test was carried out to ensure whether the grasses were moist enough and the moisture content was adjusted. The moist grasses were then mixed thoroughly with N.P.K fertilizer and $CaCo_3$. The mixtures were packed into heat resistant nylon bag and sterilized.

Inoculation and Incubation of Spawn

The slant bottles containing the ramified strain of *P. pulmonarius* was introduced into the dry gin bottles in an aseptically conditions. The spawned substrates were incubated in a dark room at $25\text{-}30^0$c for 23days still the substrate were completely ramified by the mycelium, It is then returns to the dark room, and then the bags were cut open to allow for aeration and daily watering.

Inoculation of the Substrate

The sterile substrate was allowed to cool for 24hour and the mushroom seed i.e. the spawn was introduced into the substrates. The two substrates were inoculated at the same time. The process was carried out in the inoculating room under aseptically conditions.

Weight of Mycelia Ramification (WMR)

Weight of mycelia = Final weight (grain + bottle + mycelia) – Initial weight (grain + bottle)

Productivity Rate = Total weight of mycelia/Substrate weight x 100 (%).

Ramification Rate = Total/days (mm/d)

Results

After 23 days of ramification, paddy grain is seen to support the mycelia growth than sorghum. Also, sorghum is more prone to contaminations than paddy grain.

Table 1: Mycelia growth of spawn on Paddy grain

Days / Substrate	3	4	7	10	13	16	19	23	Total (mm/day)
Paddy grain1	Nil	50	60	80	131	172	202	259	4
Paddy grain2	Nil	40	80	90	101	141	192	228	6
Paddy grain3	Nil	50	81	01	121	141	151	188	2
Paddy grain4	Nil	61	01	31	161	171	172	209	9

Table 1 shows the mycelia growth of spawn on paddy grain which was recorded at three days interval. After three days, no growth was noticed and was therefore checked on the fourth day. A little growth was noticed, measured and recorded. The same was done every three days until after 23 days when the bottle seems to be fully ramified. P_1- P_4 represents different bottles of substrates where P stands for paddy grain and the numbers are used to differentiate the bottles.

Table 2: Mycelia growth of spawn on Sorghum

Days / Substrate	3	4	7	10	13	16	19	23	Total (mm/day)
Sorghum 1	Nil 0	2 0	3 0	5 0	8 0	9 1	3 1	5 5	5
Sorghum 2	Nil 0	3 0	5 0	8 0	9 1	1 1	3 1	6 6	5
Sorghum 3	Nil 0	3 0	4 0	6 0	9 1	2 1	4 1	6 6	4
Sorghum 4	Nil 0	4 0	5 0	6 0	7 0	9 1	1 1	4 5	6

Table 2 shows the rate of mycelia growth of spawn on sorghum. The growth was also recorded at three days interval, alongside paddy grain. As in the case of paddy grain, no growth was noticed on the third day and also has to be rechecked the next day. On the fourth day, very little but conspicuous growth was noticed, measured and recorded. The growth was then checked every three days until after 23 days. The rate of mycelia ramification is low here. S_1- S_4 represents different bottles of substrates where S stands for sorghum and the numbers are used to differentiate the bottles.

Table 3: Ramification rate on substrate

Days / Substrate	3	4	7	10	13	16	19	23
Sawdust	+	+	+ +	+ + +	+ + +	+ + +	+ + +	+ + +
Elephant grass	-	+	+	+	+ +	+ +	+ +	+

Keys

- = no ramification + = fair ramification ++ = good ramification

+++ = excellent ramification

Table 3 shows the ramification rate of the mushroom on sawdust and elephant grass. The ramification rate was also recorded at 3 days interval. Fair ramification was recorded for sawdust substrate but no ramification for the elephant grass substrate. The substrates were therefore checked the next day and a fair ramification was noticed on the elephant grass but good ramification on sawdust substrate. The substrates were then checked for 23 days.

PLATE 1: Ramified slant bottle of *Pleurotuspulmonarius*

PLATE 2 Ramified spawns on the sorghum

PLATE 3: Ramified spawn on the paddy grain

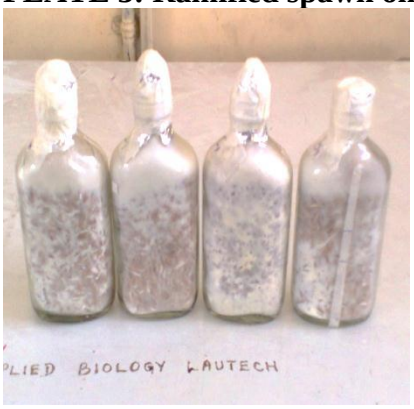

PLATE 4 :Early mycelia ramification on sawdust substrate

PLATE 5: Early mycelia ramification on the elephant Grass substrate

Plate 6: Fruiting body production of *Pleurotuspulmonarius* on sawdust

Plate 7: Fructification of *Pleurotuspulmonarius* on elephant grass substrate

Plate 1 shows the ramification of *Pleurotus pulmonarius* on a PDA agar which was prepared in a slant bottle. The full ramification was noticed after 7 days of inoculation. The *Pleurotus pulmonarius* appears white on the golden coloured PDA agar.

Plate 2 and Plate 3 shows the ramified spawn of *Pleurotus pulmonarius* on sorghum and paddy grain respectively after 23 days. After 23 days, the bottle has been fully ramified with paddy grain showing much growth than sorghum.

Plate 4 and Plate 5 show the early mycelia ramification on the elephant grass and sawdust substrate respectively and this was noticed on the 13th day of incubation. Although the ramification on the elephant grass was not as full as that of on the sawdust substrate, the two substrates were exposed together after 23 days so that they can absorb enough light for fructification.

Plate 6 and Plate 7 show the elongation stage of *Pleurotus pulmonarius* fruiting body on sawdust and elephant grass which was after the ramification days. The elongation was easily noticed on sawdust but not on elephant grass.

Discussion

The yield parameter of mushroom from each substrate (sawdust and elephant grass) is shown in Table 3 with the sawdust showing excellent ramification at Day 10. The elephant grass substrate also show good ramification which was observed at Day 13 with a long stationary phase growth of good ramification till Day 23.

The elephant grass has been tested in Cameroon by Poppe in 1987 to give satisfactory result. In Zambia, it is used for Agaricus compost (kiran *et al*, 1989).

However, sawdust still remains the best traditional substrate use in cultivating mushroom. The two substrates (sawdust and elephant grass) help in utilizing the agro-forestry wastes and also help in recycling waste.

Conclusion

The result obtained from the study shows that *Pleurotus pulmonarius* can utilize different agro-forestry wastes (sawdust and elephant grass) with the highest and better yield from the sawdust substrate. It was observed that it took longer time for the mycelia strain of *Pleurotus pulmonarius* to biodegrade the lignocellulosic material present in elephant grass as a result of high content of hemicelluloses, lignin and cellulose.

However, the elephant grass substrate also shows partial yield, fruiting little and scattered mature mushroom on it as compare to the sawdust which was much and clustered all over the surface. Nutritional and environmental factors have been the major limiting factors to the growth of mushroom production and if this can be managed, studied and practised, health benefits derived from the consumption of

mushroom will be adequately derived and made use by man to correct a lot of health challenges they may be faced with.

Recommendations

Since both substrate serves as a good medium to cultivate edible mushroom, its cultivation should be encouraged to all and sundry especially in the rural areas of the developing countries as a means of livelihood and to promote food production prevent illness thereby promoting health of individuals in the society. Apart from it medicinal importance, it is essential to encourage mushroom cultivation at home; allowing children, retirees and even women to stay at home. Mushroom in a cooked or processed form, represent a valuable food source. The strain of *Pleurotus pulmonarius* make use of different agro-forestry wastes as it's substrate and as such serves as a good bio degrader's which can be harness in environmental bioremediation and also in recycling of wastes especially the agricultural wastes. It is recommended that sawdust should be used for both large scale and small scale cultivation of the mushroom.

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PSYCHOLOGICAL IMPACT OF COVID-19 ON SPORTING ACTIVITIES IN NIGERIA

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Abstract

The staring and daring challenge in the world of sports globally is the COVID-19 pandemic. Since sports is an agent of socialization and the need for a competitive stage cannot be over emphasized, the need to comply with the social distancing policies in order to flatten the curve has affected the organization and participation of youth sports. As sport administrators, sports psychologist and athletes now seek for a better way to reconcile sports organization and participation with the current effect of the pandemic on the world system, it is expedient that individuals face the reality of the long and short term effect of the covid-19 pandemic on local, national and international sport. As researchers and sport practitioners, effort needs to be intensified to strategically ameliorate the impact of the pandemic by beginning to ask questions about the extent of the impact on youth sports in order to have answers that will expound the reality of the short- and long-term consequences of the pandemic. This will further aid the exploration of opportunities and means that will assist in retaining optimal participation in sports globally. The aim of this paper is to present an expository analysis on the psychological impact of Covid-19 on sporting activities in Nigeria.

Keywords: Covid-19, Psychology, Sporting activities, Youth Sports, Motivation

Introduction

The Olympic and Paralympic games could not hold in year, 2020 due to the scourge of the COVID-19 pandemic. The unprecedented postponement of these two most important international sporting events marked a significant downturn not only in the fortunes accruable from such sporting businesses, but also in the patronage of other popular sporting events.
Conversely, the global effect of the pandemic on sports cannot be overemphasized.

The sports industry is estimated to be worth US$756 billion globally annually. However, millions of jobs have been at risk due to COVID-19, not only for sports professionals but also for those in related retail and sporting service industries that are connected to leagues and events (Hughes 2020). These industries include media

broadcasting, travel, tourism, infrastructure, transportation, and catering. In Nigeria, professional athletes are also under pressure to reschedule their training, while trying to stay fit at home, and they risk losing professional sponsors who may not support them as initially agreed.

