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ORIGINAL ARTICLE

Quality of life and satisfaction with life among community dwelling older adults based on their level of physical activity: Cross-sectional study

Abdulsalam Yakasai[1], Hauwa Adam[2], Akindele Oyeniran[23], Auwal Abdullahi[2], Jibrin Sammani[24], and Musa Danazumi[56]

[1]CDUTCM-KEELE joint Health and Medical Sciences Institute, Department of Rehabilitation and Exercise Therapy, Chengdu, China

[2]Bayero University, Department of Physiotherapy, College of Health Sciences, Kano, Nigeria

[3]North West University, Faculty of Health Sciences, Lifestyle Diseases Research Entity Mahikeng Campus, Mahikeng, South Africa

[4]The Hong Kong Polytechnic University, Department of Physiotherapy, Hong Kong

[5]Federal Medical Center, Nguru, Department of Physiotherapy, Yobe State, Nigeria

[6] La Trobe University, College of Science, Health & Engineering Discipline of Physiotherapy, Bundoora, Victoria, Australia

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Abstract

Aging is a gradual and irreversible process characterized by progressive changes in body tissues and functions over time. As individuals age, their capacity to perform daily activities tends to decline, despite well-established evidence that physical activity (PA) plays a vital role in promoting successful aging. The objective of this study was to examine the influence of physical activity levels on health-related quality of life (HRQoL) and life satisfaction (LS) among community-dwelling older adults. A cross-sectional study was conducted, and a total of 263 completed questionnaires—including the PASE (Physical Activity Scale for the Elderly), WHOQOL-OLD, and LISAT-9—were collected. Independent t-tests were used to analyze differences in HRQoL and LS between groups, based on their physical activity levels. In addition, Pearson correlation coefficients were employed to explore the relationship between PA levels and the domains of HRQoL and LS among physically active and inactive older adults. The findings showed that older adults who reported higher levels of PA scored significantly better in the WHOQOL-OLD domains of sensory abilities, autonomy, past/present/future activities, and intimacy. They also demonstrated a significantly higher overall HRQoL. Furthermore, physically active participants reported higher scores in life satisfaction domains, including the ability to manage self-care (AMS), leisure satisfaction (LS), vocational situation (VS), financial satisfaction (FS), sexual life (SL), and partner relationships (PR), resulting in significantly greater overall life satisfaction. However, no significant correlations were found between PA levels and the specific HRQoL and LS domains. Despite this, the overall results suggest that increased levels of PA may contribute to enhanced HRQoL and LS in older adults.

Keywords: HRQoL · life satisfaction · physical activity · older adults

Correspondence:
Abdulsalam Yakasai
abdulpeace1@gmail.com

Introduction

Aging is a progressive and irreversible process that negatively affects both physical activity (PA) and health-related quality of life (HRQoL). As individuals age, they often encounter health challenges that lead to reduced physical and mental efficiency. Furthermore, the decline in PA among older adults contributes to the development of various chronic conditions, including hypertension, diabetes, obesity, cardiovascular diseases, strokes, and certain types of cancer (Booth et al., 2012; Lavie et al., 2019).

In 2020, the World Health Organization (WHO) emphasized that every individual should have the opportunity to live a long life in good health and participate fully in society. Since 2015, healthy aging and functional ability have been central to WHO's initiatives, particularly within the framework of the 2030 Agenda. Healthy aging is defined as "the process of developing and maintaining the functional ability that enables well-being in older age" (WHO, 2020). According to projections, by around 2030, the global population of individuals aged 85 years and older is expected to grow significantly, contributing to an overall global population of approximately 8.1 to 10.7 billion people. This indicates a substantial increase in the older demographic worldwide (UNDESA, 2011).

However, in 2020, the majority of African countries had less than 7% of their population aged 60 and above. By 2050, it is projected that more than one-fifth of the population in many countries within the region will be older adults. Despite this growth, the proportion of older people in Africa will still remain relatively low compared to developed nations. Additionally, Nigeria had the 19th largest older population in the world in 2020, a figure that is projected to rise to the 11th largest by 2050 (Bureau, 2020).

