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Physical activity levels among people living with HIV in Lagos, Nigeria: Evaluation of adherence to recommended guidelines

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In the era of highly active antiretroviral therapy (HAART), people living with HIV (PLWH) experience increased longevity but also face a rising burden of HIV-related comorbidities and disabilities, impacting their quality of life. The WHO 2020 Guidelines have recommended lifestyle adjustments, such as physical activity, as a strategy to minimize the risk of HIV-related disabilities. However, there is insufficient data on the physical activity levels of PLWH in Nigeria, which are crucial for monitoring preventive efforts. To assess the physical activity level of PLWH in Nigeria according to the WHO physical activity recommendations, a cross-sectional survey involving 385 PLWH in Lagos was conducted. Demographic and physical activity data were collected using the International Physical Activity Questionnaire (IPAQ) and analyzed according to the research hypotheses and related statistical methods. Results revealed that 45.5% of participants did not meet the WHO-recommended physical activity levels. Notably, individuals with higher educational levels were more likely to be physically active. The findings emphasize a concerning trend where a significant proportion of PLWH fall short of recommended physical activity, highlighting the need for targeted interventions. Implementing strategies to promote physical activity in this population becomes crucial for enhancing overall health and reducing the risk of HIV-related comorbidities.

Key words: HIV, physical activity, health, HAART, comorbidities, disabilities, quality of life.

INTRODUCTION

Although the global mortality rate from HIV has drastically declined since the advent of antiretroviral therapy (ART) in 1995-1996 (Palmisano and Vella, 2011), findings from current research show that despite the role of ART in viral suppression, people living with HIV (PLWH) generally demonstrate reduced physical function, greater loss of independence, and overall higher morbidity when compared with seronegative populations (Slogrove et al., 2019; Quigley and MacKay-Lyons, 2019; Falutz et al., 2021). HIV infection itself and the side effects of antiretroviral treatments (ARTs) are independently associated with increased risks for the immune system (Zicari et al., 2019), cardiovascular system (Pinto and da Silva, 2018), central nervous system (Sheybani et al., 2021), and musculoskeletal system (Walker-Bone et al., 2017). These compromised body systems make

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individuals prone to fatigue, joint pain, hypertension, dyslipidemia, neuropathy, depression, opportunistic infections (e.g., pneumonia), and non-communicable diseases (e.g., kidney disease, cardiovascular disease, and diabetes) (Ibeneme et al., 2019). These symptoms contribute to poor health-related quality of life (HRQoL) among people living with HIV (Yaya et al., 2019). Thus, PLWH are now faced with the double burden of HIV and the emergence of comorbidities attributed to the use of ART (Todowede et al., 2019).

To enhance health, prevent the onset of HIV comorbidities, and limit functional decline, public health authorities such as the Centers for Disease Control and Prevention (CDC, 2022) and the World Health Organization (WHO, 2020) recommend that PLWH should engage in the same levels of physical activity (PA) as seronegative individuals to accrue health benefits (WHO, 2020). The health benefits of PA and exercise, both for the general population and for PLWH, have been documented (Ibeneme et al., 2019; Martin et al., 2019; Ceccarelli et al., 2020; O'Brien et al., 2021; Ajidahun 2020; Ibeneme et al., 2022), and findings show that PA is a safe and effective method for improving metabolic function, cardiorespiratory fitness, and the quality of life of people living with HIV. According to the World Health Organization, physical activity is defined as “any bodily movement produced by skeletal muscles that require energy expenditure” (WHO, 2020). This refers to all movement, including during leisure time, transportation, occupation, housework, etc. Although this definition is clear, it is commonly used interchangeably with the terms “exercise” and “physical fitness”. To distinguish between these terms, exercise is described as a form of physical activity that is pre-planned, organized, and involves repeated bodily motions to maintain or enhance one or more aspects of physical fitness, while physical fitness refers to the ability to engage in physical activity through the possession of specific physical characteristics (Caspersen, Powell, and Christenson, 1985; ACSM, 2018).