The psychological impact of the whole restructuring in sports and the world system as a result of the pandemic needs urgent intervention. Social and physical distancing measures, re-opening of locked down businesses, schools and overall social life as a means of ameliorating the economic and social impact of the pandemic has not been able to rectify the setback the pandemic has placed (Eloh 2020).

To safeguard the health of athletes and others involved, most major sporting events (indoors and outdoors alike) at international, regional and national levels have been cancelled. The impact of such cancellations on the mental health and psychological well-being of individuals and groups is a major concern that will be explored in this paper and recommendations will be suggested.

Impact of covid-19 on the psychological well-being of individuals and groups:

Decline in Social Cohesion: Sporting events contribute to the social and emotional excitement of athletes, fans, as well as encouraging individual's participation in physical activities. Sport has long been considered a valuable tool for fostering communication and building bridges between communities and generations. Through sport, various social groups are able to play a more central role towards social transformation and development, particularly in divided societies which improves the mental health of citizens. The impact of the pandemic has affected social groups tremendously. Individuals that are prone to depression have a lower chance of getting healed when they are being isolated from people that should help them heal quickly.

Lowered Motivation: The WHO recommends 150 minutes of moderate-intensity or 75 minutes of vigorous-intensity physical activity per week. The benefits of such periodic exercise are proven to be very helpful, especially in times of anxiety, crisis and fear but the awareness of this analysis is not enough to keep individuals self-motivated at a regular level. In the context of the pandemic, lack of access to regular sporting or exercise routines may result in challenges to the immune system, physical health and the mental health of an individual which may resonate into a sedentary lifestyle.

Restrictions in Access to Sport Facilities: Restrictions have now been placed on the use of sport facilities as a result of the need for social distancing, meanwhile these facilities have always been insufficient for the population of athletes that are willing. It should be noted that lack of access to exercise and physical activity can also have mental health impacts, which can compound stress or anxiety that many will experience in the face of isolation from normal social life. Possible loss of family or friends from the virus and impact of the virus on one's economic wellbeing and access to nutrition will exacerbate these effects.

Ameliorating the impact of covid-19 on the psychological well-being of individuals and groups:

No Equipment Workout Sessions: For many, exercising at home without any equipment and limited space can still be possible. For those whose home life can

involve long periods of sitting, there may be options to be more active during the day, for example by stretching, doing housework, climbing stairs or dancing to music. In addition, particularly for those who have internet access, there are many free resources on how to stay active during the pandemic. Physical fitness games, for example, can be appealing to people of all ages and be used in small spaces. Another important aspect of maintaining physical fitness is strength training which does not require large spaces but helps maintain muscle strength, which is especially important for older persons or persons with physical disabilities. (Klein I, 2000)

Virtual Exercise: The global community has adapted rapidly by creating online content tailored to different people; from free tutorials on social media, to stretching, meditation, yoga and dance classes in which the whole family can participate. Educational institutions are providing online learning resources for students to follow at home.

Many fitness studios are offering reduced rate subscriptions to apps and online video and audio classes of varying lengths that change daily. There are countless live fitness demonstrations available on social media platforms. Many of these classes do not require special equipment and some feature everyday household objects instead of weights. (Callary B et.al, 2020)

Solutions

- **Policy Making**

The United Nations, through its sports policy instruments and mechanisms such as the Intergovernmental Committee for Physical Education and Sport, as well as through its research and policy guidance should support Governments and other stakeholders to ensure effective recovery and reorientation of the sports sector and, at the same time, strengthen the use of sports to achieve sustainable development and peace. Scientific research and higher education will also be indispensable pillars to inform and orient future policies.

- **Technical Capacity Building**

Governments, UN entities and other key stakeholders should ensure the provision of capacity development and technical cooperation services to support the development and implementation of national policies and approaches for the best use of sport to advance health and well-being, particularly in the age of COVID-19.

- **Outreach and Awareness Creation**.

Governments, the United Nations and the sporting community, including the sporting education community, should disseminate WHO and other guidance on individual and collective measures to counter the pandemic. Measures must be taken to reach communities that have limited access to the Internet and social media and that can be reached through cascading the sport education pyramid from the national/ministerial level down to the provincial/municipal level, from the national physical education inspector down to the teacher, from the national sport federation down to the clubs. In

turn, escalating the pyramid provides for important feedback to identify needs and share specific solutions. Athletes, while deeply affected by the pandemic, remain key influencers to ensure that, especially young audience understand risks and respect guidance.

- **Promotion of Social attitudes and Behaviour**

Sports education is a powerful means to foster physical fitness, mental well-being, as well as social attitudes and behaviour while populations are locked down. International rights and value-based sport education instruments and tools, such as the International Charter of Physical Education, Physical Activity and Sport, the Quality Physical Education Policy package and the Values Education through Sport toolkit remain highly relevant references to ensure that the many online physical activity modules that are being currently deployed comply with gender equality, non-discrimination, safety and quality standards.

Direct Impact of COVID-19 on Physical Activity and Sports Participation

The global outbreak of COVID-19 has resulted in closure of gyms, stadiums, pools, dance and fitness studios, physiotherapy centres, parks and playgrounds.

Many individuals are therefore not able to actively participate in their regular individual or group sporting or physical activities outside of their homes. Under such conditions, many tend to be less physically active, have longer screen time, irregular sleep patterns as well as worse diets, resulting in weight gain and loss of physical fitness. Low-income families are especially vulnerable to negative effects of stay at home rules as they tend to have sub-standard accommodations and more confined spaces, making it difficult to engage in physical exercise.

The closure of education institutions around the world due to COVID-19 has also impacted the sports education sector, which comprised of a broad range of stakeholders, including national ministries and local authorities, public and private education institutions, sports organizations and athletes, NGOs and the business community, teachers, scholars and coaches, parents and, first and foremost, the mostly young – learners. While this community has been severely impacted by the current crisis, it can also be a key contributor to solutions to contain and overcome it, as well as in promoting rights and values in times of social distancing.

As the world begins to recover from COVID-19, there will be significant issues to address to ensure the safety of sporting events at all levels and the well-being of sporting organizations. In the short term, these will include the adaptation of events to ensure the safety of athletes, fans and vendors, among others. In the medium term, in the face of an anticipated global recession, there may also be a need to take measures to support participation in sporting organizations, particularly for youth sports.

Conclusion and Recommendation

The paper captured insights about a decline in mental wellbeing and physical activity, an increase in family connectedness, the challenge for sports to attract volunteers and participants back into sport, and the opportunities to reset values and philosophies that concern youth sport.

The findings provide valuable insight into the youth sport setting as a result of the global pandemic and suggest that families, sporting clubs and sporting organisations require additional resources and tools (for example, support for parents to facilitate their children's training at home during lockdown) to aid recovery efforts and to ensure the survival and prosperity of youth sport into the future.

The COVID-19 pandemic has had and will continue to have very considerable effects on the sporting world as well as on the physical and mental well-being of people around the world. The following recommendations seek to both support the safe re-opening of sporting events and tournaments following the pandemic, as well as to maximize the benefits that sport and physical activity can bring in the age of COVID-19 and beyond.

Governments and intergovernmental organizations may provide sports federations, clubs and organizations around the world with guidance related to safety, health, labour and other international standards and protocols that would apply to future sport events and related safe working conditions. This would allow all stakeholders to work cooperatively as a team with the objective to address the current challenges and to facilitate future sports events that are safe and enjoyable for all.

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SELF-COMPASSION AS A PREDICTOR OF PSYCHOLOGICAL WELL-BEING AMONG ELITE ATHLETES

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Abstract

Self-compassion entails being warm and understanding toward ourselves when we suffer, fail, or feel inadequate, rather than ignoring our pain or flagellating ourselves with self-criticism. It is simply the process of turning compassion inward. This study investigated the relationship between self-compassion and psychological well-being among Elite athletes. Psychological well-being is essential aspect to an athlete's overall performance and satisfaction in their sporting endeavours. A sample of 200 Elite athletes (male/female) from different sports disciplines were recruited for this study. Participants completed measures assessing self-compassion and psychological well-being. The Self-Compassion Scale (SCS) was used to evaluate self-compassion, including dimensions such as self-kindness, common humanity, and mindfulness. Findings showed that there was significant relative contribution of one component of self-compassion to athletes' psychological well-being. For instance, Self-kindness ($\beta = 0.243$; $t = 3.494$; $p < 0.05$), contributed significantly to athletes' psychological well-being, however, mindfulness ($\beta = 0.121$; $t = 2.703$; $p > 0.05$) and sense of common humanity ($\beta = 0.365$; $t = 6.122$; $p > 0.05$) did not relate significantly to athletes' psychological well-being. This indicate that self-kindness made independent contributions of 24.3% in the prediction of self-kindness. This indicates that self-kindness as component of self-compassion, the independent variable in this study is the most influential in the prediction of athletes' psychological well-being of University of Ibadan. Result also indicates that there is no composite contributions of demographic variables: (sex, age of respondents and sport of interest) on the dependent variable (University of Ibadan athletes' psychological well-being) ($F(3, 196) = 0.93$; $R = 0.119$, $R^2 = 0.014$; $p < 0.05$). This implies that when demographic variables (sex, age of respondents and sport of interest) are taken together, they do not jointly relate with University of Ibadan athletes' psychological well-being. Implications of this study highlight the importance of cultivating self-compassion as a psychological resource for athletes. Incorporating self-compassion training programs and interventions within athletic settings may provide athletes with the tools to cope effectively with challenges, setbacks, and self-criticism. By fostering self-compassion, athletes may experience improved psychological well-being, resilience, and long-term athletic engagement. In conclusion, self-compassion emerges as a significant predictor of psychological well-being among Elite athletes.

