



RELATIONSHIP BETWEEN DAILY SITTING TIME AND PERCEIVED BARRIERS TO PHYSICAL ACTIVITY AMONG STAFF OF COLLEGES OF EDUCATION IN BORNO STATE, NIGERIA

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Abstract

Physical inactivity and prolonged sedentary behaviour have become significant public health concerns due to their association with numerous adverse health outcomes, including cardiovascular diseases, obesity, type 2 diabetes, and premature mortality. This study therefore investigated the relationship between daily sitting time and perceived barriers to physical activity among staff of Colleges of Education in Borno State. The study adopted a correlational research design. The target population comprised staff members of two government-owned Colleges of Education in Borno State: College of Education, Waka-Biu, and Umar Ibn Ibrahim El-Kanemi College of Education, Science and Technology, Bama. A sample of 285 staff members was drawn from a population of 590 employees. A multi-stage sampling procedure involving purposive, simple random, and accidental sampling techniques was employed to select respondents. Data were collected using a researcher-developed instrument titled Self-Reported Daily Sitting Time and Perceived Barriers to Physical Activity among Staff of Tertiary Institutions Questionnaire. The instrument consisted of demographic items and statements measuring daily sitting time and perceived barriers to physical activity on a five-point Likert scale. Face and content validity were established through expert review, while reliability testing using Cronbach's alpha yielded a coefficient of 0.81, indicating satisfactory internal consistency. Data were analyzed using descriptive statistics, while Pearson Product-Moment Correlation (PPMC) was used to test the hypothesis at a 0.05 level of significance. Findings revealed that a substantial proportion of respondents reported high levels of occupational sitting, with the majority indicating that they spent most of their working day seated while performing academic and administrative duties. Respondents also reported several barriers to physical activity, particularly lack of time, work-related fatigue, competing family and occupational responsibilities, and limited access to exercise opportunities. Correlation analysis showed a statistically significant positive relationship between daily sitting time and total perceived-barrier scores to physical activity ($r = 0.487$, $p = 0.0001$). This result indicates that staff members who spent longer periods sitting were more likely to perceive greater obstacles to engaging in physical activity. Consequently, the null hypothesis stating that there is no significant relationship between daily sitting time and perceived barriers to physical activity was rejected. The study concludes that sedentary behaviour and perceived barriers to physical activity are closely interconnected among staff of Colleges of Education in Borno State. Increased daily sitting time is associated with higher perceptions of barriers to physical activity, suggesting that prolonged occupational sitting may reinforce inactivity patterns and reduce opportunities for active lifestyles. The study recommends the implementation of workplace wellness programmes, active-break policies, physical activity promotion initiatives, and supportive institutional environments aimed at reducing sedentary behaviour and improving physical activity participation among college staff.

Keywords: *Daily sitting time, Sedentary behaviour, Perceived barriers, Physical activity, College staff, Occupational health and Colleges of education*

Introduction



Physical inactivity and prolonged sedentary behaviour have become major public health concerns globally because of their association with numerous adverse health outcomes. Sedentary behaviour refers to any waking activity that involves low energy expenditure (≤ 1.5 metabolic equivalents) while sitting, reclining, or lying down. In contemporary workplaces, technological advancements and changing job demands have increased the amount of time employees spend sitting while carrying out their daily responsibilities. Educational institutions are particularly affected because teaching, research, administrative tasks, meetings, and computer-based activities often require prolonged periods of sitting. Studies have shown that excessive sitting time is associated with an increased risk of cardiovascular diseases, obesity, type 2 diabetes, and premature mortality, regardless of participation in moderate-to-vigorous physical activity (Prince et al., 2019; O'Donoghue et al., 2016). Consequently, understanding the factors associated with prolonged sitting among educational staff has become an important area of public health research.

