PHYSICAL ACTIVITY AS A MODERATOR OF THE RELATIONSHIP BETWEEN CHILDHOOD TRAUMA, SUICIDAL IDEATION AND SELF-IMAGE AMONG UNIVERSITY UNDERGRADUATES

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Abstract

Childhood trauma, including abuse and bereavement, has been linked to adverse mental health outcomes such as suicidal ideation and negative self-image. Physical activity is often promoted as a protective factor against these outcomes; however, its role in trauma-exposed populations remains unclear. This study examined the relationships between childhood abuse, bereavement trauma, physical activity, suicidal ideation, and self-image among undergraduates of the University of Lagos. A cross-sectional survey design was employed, with data collected from 396 students using validated self-report measures. Descriptive statistics, Pearson correlation, and hierarchical multiple regression analyses were conducted using SPSS 27. Results indicated that physical activity was not significantly related to suicidal ideation ($r = .012$, $p = .810$), while a small negative correlation was observed between physical activity and self-image ($r = - .116$, $p = .021$). Additionally, physical activity did not significantly moderate the relationships between childhood trauma and suicidal ideation or self-image (p-values ranged from .378 to .812). These findings suggest that, although beneficial for general well-being, physical activity alone may not buffer the psychological effects of childhood abuse and bereavement in this population. Comprehensive interventions integrating physical activity with psychosocial support are recommended to address trauma-related mental health outcomes among undergraduates.

Key Words: Childhood trauma, Physical activity, Suicidal ideation, Self-image, Undergraduates.

Introduction

Childhood is a critical stage in human development during which emotional stability, identity, and resilience are formed (Shonkoff et al., 2015). When a child is exposed to abuse or traumatic loss, these foundational aspects of mental health may become disrupted (Norman et al., 2015). Child abuse, which includes physical, emotional, and sexual abuse as well as neglect, is widely recognized as a major public health issue globally (World Health Organization [WHO], 2016). Similarly, bereavement trauma, particularly the loss of a parent or primary caregiver during childhood, can create significant emotional and psychological instability (Murphey et al., 2016). Both forms of trauma have been linked to long-term mental health outcomes including depression, anxiety, distorted self-image, and suicidal ideation (Afifi et al., 2016).

Globally, suicide is one of the leading causes of death among young people, and early-life trauma has been consistently associated with increased risk of suicidal thoughts and behaviours (WHO, 2019). According to the World Health Organization, more than 700,000 people die by suicide every year, with a large proportion being individuals aged 15 to 29 (WHO, 2019). Traumatic childhood experiences compromise emotional regulation and self-concept, leaving survivors vulnerable to low self-esteem, hopelessness, and difficulties in coping with academic and social stressors during adolescence and early adulthood (Russell et al., 2021).

Physical activity has been widely recognized as a protective factor for mental health, with substantial evidence indicating its role in reducing psychological distress and enhancing emotional well-being. Regular engagement in physical activity is associated with improved mood regulation, reduced symptoms of depression and anxiety, and enhanced self-esteem among young adults (Biddle et al., 2019). For individuals with histories of childhood abuse or bereavement trauma, physical activity may serve as a positive coping mechanism by fostering resilience, social connectedness, and a sense of mastery (Teychenne et al., 2020). Exercise-induced neurobiological changes, such as increased endorphin release and improved stress response regulation, may further buffer the adverse psychological effects of early-life trauma.

Even while it is commonly known that physical activity protects against stress, anxiety, and depression, children who have experienced trauma may not benefit as much from it. Exercise's usual mood-boosting and stress-relieving effects can be diminished by trauma, especially bereavement-related trauma, which can dysregulate the hypothalamic-pituitary-adrenal (HPA) axis and change neurobiological stress responses (Bessel van der Kolk, 2014). In addition to emotional numbness, avoidance, and hyperarousal, children going through acute grieving may also experience decreased interest and participation in social or structured physical activities.

Furthermore, trauma exposure is often associated with environmental instability, reduced social support, and socioeconomic constraints, all of which may limit consistent participation in physical activity (Ann S. Masten, 2014). In such contexts, physical activity alone may be insufficient without concurrent psychological interventions. Research also suggests that trauma-related symptoms such as dissociation or intrusive memories may interfere with the attentional and self-regulatory mechanisms through which exercise typically promotes resilience (Bruce D. Perry, 2006). Despite these seemingly conflicting findings, among university undergraduates, participation in physical activity may mitigate academic stress and promote healthier self-perceptions during a critical transitional period. Despite these benefits, limited empirical research has examined the protective role of physical activity in the relationship between childhood trauma and suicidal ideation within the Nigerian undergraduate context. This gap underscores the need to investigate physical activity as a potential moderating factor in trauma-related mental health outcomes.

