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PARTICIPATION IN LEISURE-TIME ACTIVITIES AND THE BODY MASS INDEX OF STUDENTS IN A TERTIARY INSTITUTION IN EKITI STATE, NIGERIA

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Abstract:
The rate at which obesity is increasing among tertiary institution students in Nigeria is alarming. Physical inactivity, consumption of energy-dense foods, and sitting down for long hours are some of the risk factors for obesity that have been commonly reported among them. To reduce the risk of obesity, participation in leisure-time activities (LTA) is essential. This study was therefore carried out to determine the extent to which tertiary institution students engage in LTA and the relationship this has with their body mass index (BMI). A correlational research was carried out among 220 students selected using a multi-stage sampling procedure from Ekiti State University (EKSU) Nigeria. A self-developed, validated questionnaire was used to collect the data on respondents' demographic characteristics, anthropometric measurements and frequency of participation in LTA. Spearman correlation analysis was used to determine the relationship between participation in LTA and BMI. All inferences were made at 0.05 level of significance. The majority (80%) of the respondents had a moderate level of participation in LTA. Also, leisure-time reading (Mean=3.30, SD=1.3) and watching TV/ listening to the news (Mean=2.90, SD=1.4), were the most commonly performed LTA among respondents. Lower BMI was associated with the participation in LTA that is rigorous in nature, while higher BMI was associated with the LTA that is sedentary in nature. This study revealed that participating in LTA that is rigorous in nature helps to maintain a normal body mass index better than LTA that is sedentary in nature. The findings of this study will go a long way in providing useful information to the physical and health education teams on the differences in the influence of sedentary and rigorous LTAs on the health of tertiary institution students. This is likely to guide the planning of programmes to encourage tertiary institution students to engage more in LTAs that are more rigorous.

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1. Introduction

Obesity, a health condition of public health concern, previously assumed to be prevalent among children, adolescents, and adults, is now gradually increasing among young adults both in developing and developed countries (Obirikorang, Anto, Adda, Obirikorang, Acheampong, 2017; Ukaegbu, Uwaegbute, Echendu, Ejike, Anyika-Elekeh, Azumugha, et al. 2017). Findings of research conducted among young adults in tertiary institutions in Nigeria have documented the prevalence of obesity as being between 10 and 27% (Nwachukwu, Nwagha, Obikili et al. 2010; Ejike CECC & Ijeh, 2012). 13.4% (Ukaegbu et al, 2017), and 17.1% (Dada & Egbe, 2020).

Obesity is a cardio-metabolic condition associated with poor mental health outcomes, reduced quality of life, and an increased risk for non-communicable diseases in both young and old (Center for Disease Control (CDC), 2022). It is also associated with poor academic performance among students (Gardener, 2012).

Certain lifestyle factors, commonly reported among tertiary institution students, have been associated with the risk of obesity. These include: but are not limited to physical inactivity, high consumption of energy-dense food, sitting down for long hours either watching television or listening to the radio (Opara, Ekpin, Ukpong, Itanka, Akpan, Jonah et al, 2020), and not practicing sport (Musaiger, Lloyd, Al-Neyadi, Bener, 2003).

One way of reducing the risk of being obese among young adults is by being physically active. Physical activity is any bodily movement generated by the contraction of skeletal muscles that raises energy expenditure above the resting metabolic rate. It can be occupational, sports, conditioning, household, or other activities (Caspersen, Powell & Christenson, 1985; Thivel, Tremblay, Genin, Panahi, Riviere & Duclo, 2018).

One of the ways by which students in tertiary institutions can be physically active is to engage in playful activities, which are called leisure-time activities, during their out-of-class periods. These could be; outdoor sports, indoor games, exercising, recreational walking, or dancing among others (Prince, Rasmussen, Biswas, Holtermann, Aulakh, Merucci & Coenen, 2021).

Previous studies have documented the relationship between participation in leisure-time activities and body mass index. Cairney and Veldhuizen (2017) reported that the BMI of their study participants increased as sports participation declined. Studies have also documented a significant improvement in BMI after participating in a brisk walking exercise (Chen, Ismail, & Al-safi, 2016). Leisure-time gardening (Zick, Smith, Kowaleski-Jones, Uno, Merrill, 2013), outdoor sporting activities (Ball & Bice, 2015), and dance (Hidayat & Abd Latif, 2017). In addition to reducing the body mass index, participation in leisure-time activities also contribute significantly to weight and obesity management (Chaput, Klingenberg, Rosenkilde, Gilbert, Tremblay, Sjödin, et al., 2011;

Thivel, et al., 2018) and helps to improve the physical and cognitive well-being of individuals.