Due to declining mental health, reduced PA, and the onset of dementia, older individuals often experience a diminished social presence, leading to a sense of loss. These factors negatively impact health-related quality of life (HRQoL) by fostering feelings of social isolation (Kim, 2019). Moreover, life satisfaction (LS) is closely linked to health, as it reflects how individuals evaluate their lives as a whole rather than based on their current emotions. It serves as an important predictor of mortality, morbidity, depression, and overall health status throughout the life course. This association is particularly significant among older adults, as aging is commonly accompanied by illness, disability, and increased dependence on care and support (Koçak, 2017; Steptoe et al., 2015). Additionally, LS is considered a key component of successful aging (Teixeira Vaz et al., 2019).

The importance of PA in improving and maintaining health status has been emphasized in the recent guidelines for the prevention of cardiovascular diseases published by the American Heart Association (AHA) and the American College of Cardiology (ACC) (Arnett et al., 2019). PA offers numerous physical, psychological, and socioeconomic benefits. Moreover, active leisure and domestic forms of PA - such as walking, cycling, and housework - can directly contribute to the achievement of the Sustainable Development Goals as outlined by the World Health Organization (WHO) in its Global Action Plan on Physical Activity 2018–2030. This plan highlights the importance of PA not only for the current generation but also for future generations. Hence, PA holds significance for individuals, populations, and the public at large from a generational perspective (WHO, 2018).

Regular PA reduces the risk of numerous diseases in older adults, enhances functional capacity, supports successful aging, promotes healthier lifestyles, and improves HRQoL (Kashtanova et al., 2022; Marques et al., 2017; Marquez et al., 2020). Additionally, engaging in moderate-intensity PA for at least 3 hours per week can reduce the risk of mortality by 27%, whereas physical inactivity is associated with an increased risk of premature death by as much as 8.3% (Carlson et al., 2018).

Despite demographic, epidemiological, and anthropological shifts triggered by the aging process, PA continues to play a crucial role in supporting health and enhancing quality-adjusted life years among older adults. It is a key strategy for achieving healthy aging, with evidence suggesting it can increase longevity by 20–30% while improving overall well-being - including mental, emotional, and physical health. These health benefits are observed even among individuals who begin engaging in PA later in life. Psychologically, PA is associated with improved mood and reductions in depression and anxiety (Ramocha et al., 2017). Positive correlations have also been found between PA and LS (Maher et al., 2015), as well as between PA and happiness (Zhang et al., 2017).

However, despite widespread recognition of the benefits of PA, approximately 27.5% of adults worldwide do not meet current public health guidelines for PA (Guthold et al., 2018). There is

significant global variability in physical inactivity rates, with high-income countries reporting more than double the prevalence (36.8%) compared to low-income countries (16.2%) (Katzmarzyk et al., 2022). The relatively low prevalence in low-income countries may be partially attributed to insufficient data collection.

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However, African countries, including Nigeria, bear a disproportionately high burden of physical inactivity (PI), partly due to rapid urbanization and economic growth. These developments have led to increasingly unhealthy lifestyles and sedentary behaviors across many settings (World Health Organization, 2014). In Nigeria, the prevalence of PI is notably high, ranging from 25% to 57%, and is accompanied by a rising incidence of non-communicable diseases. Several factors contribute to this trend, including low levels of health literacy, sociocultural barriers, and widespread industrial activities that create environmental challenges in many Nigerian cities (Adeloye et al., 2021).

Understanding the influence of PA on both general and specific domains of HRQoL, as well as on LS, is essential for promoting health among older adults. While several studies in developed countries have explored the associations between PA, HRQoL, and LS, there remains a scarcity of research translating these findings to the Sub-Saharan African context. Therefore, the purpose of this study was to examine the influence of physical activity levels on HRQoL and life satisfaction among community-dwelling older adults in the Kano metropolis.

Method

Study design and participants selection

This was a cross-sectional survey conducted to determine the influence of physical activity levels on HRQoL and life satisfaction among community-dwelling older adults in the Kano metropolis. Participants included individuals aged 65 years and above who were able to walk 20 feet without any observable signs of altered physical function. Exclusion criteria included the presence of neurological disorders and significant cognitive impairment, defined as a Mini-Mental State Examination (MMSE) score of less than 24. Additionally, individuals with musculoskeletal conditions - such as severe knee osteoarthritis (OA) requiring the use of mobility aids - were excluded from the study.

Sample size estimation and sampling techniques

The minimum required sample size was calculated to be 119 using G*Power software version 3.1.9.7. However, the researchers decided to increase the sample size to 280 participants to enhance the response rate and ensure sufficient statistical power. A purposive sampling technique was employed for participant recruitment.