Engaging in physical activity, which can include small amounts of activity throughout the day (e.g., household chores and recreational activities) or scheduled blocks of time for more strenuous activities (e.g., exercise), is recommended (Bull et al., 2020). The “World Health Organization guidelines on physical activity and sedentary behaviour” suggest that people aged 18 to 64 should engage in 150 min of moderate weekly physical activity, evenly spread throughout the day; and 75 min of intense weekly physical activity, or an equivalent amount of both intense and moderate weekly physical activity. Each training session should also include at least 10 min of aerobic exercise. In the recommendations, it is also stressed that physical activity for this age group should include sports, occupational activity, home chores, and transport-related activities (WHO, 2020). Furthermore, routine jogging or running, walking, and cycling at the recommended intensity and duration have been linked to the prevention of dementia, cardiovascular disease, metabolic disease, type 2 diabetes, adverse side effects of ART, and disability caused by sarcopenia in people living with HIV (Ibeneme et al., 2019). Despite these benefits, there is limited information on the uptake of PA among PLWH in resource-poor countries (Mabweazara et al., 2019). A systematic review by O’Brien et al. (2016) reported positive cardiorespiratory, strength, and body composition outcomes. Other benefits of engaging in physical activity by people living with HIV include lower blood pressure, improved lipid profiles, improved functional capacity, reduced risk of cardiovascular disease, and overall cardiometabolic effects (Ibeneme et al., 2022).

Compared to Western societies, which have a preponderance of data on PA (Vancampfort et al., 2018), PA participation among PLWH in sub-Saharan Africa is limited by a myriad of contextually-sensitive barriers (Ley and Prista, 2015; Vancampfort et al., 2018) such as cultural habits, the unavailability of safe exercise-friendly environments, low socioeconomic status, and unsatisfactory intrapersonal factors (Roos et al., 2014; Adeloye et al., 2022). A possible reason for this poor uptake could be that PLWH in resource-poor countries are not aware of the potential health benefits of PA to their overall health, and PA promotion is not routinely practiced by healthcare professionals (Cunningham and O’Sullivan, 2021). According to Maduagwu et al. (2014), the limited data on PA among Nigeria's HIV/AIDS population is partly due to the lack of knowledge and advocacy of healthcare providers regarding the positive effects of exercise on PLWH. In Nigeria, the barriers to physical activity participation are mainly mediated by cultural, socioeconomic, and environmental variables (Adeloye et al., 2022). Thus, the constraints hindering physical exercise involvement include a lack of access to exercise facilities, discomfort in working out, financial implications, lack of time and self-motivation, poor wellbeing, family demands, lack of social support, and a physically active partner. Furthermore, numerous environmental issues that impact healthy behaviours have been brought on by the country's rapid urbanization and its vast amount of industrial activity. Many cities have elevated levels of traffic, dangerous topography, and poor road designs, making leisure walking and cycling unattractive to many (Foster et al., 2011). For example, some Nigerians believe that walking or cycling is a sign of low socioeconomic standing; hence, the desire to possess a vehicle to gain greater societal acceptance and respect (Adeloye et al., 2022).

Regarding the prevalence of PA, most of the available research in Nigeria has been conducted among the general population, with reports of PA levels ranging from 43 to 78% (Oyeyemi et al., 2018). According to a recent meta-analysis, between 1995 and 2020, the frequency of non-physically active Nigerians grew by 240% (Adeloye

et al., 2022). Thus, within 25 years, the number of people engaging in only low levels of PA increased from 14.4 million to 48.6 million. As PLWH may be less capable of completing PA-related tasks than the general Nigerian population, it is hypothesized that PLWH have lower PA levels than their healthy counterparts. However, there is a dearth of studies measuring PA levels, specifically among PLWH in Nigeria, and how the mentioned factor influences their health-related quality of life (Vancampfort et al., 2018). This apparent gap forms the basis of this study. Thus, the purpose of this study was to examine the level of PA among people living with HIV in Nigeria and the associations between PA levels and sociodemographic variables. Understanding the extent to which this population engages in physical activity is crucial for developing future therapeutic interventions to manage disability among people living with HIV.

