PHYSICAL ACTIVITY LEVEL, PERCEIVED BARRIERS AND FACILITATORS AMONG WOMEN IN NNEWI, ANAMBRA STATE

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Abstract

Background: Physical inactivity is a major public health concern and a significant risk factor for non-communicable diseases, particularly among women in low- and middle-income countries where sociocultural and environmental demands may limit physical activity participation.

Aim: This study assessed the levels of physical activity, perceived benefits, and perceived barriers to physical activity among adult women residing in Nnewi, Anambra State, Nigeria.

Materials and methods: A cross-sectional study design involving 400 adult women selected from the four quarters of Nnewi was adopted. The International Physical Activity Questionnaire-Short Form (IPAQ-SF) assessed physical activity level, while the Exercise Benefits and Barriers Scale (EBBS) assessed perceived benefits and barriers. Data was summarized using frequency counts, charts, mean and standard deviation while the Kruskal-Wallis test was used for analysis at the <0.05 level of significance.

Results: The mean age of participants was 30.77±11.15 years. Participants demonstrated high perceived exercise benefits (mean score 89.12±20.05) and moderate perceived barriers (36.10±9.15). Modal reported walking and moderate physical activity duration was less than 30 minutes to 1 hour. Respondents who reported the highest sitting period also recorded the highest benefits (p=0.003) yet more barriers to walking (p<0.001).

Conclusions: Women in Nnewi exhibit favourable perceptions of exercise benefits but relatively low engagement in vigorous physical activity, with notable barriers linked to sedentary behaviour and daily responsibilities. Targeted interventions addressing contextual barriers and promoting active lifestyles are recommended to improve physical activity participation among women in this population.

Keywords: Physical activity, Exercise benefits, Exercise barriers, Women, Sedentary behaviour, Nnewi, Nigeria

INTRODUCTION

Physical activity (PA) refers to any bodily movement produced by skeletal muscles that requires energy expenditure(1). World Health Organization (WHO) guidelines recommend that adults aged 18–64 do at least 150–300 minutes of moderate-intensity or 75–150 minutes of vigorous-intensity aerobic activity per week (or an equivalent combination) plus muscle-strengthening activities on two or more days each week [2]. Regular physical activity provides significant health benefits by preventing and managing non-communicable diseases such as heart disease, stroke, diabetes, and some cancers, while also improving mental health and overall well-being [1].

However, about one in three adults globally does not meet the recommended PA levels, with women generally being less active than men, as surveys indicate that approximately 5% more women than men fail to reach these levels[1]. In Nigeria, physical inactivity appears to be rising, with a 2022 meta-analysis estimating that about 52% of adults are insufficiently active, with higher rates in women (56%) than in men (approximately 49%), and particularly in urban areas (nearly 57%) compared to rural areas (about 19%) [3].

In sub-Saharan Africa (SSA), increasing urbanization, changes in transportation patterns, occupational shifts, and limited supportive environments for walking and recreation have been linked with reduced movement and increasing sedentary lifestyles. Evidence suggests that transport-related physical activity (e.g., walking/cycling) is a meaningful contributor to overall wellness in SSA, but it depends strongly on safety, infrastructure and built-environment support [4]. Among women of reproductive age in urban SSA, determinants of PA commonly include time constraints, competing responsibilities, socioeconomic

conditions, perceptions of safety, social norms, and access to facilities [5].

Gender norms and expectations in some communities may discourage women from engaging in adequate PA or allocating personal time for PA. Sociocultural factors such as heavy household and caregiving responsibilities also affect Nigerian women's PA, potentially limiting their time for leisure exercise [6]. Unfortunately, inadequate PA level is an important modifiable risk factor for cardiovascular diseases and several other chronic non-communicable diseases.

Nnewi, a major urban-industrial city in Anambra State with a population of over one million, is known for its vibrant trade and industry but has limited public recreational infrastructure. Although community exercise gatherings reflect a strong sports culture, the lack of accessible public sports facilities, combined with women's responsibilities at work, household duties, and childcare, as well as social norms that emphasize domestic roles over formal exercise, highlights the absence of published data on how these factors affect women's physical activity [7].