Ethical considerations

Ethical clearance for the study was obtained from the Research Ethics Committee of Bayero University, Kano. Each questionnaire was accompanied by an informed consent form, which explained that participation in the survey was entirely voluntary. The form also assured participants that their personal information would remain confidential and that the study results would be disseminated through academic conferences or peer-reviewed journal publications.

Study procedure

The purpose, procedures, and potential benefits of the study were clearly explained to all participants. Written informed consent was subsequently obtained from individuals who agreed to participate prior to the commencement of data collection. Socio-demographic information - including age, gender, and marital statuswas collected using a structured proforma. PA levels, HRQoL, and LS were assessed using the Physical Activity Scale for the Elderly (PASE), the World Health Organization Quality of Life for Older Adults (WHOQOL-OLD), and the Life Satisfaction Questionnaire-9 (LISAT-9), respectively.

Outcomes

1) PASE: The PASE is a brief, easily scored survey designed to assess PA in epidemiological studies of individuals aged 65 years and older. The questionnaire takes approximately 5 minutes to complete and combines information on leisure, household, and occupational activities. It assesses the types of activities typically chosen by older adults (e.g., walking, recreational activities, exercise, housework, yard

work, and caring for others). The frequency, duration, and intensity of activities performed over the previous week are used to assign a score, ranging from 0 to 793, with higher scores indicating greater PA. The PASE can be administered via mail or interview (either by telephone or in person). Total PASE scores are calculated by multiplying activity weights by activity frequencies.

2) WHOQOL-OLD: The WHOQOL-OLD consists of 24 items, rated on a five-point Likert scale, and is divided into six facets:

Facet 1 (Sensory Abilities): Assesses the impact of sensory impairments (e.g., taste, smell, sight, hearing, touch) on daily life, participation in activities, social interaction, and overall sensory functioning.

Facet 2 (Autonomy): Evaluates personal freedom, control over one's future, respect from others, and the ability to engage in desired activities.

Facet 3 (Past, Present, and Future Activities): Focuses on satisfaction with current opportunities for goal achievement, life recognition, and confidence about the future.

Facet 4 (Social Participation): Measures satisfaction with the amount and type of activities in which one can participate, as well as overall time management and engagement in community activities.

Facet 5 (Attitudes Toward Death and Dying): Evaluates concerns about how one will die, fears related to the dying process, and the experience of pain during death.

Facet 6 (Intimacy): Assesses companionship, love, opportunities to love and be loved, and overall intimate relationships.

Higher scores indicate better quality of life in each domain. The WHOQOL-OLD was administered face-to-face, with participants reflecting on the past two weeks. It was specifically developed for older adults (WHO, 2006; Lee et al., 2024).

3) LISAT-9: The LISAT-9 includes nine items, one of which assesses overall life satisfaction, while the remaining eight assess satisfaction in specific domains: vocational situation, financial situation, leisure, contact with friends, sexual life, activities of daily living, family life, and partnership relationships. Responses are rated on an ordinal scale from 1 (very dissatisfying) to 6 (very satisfying). Instead of summing scores, it is recommended to take the mean score for analysis. The LISAT-9 can be self-administered or interviewer-administered and typically takes about 5 minutes to complete (Oosterveer et al., 2017).

Data analysis

The socio-demographic characteristics of the participants were analyzed using descriptive statistics, including means, standard deviations, frequencies, and percentages. For inferential statistics, an independent t-test was used to compare the HRQoL scores and LS scores between physically active and physically inactive older adults. Additionally, the Pearson correlation coefficient was used to assess the relationship between PA levels and HRQoL domains, as well as between PA levels and LS domains among community-dwelling elderly individuals. Data were obtained from the questionnaires and analyzed using the Statistical Package for the Social Sciences (version 23.0; SPSS Inc., Chicago, IL, USA), with an alpha level set at 0.05 to indicate statistical significance.

Results

Socio-demographic characteristics of the participants

A total of 280 questionnaires (PASE, WHOQOL-OLD, and LISAT-9) were distributed to the study participants, with 263 (93.9%) completed and returned. The study included 128 (48.7%) physically active and 135 (51.3%) physically inactive older adults, with a mean age of 69.44 ± 3.51 years. The majority of participants (89.20%) were married, and 91.20% had a tertiary school qualification, as shown in Table 1.

