ORIGINAL ARTICLE

Relationship between quality of life and physical activity level of patients with cardiac disease in a Nigerian tertiary hospital: A cross-sectional study

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Abstract

Background: Research evidence suggests that physical activity can improve quality of life and reduce the adverse effects of living with cardiac disease. This study was conducted to investigate quality of life, physical activity level, and their relationship among cardiac patients in a Nigerian tertiary hospital.

Patients and Methods: Sixty patients (32 males, 28 females) with cardiac disease from a major tertiary hospital in Nigeria participated in this cross-sectional survey. Their Quality of Life (QoL) and physical activity (PA) levels were assessed using the Ferrans and Powers QoL Index (cardiac version IV) and the short form of the International Physical Activity Questionnaire, respectively. Data were summarized using descriptive statistics and further analyzed using Pearson correlation, with the alpha level set at 0.05.

Results: Out of the participants, 34 reported poor to fair overall QoL, while 26 reported good QoL. Additionally, 23, 25, and 12 participants reported low, moderate, and high PA levels, respectively. Health-related QoL was the most affected, with only 16 participants reporting good QoL in this domain. A positive correlation was found between PA and both the Health and Functioning Subscale (r=0.26, p=0.05) and the Family Subscale (r=0.259, p=0.05) of QoL.

Conclusion: Higher levels of PA correlate with better QoL in the Health and Functioning, as well as, Family sub-scales. Physical activity should be integrated into the care of cardiac patients to enhance their QoL and overall health.

Keywords: cardiac disease, health promotion, physical activity, quality of life

Introduction

Cardiac disease is a type of cardiovascular disease (CVD) and a global health crisis, claiming millions of lives annually.[1] In Africa, CVD affects an estimated 20 million people with sub-Saharan Africa bearing a significant burden.[2,3] In Nigeria, the incidence of cardiac disease is increasing, with hypertensive heart disease and heart failure being the most common types.[4] Cardiac disease causes debilitating symptoms such as breathlessness, which significantly reduces physical activity (PA) levels and negatively impacts quality of life (QoL).[5]

Quality of life (QoL) is a crucial health outcome in the management of cardiac disease due to the profound impact of the disease on physical, psychological, and emotional well-being.[6] Symptoms like dyspnea, fatigue, and anxiety impose a significant burden on patients' QoL.[7,8] Moreover, factors like increased dependence on relatives for self-care further worsen QoL.[9] Evidence indicates that physical activity can reduce these effects and enhance QoL in cardiac patients.[10,11]

Physical activity (PA) is pivotal in the prevention and management of cardiac disease, as it lowers resting heart rate and improves cardiac muscle efficiency over time.[12]

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Despite its usefulness, its utilization in the management of patients living with CVD in Nigeria is low. Due to the lack of teamwork, patients with cardiac disease in Nigeria do not get referred to rehabilitation professionals for expert instruction on PA and exercise.[13]

Understanding the relationship between QoL and PA levels in patients with cardiac disease is vital for planning effective interventions, however, research on this is sparse. We thus investigated QoL, PA levels, and their relationship among cardiac patients. The aim was to provide a basis for integrating PA into the routine care of cardiac patients to improve QoL.

Methods

This cross-sectional survey included 60 consenting individuals (32 males, 28 females) aged 35 years and above, with cardiac disease. They were purposively sampled from the medical and surgical out-patient clinics of a major tertiary hospital in Nigeria. Participants had been attending for at least a month, with cardiac disease diagnosed by cardiologists. Individuals with co-morbidities significantly affecting QoL and PA levels, like stroke and depression were excluded. Participants were English speakers, eliminating the need for translation of instruments.

Data collection instruments included the Ferrans and Powers QoL Index (QLI) (Cardiac version IV)[14] and the International PA Questionnaire Short form (IPAQ-SF). The QLI, a 72-item tool, assesses QoL across five domains: health/functioning, psychological/spiritual, social/economical, family, and overall QoL.[14] It has a reliability of 0.93 and a correlation coefficient of 0.77.[15]

It has been cross-culturally adapted in many languages and cultures and found to be acceptable.[16] The IPAQ-SF measures PA over the last seven days across various domains[17]. It has a reliability ranging from 0.66 to 0.88[18] and a criterion validity of 0.31[19] and has been previously used among Nigerians.[20] Socio-demographic data were obtained using a biodata form.

Ethical approval (UI/EC/16/0178) was obtained from the University of Ibadan/University College Hospital Ethics Committee. Informed consent was obtained from all participants. The QLI, IPAQ-SF, and biodata form were self-administered by participants who could read. Otherwise, questionnaires were interviewer-administered. SPSS software (version 20) was used for data analysis. Descriptive statistics (mean, standard deviation, frequency, percentages) were used to summarize the data, and Pearson correlation was used to investigate the relationship between QoL scores and PA levels, with the level of significance set at 0.05.