Keywords: self-kindness, mindfulness, common humanity, psychological well-being, elite athletes

Introduction

Some Elite athletes experience emotionally difficult setbacks. These setbacks can range from devastating performance failures to facing harsh negative evaluations from spectators, teammates, competitors, friends or even themselves. For some athletes, these types of setbacks can offer an opportunity for personal growth. For others without strong coping skills, setbacks can negatively impact athletes' wellbeing and ruin their overall sport experience, putting them at risk of dropping out from sport. Fortunately, self-compassion is steadily gaining attention as a personal resource that athletes can use to help navigate setbacks experienced in sport in a healthy and positive way (Amber Mosewich, Kent Kowalski, Catherine Sabiston, Whitney Sedgwick 2011; Reis, Kowalski, Ferguson, Sabiston, Sedgwick and Crocker 2015).

Self-compassion has been studied in the context of sport largely as a tool to help athletes cope or deal with the emotionally challenging setbacks or obstacles they encounter. Especially when extrinsic motivations are limited or unavailable to athletes, self-compassion might be particularly useful to help athletes overcome a variety of setbacks in adaptive, healthy ways. Self-compassionate people have more intrinsic motivation in life trying hard because they want to learn and grow, not because they need to impress themselves or others. Self-compassionate people are more likely to take responsibility for their past mistakes, while acknowledging them with greater emotional calmness. Self-compassion helps athletes cultivate a growth mind-set by encouraging the belief that improvement is possible and fostering athletes' desire to do better.

Athletes are highly prone to emotional suffering that stems from harsh evaluations of their sport performance (Mosewich et al., 2011). Research has shown that athletes experience a variety of maladaptive emotions (e.g., shame, embarrassment, humiliation) and thoughts (e.g., "I am worthless") when they make mistakes or fail (Reis et al., 2015), while also engaging in self-criticism and self-punishment (Ceccarelli et al., 2019). More generally, performance failures in sport can lead to decreased mental health, a diminished sense of self, and emotional distress (Ceccarelli et al., 2019; Mosewich, Crocker, & Kowalski, 2014). When we mindfully observe our pain, we can acknowledge our suffering without exaggerating it, allowing us to take a wiser and more objective perspective on ourselves and our lives.

Self-compassion shows promise as a coping resource for athletes. Self-compassion involves a desire to alleviate personal suffering, offering non-judgmental understanding, concern, and compassion to oneself, and is seen as an aid to combat self-criticalness (Neff, 2003b).

Self-compassionate people recognize that being imperfect and experiencing life's challenges is inevitable, so they are gentle with themselves when things are either good or bad. Research indicates that self-compassion is associated with psychological well-being (Neff, 2009). Higher levels of self-compassion are linked to increased feelings of happiness, optimism, curiosity and connectedness, as well as decreased anxiety, depression, rumination and fear of failure.

According to Neff (2003), self-compassion includes three major components: Self-kindness means showing kindness and understanding toward oneself when experiencing any sort of distress or failure. It involves being kind and caring toward ourselves instead of being mean or self-critical. When one feels inadequate, the

self is given understanding and acceptance, although the issue in question may still be identified as problematic, in which case the required change or attention will be provided, but without harshness to the self (Neff, 2009). In comparison to self-esteem, self-kindness does not require that we feel superior to others. Self-kindness is not an evaluation of ourselves at all, but is an attitude we adopt toward our own failure and suffering.

Common humanity means seeing one's experiences as a part of being human and knowing that others experience the same. It involves recognizing that other athletes experience difficult situations too, and that we are not alone. Being self-compassionate means that we care about ourselves and want to support ourselves in managing difficult experiences. This often means taking action to make the difficult experience better. As such, self-compassion can be very motivating and help us meet our goals in sport.

Mindfulness is when one is being able to notice uncomfortable thoughts and feelings with a non-judgmental awareness, rather than over-identifying with them. It involves recognizing that we are going through a difficult experience. It is not about exaggerating the situation or ignoring the situation, but simply acknowledging that it is happening. Mindfulness is a type of balanced awareness that neither avoids nor exaggerates the discomfort of our present-moment experience (Shapiro et al. 2006). We cannot show ourselves compassion if we do not acknowledge we are in pain.

Mindfulness involves keeping painful thoughts and feelings in a "balanced awareness" (Neff, 2003b), rather than over identifying with them. Mindfulness allows for the maintenance of perspective during stressful times, resulting in a more positive and objective focus, as one is not affected by emotion. Theoretically, self-compassion could have an influence at various points in the stress and coping process, including the appraisal of situations, the choice and options in coping efforts, coping effectiveness, or the use of self- compassion as a coping resource or strategy (A. B. Allen & Leary, 2010), all of which may influence resultant cognitive, emotional, and behavioural outcomes.

Self-compassion is related to fewer negative thoughts and feelings in response to sporting challenges (Reis et al., 2015). Self-compassion offers a way for athletes to reduce some of the negative emotions experienced due to sport injury (e.g., shame, humiliation), which might make them more driven to overcome and persevere through injury-based adversity. By enabling athletes to treat themselves less harshly and put sport failures or mistakes in perspective, self-compassion promotes adaptive coping and a healthier stress response, both psychologically (e.g., viewing current shortcomings as changeable and addressable) and physiologically (e.g., appropriate heart rate response to stress) (Ceccarelli et al., 2019). Psychological well-being encompasses a person's perspective on life, including not only perceptions of physical health but also of self-esteem, self-efficacy, relationships with others, and satisfaction with life.

Athletes who are high in self-compassion are more likely to take their minds off a negative event than those low in self-compassion. They also accept more responsibility for their actions than those low in self-compassion (Leary et al., 2007). High levels of self-compassion are also related to reduced levels of fear of failure, possibly because failure situations are approached with kindness and understanding as opposed to harsh self-criticism and condemnation, allowing failure to be seen as a

learning opportunity to do better rather than an indicator of self-worth (Neff et al., 2005).

The mindfulness component of self-compassion might help athletes attain a better sense of balance, particularly related to thought patterns, expectations, and standards, as well as help to make decisions that better balance health and performance (Mosewich et al., 2013). When an individual faces challenge, setback, or evaluation, self-compassion permits the acknowledgment and evaluation of weaknesses but without excessive self-criticism and rumination, allowing the athlete to move on with an effective focus (Neff, 2003b, 2009; Neff et al., 2005).

Psychological Well-being is affected by an array of factors associated with physical and mental health. Exercise, physical activities and sport play key roles in both physical and mental health, and therefore have profound effects on one's psychological well-being.

Psychological well-being is when one is mentally healthy and feel positive overall about one's life. It is a core feature of mental health and may also be defined as including hedonic (enjoyment, pleasure) and eudaemonic (meaning, fulfilment) happiness (Ryan and Deci's 2001), as well as resilience, coping, emotion regulation and healthy problem-solving methods. The term "Hedonic" wellbeing is normally used to refer to the subjective feelings of happiness. It comprises of two components, an affective component (high positive affect and low negative affect) and a cognitive component (satisfaction with life). It is proposed that an individual experiences happiness when positive affect and satisfaction with life are both high (Carruthers & Hood, 2004). While eudaemonic wellbeing is used to refer to the purposeful aspect of psychological well-being. The psychologist Carol Ryff has developed a very clear model that breaks down Eudaemonic wellbeing into six key types of psychological wellbeing which are; self-acceptance, environmental mastery, positive relationships, personal growth, purpose in life and autonomy.

Psychological wellbeing has two important facets. The first of these refers to the extent to which people experience positive emotions and feelings of happiness. Sometimes this aspect of psychological wellbeing is referred to as subjective wellbeing (Diener, 2000). Athletes in a psychologically safe environment are genuinely interested in their teammates, have positive intensions towards one another, as well as a mutual respect for others' competence, especially when mistakes are made. The Six-factor Model of Psychological Well-being is a theory developed by Carol Ryff (1989) which determines six factors which contribute to an individual's psychological well-being, contentment, and happiness. Psychological well-being consists of self-acceptance, positive relationships with others, autonomy, environmental mastery, a feeling of purpose and meaning in life, and personal growth and development.

Self-acceptance is an individual's acceptance of all of their attributes, positive or negative. Self-acceptance is related to happiness, the more accepting you are of yourself, the more happiness you accept and enjoy. Without self-acceptance, one's mental well-being is likely to suffer. For example, you are less able to control stress and anxiety. The way we feel about ourselves impacts both psychological health and future goal achievement. Self-acceptance will help one achieve self-improvement. Self-improvement consists of activities that develop a person's capabilities and potential,

build human capital, facilitate employability, and enhance quality of life and the realization of dreams and aspirations. When you are accepting of yourself you tend to worry less about what others think. This helps you view situations with more clarity and makes you less likely to take on harsh criticism of yourself. How you feel about yourself can also play an important role in determining your overall well-being.

Without self-acceptance, people essentially devalue themselves and this often has a negative impact on all areas of their life, including their work, friends, family, health, and well-being (Meghan Marcum, PSYD). Accepting yourself as an athlete can help you be happy and peaceful, and lead to a sense of well-being. On the other hand, lack of self-acceptance and a negative view of yourself can cause you to have low self-confidence and a greater risk of conditions such as depression and anxiety which will lead to poor performance in sporting activities and competitions.

Positive relationship with others is another important sub-variable of psychological well-being. Positive Relationship means a relationship between two people who support, encourage, and help each other practically as well as emotionally through listening, communicating openly and without judgement, trusting and respecting each other. Genuine relationships between athletes and coaches generate more trust, better communication and a winning attitude. An open line of communication helps everyone be more honest with one another, which leads to stronger training, athletic progress and personal growth.