Table 1. Socio-demographic profile of the study participant (N = 263)

Variables	Frequency N (%)
Gender	
Male	235(89.40%)
Female	28(10.60%)
Total	263(100%)
Age	Mean ± SD
Years	69.44 ± 3.51
Age group (years)	
65 -70	196(74.50%)
71-75	48(18.30%)
76-80	19(7.20%)
Total	263(100%)
Marital status	
Single	2(0.80%)
Married	233(88.60%)
Separated	18(6.80%)
Divorced	8(3.00%)

Widowed	2(0.80%)
Total	263(100)
Educational qualification	
Informal	0(0.00%)
Primary	0(0.00%)
Secondary	21(8.00)
Tertiary	242(92.00%)
Total	263(100%)
Religion	
Islam	260(98.90%)
Christianity	3(1.10%)
Total	263(100%)
Ethnic group	
Hausa	232(88.20%)
Yoruba	9(3.40%)
Igbo	4(1.50%)
Others	18(6.80%)
Total	263(100%)
Elderly Activity group	
Physically active	128(48.70%)
Physically inactive	135(51.30%)

Differences in HRQoL domains between the physically active and physically inactive groups

An independent t-test analysis was performed to determine differences in HRQoL domains between the groups. The test indicated significant differences between the physically active group and the physically inactive (PI) group in the following domains: Sensory abilities (SAB), Autonomy (AUT), Past, Present, and Future activities (PPF), and Intimacy (INT), with the mean scores of the Physically active group being higher than those of the Physically inactive group ($P < 0.05$). However, no significant difference was found in the Social Participation (SOP) and Death and Dying (DAD) domains between the two groups ($P > 0.05$), as shown in Table 2 and Figure 1.

Table 2. Differences in HRQoL domains between Physically active and physically inactive

Variables (HR-QoL Domains)	Physically active (N =128)	Physically inactive (N = 135)	t	p
	Mean ± SD	Mean ± SD		
Sensory abilities (SAB)	3.73 ± 0.94	2.11 ± 0.98	2.054	0.043
Autonomy (AUT)	3.85 ± 1.08	2.26 ± 1.14	2.852	0.047
Past, present and future activities (PPF)	3.30 ± 0.93	2.13 ± 1.13	0.383	0.035
Social participation (SOP)	3.79 ± 0.77	3.34 ± 0.90	0.368	0.714
Death and dying (DAD)	2.92 ± 0.99	2.83 ± 1.13	0.465	0.643
Intimacy (INT)	3.79 ± 0.69	2.90 ± 0.61	2.919	0.021