Results

Out of 72 questionnaires distributed, 60 were completed, yielding an 83.33% response rate. The study involved 60 participants with diverse cardiac conditions, comprising 32 males and 28 females, with a mean age of 52.23±12.65 years. The majority were in the middle-age category (35-44 years). Employment status varied, with 24 employed, 24 self-employed, 1 unemployed, and 11 retired participants. Hypertensive heart disease was the most prevalent condition (43.3%), followed by heart failure (31.7%), with septal defect being the least prevalent (1.7%). This is shown in Figure 1.

In this study, participants' overall Quality of Life Index (QLI) varied: 32 reported good, 36 fair, and 2 poor QoL. In the Health and Functioning Subscale (HFSUB), most had fair QoL (n=36), followed by good (n=16) and poor (n=8) QoL. Similarly, in the Social and Economic subscale (SOCSUB), the majority reported fair QoL (n=35), followed by good (n=21) and poor (n=4) QoL. In the Psychological and Spiritual Subscale (PSPSUB), most had good QoL (n=40), followed by fair (n=19), and poor (n=1) QoL. In the Family Subscale (FAMSUB), the majority reported good QoL (n=36), followed by fair (n=32) and poor (n=2) QoL.

In this study, 23 participants had a low level of PA, 25 were moderately active and 12 had a high level of PA. The overall QoLI and PA correlation was positive but not significant (r=0.23, p=0.08). However, there was a positive correlation between PA and each of HFSUB (r=0.26, p=0.05), and FAMSUB (r=0.26, p=0.05) which were deemed statistically significant as shown in Table 1.

Discussion

This research paper reports on the quality of life, physical activity level, and the relationship between the two variables among people with cardiac disease in a Nigerian hospital. Previous studies from international populations have shown that a higher PA level is associated with better QoL.[21,22] Due to sociocultural and economic disparities, international data on physical activity (PA) and quality of life (QoL) cannot be used to plan intervention in Nigeria. This study therefore offers insights into integrating PA and exercise into routine cardiac care in Nigeria, potentially improving the QoL and overall health of cardiac patients.
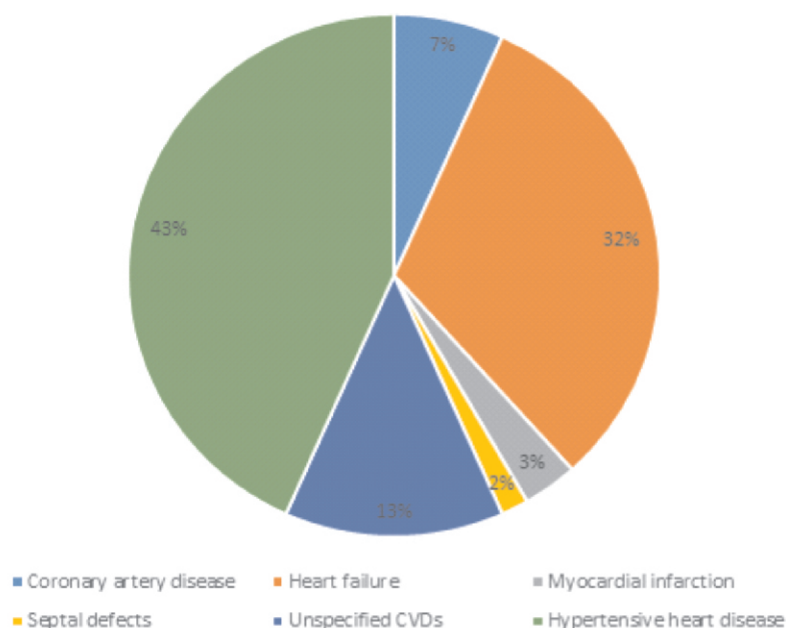

Figure 1: Distribution of cardiovascular conditions among participants

- Coronary artery disease   - Heart failure   - Myocardial infarction
- Septal defects   - Unspecified CVDs   - Hypertensive heart disease

Table 1: Relationship between Quality of life and Physical activity level of Participants

Quality of life	Physical activity level	
	P	r
HFSUB	0.05	0.26
SOCSUB	0.1	0.18
PSPSUB	0.17	0.26
FAMSUB	0.05	0.26
QOLI	0.08	0.23

FAMSUB: Family Subscale, HFSUB: Health and Functioning Subscale,
PSPSUB: Psychological and Spiritual Subscale, QOLI: Quality of Life Index, SOCSUB: Social and Economic Subscale.