The third is autonomy, which has eight items that measure an individual's capacity to maintain their individuality in different contexts and situations with determination, independence, and personal authority. Empowering people to have control over their life and mental health care instils personal dignity, value and respect. It can increase self-esteem and confidence. It also gives people a level of choice and autonomy they may not have received otherwise. Autonomy is a fundamental human need. People who experience autonomy report higher levels of psychological health and social functioning. They have an increased sense of well-being and self-esteem.

Environmental mastery emphasizes the ability to choose or change the surrounding context using physical or mental actions as well as being able to control events (Ryff, 1989). Environmental mastery is the intellect that we are able to have an impact on the events in our lives and are capable of acting on our own behalf. Environmental mastery is associated with the athlete's ability to choose or create environments suitable to his or her psychic conditions.

Feeling of meaning and purpose in life refers to the tendency to derive meaning from life’s experiences and possess a sense of intentionality and goal directedness that guides behaviour. Meaning in life and psychological well-being are positively related. Meaning in life, even more, is an important and great predictor of psychological well-being. It refers to the idea that athletes are strongly motivated to find meaning in their lives, that is, to be able to understand the nature of their personal existence and the reason why they participate in that particular sporting activity and feel it is significant and purposeful.

Self-growth, also referred to as “personal growth” or “personal development,” is a process of developing new skills, attitudes, actions, or reactions that can have a

positive impact on one's life and increase your overall well-being. Self-growth is an intrinsic process in which athletes develop and expand their abilities. Self-growth can have positive implications on an athlete's career and personal life, as it helps the athlete achieve his or her full potential.

Hypotheses

The following hypotheses were tested:

a. There will be no significant relationship between self-compassion (self-kindness, mindfulness and sense of common humanity) and psychological well-being among athletes in University of Ibadan.
b. There will be no significant composite contribution of Demographic Variables (sex, age of respondents and sport of interest) in the prediction of University of Ibadan athletes' psychological well-being.
c. There will be no significant relative contributions of Demographic Variables (sex, age of respondents and sport of interest) in the prediction of University of Ibadan athletes' psychological well-being.

Methodology

The descriptive research survey design was adopted in the study. It involved collection of data from 232 matriculated male and female athletes of the University of Ibadan who have represented the institution in one game or the other. The athletes

Variables	Self Kindness	Mindfulness	Sense of Common Humanity	Psychological well-being

responded to a standardized modified questionnaire by Kriston Neff. Section A of the questionnaire elicited responses on respondents' demographic characteristics while Section B elicited responses on self-compassion and the components of self-compassion, section C elicited responses on psychological well-being and the components of psychological well-being. The expected responses format was the modified four-point Likert scale of: Strongly Agree (SA), Agree (A), Disagree (D), Strongly Disagree (SD). The reliability coefficient was determined to be 0.82. Each item was assigned a value of 2: Agree and 1: Disagree. The instrument yielded a Cronbach's alpha of 0.87 which indicated a high content validity and a test – retest reliability of ($r = 0.94$).

Results

Ho1: There will be no significant relationship between self-compassion components (self-kindness, mindfulness and sense of common humanity) and psychological well-being among elite athletes.

Self-Kindness	1			
Mindfulness	0.224**	1		
Sense of Common Humanity	0.141*	0.593**	1	
Psychological well being	0.267**	0.202**	0.177**	1

Table 1: Correlation Matrix Table of Self-Compassion (Self-Kindness, Mindfulness and Sense of Common Humanity) and Psychological Well-Being among Athletes

Significant @ p < 0 .05.

The results from table 1 shows the relationship between self-compassion components (self -kindness, mindfulness and sense of common humanity) and psychological well-being among elite athletes. From the table, there is significant low positive correlation between self-kindness and psychological well-being among elite athletes, r = (0.27), 0.000, P < .05. Similarly, there is significant low correlation between mindfulness and psychological well-being among athletes, r = (0.20), 0.004, P < .05. Besides, there is significant positive low correlation between sense of common humanity and psychological well-being among athletes, r = (0.18), 0.012, P < .05. This finding therefore reveals that there is significant relationship between self-compassion components (self-kindness, mindfulness and sense of common humanity) and psychological well-being among elite athletes in the study coverage.

Ho2: There will be no significant composite contribution of Demographic Variables (sex, age of respondents and sport of interest**)** in the prediction of elite athletes' psychological well-being

Table 2: Regression Summary and ANOVA of Sex, Age of Respondents and Sport of Interest and Athletes' Psychological Well-Being?

Multiple R = 0.119

R Square = 0.014

Adjusted R Square = 0.001

Standard Error = 6.417

Analysis of Variance

Source of Variance	Sum of Square	df	Mean Square	F	Sig.
Regression	115.89	3	36.63	.938	.423
Residual	8070.660	196	41.177		
Total	8186.55	199			

Significant @ p < 0 .05.

Table 2 indicates that there are no composite contributions of demographic variables: (sex, age of respondents and sport of interest**)** on the dependent variable (elite athletes' psychological well-being) (F (3, 196) = 0.93; R = 0.119, R^2 = 0.014; $p < 0.05$). This implies that when demographic variables (sex, age of respondents and sport of interest) are taken together, they do not jointly relate with elite athletes' psychological well-being.

Table 3 further reveals a multiple regression adjusted R^2 = 0.001. This shows that independent variables accounted for 0.1% of the total variance in athletes' psychological well-being while the remaining 99.9% may be due to other factors and residuals not investigated in the study model. The finding implies that there were no composite contributions of demographic variables: (sex, age of respondents and sport of interest**)** in the prediction of elite athletes' psychological well-being.

Ho3: There will be no significant relative contributions of Demographic Variables (sex, age of respondents and sport of interest**)** in the prediction of elite athletes' psychological well-being

Variables	B	Std. Error	Beta

(Constant)	28.439	2.233		12.734	.000
Age (in years)	1.023	.625	.117	1.639	.103
Sex	-.050	.916	-.004	-.055	.956
Sport of interest	-.046	.362	-.009	-.127	.899

Table 3 Relative Contribution of Sex, Age of Respondents and Sport of Interest in the Prediction of Elite Athletes' Psychological Well-Being.

Significant @ p < 0 .05

Table 3 indicates that there were no significant relative contributions of demographic variables: (sex, age of respondents and sport of interest**)** to elite athletes' psychological well-being. For instance, Age (in years) ($\beta = 0.117$; $t = 1.639$; $p > 0.05$), Sex ($\beta = -0.004$; $t = -0.055$; $p > 0.05$) and Sport of interest ($\beta = -0.009$; $t = -0.127$; $p > 0.05$) did not relate significantly to University of Ibadan athletes' psychological well-being. The findings indicate that demographic variables are not part of the major determinants of elite athletes' psychological well-being.

Discussion

The result that show that self-compassion components (self-kindness, mindfulness and sense of common humanity relate with psychological well-being among elite athletes buttress the authors and researcher's assertion. For instance, the result is in consonance with Neff, Pisitsungkagarn and Hsieh, (2008**) s**elf- compassion was found to be related to psychological wellbeing in the United States, Thailand and Taiwan**.** Self- compassion was associated with lower levels of depression and higher level of life satisfaction in these three countries. Similarly, self-compassion was an important predictor of well-being of elite athletes**.** Undergraduate students' athletes who had encountered difficulties in the past 6 months, were found to have lower levels of wellbeing (Neely, 2019). Furthermore, mindfulness and self- compassion were crucial for increasing emotional wellbeing in adolescents in the United States (Bluth and Blanton, 2019).

The result supports Kardas, (2019) who asserted that self-compassion is associated with feelings of life satisfaction, happiness, wisdom, optimism, gratitude, curiosity, creativity, and positive affect. Accordingly, the desired outcome of self-compassion is to increase psychological well-being (i.e., the emotional factor or the human feeling aspect of the meaning of life. Neff and Pommier (2018) proposed that self-compassion was related to both individual wellbeing and concern of other people's wellbeing. In addition to the psychological benefits of self-compassion (Barnard and Curry, 2017), self-compassion may promote adaptive physiological regulation in response to failure. When people respond to failure with self-criticism, they may activate similar affect pathways, in this case a threat-defense system, as when they are being attacked by another person or experience a threatening event (Gilbert and Irons, 2017; Gilbert, Procter, 2006; Gilbert, 2019). Self-compassion may support well-being through promoting both adaptive psychological and physiological responses to failure that could be helpful to athletes as they cope with failure in the context of competitive sport.

Moreover, the research support **(**Persinger, 2017**)** who suggests that self-compassion is strongly related to psychological wellbeing positive feelings **(**Barnard and Curry, 2017**)**, competence and mental health **(**Zhang, Wang, Ying, 2019**).** It is a vital predictor of psychological wellbeing that may be an important component of mindfulness-based intervention **(**MBIs**)** for anxiety and depression **(**Van Dam, Sheppard, Forsyth, and Earleywine, 2017). It was shown to partially mediate the relationship between body preoccupation and depressive symptoms **(**Wasylkiw, MacKinnon, and MacLellan, 2017**)** and mediated the relationship between psychological wellbeing and the anxiety of attachment **(**Wei, Liao, Ku, and Shaffer, 2017). For instance, McGehee, Germer, and Neff (2017) examined self-compassion and psychological wellbeing conducted a study with 177 undergraduate participants which examined the relationship between self-compassion and various measures of mood and personality. The study found that self-compassion was positively associated with self-reported measures of happiness, optimism, and positive affect.