MATERIALS AND METHODS

Study design

A cross-sectional descriptive study design was used in this study. The study participants were recruited using a convenience sampling approach.

Participants

This study population included PLWH in Lagos, Nigeria, who attended the HIV clinics/treatment centres from September 2021 to October 2022. This was a multi-centre study with participants recruited from seven HIV/AIDS testing and treatment centres in Lagos, the largest city in Nigeria. With a population of over 15 million (Idris and Fagbenro, 2019), Lagos has 20 local governments with 31 HIV/AIDS testing and treatment centres across the state. Based on the cluster sampling method, the seven centres selected were: Mainland Hospital, Yaba; Lagos State University Teaching Hospital (LASUTH), Ikeja; General Hospital, Ikorodu, Lagos; General Hospital, Marina, Lagos; Randle General Hospital, Surulere, Lagos; General Hospital, Isolo, Lagos; and Hope for HIV/AIDS International, Mushin, Lagos. Lagos State is one of the key population hotspots with evidence of a high HIV burden and needs not met by the HIV/AIDS treatment services (Lo et al., 2021). Thus, Lagos was selected based on the relevant resource data available to the researcher and the national key population size estimate.

Inclusion criteria

To be included in the study, participants were required to meet the following criteria: Participants should be: (i) PLWH aged ≥ 18 years (ii). PLWH who have been on ART for at least six months, and (iii) PLWH attending an HIV/AIDS outpatient clinic.

Exclusion criteria

The following participants were excluded from this study: (i) PLWH who did not consent to the study, (ii) PLWH who was younger than age 18, (iii) in-patients living with HIV/AIDS, and (iv) PLWH attending the HIV/AIDS testing and treatment centre for the first time.

Sample size

The sample size was calculated according to the 51.9% prevalence rate for disability in PLWH in South Africa (Myezwa et al., 2018). Using a power of 95 %, a level of significance of 5 %, and the 51.9% prevalence rate for disability, a minimum sample size of 384 participants was calculated using the formula $n=Z^2P\ (1-P)/d^2$ (Taherdoost, 2017).

Data collection tool

The following tools were used to obtain information regarding the specific objectives:

Sociodemographic questionnaire: The sociodemographic questionnaire used in this study provided information on the age, gender, marital status, educational qualifications, and income range of the participants.

The International PA Questionnaire (IPAQ-SF): It is a self-reported measurement tool for PA suitable for assessing PA and inactivity in a population (Stelmach, 2018). The IPAQ-SF measures the PA levels of people aged 15 to 69 years and was adapted from the long form IPAQ, which assesses activity levels across five domains (job-related, transportation, housework, recreation, and time spent sitting), contains four generic items, and can be self-administered or administered via telephone (Craig et al., 2017). The questionnaire requires information on the time spent on physical activities over the past seven days and has acceptable measurement properties for developed and developing nations. It has been previously used in the Nigerian population, where the overall PA (ICC = 0.79, 95% CI 0.65 to 0.82) showed moderate test-retest reliability (ICC > 75, intraclass correlation coefficient) (Oyeyemi et al., 2014). The IPAQ-SF measures three specific types of activity: walking; moderate physically intense activity; and vigorous physically intense activity (Craig et al., 2017).

The IPAQ scoring protocol was used to report the collected data in terms of categorical and continuous measures (Cleland et al., 2018). For continuous data, one measure of the volume of activity was computed by weighting each type of activity in terms of its energy requirements, as defined in METs. Thus, walking = 3.3 METs; moderate PA = 4.0 METs; and vigorous PA = 8.0 METs.

Using these values, four continuous scores were defined:

1) Walking MET-min/week = 3.3 * walking minutes * walking days.
2) **Moderate MET-min/week** = 4.0 * moderately intense activity minutes * Moderate intensity, days.
3) Vigorous MET-min/week = 8.0 * vigorously intense activity minutes * Vigorous intensity, days.
4) Total PA MET-min/week = sum of walking + moderate + vigorous MET- minutes/week scores.