Despite the numerous benefits of leisure-time activities, research has shown that there seems to be a low level of participation among tertiary institution students. Also, there is low participation in leisure-time activities that are rigorous (Ogunjinmi, Akpan, & Ikorok, 2014). The objective of this research, was to determine the relationship between leisure-time activities and the body mass index of tertiary institution students. Specifically, this study was conducted among students of Ekiti State University, Ado-Ekiti, Nigeria, because there is a dearth of studies reporting the relationship between their leisure-time activities and body mass index.

2. Materials and Methods

Two hundred and twenty students (82 males, 138 females) constituted the participants in this study. These were recruited from all the nine faculties in Ekiti State University using a multi-stage sampling procedure. First, the random sampling technique was employed to choose two departments from each of the nine faculties. Secondly, the year of study that constituted the sampling frame was selected using the simple random sampling technique. In this regard, year 3 was chosen as the sampling frame. The third stage involved the convenience sampling technique to recruit participants from among the year three students across the 18 selected departments. This study involved only the students who consented to participate.

2.1 Data Collection

A self-developed questionnaire was the instrument for collecting the demographic, data, and the data on the leisure-time activities of the participants. Before the commencement of the study, permission was sought from the Heads of Departments. The participants were also informed about the purpose of the study and told that it was voluntary. It was only the students who consented that participated in the study. The written survey and the anthropometric measurements were completed in the lecture theatres and lasted between 20 and 30 minutes.

2.2 Measures

The independent variable measured in this was the participation in leisure-time activities. The leisure-time activities assessed included: outdoor sports, indoor games, attending social functions, leisure time reading, listening to news/watching television, and arts & craft activities. The questionnaire consisted of 6 items having a 4 point rating scale of 'never', 'rarely', sometimes', and 'often' to assess the frequency of participation in leisure-time activities. The mean score and standard deviation of the responses were computed and used for determining the level of participation in leisure-time activities.

The outcome variable in this study was the body mass index, and it was obtained by first taking the students' weight and height measurements. Weight was measured to

the nearest 0.1kg using a Hana bathroom weighing scale. Respondents removed their shoes and any other clothing that could add to their weight. Height was measured (to the nearest 0.1 m) with a graduated wooden meter rule placed against a smooth-surfaced wall. The respondents were measured standing upright against the meter-rule, with the two feet put together and the shoes removed.

The body mass index (BMI) was computed by dividing weight by height squared (kg/m^2). Participants having BMI of $<18.5\ kg^2$ were classified as being underweight, those having BMI between 18.5 and 24.9 kg/m^2 were classified as having normal weight, those having BMI between 25 and 29.9 kg/m^2 were classified as being overweight, while those having BMI $\geq 30kg/m^2$ were classified as being obese (World Health Organisation (WHO), 2022). To determine the strength of the relationship between participation in leisure-time activities and the body mass index, the correlation coefficients obtained were compared with Cohen's standard (Complete Dissertation, 2022). Based on Cohen's standard, correlation coefficients between .10 and .29 represent a small association, those between .30 and .49 represent a medium association, while the correlation coefficient of .50 and above represent a large association (Complete Dissertation, 2022).

2.3 Data Analysis

The data obtained from this study were analysed using SPSS (version 23.0, IBM, Armonk, NY, 2015). Research questions were analysed using frequency counts, mean and standard deviation. The strength and the direction of the relationship between participation in leisure-time activities and BMI were determined using the Spearman correlation coefficient and the level of statistical significance was set at $p < 0.05$.

3. Results

The study comprised 82(37.7%) male, 138(62.3%) female having an average weight of 62.3kg (SD = 11.92). The majority (80.5 %) were less than 25 years of age (Table 1).

The analysis of the level of participation of respondents in leisure-time activities shows that 80.0 % of the respondents had a moderate level of participation (Table 1). More males (97.6% had between a moderate to a high level of participation than females (87.7%) (Table 1).

With regards to BMI, the findings of this study revealed that 58.6% of the respondents had normal BMI, 11.4% were underweight and 6.4% were obese (Table 1). 59.8% of the male respondents and 59.4% of the females had normal weight. Obesity was found among 6.1% of the male and 5.8% of females (Table 1).

Table 1: Respondents' Demographic Characteristics, BMI and Level of Participation in LTA (n=220)

Variable	Frequency	%
Gender		
Male	82	37.3
Female	138	62.7
Age (years)		
<25	178	80.9
>25	42	19.1
BMI		
Underweight	25	11.4
Normal	129	58.6
Overweight	52	23.6
Obesity	14	6.4
Leisure-time activity (LTA) level		
Low	20	9.1
Moderate	176	80.0
High	24	10.9
BMI classification based on sex		
Male		
Underweight	12	14.6
Normal	49	59.8
Overweight	16	19.5
Obese	5	6.1
Female		
Underweight	12	8.7
Normal	82	59.4
Overweight	36	26.1
Obese	8	5.8
Leisure-time activity level based on sex		
Male		
Low	2	2.4
Moderate	53	64.6
High	27	33.0
Female		
Low	17	12.3
Moderate	73	52.9
High	48	34.8

Note: BMI = Body mass index

The findings of this study as shown in Table 2 revealed that the most commonly reported leisure-time activity among respondents is leisure time reading (Mean=3.30, SD=1.3), followed by listening to news/watching TV (Mean=2.90, SD=1.4). The least commonly reported leisure–time activity is social activities (M=1.75, SD=0.8).