The finding buttresses Macaskill, Maltby, and Day (2017) who examined the relationship between self-compassion and wellbeing. In the study, 324 British undergraduate students completed measures of self-compassion to be self-forgiveness, forgiveness of others, and emotional empathy. The results suggest that individuals with higher levels of empathy find it easier to work toward forgiveness of others, but not necessarily toward self-forgiveness. Hodgson and Wertheim (2017) predicted that self-compassion would be positively related to the ability to repair one's emotions

Conclusion

Conclusions made in this study was that self-compassion is a predictor of psychological well-being among elite athletes. It was also concluded that there is no significant relationship between self-compassion and psychological well-being of elite athletes.

Recommendations

Based on the findings of the study, the following recommendations were made:

i. Coaches should encourage elite athletes to practice mindfulness. Mindfulness involves non-judgmentally acknowledging and accepting your thoughts, feelings, and experiences in the present moment. This practice allows you to observe self-critical thoughts without getting caught up in them, fostering self-compassion.
ii. Coaches should encourage elite athletes to cultivate self-acceptance: Embrace yourself fully, including your strengths and weaknesses. Recognize that imperfections are a natural part of being human, and they do not diminish your worth or value as a person.
iii. Elite athletes should engage in self-compassion exercises. There are specific exercises designed to cultivate self-compassion, such as self-compassion journaling, loving-kindness meditation, or self-compassion affirmations. They should explore these practices and incorporate them into their routine.
iv. Elite athletes should challenge self-critical thoughts. They should notice and challenge self-critical thoughts or negative self-talk. Replacing them with more compassionate and realistic thoughts. For example, if you make a mistake, remind yourself that everyone makes mistakes and that it does not define your worth as a person.

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HEALTH THREATS OF WASTES ON THE MECHANICAL WORKSHOPS WORKERS AND THE RESIDENTS OF THE ENVIRONMENT IN ILE-IFE, OSUN STATE

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Abstract
This study specifically examined the perceived health threats of wastes on the mechanical workshops' workers and the residents of the environment in Ile-Ife, Osun State. Descriptive survey research design was used for this study. The sample size for the study was 200 respondents using accidental sampling technique. Two self-designed instruments were used for data collection, which were validated by experts and the reliability of the instrument was exposed to the use of test re-retest reliability processes at correlation coefficient of 0.85 which was considered high. The administration of the questionnaire was done with the help of 5 trained research assistants. Findings showed that majority of the respondents agreed that dusts, fumes from vehicles and engine oils were the major wastes in the mechanical workshops, very many of the respondents agreed that there were perceived health threats of wastes on the health of the respondents in the mechanical workshops and the residents of the environment in the study area; And that wastes will have significant influence on the health of the respondents of the mechanical workshop and the environment in Ile-Ife, Osun State. It was recommended that the three tiers of government should put in place policies that will prevent citing of mechanical workshops in residential to prevent health threats.

Key words: Perceived Health Threats, Wastes, Mechanical Workshops, Environment, Local Government Area

Introduction

Good health maintenance is very important in every aspect of living. Either in our place of work, home, environment and anywhere an individual finds him/herself. One needs to be mindful of the environment for healthy living. Mechanical workshops are where vehicles are being repaired. This area also has various areas of specializations such as vulcanize, brake repair, panel beaten, mechanic, painter, rewire etc. To many people, mechanical workshops are seen as places of common visit due to the safety of their vehicles. Car owners visit this area to check their vehicles or to repair damage areas of the cars. Visiting these workshops where car/vehicles are being repaired often expose peoples to environmental threats particularly air contaminants.

Generally, Contamination/pollution is said to be both social and human problems. Therefore, in any environment too, pollution can be termed as both social

and human problems, which is as ancient as man. Air polluted by wastes creates major risks to the environment and the healthy living of the people (Awosusi & Akinduntire, 2014). The poor health of humans caused by environmental pollution/effluence is increasing which needs serious care in the globe (Baba *et al*., 2013). Actions from communities and individuals could require changes in their behaviours which might negatively or positively modify their exposure to pollution compulsorily (Oltra & Sala, 2014). Adimekwe, (2013), reported that for a man to survive healthily to a very large extent rest on the environment where he lives. Wastes causing pollution through indoor or outdoor atmosphere by any chemical, physical, or biological agent can change the natural features of the air.

Any interference with the healthy living in the environment may be injurious and deadly to the health of the people (Adimekwe, 2013; Awosusi & Akindutire, 2014). While, Ogundele (2004) indicated that a link with atmospheric air pollution can cause cough, asthma, tuberculosis, constriction of the chest, nausea, cancer and irritation of mucous membrane. Pollution is the accumulation of toxins in the environment that can have harmful effects on individuals (Walker and Xanthos, 2018). Air pollution can also be injurious to natural water supplies thereby being polluted and unhealthy for the consumption of human beings (Claeson, A. S., Lidén, E., Nordin, M., and Nordin, S. 2013).

The prominent environmental risk factor that can be the root of non-communicable ailments globally is the wastes that pollutes the air which brings about a chief health infirmity (Cobbold et al 2022), polluted air when breathed in, can show signs as burning eyes and nose, it can even result to respiratory issue such as asthma. According to Blacksmith Institute/Green Cross Switzerland (2013), the world population is exposed to pollution. World Health Organization (2012) indicated that diseases such as chronic illness, neurological damage, lowering of life expectancy from lungs, throat and thyroid cancers and a variety of other diseases might rendered a person to be in a permanent health impairment as a result of pollution. One in every seven, demises can be attributed to pollution associated cases.

Car emission can cause the air to be polluted; dust suspended in atmosphere can also be harmful. (Oyedepo, 2012). Emission from cars and traffic when released into the air will significantly be harmful to health and wellbeing of the people (Howel *et al.,* 2003). Air pollution is an environmental problem with significant negative impacts on public health of the societies (WHO, 2013). Human beings' introductions to threats in the air contribute a lot to human's illness, disability, and death worldwide. Good air quality plays important roles in individual and community health at large. Poor quality air too has been attributed to threats capable of affecting one's health and well-being. (Grason & Misra, 2009).

In a study conducted by Claeson *et al*. (2013), revealed that air effluence is linked with health risks of individuals. Howel *et al*. (2003), stated that public views showed a strong existence between air pollution and health of the general public in Northeast England, In a study conducted by Adimekwe (2013), it was discovered that air pollution is a foremost cause of ill health in a community. Obviously, the links between specific diseases or health abnormality have a strong important, when air is polluted could result to illnesses, such as allergies, asthma, and bronchitis. Air pollution is detrimental to the health of the public in a community, and the awareness

of health implications of air pollution among the populace is scanty (Webber & Willett, 2010).

Statement of Research Problem

Good health promotion and maintenance are very important. Mechanical workshops are where vehicles are being repaired having various areas discipline such as vulcanize, brake repair, panel beaten, mechanic, painter, rewire etc. To many people, mechanical workshops are seen as places of common visit due to the safety of their vehicles. It has been observed that the work of all the above disciplines have impact on the air, which individuals breathe in when visiting these areas. Therefore, people are often exposed to environmental threats particularly air contaminants. This circumstance seems to be having deleterious concerns on the individuals. Nevertheless, research on causes of polluted air and perceived health threats as a result of air polluted through wastes on the health of the mechanical workshops workers and the residents of the environment are very scarce, hence, this study.

Purpose of the Study

The purpose of this study was to examine perceived health threats of wastes on the mechanical workshops workers and the residents of the environment in Ile-Ife, Osun State.

Research Objectives

The objectives were to:

(i) Determine the types of wastes found among the mechanical workshops workers in Ile-Ife, Osun State;

(ii) Determine the wastes that can cause air pollution among the mechanical workshops workers and the residents of the environment in the study area; and

(iii) Examine the perceived health threats of wastes among the mechanical workshops workers and the residents of the environment in the study area.

Research Hypothesis 1: Wastes will not have significant influence on the health of the mechanical workshop workers and the residents of the environments in Ile-Ife, Osun State;

Methodology

Descriptive survey research design was employed for this study. The populations for this study were the workers and customers in the mechanical workshop and the residents of the environment in Ile-Ife, Osun State.

The populations were workers, customers in the workshop and the residents in the environment in the study area. Ten respondents from ten mechanical workshops and 12 respondents from each environment were selected using accidental sampling technique. A total of 200 respondents of 80 respondents from the mechanical workshops and 120 of the residents from the areas were selected for the study. A self-designed questionnaire comprised of two sections. Section A was on personal information of the respondents, while Section B was used for the information of the study. The questionnaire was exposed to face and content validity procedures. The face validity of the instrument was performed by experts, who critically examined the instrument and the content validity used to establish the suitability of the items in the questionnaire. It was then believed to be fit for administration. The reliability of the instrument was subjected to the use of test re-retest reliability measures with a pilot

study to determine the reliability of the instrument. The questionnaire was first administered on 10 respondents in the mechanical workshop and 12 respondents who resided near the mechanical workshop who were not among the respondents used for the study. After two weeks, the re-test was again given to the respondents. The data collected from the two tests of the respondents were tested for reliability, it yielded correlation coefficient of 0.82 which was deemed high, reliable and significant at 0.05 level (no = 10, r = 0.82, p <0.05). The researcher used 6 trained research assistants for the administration of the questionnaire. The respondents did sincerely supplied information to achieve a reliable result with brief explanation on the sincerity of the research work. With this process, all the copies of the questionnaire given to the respondents were correctly filled and returned. Appropriate descriptive and inferential statistics of (SPSS) Statistical Package for Social Sciences of t-test method were used for data analysis.

Results

Table 1: Demographic characteristics of mechanical workshop workers and residents of the environment.