For the categorical data, individuals who do not meet the criteria for Categories 1 or 2 are considered to have a 'low' PA level (Category 0).

Moderate (category 1): The pattern of activity classified as 'moderate' should comply with either of the following criteria: a) three or more days of vigorously intense PA for at least 20 minutes per day OR b) five or more days of moderately intense PA and/or walking for at least 30 minutes per day OR c) five or more days of any combination of walking involving moderately intense or vigorously intense activities and achieving a minimum total PA level of at least 600 MET-minutes/week.

Vigorous (category 2): The pattern of activity classified as'vigorous' should comply with either of the following criteria:

Table 1. Sociodemographic characteristics of the participants (N=385).

Sociodemographic characteristics	N (%)
Gender	
Men	104 (27.0)
Women	281 (73.0)
Marital status	
Married	219 (56.9)
Single	101 (26.2)
Widowed/Divorced/Separated	65 (16.9)
Education	
No formal education	24 (6.3)
Primary school	51 (13.3)
Secondary school	194 (50.4)
Post-secondary	115 (29.9)
Income (in Niara):	
Less than 8,000	113 (29.4)
Between 18,001 - 30,000	115 (29.9)
Between 30,001 - 70,000	108 (28.1)
Above 70,000	49 (12.7)

a) Vigorously intense activity for at least three days, achieving a minimum total PA level of at least 1500 MET-minutes/week, OR seven or more days of any combination of walking, of moderate intensity, or vigorous intensity, achieving a minimum total PA level of at least 3000 MET-minutes/week.

Procedure

The principal investigator and two researchers collected participant data according to the study protocol requirements. The research assistants collected the sociodemographic data using a researcher-developed questionnaire, while the PA level data were collected through a self-administered questionnaire.

Data analysis

The data were captured from the completed questionnaires in Microsoft Excel and imported into IBM SPSS 23® for analysis. Descriptive statistics were applied for all demographic variables. Quantitative data and categorical variables were described as mean ± standard deviation (M ± SD) and expressed as frequencies or percentages, respectively. The PA score of IPAQ-SF was the main outcome measure. The overall sitting time, described as the level of sedentary time, was also analyzed. Pearson's Chi-square was used to determine the association between PA level and sociodemographic variables. Univariate binary logistic regression was used to determine predictors of PA. The level of significance was set at a p-value of less than 0.05.

Ethical considerations

Approval was obtained from the Human Research Ethics Committee of the University of the Witwatersrand (M200906) and Lagos State University Teaching Hospital Health Research Ethics Committee (LREC/06/10/1547). The clinical director of the participating testing and treatment centre's granted permission. Participants were informed about the voluntary nature of their participation and their right to withdraw from the research at any point without being obliged to explain their reasons. All participants read, understood, and signed a written informed consent form.

RESULTS

Sociodemographic characteristics

The sociodemographic characteristics of the participants are presented in Table 1. The mean age of the participants was 42.2 ± 10.43 years with a range of 22 to 70 years. The data showed that the majority of participants were female (73%), married (56%), and had a secondary school education (50.4%). Additionally, a significant portion (29.9%) earned below the minimum wage or between N18,001 - N30,000 per month.

PA level

Based on the WHO recommendations, the survey results revealed that 176 (45.7 %) of the 385 participants had a low level of PA (Figure 1).