Statement of the Problem

Childhood abuse and bereavement trauma remain significant yet underexplored psychosocial challenges affecting the mental health of university undergraduates in Nigeria. Many students enter higher education carrying unresolved traumatic experiences that may negatively influence their self-image, emotional regulation, and coping capacity. These vulnerabilities can increase susceptibility to suicidal ideation, particularly in the face of academic, social, and financial stressors commonly encountered during university life. While prior studies have established links between early-life trauma and adverse mental health outcomes, limited attention has been given to protective behavioral factors that may attenuate these effects. Physical activity, although widely acknowledged for its mental health benefits, has not been sufficiently examined as a buffering mechanism within this population. The absence of context-specific evidence limits the

development of effective prevention and intervention strategies on Nigerian university campuses. Therefore, there is a critical need to examine the combined and interactive effects of childhood abuse, bereavement trauma, and physical activity on suicidal ideation and self-image among undergraduates of the University of Lagos.

Specific Purposes of the Study

1. To determine the relationship between levels of physical activity and suicidal ideation among undergraduates with a history of childhood abuse or bereavement trauma.
2. To determine the relationship between levels of physical activity and self-image among undergraduates with a history of childhood abuse or bereavement trauma.
3. To examine whether physical activity moderates the relationship between childhood abuse, bereavement trauma, suicidal ideation and self-image among undergraduates of the University of Lagos.

Research Questions

1. What is the relationship between level of physical activity and suicidal ideation among undergraduates of the University of Lagos who have experienced childhood abuse or bereavement trauma?
2. What is the relationship between level of physical activity and self-image among undergraduates of the University of Lagos who have experienced childhood abuse or bereavement trauma?
3. Does level of physical activity moderate the relationship between childhood abuse, bereavement trauma, and suicidal ideation and self-image among undergraduates of the University of Lagos?

Research Hypotheses

1. Level of physical activity has no significant relationship with suicidal ideation among undergraduates of the University of Lagos with a history of childhood abuse or bereavement trauma.
2. Level of physical activity has no significant relationship with self-image among undergraduates of the University of Lagos with a history of childhood abuse or bereavement trauma.
3. Level of physical activity does not significantly moderate the relationship between childhood abuse, bereavement trauma, and suicidal ideation and self-image among undergraduates of the University of Lagos.

Methodology

This study adopted a quantitative research method to investigate the relationships between childhood abuse, bereavement trauma, physical activity, suicidal ideation, and self-image among undergraduates of the University of Lagos. The choice of a quantitative approach allows for the systematic measurement and statistical analysis of variables, enabling the identification of patterns, associations, and potential moderating effects. Data were collected using structured self-report questionnaires that assessed participants? levels of physical activity, experiences of childhood abuse and bereavement trauma, suicidal ideation, and self-image. The target population comprised full-time undergraduate students of the University of Lagos, and a sample was drawn using an appropriate sampling technique to ensure representativeness. Ethical considerations, including informed consent, confidentiality, and voluntary participation, were strictly observed throughout the study. The collected data were analyzed using descriptive and inferential statistical techniques, including correlation, regression, and moderation analyses, to test the study hypotheses and answer the research questions.

Population of Study

The population of this study comprises all undergraduate students of the University of Lagos across various faculties and departments. This population was chosen because university students are at a developmental stage where past traumatic experiences may influence their mental health, particularly in areas such as self-image and suicidal ideation. (Ogunyemi, Adeoye, & Alabi, 2018; Umeh & Ajiboye, 2019).

3.3 Sample and Sampling Technique

The sample size for this study was determined using Yamane? s formula (1967) for calculating sample size from a known population (Scott et al., 2020). The formula is expressed as:

$$n = \frac{N}{1 + N(e)2}$$

Where:

n = sample size

N = total population e = margin of error (0.05 for 95% confidence level)

The sample size was calculated as follows:

$$n = \frac{35{,}000}{1 + 35{,}000(0.05)2}$$

$$n = \frac{35{,}000}{1 + 35{,}000(0.0025)}$$

$$n = \frac{35{,}000}{1 + 87.5}$$

$$n = \frac{35{,}000}{88.5}$$

$$n = 396$$

Thus, the recommended sample size for this study is approximately 396 students.

A stratified random sampling technique was used to ensure fair representation across faculties, departments, and academic levels within the University of Lagos.