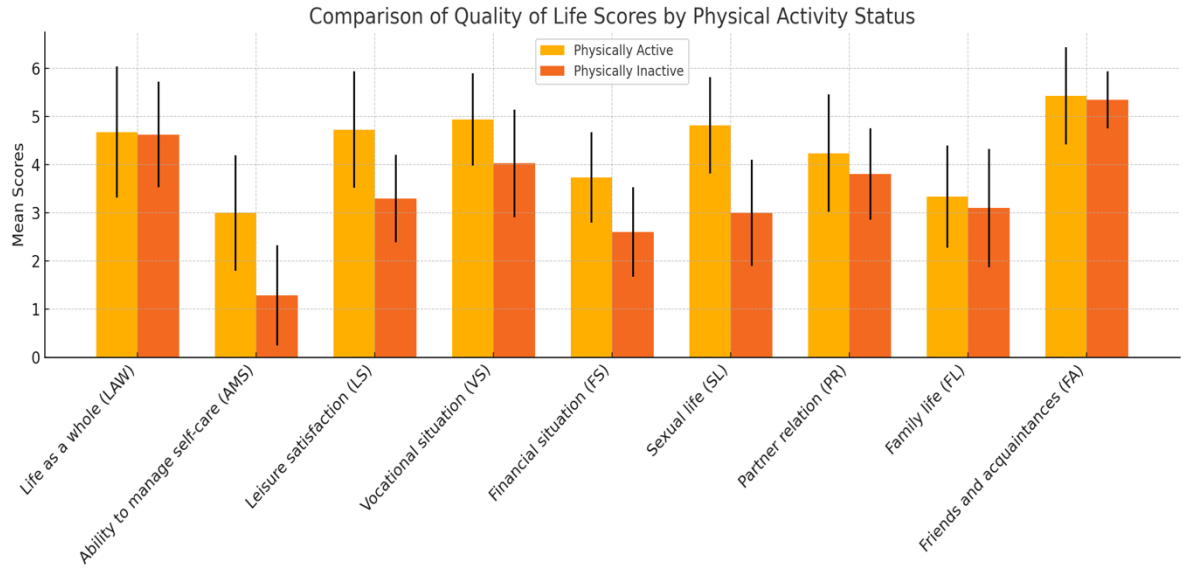

Figure 1. Comparison HRQoL domains between physically active and physically inactive groups

Differences in life satisfaction between physically active and physically inactive groups

An independent t-test was conducted to compare the life satisfaction domains between physically active and physically inactive elderly groups. Statistically significant differences ($P < 0.05$) were found in the following domains: Ability to Manage Self-care (AMS), Leisure Satisfaction (LS), Vocational Situation (VS), Financial Satisfaction (FS), Sexual Life (SL), and Partner Relationship (PR), with the mean scores of the Physically active group being higher than those of the Physically inactive group. In contrast, no significant difference was found in the domains of Life as a Whole (LAW), Family Life (FL), and Friends and Acquaintances (FA) ($P > 0.05$) between the two groups, as shown in Table 3 and Figure 2.

Table 3. Differences in life satisfaction domains between Physically active and physically inactive groups

Variables (Life satisfaction Domains)	Physically active (N =128)	Physically inactive (N = 135)	t	p
	Mean ± SD	Mean ± SD		
Life as a whole (LAW)	4.68 ± 1.36	4.63 ± 1.10	0.185	0.853
Ability to manage self-care (AMS)	3.00 ±1.20	1.29 ± 1.04	2.304	0.019
Leisure satisfaction (LS)	4.73 ± 1.21	3.30 ±0.91	3.452	0.001
Vocational situation (VS)	4.94 ± 0.96	4.03 ± 1.12	2.877	0.005
Financial situation (FS)	3.74 ± 0.94	2.60 ± 0.93	4.604	0.001
Sexual life (SL)	4.82 ± 1.00	3.00 ± 1.10	2.861	0.039
Partner relation (PR)	4.24 ± 1.22	3.81 ± 0.95	2.625	0.010
Family life (FL)	3.34 ± 1.06	3.10 ± 1.23	1.073	0.286
Friends and acquaintances (FA)	5.43 ± 1.01	5.35 ± 0.59	1.636	0.105

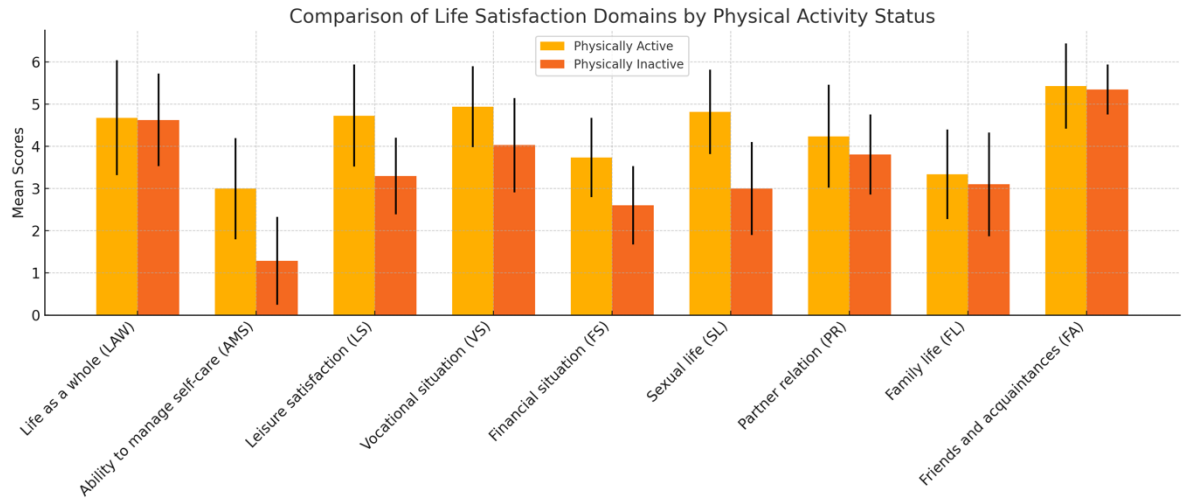

Figure 2. Comparison LS domains between physically active and physically inactive groups