S/N	Variables	Mechanical workshops Workers		Residents of the environments	
	Respondents 200 (100%)	**NO**	**(%)**	**NO**	**(%)**
	Age	**80**	**(40%)**	**120**	**(60%)**
1.	Below 21 years	10	(5%)	15	(7.5%)
	21-30	14	(7%)	36	(18%)
	31-40	32	(16%)	48	(24%)
	41 years and above	24	(12%)	21	(10.5%)
3.	**Religion**				
	Muslim	32	(18%)	52	(26%)
	Christianity	38	(19%)	54	(27%)
	Traditional	04	(2%)	08	(4%)
	Others	06	(3%)	06	(3%)
	Total				

The above table 1 showed the respondents' demographic characteristics of this study

RESEARCH QUESTION 1: What are the types of wastes found among the mechanical workshops' workers in Ile-Ife, Osun State.

Table 2: Descriptive analysis of the types of wastes found among the mechanical workshops workers in Ile-Ife, Osun State;

S/N	Variables	Mechanical Workshops Workers	
	Types of Wastes	**Agreed**	**Disagreed**

1	Fumes from vehicles.	80 (40%)	00 (0%)
2.	Used engine oil	80 (40%)	00(0%)
3.	Used break oil	80 (40%)	00 (0%)
4.	Used transmission fluid	80 (40%)	00(0%)
5.	Used gear oil	80 (40%)	00(0%)
6.	Cellophane nylon, used and damaged tyres, local	80 (40%)	00(0%)
7.	wrapper	80 (40%)	00(0%)
8.	Open burning of garbage wastes	80 (40%)	00(0%)
9.	Empty bottle soda water, water sachets etc.	80 (40%)	00(0%)
10.	Use of chemical and synthetic products	80 (40%)	00(0%)
11.	Dead animals around the workshop	80 (40%)	00(0%)
12.	Various rags in the workshop	66 (33%)	14(7%)
	Gasoline oil		
NOTE:- • A=AGREED • D=DISAGREED			

The Table 2 above showed that all the respondents working in the mechanical workshop agreed that all items listed were found in the workshop. Such items were fumes from vehicles, used engine oil, used break oil, used transmission fluid, used gear oil, cellophane nylon, used and damaged tyres, local wrapper, open burning of garbage wastes, empty bottle soda water, water sachets etc., use of chemical and synthetic products, to the last item which was gasoline oil.

RESEARCH QUESTION 2: What are the types of wastes that can cause air pollution among the mechanical workshops workers and the residents of the environment in Ile-Ife, Osun State.

Table 3: Descriptive analysis of the types of wastes that can cause air pollution among the mechanical workshops workers and the residents of the environment in Ile-Ife, Osun State;

S/N		**Mechanical Workshops Workers 80 (40%)**		**Residents of the Environment 120 (60%)**	
S/N	**Causes of Air Pollution**	**A**	**D**	**A**	**D**
1	Fumes from vehicles.	80 (40%)	0 (0%)	120(60%)	0(0%)
2.	Used engine oil	25 (12.5%)	55(27.5%)	120(60%)	0(0%)
3.	Used break oil	20 (10%)	60(30%)	120(60%)	0 (0%)
4.	Used transmission fluid	22 (11%)	58(29%)	78(39%)	42(21%)
5.	Used gear oil	23 (11.5%)	57 (28.5%)	120(60%)	0(0%)
6.	Cellophane nylon, used and damaged tyres, local	10 (5%)	70(35%)	46(23%)	74(37%)
7.	wrapper,	80 (40%)	0 (0%)	100 (50%)	20(10%)
8.	Open burning of garbage wastes	20 (10%)	20(10%)	76(38%)	44(22%)
9	Empty bottle soda water, water sachets etc.	18 (9%)	62(31%)	82(41%)	38(19%)
10.	Use of chemical and synthetic products	24 (12%)	56(28%)	98(49%)	22(11%)
11.	Dead animals around the workshop	5(2.5%)	75(37.5%)	18(29%)	62(31%)
12.	Various rags in the workshop	22(11%)	58(29%)	102 (51%)	18 (9%)
	Gasoline oil				

NOTE:- • A=AGREED • D=DISAGREED

From Table 3 above, it was observed that all the respondents from the mechanical workshops agreed that items no 1 and 7 did cause air pollution (Fumes from vehicles and open burning of garbage wastes). While only few respondents from this same areas disagreed to this statement. This could be that they were not aware of the causes of air pollution. In respect of the people living around the environment, majority of them agreed that most of the items listed could cause air pollution except item 11 which was various rags in the workshop.

RESEARCH QUESTION 3: What are the perceived health threats of wastes on the health of the mechanical workshops workers and the residents of the environment in the study area.

Table 4: Descriptive analysis of the perceived health threats of wastes on the health of the mechanical workshops workers and the residents of the environment in the study area.

		Mechanical Workshops Workers 80 (40%)		**Residents of the Environment 120 60%)**	
S/N	ITEMS	A	D	A	D
1.	Wastes mixed with air can cause increased cough and shortness of breath.	55(27.5%)	25(12.5%)	86(43%)	34(17%)
2.	Wastes mixed with air can cause irritation of mucous membrane of the eyes.	18(9%)	62(31%)	20(10%)	100(50%)
3.	Wastes mixed with air can cause constriction of the chest.	35(17.5%)	45(22.5%)	82(41%)	38(19%)
4.	Wastes mixed with air can cause nausea (unsettled stomach).	28(14%)	52(26%)	90(45%%)	30(15%)
5.	Wastes mixed with air can cause respiratory tract infection	34(17%)	46(23%)	104(52%)	16(8%)
6.	Wastes mixed with air can cause cancer	12(06%)	68(34%)	04(2%)	116(58%)
7.	Wastes mixed with air can cause damage to nerves, liver and Kidney	15(7.5%)	65(32.5%)	98(49%)	22(11%)
8	Wastes mixed with air can cause blurred nasal passages, pharynx problem and damage lungs.	68(34%%)	12(6%)	102(51%)	18(9%)

NOTE:- • A=AGREED • D=DISAGREED

Table 4 showed the perceived health threats of wastes on the mechanical workshops workers and the residents' of the environment in the study areas. It was observed that very few respondents from the mechanical workshops identified that there were perceived health threats of wastes on the health particularly items 1 and 8. This could be that the workers were not aware or not well educated to have known that wastes from mechanical workshop or wastes generally could lead to health threats of life. While many respondents from the residents of the environment stated that items 1, 3, 4, 5, 7 and 8 were perceived to cause health threats to the health of individuals. These statements showed that the residents were more educated than the workers of the study areas.

Hypothesis 1: Wastes will not have significant health threats on the health of the mechanical workshops workers and the residents of the environments in Ile-Ife, Osun State.

Table 4: t-test showing how wastes will not have significant health threats on the health of the mechanical workshops workers and the residents of the environments in Ile-Ife, Osun State.

Variable	N	Mean	std	df	t-cal	t-critic
Decision						
Mechanical workshop workers	80	2.211	1.123			
Significant 0.002					3	1.101
Residents of the environments	120	3.132	1.323			

P<0.05

Table 4 showed the results of the t-test analysis conducted to determine the significant health threats of wastes on the health of the mechanical workshops workers and the residents of the environments in Ile-Ife, Osun State. The research was subjected to t-test analysis to determine the significant health threats of wastes on the health of the mechanical workshops workers and the residents of the environments in Ile-Ife, Osun State. The table showed that the t-test value was t-cal= 1.101, t-critic = 0.002, P<0.05 alpha level of significance. Based on this result, the null hypothesis which stated that wastes will not have significant health threats on the health of the mechanical workshops workers and the residents of the environments in Ile-Ife, Osun State was hereby rejected. On the basis of the above, Wastes will have significant health threats on the health of the mechanical workshops workers and the residents of the environments in Ile-Ife, Osun State.

Discussion of Findings

One of the findings of this study discovered that all the respondents working in the mechanical workshop agreed that all items listed were found in the workshop. Such items were fumes from vehicles, used engine oil, used break oil, used transmission fluid, used gear oil, cellophane nylon, used and damaged tyres, local wrapper, open burning of garbage wastes, empty bottle soda water, water sachets etc., use of chemical and synthetic products, to the last item which was gasoline oil.

Another finding of the study observed that all the respondents from the mechanical workshops agreed that fumes from vehicles and open burning of garbage wastes did cause air pollution. While majority of the people living around the environment agreed that most of the items listed could cause air pollution except various rags in the workshops.

Another finding showed that very few respondents from the mechanical workshops identified that there were perceived health threats of wastes on the health particularly items 1 and 8. This could be that the workers were not aware or not well educated to have known that wastes from mechanical workshop or wastes generally could lead to health threats of life.

Further finding showed that many respondents from the residents of the environment stated that items such as increased cough and shortness of breath, constriction of the chest, nausea and also blurred nasal passages, pharynx problem and damage lungs respectively. Respiratory tract infection, damage to nerves, liver and Kidney were perceived to be the causes of health threats to individuals' health. In fact, the above fore-mentioned diseases are dangerous to health. This relates to the statement of Cobbold et al. (2022), that stated air pollution is a major health disability and is the leading environmental risk factor that can cause diseases universally. And similar to Webber & Willett, (2010), that air pollution is harmful to the public health causing numerous diseases and ill-health in individuals and the community at large.

Further finding stated that wastes will have significant health threats on the health of the mechanical workshops workers and the residents of the environments in Ile-Ife, Osun State. This study is in line with. W.H.O (2013) which stated that air pollution is an environmental problem with significant negative impacts on public health of the societies.

Conclusion

Based on the findings from this study, the study concluded that wastes could have perceived serious negative implications on health and wellbeing of mechanical workshops workers and the residents of the environments which would be a significant health threats on the health of these respondents in the study areas.