Analysis of PA level according to sociodemographic categories

Based on the IPAQ scoring guidelines, participants who

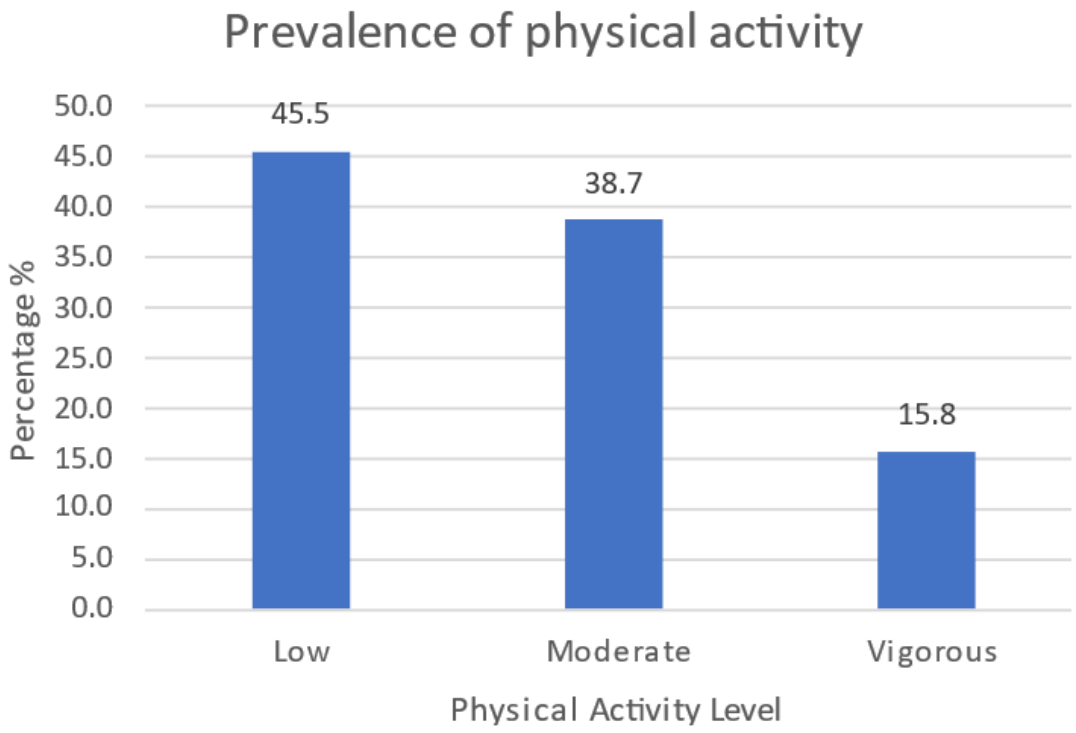

Figure 1. PA categories among PLWH.

did not achieve a minimum of 600 MET-min/week were categorized as physically inactive/limited, while participants who achieved above 3,000 MET-minutes/week were categorized as physically vigorous/superior. Participants were classified as moderately active if they achieved between 600 – 3,000 MET-minutes/week. Table 2 describes the sociodemographic distribution of the participants across the PA levels. Pearson's chi-square test was used to determine the association between sociodemographic variables and PA level (Table 2). Male participants showed higher PA levels than female participants (57.7% vs. 53.4%). Based on marital status, 48.9% of married individuals did not meet the PA recommendations, and statistical analysis revealed a significant association ($p<0.05$) between PA and marital status ($\chi 2 = 9.612$; $p = 0.048$). Participants with no formal education had the lowest PA levels (60%), while 38% of the participants had moderate PA levels, regardless of their income level. Furthermore, according to the findings of an unadjusted analysis, level of education and marital status were associated with increased odds of PA, while gender and income were associated with decreased odds of PA.

Energy expenditure in PA and sedentary time

Based on WHO recommendations, the energy expended in engaging in PA was calculated and categorized into Vigorous = ≥ 3,000 MET/mins/wk; Moderate = 600 – 3,000 MET/mins/wk; and Low = < 600 MET/mins/wk. Results showed that the total PA fell within the moderate PA level (600-3,000 MET-min/week) with a mean value of 1,620 ± 2,396 MET-min/week. The participants reported the average time (in minutes) that they spent sitting per day, and the overall mean was 238 ± 136 min/day (median = 3h/day; IQR = 2 – 5h/day) (Table 3).