Table 2: Frequency of Respondents' Participation in Leisure-Time Activities (n=220)

Leisure–time Activity	Never (Percent)	Rarely (Percent)	Sometimes (Percent)	Often (Percent)	Mean± SD
Outdoor games	90 (40.9)	84 (38.2)	31 (14.1)	15 (6.8)	1.90 ± 1.0
Indoor games	62 (28.2)	102 (46.4)	31 (14.1)	25 (11.3)	2.17 ± 1.1
Social activities	88 (40.0)	108 (48.1)	18 (8.2)	6 (2.7)	1.75 ± 0.8
Leisure-time reading	9 (4.1)	68 (30.9)	51 (23.2)	92 (41.8)	3.30 ± 1.3
Listening to news/watching TV	32 (14.5)	72 (32.7)	51 (23.2)	65 (29.6)	2.90 ± 1.4
Arts & Craft activities	101 (45.9)	76 (35.0)	28 (12.7	14 (6.4)	1.84 ± 1.0

With regards to the relationship between participation in leisure-time activities and BMI, The findings of this study showed that participating in leisure-time activities such as outdoor sports, arts & crafts activities, social activities, had a very small negative association with the body mass index of respondents while participating in indoor games, leisure-time reading and watching TV had a very small positive association with the body mass index of respondents (Table 3). The findings of this study further revealed that the level of participation of students in leisure-time activities had a small negative association with the body mass index of students. This is an indication that the higher the level of participation in leisure-time activities, the lesser their body mass index.

Table 3: Relationship between Leisure-Time Activities and Body Mass Index (n=220)

Leisure-time activities	r	Sig.
Outdoor game	-0.075	0.270
Indoor game	0.031	0.646
Social activities	-0.079	0.245
Leisure-time reading	0.126	0.062
Listening to radio/watching TV	0.078	0.247
Arts & craft activities	-0.101	0.134
Level of participation	-0.149	0.029*

*significant at P<0.05

4. Discussion

The research was conducted to assess the level of participation in leisure-time activities among students of EKSU and to determine the relationship between this and their body mass index. The findings of this study showed that participation in leisure-time activities among these students was moderate. This finding is in contrast with that of Ogunjinmi and Ikorok (2014) where a low level of participation in leisure-time activities was reported among tertiary institution students that constituted the respondents for their

study. The moderate level of leisure- activity among EKSU students is commendable and, likely, these students are already gaining the knowledge of the benefits of leisure-time activities to human health. All efforts must therefore be made to encourage these students to improve their level of participation from moderate to high.

The most common leisure-time activity engaged in by the respondents is leisure-time reading, followed by listening to the news or watching TV which are both sedentary. This is similar to the findings of (Ogunjimi & Ikorok 2014; Moulin, & Irwin, 2017; Opara et al, 2020) where it was reported that many tertiary institution students engage more in leisure-time activities that are sedentary and this is a risk factor for overweight and obesity.

The findings of this study showed that the majority of the respondents had normal BMI and this was found to be associated with participation in outdoor sports, arts & craft activities, and social activities which are slightly rigorous. This is consistent with a previous study [15] where it was reported that significant improvement was observed in the body mass index of their respondents after participating in rigorous physical activity.

This study revealed that participation in sedentary leisure-time activities like sitting down for long hours, and indoor games were associated with higher BMI among respondents. The reason for this finding is not far-fetched. Participation in rigorous activities during leisure periods tends to help burn unwanted fats in the body thus keeping the BMI at the normal level. Sedentary activities, on the other hand, tend to help build body fat thereby increasing the BMI.

5. Conclusion

The findings of this study showed that the most commonly reported leisure-time activities among EKSU students are those that are sedentary and this was found to be associated with increased BMI. Also, the level of participation in leisure-time activities was moderate and this was negatively associated with their BMI.

It is therefore recommended that tertiary institution students should be encouraged to participate more in leisure-time activities, especially those that are rigorous such as: outdoor sports and art & craft activities so as to maintain a normal BMI. Also, further research should be conducted to consider the relationship between a wide variety of leisure-time activities on the BMI of tertiary institution students.

Conflict of Interest Statement

The authors do not have any conflict of interest.

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