Findings from this study showed that individuals in the younger age group (35-44 years) constituted the highest proportion of participants. This is in line with the findings of Lim et al,[23] Oguanobi et al.[24] and Ogah et al.[25] who also observed a preponderance of CVD among young individuals. The rising prevalence of CVD among the younger age group is peculiar to developing countries,[26] in contrast to developed countries where CVD is more common among the older population. This has socio-economic implications for developing countries because people of younger age groups constitute the working population. The preponderance of CVD among the younger population is thought to be a result of risky health behaviors such as poor diets, low PA levels, and substance abuse often undertaken by people in this age group.[27]

In this study, we also observed a higher prevalence of CVD among males than females. Previous studies[28,29] reported a similar observation, which is attributable to some innate physiological differences between males and females. The female endocrine system releases the hormone estrogen which has been found to retard the development of atherosclerosis in women during their reproductive years.[30] However, during menopause and beyond, the risk of CVD increases leading to a higher prevalence of CVD among older women than their male counterparts.[31] Furthermore, we observed that hypertensive heart disease had the highest prevalence in the present study, followed by heart failure. This finding is consistent with that of previous studies.[26,30] Adegoke et al. reported that hypertensive heart disease and heart failure are the highest contributors to CVD mortality in Nigeria,[32] with hypertension being the most implicated risk factor.[7] There is a need for measures to be put in place to mitigate the burden of hypertension and resultant CVD in Nigeria.

The majority of participants in this study reported fair QoL in the Health and Functioning subscale, which is likely due to the negative impact of the disease on their functional capacity and overall health.[33] Similarly, most participants reported fair QoL in the Social and Economic subscale, possibly because living with CVD restricts engagement in social activities, because of the fear of symptom exacerbation. Moreover, the high costs of cardiac care may have influenced participants' fair scores in this subscale.[34] However, in the Psychological and Spiritual subscale, along with the Family subscale, most participants reported a QoL. This aligns with the findings of Silva et al. indicating better QoL in the psychological domain than physical health domain among CVD patients.[35] Factors like a good family environment and strong social support may positively influence participants' psychological health. Additionally, Nigerians' religious inclination provides solace, while cultural values emphasize community support for the sick, potentially enhancing participants' psychological well-being.

Furthermore, we investigated participants' physical activity levels, and some of the participants reported low physical activity levels. A study by Stewart et al.[36] among individuals with coronary artery disease found that 50% of the participants had low PA levels, which was associated with poor self-reported general health and a larger number of co-morbidities. It is also possible that the non-referral of patients with CVD in Nigeria for appropriate exercise-based cardiac rehabilitation as earlier observed by Odunaiya et al.[13] plays a role in the low level of PA among participants. People with cardiac disease who are physically inactive are at greater risk of occurrence of cardiovascular emergencies.[37] It is therefore essential that they perform the recommended dose of PA.[38] However, for PA to be carried out

appropriately and safely in cardiac patients, there is a need for the involvement of cardiac rehabilitation experts such as physiotherapists.[39]

In this study, we also found a significant positive correlation between physical activity and each of the Health and Functioning (HFSUB) and Family (FAMSUB) subscales of QoL. This may imply that the higher the physical activity level, the better the QoL of participants in these subscales. Wardoku et al. found that physical inactivity is associated with poor physical and mental health-related QoL among coronary heart disease survivors.[40] Pucci et al. also reported that the higher the level of PA, the better the QoL.[41] This suggests that an increase in physical activity levels may contribute to improvements in health and overall well-being among individuals with cardiac disease.

Studies investigating the relationship between QoL and PA among cardiac patients are sparse. To our knowledge, this study pioneers the investigation of the relationship between QoL and PA among cardiac patients in Nigeria, potentially establishing a basis for future research in this area. Collaborative efforts are needed to integrate PA into the routine care of cardiac patients to improve their QoL.

Future studies should investigate the effects of physical activity and structured exercises on specific health outcomes in cardiac patients using a prospective design. Additionally, a larger study spanning multiple hospitals across Nigeria is recommended to further investigate the relationship between PA and QoL among cardiac patients.

This study is not without its limitations. The heterogeneous nature of the conditions and the wide variability in their severity pose a limitation. There is also the possibility of recall bias in the use of self-report instruments. Also, other factors that could affect the QoL of the participants other than cardiac disease were not controlled for.

Conclusion

Most participants in this study reported fair QoL, particularly in the Health and Functioning subscale, with many also having low physical activity levels. Higher levels of PA correlate with better QoL in the Health and Functioning, as well as, Family sub-scales. These findings suggest the potential benefits of integrating regular physical activity into the routine care of cardiac patients to improve their QoL.

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