Predictors of PA level

Univariate binary logistic regression showed that the results suggested that none of the predictor variables (Marital status, Gender, Education, Income, and Age) had a statistically significant effect on PA levels among the participants. It can be deduced that the marginally significant p-value for Age and the wide confidence intervals (CI) for all variables could indicate the potential need for further investigation with a larger sample size. The coefficient for Education was positive (0.105), indicating a potentially positive effect on the outcome variable. However, the p-value (0.214) was not statistically significant, suggesting that the effect of Education on PA may be weak or negligible. The wide confidence interval (0.902 to 1.368) added further uncertainty to the association. Regarding the model fit, the AIC (Akaike Information Criterion) was used for the null and final models. The lower AIC value (731.79) for

Table 2. Prevalence and unadjusted analysis of factors associated with PA level (N=385).

Sociodemographic characteristics	Low PA N (%)	Moderate PA N (%)	Vigorous PA N (%)	OR (95%CI)	χ^2	p-value
Gender						
Men	44 (42.3)	40 (38.5)	20 (19.2)	0.84 (0.53 to 1.32)	1.344	0.511
Women	131 (46.6)	109 (38.8)	41 (14.6)			
Marital status						0.048*
Married	107 (48.9)	72 (32.9)	40 (18.3)	1.38 (0.92 to 2.07)	9.612	
Single	40 (39.6)	45 (44.6)	16 (15.8)			
Widowed/Divorced/Separated	28 (43.1)	32 (49.2)	5 (7.7)			
Education						
No formal education	15 (60.0)	9 (36.0)	1 (4.0)			
Primary school	20 (39.2)	20 (39.2)	11 (21.6)	1.88 (0.82 to 4.29)	10.751	0.096
Secondary school	97 (50.0)	72 (37.1)	25 (12.9)			
Post-secondary	43 (37.4)	48 (41.7)	24 (20.9)			
Income (in Niara)						
Less than 30,000	100 (43.9)	88 (38.6)	40 (17.5)	0.85 (0.57 to 1.29)	1.382	0.847
Betw. 30,001- 70,000	52 (48.1)	42 (38.9)	14 (13.0)			
Above 70,000	23 (46.9)	19 (38.8)	7 (14.3)			

Table 3. PA levels of the participants in MET/min/wk.

PA	Mean ± SD	Median (IQR)
Total MET/ min/wk	1.620 ± 2.396	693 (297-1.680)
Vigorous MET/ min/wk	6.422 ± 2.549	5.970 (4.158-8.106)
Moderate MET/ min/wk	1.268 ± 594	1.044 (792-1.663)
Low MET/ min/wk	246 ±194	248 (0-396)
Walking MET/ min/wk	637 ± 844	396 (149-693)
Sitting min/day	238 ± 136	180 (120-300)

the final model indicated a better fit than the null model. Because the difference in AIC values (0.018) was relatively small, it indicated a modest improvement in model fit (Table 4).

DISCUSSION

This study aimed to determine the prevalence of physical activity among people living with HIV in Nigeria and the associations between PA levels and sociodemographic variables. The results of this study indicated that approximately 45.5% of people living with HIV in Nigeria do not meet the recommended level for PA. This is higher than the 22% reported among the general population in a national survey (Oyeyemi et al., 2018), the 20.8% in southwest Nigeria (Iwuala et al., 2015), and the 36.2% in Northeastern Nigeria (Akinrolie et al., 2022). Although these studies were conducted on the general population, they used the same research instrument as used in our study. The results of studies conducted between 1995 and 2020, which covered 13, 814 Nigerian adults aged 20 to 79 years, confirmed a clear reduction in PA levels, as the reported prevalence of low PA was only 52.0% (Adeloye et al., 2022). Since a lack of PA has been linked to the emergence of non-communicable diseases, this reduced level of physical inactivity in the general population raises public health concerns (Katzmarzyk et al., 2022). Likewise, regular PA has been shown to lessen the effects of HIV on both physical and mental health, subsequently reducing the potential risk of disability and morbidity among PLWH. Thus, to reduce the risk of HIV-related disabilities, the WHO (2020) guidelines advocate for modifying one's lifestyle to increase PA. The second aim of this study was to investigate the relationship between PA level and sociodemographic variables. Consistent with PA research conducted nationally and globally, the male participants

Table 4. Predictors of PA level.