Recommendations

- Based on the findings and conclusion of the study, the following recommendations were made towards the improvement of the health of the mechanical workshops workers and the residents of the environments
- Government and its agencies should put in place policies or measures that will prevent siting mechanical workshops around the streets of the town in order to prevent hazards.
- Erection of such mechanical workshops should be far away from residential areas for healthy living environment.
- Health talk on air purity should be organized often for the public in order to prevent them from polluting air or polluted air as well as the danger associated with impure air.
- Government and her agencies should also enforce the environmental sanitation officers to visit all areas often to see that dead animals are not left around in the community/society.

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HEART RATE AND BLOOD PRESSURE VARIATIONS DURING A LOW INTENSITY ACUTE AEROBIC RUNNING AMONG OBAFEMI AWOLOWO UNIVERSITY ATHLETES

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Abstract

This study sought to investigate heart rate and blood pressure variations during a low-intensity acute aerobic running among students of Obafemi Awolowo University (OAU), Ile-Ife. This was with a view to describe the dynamics of blood circulation and changes during exercise and sports performance among college athletes. Descriptive survey research design was used in the study; heart rate and blood pressure of participants were measured before and after a low-intensity aerobic running exercise. Population for the study were athletes of ball games, racket sports and athletics of OAU, Ile-Ife, Nigeria. Sample comprised of 60 athletes drawn from Athletics (Track & Field), 4 Ball games (Football, Basketball, Handball & Volleyball), and 4 Racket sports (Badminton, Squash, Table-Tennis & Tennis) using quota sampling technique. A digital blood pressure monitor (OMRON-M6 Comfort) was used to record the resting heart rate and blood pressure of participants before and after the low-intensity acute aerobic running which lasted 20 minutes, weight, height and BMI were recorded with an electronic BMI scale (SECA-220). Data was described using descriptive statistics of mean and standard deviation. Student's t-Test was computed to compare the pre exercise and post exercise resting heart rates and blood pressures of participants to determine training effect and gender-related difference. The results showed that male and female athletes had mean resting heart rates of 69.36 ± 8.15bpm and 79.67 ± 6.78bpm respectively, while their resting systolic and diastolic blood pressures were 128.49 ± 10.91mmHg/86.15 ± 9.60mmHg and 115.33 ± 11.78mmHg/78.52 ± 6.29mmHg respectively for male and female. Athletes in the study had post exercise heart rate values of 124.46 ± 12.23bpm and 121.29 ± 10.50bpm respectively, their post-exercise systolic and diastolic blood pressures were 146.10 ± 20.85mmHg/89.21 ± 11.11mmHg and 122.38 ± 12.75mmHg/79.90 ± 11.18mmHg respectively. When athletes' heart rates and blood pressures were compared by gender, significant difference was found in the resting heart rates, $t = -4.94$; $P<0.05$, resting systolic blood pressure, $t = 0.27$; $P<0.05$, resting diastolic blood pressure $t = 0.27$; $P<0.05$, post-exercise systolic blood pressure $t = 0.14$; $P<0.05$ and post-exercise diastolic blood pressure $t = -1.23$; $P<0.05$.

The study concluded that low intensity aerobic running significantly alters cardiovascular parameters, thus producing beneficial effects on cardiovascular health.

Key Words: Heart rate, Blood pressure, Variability, BMI, Athletics, Ball game, Rackets

Introduction

Attempts to explain changes in the cardiovascular dynamics, which includes but not limited to heart rate, blood pressure, cardiac output and stroke volume during exercise have been the focus of many researches in the field of exercise science over

the years. Heart rate and blood pressure variability during low to intensive physical activity is an important index of physical fitness, health and general wellbeing of individuals. The human cardiovascular system is highly adaptive and is capable of responding to multiple physical demands. According to Hughson and Tschakovsky (1999) the cardiovascular system manifests adaptation through a series of integrated responses occasioned by the need to meet the increasing metabolic demands of the exercising muscles. These cardiovascular adjustments, which may even precede the onset of the actual exercise experience helps the body in coping with the heightened demands of the working muscles. Early in the 21st century, Aubert et al. (2003) had described the heart rate as one important cardiovascular parameter for gauging the intensity of exercise. It thus constitutes a key variable when considering the dose-response relationship in an exercise programme and prescription. Like other parameters of the cardiovascular system, the heart rate is mostly controlled by autonomic regulation through the activity of the sympathetic and parasympathetic pathways of the autonomic nervous system (Aubert et al. 2003). The heart rate maintains a linear relationship with the intensity of exercise and is affected by changes in the baroreflex phenomenon, sympathetic and parasympathetic mechanisms (vagal tone) and general autonomic functions. It thus varies with increases in the intensity and duration of exercise. Increasing evidence suggests that heart rate and blood pressure variability during low-intensity acute aerobic running can be used to assess an athlete's health, performance, and overall readiness for competition. Moreover, evidences abound in the literature of a strong correlation between blood pressure and cardiovascular mortality, with higher blood pressures being associated with a higher incidence of cardiovascular disease. Physical activity performed at regular intervals have been found to reduce risk of developing cardiovascular diseases, such as coronary heart disease and stroke, by improving cardiorespiratory fitness, reducing blood pressure, and reducing cholesterol levels (Yeh, 2011; Lima-Silva et al. 2016, Patel et al., 2018, and Esteves et al. 2018).

The values of regular exercise in maintaining a healthy weight, reducing stress and improving the overall quality of life and wellness has also been documented (Patel et al., 2018). Mild to moderate aerobic exercise has been found to effectively mitigate existing cardiovascular conditions such as hypertension, heart failure, and peripheral artery disease (Yeh, 2011).Exercise which is a subset of physical activity is the medium by which the efficiency of the cardiovascular system is enhanced and evaluated. The benefits of exercise in the prevention of cardiovascular disease have been exhaustively described in the works of many researchers (American College of Sports Medicine (ACSM) 2009, Kenney, Wilmore and Costil 2012, Heyward and Gibson 2014, Wei et al. 2017, LaMonte et al. 2019, and O'Gorman et al. 2020) A systematic review of the physical activity-cardiovascular disease prevention literature by LaMonte et al. (2019) concluded that even short bouts of physical activity can reduce the risk of cardiovascular disease. LaMonte and colleagues noted that physical activity is associated with improved vascular function and reduced circulating biomarkers of cardiovascular disease. In a similar review, Xing, Yang, Wang, Feng, Dong, & Zhang, (2020) found both aerobic and resistance exercise potent in reducing the risk of CVD especially when combined with other lifestyle interventions. The authors concluded that while aerobic exercise, such as running, can cut-down the risk of CVD by up to 37%, resistance training, such as weight lifting, can mitigate the risk by up to 11%. Despite the numerous benefits of exercise and physical activity to health in general and the cardiovascular system in particular, increasing rates of

urbanization and its associated behavioural changes have led to a higher prevalence of a sedentary lifestyle globally. This negative trend has provoked several learned and scientific discourse leading to notable position stands and recommendations such as the Surgeon General's Report on Physical Activity and Health, the position stands of the American College of Sports Medicine and the American Heart Association. It is an age long consensus that exercise is beneficial to human health and general wellbeing. One question that has spurred debates and inquiries is how much of exercise is required to yield the desired benefits and at what point or level of intensity does adverse reactions set in? Scholars; (Mutikainen et al. 2009; Hottenrott, Ludyga and Schulze 2012; Akinbiola, Adeniran and Ogunlade 2019; Akinbiola, Adeniran and Yekini 2020) have continued in their attempts to unravel whether cardiovascular dynamics are better modified with low intensity exercise or exercise performed at higher intensities. According to the American College of Sports Medicine (ACSM 2009), the dose-response question is also very vital in recommending physical activity. It explains the relation between increasing doses of physical activity and changes in a particular parameter.

An in-depth knowledge of the dose-response relationship in exercise prescription is very important, particularly when dealing with a population with special needs or those with increased risk of developing cardiovascular myopathies or other chronic diseases. For instance, since physical activity had been found to be beneficial to every person irrespective of age, sex, status and health conditions, one could easily recommended a mild dose of low to moderate intensity exercise to a child, the aged, the hypertensive and sedentary individuals, thus mitigating the risk of cardiovascular events.

Statement of the Problem

Cardiovascular diseases are on the increase and issues related to cardiac events during exercise or sports engagements have continued to dominate scientific inquiries. Studies have indicated a strong correlation between physical activity and cardiovascular health, while exercise tolerance has remained the foremost indicator of cardiovascular fitness even in the clinical setting. There are evidences in the literature supporting the remodelling of the athlete's heart in terms of structure and function, a phenomenon often used to juxtapose the athlete's superiority over his non athlete counterpart in relation to cardiovascular fitness. This superiority often manifests in form of lowered heart rate and reduced blood pressure at rest and quick return to baseline values following the cessation of an exercise. It may seem implicit that physical activity or exercise would benefit the cardiovascular system, however, findings from some studies; such as the ones implying that a reduction of the heart rate and blood pressure variability could be related to autonomic dysfunction, chronic-degenerative diseases, and increased mortality risk; and those suggesting that small increases in HR variability could decrease mortality risk among individuals with congestive heart failure, have pointed to the need for more research on the intensity and type of exercise that best suits different categories of people. This study therefore sought to determine the pattern of heart rate and blood pressure variations due to an acute bout of low intensity aerobic running among athletes of different sports in Obafemi Awolowo University, Ile-Ife, Nigeria.