Physical activity is widely recognized as an essential component of healthy living and the prevention of non-communicable diseases. Regular participation in physical activity contributes to improved cardiovascular fitness, weight management, mental well-being, and overall quality of life. Despite these benefits, many adults fail to meet recommended physical activity guidelines. Research has shown that engagement in physical activity is influenced by various personal, social, environmental, and organizational factors. Common barriers include demanding workloads, limited leisure time, inadequate access to exercise facilities, family commitments, and workplace cultures that do not encourage active lifestyles. These challenges are often described as perceived barriers, reflecting an individual's subjective evaluation of obstacles that prevent participation in physical activity. Evidence indicates that individuals with higher perceived barriers are less likely to engage in regular exercise and more likely to exhibit sedentary behaviours (Safi et al., 2022; Ndupu et al., 2023).

The workplace environment plays a crucial role in shaping both physical activity patterns and sedentary behaviour. Employees in higher education institutions frequently engage in tasks that involve prolonged sitting, such as lecture preparation, grading, research activities, administrative duties, and electronic communication. Such occupational demands may not only increase sedentary behaviour but also strengthen perceptions that physical activity is difficult to integrate into daily routines. Previous studies among university staff and office workers have identified lack of time, excessive workload, inadequate managerial support, and limited workplace facilities as significant barriers to physical activity participation (Blom et al., 2021; Ojo et al., 2019). In addition, workplace design and organizational structures can either promote or restrict opportunities for movement throughout the workday, thereby influencing employees' health-related behaviours.

Recent literature suggests a close relationship between sedentary behaviour and perceived barriers to physical activity. Individuals who perceive numerous obstacles to exercise are more likely to adopt sedentary lifestyles characterized by prolonged sitting during both work and leisure time. Similarly, extended periods of sitting may reinforce beliefs that physical activity is inconvenient, time-consuming, or incompatible with occupational responsibilities. The Capability–Opportunity–Motivation Behaviour (COM-B) model emphasizes that behaviour is influenced by the interaction of environmental opportunities, individual capabilities, and motivational factors. Research among university employees and office-based workers has highlighted barriers such as lack of motivation, time constraints, social influences, and environmental limitations as factors contributing to both physical inactivity and sedentary behaviour (Ndupu et al., 2023; Ojo et al., 2019). However, despite growing international evidence, empirical studies examining the relationship between daily sitting time and perceived barriers to physical activity among staff of Colleges of Education in Nigeria, particularly in Borno State, remain scarce, thereby justifying the need for the present study.

Statement of the Problem



The increasing prevalence of sedentary behaviour among employees in educational institutions has become a significant public health concern worldwide. Staff of Colleges of Education in Borno State often spend prolonged periods sitting while performing administrative duties, teaching, attending meetings, preparing instructional materials, and engaging in computer-based tasks. Extended daily sitting time has been associated with numerous adverse health outcomes, including obesity, cardiovascular diseases, musculoskeletal disorders, diabetes, and reduced overall well-being. Although regular physical activity is recognized as an effective strategy for preventing these health risks, many college staff members may not engage in sufficient physical activity to offset the negative effects of prolonged sitting. Understanding the factors that discourage participation in physical activity is therefore essential for promoting healthier lifestyles among this population. Despite the known benefits of physical activity, staff members may encounter various perceived barriers such as lack of time, heavy workload, inadequate recreational facilities, lack of motivation, safety concerns, and limited institutional support. These barriers may contribute to increased sedentary behaviour and prolonged daily sitting time. Therefore, this study seeks to examine the relationship between daily sitting time and perceived barriers to physical activity among staff of Colleges of Education in Borno State, with a view to providing evidence-based recommendations for improving staff health and well-being.

Purpose of the Study

The purpose of this study is to determine the relationship between daily sitting time and total perceived-barrier to physical activity among staff of Colleges of Education in Borno State.

Research Questions

1. What is the pattern of daily sitting time among staff of Colleges of Education in Borno State?
2. What are the perceived barriers to physical activity among staff of Colleges of Education in Borno State, Nigeria?

Hypothesis

There is no significant relationship between daily sitting time and total perceived-barrier scores to physical activity among staff of Colleges of Education in Borno State.