Correlation between pa level and HRQoL domains among physically active and physically inactive older adults

The relationship between PA level and HRQoL domains was assessed using the Pearson correlation coefficient for both Physically active and physically inactive groups. The results indicated no statistically significant correlation between PA level and HRQoL domains. Lower PA levels were associated with decreased HRQoL. Furthermore, positive and negative correlations were observed between PA and HRQoL domains among the Physically active and physically inactive groups. For the Physically active group, positive correlations were found in the SAB, AUT, and DAD domains, while negative correlations were observed in the PPF, SOP, and INT domains. In contrast, the Physically inactive group showed positive correlations in the SOP and INT domains, while negative correlations were

found in the SAB, AUT, PPF, and DAD domains, as shown in Table 4.

Table 4. Relationship between physical activity level and quality of life domains scores

Variables	r	p
Sensory abilities vs PA	0.022	0.880
Autonomy vs PA	0.037	0.799
Past, present and future activities vs PA	-0.017	0.908
Social participation vs PA	-0.169	0.240
Death and dying vs PA	0.06	0.967
Intimacy vs PA	-0.239	0.095
Sensory abilities vs PI	-0.157	0.267
Autonomy vs PI	-0.052	0.714
Past, present and future activities vs PI	-0.233	0.096
Social participation vs PI	0.232	0.098
Death and dying vs PI	-0.119	0.399
Intimacy vs PI	0.017	0.902

Correlation between physical level and life satisfaction among physically active and physically inactive older adults

The relationship between PA level and LS was examined using the Pearson correlation coefficient for both Physically active and physically inactive groups. The results indicated no significant correlation between PA level and LS scores, with lower PA levels being associated with decreased LS. Negative correlations were observed between PA and LS among both the Physically active and physically inactive groups, as shown in Table 5.

Table 5. Relationship between physical activity level and life satisfaction scores

Variables	r	p
Life as a whole (LAW) Vs PA	-0.232	0.098
Ability to manage self-care (AMS) Vs PA	-0.119	0.399
Leisure satisfaction (LS) Vs PA	-0.017	0.902
Vocational situation (VS) Vs PA	-0.067	0.84
Financial situation (FS) Vs PA	-0.130	0.072
Sexual life (SL) Vs PA	-0.08	0.697
Partner relation (PR) Vs PA	-0.329	0.095
Family life (FL) Vs PA	-0.157	0.627
Friends and acquaintances (FA) Vs PA	-0.062	0.471
Life as a whole (LAW) Vs PI	-0.032	0.980
Ability to manage self-care (AMS) Vs PI	-0.073	0.979
Leisure satisfaction (LS) Vs PI	-0.017	0.908
Vocational situation (VS) Vs PI	-0.169	0.240
Financial situation (FS) Vs PI	-0.072	0.967
Sexual life (SL) Vs PI	-0.239	0.065
Partner relation (PR) Vs PI	-0.064	0.657
Family life (FL) Vs PI	-0.031	0.829
Friends and acquaintances (FA) Vs PI	-0.087	0.071

Discussion

Participation in PA is essential for healthy aging and plays a significant role in improving LS and quality of life (QoL) among older adults (Abebe Eyowas et al., 2016; Acree et al., 2006). Evidence suggests that regular moderate-intensity PA offers substantial health benefits, including the prevention and improvement of many diseases (Brach et al., 2004; Pedersen & Saltin, 2006). These health benefits are particularly pronounced for adults aged 65 and older, as the consequences of inactivity are more severe in this age group (Halaweh et al., 2015). Despite this, there is a lack of evidence regarding the influence of PA on HRQoL and LS among individuals aged 65 and older in sub-Saharan Africa, particularly in Nigeria. To the best of the authors' knowledge, no studies have specifically examined the impact of PA on HRQoL and LS domains in community-dwelling individuals aged 65 and older in Nigeria.