Research Instrument

The research instrument used in this study was developed based on insights gathered from extensive review of existing literature, including validated scales related to child abuse, bereavement trauma, suicidal ideation, self-image, and physical activity. Items were carefully selected and adapted to align with the objectives of the study and the characteristics of the target population.

The questionnaire was reviewed by an expert in measurement to ensure that the content was relevant, clearly worded, and logically structured. Suggestions from the expert led to adjustments in phrasing and formatting to enhance clarity and appropriateness for undergraduate respondents.

Data for this study were gathered through a structured, self-administered questionnaire that was divided into five main sections. The first section (Section A) collected demographic details such as age, level of study, faculty, and relationship status. Section B focused on child abuse and was adapted from the Childhood Trauma Questionnaire (CTQ). Section C addressed bereavement trauma, drawing on standard bereavement assessment items that address on early-life caregiver loss. Section D measured aspects of mental health, including suicidal ideation using items from the Beck Suicidal Ideation Scale, as well as self-image through items adapted from the Rosenberg Self-Image Scale. Finally, Section E assessed physical activity using the Godin Leisure-Time Exercise Questionnaire. All the scales used were based on Likert-type response formats, which facilitated ease of analysis.

Data Analysis and Results

The Statistical Package for the Social Sciences (SPSS) version 27 was used to analyze the data gathered for this study. The demographics of the respondents and important research variables were summarized using descriptive statistics, such as frequencies, percentages, means, and standard deviations. The study hypotheses were tested at the 0.05 level of significance using inferential statistical methods, namely regression-based moderation analysis and Pearson Product-Moment Correlation. To aid with comprehension and clarity, the results are displayed in tables with narrative explanations.

Personal data of participants

Table 1: Demographic Characteristics of Respondents (N = 396)

Variable	Category	Frequency	Percentage (%)
Marital Status	Single	178	44.9
	In a relationship	146	36.9
	Married	55	13.9
	Other	17	4.3
	Total	**396**	**100**
Faculty	Education	132	33.3
	Environmental Sciences	132	33.3
	Arts	132	33.3
	Total	**396**	**100**
Level of Study	100 Level	93	23.5
	200 Level	92	23.2
	300 Level	81	20.5
	400 Level	69	17.4
	500 Level	61	15.4
	Total	**396**	**100**
Age (years)	16? 20	157	39.6
	21? 25	165	41.7
	26? 30	63	15.9
	31 and above	11	2.8
	Total	**396**	**100**

Note. Percentages may not total exactly 100 due to rounding.

Description of Demographic Characteristics

Table 1 presents the demographic characteristics of the respondents. With respect to marital status, the majority of the respondents were single (44.9%), while 36.9% reported being in a relationship, 13.9% were married, and 4.3% fell into other categories. Respondents were evenly distributed across the three Faculties included in the study namely; Education, Environmental Sciences, and Arts each accounting for 33.3% of the sample.

Regarding level of study, students from all undergraduate levels were represented, with the highest proportion drawn from 100 level (23.5%) and 200 level (23.2%), while 500 level students constituted the smallest group (15.4%). In terms of age distribution, most respondents were between 21 and 25 years (41.7%) and 16 to 20 years (39.6%), indicating that the sample largely comprised young adults typical of undergraduate populations. Overall, the demographic distribution suggests a diverse and representative sample suitable for examining physical activity, trauma exposure, and mental health outcomes among undergraduates.

Testing hypotheses

Hypothesis one was tested using Pearson correlation coefficient at 0.05 level of significance, the results are presented in the table below.

Table 2: Descriptive Statistics and Pearson Correlation between Physical Activity and Suicidal Ideation (N = 396)

Variable	Mean	SD	r	p
1. Suicidal Ideation	2.02	0.42	0.01	0.81
2. Physical Activity	3.17	0.79		

Hypothesis One was tested using the Pearson Product? Moment Correlation to examine the relationship between level of physical activity and suicidal ideation among undergraduates of the University of Lagos. The results indicated a very weak positive correlation between physical activity and suicidal ideation ($r = .012$, $p = .810$). This relationship was not statistically significant at the .05 level, suggesting that physical activity was not associated with suicidal ideation in the study sample. Consequently, the null hypothesis (Ho_1), which states that level of physical activity has no significant relationship with suicidal ideation among undergraduates with a history of childhood abuse or bereavement trauma, was **not rejected**. This finding implies that, within the context of this study, variations in physical activity levels did not significantly influence suicidal ideation among the respondents.