Methodology

This study adopted correlational research design. A correlational research design is a non-experimental approach used to examine the statistical relationship between two or more variables without manipulating them. It seeks to determine whether, and to what extent, a relationship exists between variables, allowing researchers to identify patterns, trends, and associations in naturally occurring data (Creswell & Creswell, 2018). In this design, variables are measured as they exist in the real world, and the strength and direction of their relationship are typically expressed using correlation coefficients, such as Pearson's r . A positive correlation indicates that as one variable increases, the other also increases, while a negative correlation suggests that as one variable increases, the other decreases (Gravetter & Forzano, 2018). The selection of the sample size follows the rule of thumb suggested by Nworgu (2015), for determining sample sizes based on the population. Rule of thumb states that "when the population of a study is few hundreds, the sample size should be 40-50%. If they are a severe hundred, 20% of the population should be the sample size. When a few thousand, 10% of them will do and if several thousands 2-5 % of the population will be considered respectively". Since the population of mothers is in the thousands, the study will use a sample size of 2% of the total population.

This study adopted multi-stage sampling procedure. That is, purposive sampling procedure, sample random sampling procedure and accidental sampling procedure. Purposive sampling procedure will be used in selection of Government own universities in Borno State; sample random sampling procedure of hat sampling were used in selection of 50% of the schools in each College of Education. Sample random sampling procedure of hat



sampling will be used in selection of 50% of the department in each faculties while accidental sampling technique were used in selection of the respondents.

Table 1: population and sampled

S/N	College of Education	Population	Sampled
1	College of Education, Waka-Biu	260	130
2	Umar Ibn Ibrahim El-Kanemi College of Education, Science and Technology, Bama	330	165
	Total	590	285

The instrument for this study is a researcher self-developed questionnaire named Self-Reported Daily Sitting Time and Perceived Barriers to Physical Activity among Staff of Tertiary Institutions. The questionnaire consists of two sections. That is, section A which is the first section of the questionnaire elicit demographic information from respondents; while section B obtained information on Self-Reported Daily Sitting Time and Perceived Barriers to Physical Activity Among Staff of Tertiary Institutions. The questionnaire were structured in a closed ended format on a 5-point Likert scale and were further graded as 5,4,3,2 and 1 respectively. The instrument was validated using face and content validity. Face and content and construct validity deal with assessing how all the items of the questionnaire measure all the different dimensions of the concept in all its characteristics and appropriateness of the statements. To establish face and content validity of the instrument, copies of the drafted questionnaire were presented to experts who examined and offer corrections that were incorporated. The corrected version was given to three experts in the Department of Physical and Health Education. The reliability of the research instrument was ascertained through a pilot study called split-half, using Cronbach's alpha model of reliability to determine reliability coefficient. One of the universities in Yobe state which is not part of the study used to conduct the pilot study, thirty (30) respondents. And the reliability coefficient was 0.81. To administer the research instrument, the research team visited the Colleges of Education in Borno State, with a duly signed introductory letter from the desk officer. The purpose of the letter is to be granted access to staff to respond to the questionnaires. The research team employ six trained research assistants to administer and retrieve the completed questionnaire. The results of this study were analysed using descriptive statistics of frequency counts, percentage and mean and standard deviation for demographic characteristics, and to answer the research questions. While inferential statistics of Person Product Moment Correlation was used to test the formulated hypotheses at 0.5 level of significance.

Results

Research Question One: What is the pattern of daily sitting time among staff of Colleges of Education in Borno State?