The results of the present study showed that community-dwelling older adults in Kano metropolis exhibited a good level of HRQoL and LS. However, higher levels of both HRQoL and LS were observed among physically active elderly individuals. The most recent study by Kieltyka-Slowik et al. (2024) corroborates our findings, showing a good level of QoL among physically active older adults aged 60-89. Additionally, the present study demonstrated that higher levels of PA did not equally influence all six HRQoL domains proposed in the WHOQOL-OLD module. On one hand, mean scores for the sensory abilities, autonomy, past, present & future activities, and intimacy domains were significantly higher among physically active older adults compared to physically inactive individuals. In contrast, mean scores for the social participation and death/dying domains did not differ significantly between the two groups.

These findings align with cross-sectional studies by Puciato et al. (2017), who found that sensory abilities, autonomy, past, present and future activities, and intimacy domains were significantly better in physically active participants. Similarly, a study by Guedes et al. (2011) examined the association between PA and QoL in Brazilian older adults, the results showed higher scores in the sensory ability, autonomy, and intimacy domains, along with significantly higher overall QoL among physically active older adults. Additionally, a study by Ramocha et al. (2017) compared PA levels and QoL among older adults living in institutions and in the community and found that community-dwelling older adults had higher PA levels and QoL compared to those living in institutions. This supports the findings of the present study, which demonstrated higher HRQoL in physically active community-dwelling older adults.

Furthermore, both positive and negative correlations, although statistically insignificant, were observed between PA level and HRQoL domains among physically active and physically inactive groups. In the physically active group, the sensory abilities (SAB), autonomy (AUT), and death/dying (DAD) domains showed a positive correlation, while the past, present, and future activities (PPF), social participation (SOP), and intimacy (INT) domains showed a negative correlation. In contrast, in the physically inactive group, the social participation (SOP) and intimacy (INT) domains demonstrated a positive correlation, while the sensory abilities (SAB), autonomy (AUT), past, present, and future activities (PPF), and death/dying (DAD) domains showed a negative correlation. Contrary findings have been reported by Valadares et al. (2011), who found a positive association between PA levels and quality of life domains related to present, past, and future activities, as well as social participation, among physically active participants.

The analysis of the present study's results aligns with a large body of existing literature, which shows significant differences in LS between elderly individuals who engage in regular physical exercise and those who do not. Additionally, previous research has highlighted the link between regular physical exercise and reduced stress, better sleep quality, and higher mood and life satisfaction (Cho & Cheon, 2023).

Similar to our findings on LS, the results of recent studies by Parra-Rizo and Sanchis-Soler (2020) revealed higher levels of LS in physically active older adults compared to those who were physically inactive. Similarly, Toros et al. (2023) confirmed the benefits of physical exercise on LS, emphasizing its importance, especially among older individuals. The higher LS scores in individuals who exercise regularly, compared to those who do not, further validate the role of physical exercise in enhancing LS.

However, the results of the present study showed no significant correlation between physical activity level and life satisfaction scores, with lower physical activity levels being associated with decreased LS. Negative correlations were observed between PA and LS domains among both physically active and inactive groups. These findings contradict the results of recent studies by Toros et

al. (2023) and Liu and Qiang (2022), where their studies revealed a significant positive correlation between regular physical exercise and life satisfaction in men over 60.

Limitations of our study

Our study has some limitations. Firstly, it was conducted in Nigeria, which may limit its generalizability to other settings. Secondly, the study design was cross-sectional, meaning it cannot establish cause-and-effect relationships. Future studies should consider using randomized controlled trials to assess the effect of physical activity on health-related quality of life (HRQoL) and life satisfaction (LS) among older adults.

Implication for practice

Our findings suggest that physiotherapists should consistently prescribe physical activity to older adults to improve their HRQoL and LS. However, mentorship and workshops on therapeutic exercises for the geriatric population focusing on disease prevention, management, and health promotion are essential for novice clinicians. Therefore, HRQoL and LS should be incorporated into the assessment of elderly patients in the geriatric physiotherapy specialty.

Conclusion

PA positively and consistently influenced the HRQoL and LS domains among older individuals, supporting the idea that promoting PA in the elderly may have benefits beyond physical health. Furthermore, statistically insignificant positive and negative correlations were observed between Physically active and the Physically inactive groups and HRQoL. In contrast, statistically insignificant negative correlations were found between LS and both PA and PI groups.

Competing interests

The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

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Data availability

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request. However, the findings from the study would be made available to participating researchers as required by law.

Artificial Intelligence (Ai) Authoring Tools

AI was not used in preparing this manuscript in any way, and all is the natural work of the authors.

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