Testing of Hypothesis Two

Hypothesis Two examined the relationship between level of physical activity and self-image among undergraduates of the University of Lagos. The hypothesis was tested using the Pearson Product Moment Correlation, which is appropriate for assessing the strength and direction of the linear relationship between two continuous variables. Descriptive statistics were first computed to summarize the distribution of physical activity and self-image scores, after which correlation analysis was conducted at the 0.05 level of significance.

Table 3: Descriptive Statistics and Pearson Correlation between Physical Activity and Self-Image (N = 396)

Variable	Mean	SD	r	p
1. Physical Activity	3.17	0.79	-.116	0.021
2. Self-Image	2.9	0.5		

The results revealed a statistically significant negative correlation between physical activity and self-image ($r = -.12$, $p = .021$). Although the magnitude of the relationship was small, the finding indicates that higher levels of physical activity were associated with lower self-image scores among the respondents. Based on this result, the null hypothesis (Ho_2), which states that level of physical activity has no significant relationship with self-image among undergraduates with a history of childhood abuse or bereavement trauma, was rejected. This suggests that physical activity is significantly related to self-image within the study population. The direction of the relationship should be interpreted in light of the scoring orientation of the self-image scale, as lower scores may reflect either more positive or more negative self-image depending on the instrument used.

Testing of hypothesis three

Hypothesis Three examined whether physical activity moderates the relationships between childhood trauma (childhood abuse and bereavement) and mental health outcomes (suicidal ideation and self-image) among undergraduates of the University of Lagos. Moderation analysis allows researchers to determine whether the strength or direction of the relationship between a predictor (childhood trauma) and an outcome (suicidal ideation or self-image) changes at different levels of a third variable (physical activity). In this study, hierarchical multiple regression was employed to test the moderating effect of physical activity. Interaction terms were created by multiplying standardized scores of physical activity with standardized scores of each trauma variable. The significance of these interaction terms was then assessed to determine whether physical activity significantly altered the relationships between trauma and mental health outcomes.

Table 4: Moderation Analysis of Physical Activity on the Relationship between Childhood Trauma and Mental Health Outcomes (N = 396)

Outcome Variable	Interaction Term	Sig. (p)
Suicidal Ideation	Physical Activity × Childhood Abuse	0.453
Suicidal Ideation	Physical Activity × Bereavement Trauma	0.378
Self-Image	Physical Activity × Childhood Abuse	0.736
Self-Image	Physical Activity × Bereavement Trauma	0.812

Note. Sig. (p) values represent the significance levels of the interaction terms in the regression models. All p-values are greater than .05, indicating that physical activity did not significantly moderate the relationships between childhood abuse, bereavement trauma, and suicidal ideation or self-image.

Hypothesis Three stated that level of physical activity does not significantly moderate the relationship between childhood abuse, bereavement trauma, and suicidal ideation and self-image among undergraduates of the University of Lagos. Moderation was tested using hierarchical multiple regression by examining the significance of the interaction terms between physical activity and each trauma variable.

The results showed that the interaction between physical activity and childhood abuse in predicting suicidal ideation was not statistically significant (p = .453). Similarly, the interaction between physical activity and bereavement trauma in predicting suicidal ideation was not significant (p = .378). In addition, physical activity did not significantly moderate the relationship between childhood abuse and self-image (p = .736), nor the relationship between bereavement trauma and self-image (p = .812). All interaction terms had p-values greater than .05, indicating the absence of significant moderating effects.

Based on these findings, the null hypothesis (Ho_3) was not rejected. This implies that, within the context of this study, level of physical activity did not buffer or alter the relationships between childhood abuse, bereavement trauma, and the mental health outcomes of suicidal ideation and self-image among the undergraduates studied.

Discussion of Findings

This study explored the relationships between childhood trauma (childhood abuse and bereavement), physical activity, suicidal ideation, and self-image among undergraduates of the University of Lagos.

The hypothesis one was generated to investigated the connection between suicidal thoughts and physical exercise. There was no significant link, according to the results (r =.012, p =.810). This result is consistent with the study by Murphey, Barry, and Vaughn (2016), which found that among those with a history of severe trauma, physical activity may not be enough to lessen suicide ideation. On the other hand, it deviates from other earlier research that suggests regular exercise helps lessen suicide thoughts and depression symptoms (Afifi et al., 2016). The disparity could be explained by the particular circumstances of Nigerian undergraduates, whose exposure to sociocultural and academic pressures may exceed the benefits of physical activity alone.