Table 2: Frequency and Percentage Distribution of Respondents' Daily Sitting Time (N = 285)

S/N	Statements on Daily Sitting Time	SA (5) (%)	FA (4) (%)	FUD (3) (%)	FD (2) (%)	SD (1) (%)
1	I spend a large part of my working day sitting while performing my duties.	125 (43.9)	100 (35.1)	30 (10.5)	20 (7.0)	10 (3.5)
2	My job requires me to sit for long hours without frequent movement.	115 (40.4)	110 (38.6)	30 (10.5)	20 (7.0)	10 (3.5)
3	I usually sit continuously for more than two hours during work activities.	130 (45.6)	95 (33.3)	30 (10.5)	20 (7.0)	10 (3.5)
4	Most of my professional tasks are carried out while seated.	120 (42.1)	100 (35.1)	35 (12.3)	20 (7.0)	10 (3.5)
5	I spend long hours sitting when using the computer or preparing lectures.	110 (38.6)	115 (40.4)	30 (10.5)	20 (7.0)	10 (3.5)
6	During breaks, I often remain seated instead of moving	95 (33.3)	110	40 (14.0)	25 (8.8)	15 (5.3)



S/N	Statements on Daily Sitting Time	SA (5) (%)	FA (4) (%)	FUD (3) (%)	FD (2) (%)	FS (1) (%)
	around.		(38.6)			
7	My daily routine involves more sitting than standing or walking.	125 (43.9)	100 (35.1)	30 (10.5)	20 (7.0)	10 (3.5)
8	I spend a significant amount of time sitting during meetings and administrative duties.	110 (38.6)	115 (40.4)	30 (10.5)	20 (7.0)	10 (3.5)
9	I rarely have opportunities during work to reduce my sitting time.	120 (42.1)	110 (38.6)	25 (8.8)	20 (7.0)	10 (3.5)
10	I usually complete most of my working day while sitting.	130 (45.6)	100 (35.1)	25 (8.8)	20 (7.0)	10 (3.5)

Table 2 presents the frequency and percentage distribution of respondents' responses to statements measuring daily sitting time among staff of Colleges of Education in Borno State. The findings indicate a high prevalence of sedentary behaviour among the respondents, as the majority reported spending substantial portions of their working day sitting. Specifically, 79.0% of the respondents agreed that they spend a large part of their working day sitting while performing their duties, while an equal proportion indicated that their jobs require them to sit for long hours without frequent movement. Furthermore, 78.9% agreed that they usually sit continuously for more than two hours during work activities, and 77.2% reported that most of their professional tasks are carried out while seated. These findings suggest that prolonged sitting is a common and integral feature of respondents' occupational responsibilities. The results further reveal that the sedentary nature of respondents' work extends beyond routine job tasks to academic and administrative activities. A combined 79.0% of respondents agreed that they spend long hours sitting when using computers or preparing lectures, while 71.9% indicated that they often remain seated during breaks. In addition, 79.0% agreed that their daily routine involves more sitting than standing or walking. These findings demonstrate that sitting dominates not only work-related responsibilities but also other aspects of respondents' daily routines, reflecting a predominantly desk-based work environment characterized by limited physical movement. The findings also show that workplace demands and organizational activities significantly contribute to daily sitting time. About 79.0% of respondents agreed that they spend a significant amount of time sitting during meetings and administrative duties. Moreover, the highest level of agreement (80.7%) was recorded for the statements that respondents rarely have opportunities during work to reduce their sitting time and that they complete most of their working day while sitting.

Research Question Two: What are the perceived barriers to physical activity among staff of Colleges of Education in Borno State, Nigeria?

Table 3: Frequency and Percentage Distribution of Respondents' Perceived Barriers to Physical Activity (N = 285)

S/N	Statements on Perceived Barriers	SA (5) (%)	FA (4) (%)	FUD (3) (%)	FD (2) (%)	FS (1) (%)
1	I often feel too tired after work to engage in physical activity.	110 (38.6)	95 (33.3)	35 (12.3)	30 (10.5)	15 (5.3)
2	I lack sufficient time to participate in regular exercise.	125 (43.9)	90 (31.6)	35 (12.3)	25 (8.8)	10 (3.5)
3	I feel I do not have access to suitable exercise facilities near my workplace or home.	70 (24.6)	90 (31.6)	55 (19.3)	40 (14.0)	30 (10.5)
4	I am often too busy with work or family responsibilities to exercise.	115 (40.4)	100 (35.1)	35 (12.3)	25 (8.8)	10 (3.5)
5	I feel that exercise is not enjoyable or motivating enough.	50 (17.5)	75 (26.3)	70 (24.6)	50 (17.5)	40 (14.0)