Purpose of the Study

The study investigated the pattern of changes in the heart rate and blood pressure due to a low intensity aerobic running among athletes of Obafemi Awolowo University, Ile-Ife, Nigeria. It specifically sought to;

i. determine the resting heart rates and resting blood pressures of the athletes;
ii. investigate heart rate and blood pressure variability following an acute bout of low intensity aerobic running exercise;
iii. determine differences in athletes' heart rate and blood pressure variations by gender;

Research Questions

The study will proffer answers to the following questions,

1. What constitutes the resting heart rate and blood pressure of athletes in Obafemi Awolowo University, Ile-Ife, Nigeria?
2. Will resting heart rates and blood pressures of athletes in the study area vary following an acute bout of low intensity aerobic running exercise?
3. Will male and female athletes differ in their resting heart rate and blood pressure variations where it exists?

Methodology

The sample comprised of 60 athletes spread across 3 sports divisions; ball games (n=30), racket sports (n=20) and athletics (n=10), who were conveniently drawn from the Obafemi Awolowo University Ile-Ife. Sampling took place while athletes were in camp for the 26th edition of the Nigeria University Games (NUGA), which held at the University of Lagos in 2022. The study was cleared by the Obafemi Awolowo University's Teaching Hospital's Research Ethics Committee (OAUTHREC). Participants had been screened for cardiovascular disease risk factors through a medical history and screening questionnaire and they were duly informed of the testing procedures before the test. Written consent was obtained through a consent form completed and signed by each participant. Height and weight were measured and BMI was estimated with an electronic BMI scale (SECA 220). Resting heart rate and blood pressure were recorded while participants sat on a straight backed chair in a relaxed position, with a digital sphygmomanometer (OMRON M6 Comfort). Exercise heart rate and blood pressure were recorded immediately after the completion of the aerobic running exercise. All measurements were recorded in conformity with the protocol of the American College of Sports Medicine, ACSM reviewed by Bayles (2023) and test data were recorded in a data sheet.

Data was analysed with the IBM SPSS® software. Descriptive statistics of means and standard deviations was used to describe data and a two-way Analysis of Variance (ANOVA) statistics was used to compare resting heart rates, exercise heart rates and blood pressures of athletes in ball games, racket sports and athletics.

Results

The results showed that male and female athletes in the study were within ages 21.21±2.45yrs and 20.76±1.95yrs respectively. They measured 179.49±12.60cm and 167.62±5.71cm in height and they weighed 68.62±15.44kg and 58.81±5.62kg respectively. The means of male and female's BMI as summarised in Table 1 were 21.19±3.30 kg/m^2 and 20.93±1.73 kg/m^2 respectively.

Table 1: Demographic Characteristics of Study Participants

		N	**X±**
Age(Yrs.)	Male	39	21.21±2.45

	Female	21	20.76±1.95
Height (cm)	Male	39	179.49±12.60
	Female	21	167.62±5.71
Weight (kg)	Male	39	68.62±15.44
	Female	21	58.81±5.62
BMI (kg/m^2)	Male	39	21.19±3.30
	Female	21	20.93±1.73

This study sought to determine the resting heart rate and blood pressure of athletes in Obafemi Awolowo University, Ile-Ife, Nigeria. Results summarised in Table 2 describes the resting heart rates and blood pressures of male and female athletes in the study.

Table 2: Resting Heart Rates and Blood Pressures of Obafemi Awolowo University Athletes

		N	×±	t	df	sig
RHR (bpm)	Male	39	69.36±8.15	-4.94	58.00	0.00*
	Female	21	79.67±6.78			
Resting SBP (mmHg)	Male	39	128.49±10.91	0.27	58.00	0.03*
	Female	21	115.33±11.78			
Resting DBP (mmHg)	Male	39	86.15±9.60	0.27	58.00	0.01*
	Female	21	78.52±6.29			
Ex. HR (bpm)	Male	39	124.46±12.23	1.01	58.00	0.32
	Female	21	121.29±10.50			
Exercise SBP (mmHg)	Male	39	146.10±20.85	0.14	58.00	0.00*
	Female	21	122.38±12.75			
Exercise DBP (mmHg)	Male	39	89.21±11.11	-1.23	58.00	0.02*
	Female	21	79.90±11.18			

RHR = Resting Heart Rate; SBP = Systolic Blood Pressure; DBP = Diastolic Blood Pressure

Male and female athletes had mean heart rates of 69.36±8.15bpm and 79.67±6.78bpm respectively at rest. Their resting blood pressure values were 128.49±10.91mmHg and 115.33±11.78mmHg respectively for systolic BP, while their mean diastolic blood pressures were 86.15±9.60 mmHg and 78.52±6.29 mmHg respectively. Athletes in the study had post exercise heart rate values of 124.46±12.23bpm and 121.29±10.50bpm respectively for male and females, while their mean post-exercise systolic blood pressures were 146.10±20.85mmHg and 122.38±12.75mmHg for male and female respectively. The means of their post-exercise diastolic blood pressures were 89.21±11.11mmHg and 79.90±11.18mmHg respectively for males and females. When athletes' heart rates and blood pressures were compared by gender, significant difference was found in the resting heart rates, $t = -4.94$; $P<0.05$, resting systolic blood pressure, $t = 0.27$; $P<0.05$, resting diastolic blood pressure $t = 0.27$; $P<0.05$, post-exercise systolic blood pressure $t = 0.14$; $P<0.05$ and post-exercise diastolic blood pressure $t = -1.23$; $P<0.05$. There was no gender-related difference in post-exercise heart rates of athletes in the study.

The resting heart rates, systolic and diastolic blood pressures of athletes were compared to their post-exercise values to determine variations. The results of t-Test comparing athletes' resting and post-exercise values are summarised in Table 3.

Table 3: Summary of t-Test comparing Resting and Exercise Heart Rates and Blood Pressure of Athletes following an Acute Low-Intensity Aerobic Running Exercise

	X±SD	t	df	sig
Resting HR (bpm) Exercise HR (bpm)	72.97±9.11 123.35±11.66	-25.27	59.00	0.00*
Resting SBP (mmHg) Exercise SBP (mmHg)	129.63±11.79 122.85±18.31	2.91	59.00	0.01*
Resting DBP (mmHg) Exercise DBP (mmHg)	82.93±8.54 77.50±11.18	4.30	59.00	0.00*

RHR = Resting Heart Rate; SBP = Systolic Blood Pressure; DBP = Diastolic Blood Pressure

Athletes varied significantly in their resting and post-exercise heart rates, $t = -25.27$; $P<0.05$. Heart rates of participants increased significantly on account of the aerobic running but a quick return to the baseline value was also noticed within 3 minutes of cessation of exercise. Significant difference was also noticed in the resting and post-exercise systolic blood pressures, $t = 2.91$; $P<0.05$, as well as the resting and post-exercise diastolic blood pressures, $t = 4.30$; $P<0.05$. Both the systolic and diastolic blood pressures of participants were lowered significantly following the low-intensity aerobic running exercise.

Discussion

Physiological traits contribute substantially to optimum performance in sports and blood pressure and heart rate are two important indicators of cardiovascular health. The benefits of physical activity and exercise on the cardiovascular system had been a subject of many academic and scientific discuss. In a study of the effects of aerobic exercise on blood pressure variability, Liu et al. (2022) held that aerobic exercise significantly reduced systolic and diastolic blood pressure and has concomitant positive effects on cardiovascular health. The author therefore opined that regular physical activity should be considered an important factor in maintaining cardiovascular health. This study investigated the effect of an acute low intensity aerobic running on selected cardiovascular parameters of athletes in a college setting. It found a significant difference in the heart rates and blood pressures of both sexes at baseline. This finding is consistent with those of Lima-Silva et al. (2016) and Esteves et al. (2018). These authors had reported that male and female athletes differ in blood pressure and heart rate, with the male presenting higher systolic and diastolic blood pressure values than their female counterparts. This study also reported gender difference in post exercise systolic and diastolic blood pressures. Park et al. (2017) had reported that female athletes presented significantly lower systolic and diastolic blood pressures when compared with their male counterparts after exercise. In a

related study, Petek, Drezner and Harmon (2022) found that male athletes had significantly higher systolic and diastolic blood pressures than the female athletes.

There seems to be a high level of concurrence in the opinions of authors on the health benefits of exercise to cardiovascular health, with little regards given to the type of training or intensity. This is evidenced in the findings reported by several scholars in the literature, thus, evidence abounds in support of the premise that acute low-intensity aerobic exercise do have beneficial effects on cardiovascular parameters such as heart rate, systolic and diastolic blood pressures and heart rate variability. The findings of this study with regards to the effects of low-intensity aerobic running on heart rate and blood pressures concur with former authors. Athletes in the study varied significantly in their resting and post-exercise heart rates, resting and post-exercise systolic blood pressures, and, resting and post-exercise diastolic blood pressures. Both systolic and diastolic blood pressures were significantly lowered after the aerobic running exercise. This finding is in tandem with the submissions of Xing, et al. (2020), Chen, Mat Ludin, & Farah, (2022) and Li et al. (2020). These authors converged in their opinions on the benefits of acute aerobic exercise to the cardiovascular system. They reported that acute bout of moderate-to vigorous physical activity decreased systolic and diastolic blood pressures, while also increasing heart rate variability. Chen et al. (2022) even hinted that acute exercise particularly of the moderate-intensity aerobic type effectively reduced stress-induced BP reactivity in the general population. The effects on HR reactivity and cardiovascular recovery were inconclusive. Caminiti et al. (2022) reported that concurrent training lowered systolic blood pressure in men and women, but with greater decrease in the women's diastolic blood pressure. Overall, a synthesis of the findings from previous research works in this area suggests that male athletes may have a greater aerobic capacity than female athletes, as evidenced by their higher post-exercise systolic and diastolic blood pressures and heart rates.

Conclusion

The study concluded that low- intensity aerobic running significantly alters cardiovascular parameters and produces beneficial effects on cardiovascular health.

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