Variable	B	S.E.	p-value	OR (95% CI)
Marital status (Married/Single/Widowed/Divorced)	0.151	0.121	0.214	1.163 (0.917 - 1.475)
Gender (Male/Female)	-0.315	0.252	0.212	0.730 (0.445 - 1.197
Education: No formal education /primary/secondary/post-secondary	0.105	0.121	0.214	1.111 (0.902 - 1.368)
Income <18k /18-30k /31-70k / >70k	-0.097	0.117	0.408	0.908 (0.722 - 1.141)
Age (22-41/42-70 years)	-0.019	0.010	0.061	0.981 (0.961 - 1.001)
Null model AIC				733.19
Final model AIC				731.79 (0.018)

in the present study were found to be more physically active than females (Iwuala et al., 2015; Guthold et al., 2018; Adeloye et al., 2022; Akinrolie et al., 2022). Gender differences in PA are a recurrent theme in PA studies from adolescence to adulthood, possibly due to pre-existing gender stereotypes, external influences, differences in motivation, and variations in PA context preferences (Edwardson et al., 2013; Schlund et al., 2021). Similarly, the association between educational level and PA level was explored by Shaw and Spokane (2008), who reported that lack of employment and job loss were linked to decrease PA in those with low levels of education. However, the opposite was true for those with high levels of education in this present study. Vancampfort et al. (2017) also observed this in a systematic review of PA correlates among people living with HIV. Although health behaviour theories posit that an individual's knowledge and understanding of health risks and rewards are beneficial for motivating behaviour (Fisher et al., 2014), participation in PA is influenced by a wide range of factors, which should be considered when planning rehabilitation programs.

PA level is also impacted by the socioeconomic factors of PLWH, which cannot be ignored, especially when one considers the estimated financial cost per person living with HIV, which is estimated to be 36,065 Naira in direct private healthcare expenses and indirect income loss (Mahal et al., 2008). Even though the minimum wage in Nigeria increased in April 2019 from 18,000 to 30,000 Naira (Alege et al., 2020), more than half (59.3%) of the sample population reported that their income was less than 30,000 Naira ($65.07) per month. Although not statistically significant, participants in our study who earned less than ₦18,000 per month (40 U.S. Dollars) reported less vigorous PA than those from other income levels. This is contrary to the global trend shown in a study by Chastin et al. (2020), which revealed an association between higher income and a lower likelihood of meeting PA recommendations. It is frequently challenging to explain this link, as several other studies have reported that high PA is related to high income (Kari et al., 2015; Zapata-Lamana et al., 2021). Income level was a vital confounder in this study, as the HIV epidemic has been reported to disproportionately affect people with low socioeconomic status (Ogunmola et al., 2014), who have been reported to be less likely to engage in PA (Mangona et al., 2020). Given the link between physical inactivity and poor health, it is conceivable that disparities in income have a significant impact on the PA level of people living with HIV and on their overall health-related quality of life.

Furthermore, sedentary behaviour and its correlation with comorbidity, neurological impairment, walking dysfunction, symptoms, and poor quality of life in people living with HIV have received little attention (Vancampfort et al., 2017). The current study also examined sedentary behaviour using scores from the sitting-time item on the IPAQ-SF among people living with HIV. Participants in our study spent approximately four hours a day sitting. These results are less than those obtained in other studies using the same questionnaire. For example, Vancampfort et al. (2017) highlighted that PLWH spent 533 min/day (95% CI = 466 to 599) sitting, while Zou et al. (2022) observed that PLWH in China spent 370.62 (SD =176.27) min/day sitting. Another study assessing sedentary time among older adults in Nigeria showed that participants spent on average 284.8 ± 125.4 min/day in a sedentary position (Oyeyemi et al., 2018), which is in line with the findings from the present study. Although these results show that participants spend considerable time sitting, it does not necessarily indicate a lack of exercise (Matusiak-Wieczorek et al., 2020). With advancements in technological innovations and environmental changes, sitting has become the default position in the workplace, transportation, and domestic settings. Thus, sedentary behaviour is increasing globally (Bull et al., 2020). It is crucial to remember that the WHO (2020) recommendations on PA and sedentary behaviour for PLWH call for moderate and intense PA bouts in addition to the movement one already engages in daily.