S/N	Statements on Perceived Barriers	SA (5) (%)	F A (4) (%)	F UD (3) (%)	F D (2) (%)	F SD (1) (%)
6	I am concerned about the costs associated with gym or fitness programs.	40 (14.0)	65 (22.8)	70 (24.6)	60 (21.1)	50 (17.5)
7	I am unsure about how to start or maintain a physical activity routine.	60 (21.1)	80 (28.1)	65 (22.8)	50 (17.5)	30 (10.5)
8	I feel that my health condition limits my ability to perform physical activity.	55 (19.3)	70 (24.6)	60 (21.1)	60 (21.1)	40 (14.0)
9	I do not have enough social support from colleagues or family to be active.	35 (12.3)	60 (21.1)	65 (22.8)	65 (22.8)	60 (21.1)
10	I often prioritize other activities over physical exercise.	80 (28.1)	90 (31.6)	50 (17.5)	40 (14.0)	25 (8.8)

Table 3 presents the frequency and percentage distribution of respondents' perceived barriers to physical activity among staff of Colleges of Education in Borno State. The findings reveal that work-related fatigue and insufficient time are among the most significant barriers to participation in regular physical activity. A combined 71.9% of respondents agreed that they often feel too tired after work to engage in physical activity, while 75.5% reported lacking sufficient time to participate in regular exercise. These results suggest that demanding work schedules and exhaustion associated with occupational responsibilities substantially limit opportunities for physical activity among staff members. The results further indicate that occupational and family commitments, as well as limited access to exercise facilities, contribute to reduced physical activity participation. While 56.2% of respondents agreed that they lacked access to suitable exercise facilities near their workplace or home, a higher proportion (75.5%) reported being too busy with work or family responsibilities to exercise. These findings imply that competing responsibilities and environmental constraints create significant challenges for maintaining an active lifestyle among the respondents. The findings also show that motivational, financial, health-related, and social factors influence physical activity participation to varying degrees. Less than half of the respondents agreed that exercise was not enjoyable or motivating enough (43.8%), that health conditions limited their ability to engage in physical activity (43.9%), or that they were unsure how to start or maintain a physical activity routine (49.2%). Financial concerns and lack of social support were among the least reported barriers. However, 59.7% of respondents indicated that they often prioritized other activities over exercise.

Test of Hypothesis

There is no significant relationship between daily sitting time and total perceived-barrier scores to physical activity among staff of Colleges of Education in Borno State.

Table 4: Pearson Product-Moment Correlation (PPMC) on Relationship Between Daily Sitting Time and Total Perceived-Barrier Scores (N = 285)

Variables	Mean	Std. Dev.	N	df	r	P	Decision
Daily Sitting Time	3.6800	0.51240	285	283	0.487	0.0001	Significant
Total Perceived-Barrier Scores	3.5400	0.49830	285				

Table 4 presents the results of the Pearson Product-Moment Correlation (PPMC) analysis conducted to determine the relationship between daily sitting time and total perceived-barrier scores to physical activity among staff of Colleges of Education in Borno State. The results show that respondents recorded a mean score of 3.68 (SD = 0.512) for daily sitting time, indicating a relatively high level of sedentary behaviour among the staff. Similarly, the mean score for total perceived-barrier scores was 3.54 (SD = 0.498), suggesting that respondents experienced moderate to high levels of perceived barriers to physical activity. The Pearson correlation coefficient obtained was $r = 0.487$, indicating a moderate positive relationship between daily sitting time and perceived barriers to physical activity. This positive correlation implies that as daily sitting time increases, perceived barriers to physical activity also tend to increase. In other words, staff members who spend longer periods sitting during their daily occupational activities are more likely to perceive greater obstacles to engaging in physical activity. The