Hypothesis two assessed the relationship between physical activity and self-image, revealing a small but statistically significant negative correlation (r = - .116, p = .021). This contrasts with the majority of studies reporting positive associations between physical activity and self-esteem or body image (Norman et al., 2015; Shonkoff et al., 2015). One plausible reason for this difference is the cultural and psychosocial context: Nigerian undergraduates may perceive their body image and social comparison pressures differently, and engagement in physical activity may highlight body dissatisfaction rather than enhance self-image.

Hypothesis three was postulated to find out whether the association between childhood trauma and mental health outcomes is mitigated by physical activity. The moderating effects were not found to be significant (p-values ranging from.378 to.812). This supports the findings of Russell, Masten, and Sroufe (2021), who proposed that behavioral therapies, such physical activity, may not be sufficient to mitigate the long-term effects of early-life trauma. It is different, though, from research conducted in Western settings that has shown some protective effects of exercise on symptoms associated with trauma (WHO, 2016). The discrepancy may be explained by changes in the kind, level, and setting of physical activity as well as disparities in the severity of trauma, coping mechanisms, and cultural attitudes toward exercise.

Overall, the findings indicate that while physical activity has known general benefits for well-being, its protective role in mitigating the psychological effects of childhood abuse and bereavement may be limited among Nigerian undergraduates. This highlights the need for comprehensive, culturally-sensitive interventions that combine physical activity with psychological support to effectively address trauma-related mental health outcomes.

Conclusions

This study provides important insights into the interplay between childhood trauma, physical activity, and mental health outcomes among undergraduates. The key conclusions are as follows:

1. Physical activity was not significantly related to suicidal ideation among students with a history of childhood trauma.

2. A small negative association was observed between physical activity and self-image, indicating potential complexities in how students perceive themselves in relation to physical activity.
3. Physical activity did not moderate the effects of childhood abuse or bereavement trauma on suicidal ideation or self-image.
4. These results underscore that childhood trauma exerts persistent effects on mental health that may not be easily mitigated by physical activity alone.
5. The study contributes to understanding the limitations of physical activity as a sole protective factor in trauma-affected populations and suggests the need for comprehensive interventions.

Recommendations

Based on the findings, the following recommendations are made:

1. Integrated Interventions: Universities should consider combining physical activity programs with mental health counselling or therapy to support students with a history of trauma.
2. Awareness and Screening: Early screening for childhood trauma and mental health risks can help identify students who may require additional psychosocial support.
3. Further Research: Future studies should examine the role of different types of physical activity (e.g., team sports, resistance training, mindfulness-based movement) and their interaction with psychosocial interventions.
4. Cultural Considerations: Researchers should explore cultural and societal factors that may influence the relationship between physical activity and self-image, especially in Nigerian university populations.

References

Afifi, T. D., Joseph, S., Aldeis, D., & MacMillan, H. L. (2016). Childhood maltreatment and mental health: Implications for intervention. Journal of Adolescent Health, 59(6), 582? 589. https://doi.org/10.1016/j.jadohealth.2016.06.008

Masten, A. S. (2014). Ordinary magic: Resilience in development. Guilford Press.

Murphey, D., Barry, M., & Vaughn, B. (2016). Child bereavement and mental health outcomes: A review. Child Trends Research Brief, 1? 12.

Norman, R. E., Byambaa, M., De, R., Butchart, A., Scott, J., & Vos, T. (2015). The long-term health consequences of child physical abuse, emotional abuse, and neglect: A systematic review and meta-analysis. PLoS Medicine, 12(11), e1001925. https://doi.org/10.1371/journal.pmed.1001925

Perry, B. D. (2006). Applying principles of neurodevelopment to clinical work with maltreated and traumatized children. In N. B. Webb (Ed.), Working with traumatized youth in child welfare (pp. 27? 52). Guilford Press.

Russell, P., Masten, A., & Sroufe, L. A. (2021). Developmental pathways of resilience in trauma-exposed youth. Development and Psychopathology, 33(2), 345? 360. https://doi.org/10.1017/S0954579420001040

Shonkoff, J. P., Garner, A. S., Siegel, B. S., Dobbins, M. I., Earls, M. F., McGuinn, L., ? Wood, D. L. (2015). The lifelong effects of early childhood adversity and toxic stress. Pediatrics, 129(1), e232? e246. https://doi.org/10.1542/peds.2011-2663

van der Kolk, B. (2014). The body keeps the score: Brain, mind, and body in the healing of trauma. Viking.

World Health Organization. (2016). Child maltreatment: Factsheet. https://www.who.int/news-room/fact-sheets/detail/child-maltreatment

World Health Organization. (2019). Suicide in the world: Global health estimates. https://www.who.int/publications/i/item/suicide-in-the-world