A report published in The Lancet Public Health (2019) highlights the need for public health professionals and policymakers to adapt interventions and opportunities to tackle the PA gender gap if the worldwide PA goal of a 10% relative decrease in insufficient PA by 2025 is to be achieved (The Lancet Public Health, 2019). This call to action is equally important to the HIV community, as there is evidence that regular PA can lessen the effects of HIV on physical and mental health (Martin et al., 2019). If Nigeria aims to achieve its strategic objective of

improving the quality of life of PLWH, as set out in the 'National HIV and AIDS Strategic Framework 2021-2025' (NACA, 2021), the importance of PA to overall health must be highlighted in policy documents, barriers to PA participation must be overcome, and the health benefits of PA disseminated to all stakeholders. In our study, education was associated with an increased odd of meeting the recommended PA level (OR=1.88; CI 0.82 – 4.29). Encouraging PA among PLWH is essential as an intervention strategy to prevent the added burden of HIV-related disability. Thus, healthcare professionals should be encouraged to promote the health benefits of PA among PLWH and disseminate this information in various contextually sensitive forms to facilitate an increase in the likelihood of meeting the recommended PA levels (Mabweazara et al., 2019). Effective public health status monitoring and intervention depend on understanding the prevalence of PA among PLWH and pinpointing the factors that influence engagement in PA.

Implications for future research

Comparative studies between the general population and people living with HIV (PLWH) can be explored to delve deeper into the disparities in physical activity (PA) levels with the aim of designing tailored interventions for PLWH with low income. Understanding the unique challenges faced by this subgroup and developing targeted strategies to enhance PA participation may contribute to reducing health disparities. Furthermore, future studies may evaluate the effectiveness of policy-driven initiatives aimed at promoting PA among PLWH and could involve collaborations to address sociodemographic factors, economic constraints, and educational needs influencing PA among PLWH.

Conclusion

Most people living with HIV and receiving ART in Lagos are not meeting the recommended levels of physical activity. There was a significant association between educational level and physical activity level. While physical activity promotion among people living with HIV holds great promise for improving the overall health status of PLWH, interventions to improve physical activity levels among PLWH need a multi-stakeholder framework to achieve optimum results. Thus, further studies should investigate the influencing factors of physical activity among PLWH and target interventions to address these factors.

STRENGTHS, LIMITATIONS AND RECOMMENDATIONS

To the best of our knowledge and according to evaluations of the literature, this study appears to be the first attempt to investigate the prevalence of physical activity (PA) among people living with HIV (PLWH) in Nigeria. The current study had several limitations. First, participants were conveniently sampled from HIV testing and treatment centre's in Lagos. Therefore, we were not able to generalize the findings to those not attending the clinics or to those in other states in the country. Another limitation was that the International Physical Activity Questionnaire (IPAQ), which was used for data collection, is vulnerable to recall bias, as participants were requested to fill in the questionnaires reporting their activities over seven days. Furthermore, HIV clinical variables were not captured in this study as participants did not have accurate CD_4 count and viral load information. Thus, the relationship between PA levels and HIV clinical variables was not explored. A third limitation is that enabling and limiting factors of PA participation were not identified, and the impact of HIV on PA was beyond this study's scope. Rehabilitation professionals aiming to increase PA participation among PLWH should highlight the health benefits of PA and examine the contextual barriers to and facilitators of PA participation. The findings of the present study provide information for policymakers to develop effective strategies to promote PA among PLWH, particularly in low-resource settings where the prevalence of HIV is high.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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