probability value associated with the correlation coefficient was $p = 0.0001$, which is lower than the stipulated level of significance of 0.05. Since the calculated p-value is less than 0.05 ($p < 0.05$), the relationship observed is statistically significant. Based on this result, the null hypothesis stating that there is no significant relationship between daily sitting time and total perceived-barrier scores to physical activity among staff of Colleges of Education in Borno State was rejected. Since $p = 0.0001 < 0.05$, the null hypothesis was rejected. The study concluded that a significant positive relationship exists between daily sitting time and total perceived-barrier scores to physical activity among staff of Colleges of Education in Borno State. This implies that higher levels of daily sitting are associated with greater perceived barriers to engaging in physical activity.

Discussion of the Findings

The findings of this study revealed a significant positive relationship between daily sitting time and total perceived-barrier scores to physical activity among staff of Colleges of Education in Borno State ($r = 0.487$, $p < .05$). This result indicates that staff who spend longer periods sitting during their daily occupational activities are more likely to perceive greater barriers to engaging in physical activity. The finding supports the growing body of evidence suggesting that sedentary behaviour is closely associated with factors that discourage participation in physical activity, including lack of time, fatigue, and competing work demands. According to Owen, Healy, Matthews, and Dunstan (2010), prolonged sitting has become a common feature of modern occupational environments and is often associated with reduced opportunities for movement and exercise. Similarly, Bauman, Reis, Sallis, Wells, Loos, and Martin (2012) observed that workplace-related constraints frequently limit participation in physical activity, thereby increasing perceptions of barriers among employees.

The moderate positive correlation observed in this study is consistent with previous empirical findings that have linked sedentary occupational lifestyles with lower levels of physical activity participation. For instance, Church et al. (2011) reported that technological advancements and desk-based work environments have significantly increased sitting time among employees, resulting in reduced energy expenditure and diminished engagement in physical activity. Likewise, Prince, Saunders, Gresty, and Reid (2014) found that individuals who spend a substantial proportion of their day sitting are more likely to report barriers such as insufficient time, lack of motivation, and work-related fatigue. The present finding therefore suggests that the sedentary nature of academic and administrative responsibilities in Colleges of Education may contribute to the perception that engaging in physical activity is difficult or impractical. The rejection of the null hypothesis further highlights the importance of addressing sedentary behaviour as part of workplace health promotion initiatives. The socio-ecological model proposes that environmental and organizational factors can significantly influence individual health behaviours (Sallis, Owen, & Fisher, 2015).

Conclusion

Based on the findings, the null hypothesis which stated that there is no significant relationship between daily sitting time and total perceived-barrier scores to physical activity among staff of Colleges of Education in Borno State was rejected. The study therefore concludes that sedentary behaviour and perceived barriers are closely linked constructs that reinforce each other in academic work environments. The study established a significant positive relationship between daily sitting time and perceived barriers to physical activity among staff of Colleges of Education in Borno State, Nigeria. This finding implies that as employees spend more time engaged in sedentary activities, particularly prolonged sitting during academic and administrative duties, they are more likely to experience increased perceived obstacles to engaging in physical activity.

Recommendations

Based on the findings, the followings were recommended:

1. Management of Colleges of Education in Borno State should establish structured workplace physical activity programmes aimed at reducing prolonged sitting among staff. These programmes should include scheduled active breaks during working hours, stretching sessions, walking meetings, and periodic movement reminders.



2. College administrators should invest in workplace environments that facilitate physical activity and reduce sedentary behaviour. This can be achieved through the provision of walking paths, recreational facilities, fitness centres, sit-stand workstations, and designated exercise spaces within the institutions.
3. Regular health promotion campaigns, seminars, workshops, and counselling programmes should be organized to educate staff on the health risks associated with prolonged sitting and the benefits of maintaining an active lifestyle.

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