Therefore, this study aimed to assess the levels of physical activity, perceived benefits, and perceived barriers to physical activity among adult women residing in Nnewi, Anambra State, Nigeria.

MATERIALS AND METHODS

Study Design

This study employed a cross-sectional survey design.

Study Population

The respondents of this study were adult women aged 18–59 years residing in Nnewi town, Anambra State of Nigeria who gave their consent to be used for the study.

Inclusion Criteria

Women aged 18–59 years who were residents of Nnewi for at least one year and provided informed consent were included.

Exclusion Criteria

Women with physical or cognitive impairments that prevented them from engaging in physical activity or completing the questionnaire were excluded.

Sampling Technique

A quota sampling technique was used to select an equal number of women from selected communities from each of the four quarters of Nnewi namely: Otolo, Uruagu, Nnewi-ichi, and Umudim. The fishbowl method was also used to randomly select two communities from each quarter. Female residents of the selected communities who met the inclusion criteria were consecutively recruited into the study.

Sample Size Determination

The sample size was determined using Taro Yamane's formula:

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

Where:

- n = required sample size
- N = total population of women aged 18–59 in Nnewi North (55,493)[15]
- e = margin of error (0.05 for 95% confidence level)

$n = 397.22$

Thus, the minimum required sample size was 400 women.

Research Instruments

International Physical Activity Questionnaire-Short Form (IPAQ-SF): The IPAQ-SF is a standardized 7-item self-report instrument for adults that assesses physical activity over the past 7 days by asking respondents to report the number of days and time spent in walking, moderate-intensity, and vigorous-intensity activities (each lasting at least 10 minutes), as well as daily sitting time [8]. The IPAQ-SF has demonstrated acceptable test-retest reliability with intra-class correlations of 0.642–0.789 for total physical activity [9].

Exercise Benefits and Barriers Scale (EBBS): The EBBS is a 43-item instrument designed to assess individuals' perceptions of the benefits of and barriers to engaging in physical activity. It comprises two subscales: 29 items measuring perceived benefits and 14 items measuring perceived barriers. Each item is rated on a 4-point Likert scale, ranging from "strongly disagree" (1) to "strongly agree" (4) [10]. Psychometric evaluations of the EBBS indicate strong reliability with Cronbach's $\alpha \approx 0.82$ for the overall EBBS [11].

Data Collection Procedure

Ethical approval was obtained from the ethical review committee of the Faculty of Health Sciences and Technology, Nnamdi Azikiwe University, Nnewi Campus before the commencement of this study (Protocol Number: FHST/REC/024/1063). Research assistants were recruited and trained by the researcher. The details of the study were explained to the participants. Participants' confidentiality was assured, and informed consent was obtained. Voluntary participation and freedom to withdraw from the study were duly emphasised. The questionnaires were distributed to the participants by the researcher and retrieved after completion.

Data Analysis

The obtained data were summarized using descriptive statistics of mean, frequency table, percentage, range, standard deviation, and bar chart. The Kruskal-Wallis test was used to test the hypotheses. The level of significance was set at 0.05.

RESULTS

Sociodemographic Characteristics of Participants

A total of 400 female adult residents of Nnewi participated in this study. The mean age of the participants was 30.77 ± 11.15 years, with ages ranging from 17 to 65 years. Regarding marital status, 49.8% were single, 45.3% were married, 3.5% were widowed, 1.0% were divorced, and 0.5% were classified under other categories. In terms of educational attainment, 63.5% had secondary education, 27.8% had tertiary education, 5.0% had primary education, 3.0% had postgraduate education, and 0.3% had no formal education. Occupational distribution showed that participants were engaged in diverse economic activities: business (25.5%), trading (17.5%), students (14.8%), fashion industry (11.3%), beauticians (10.8%), caterers (7.2%), healthcare providers (4.5%), civil servants (3.8%), and unemployed (2.8%). Participants were almost evenly distributed across the four quarters of Nnewi: Nnewichi (24.8%), Uruagu (24.5%), Umudim (25.5%), and Otolo (25.3%) (Table 1).

Table 1 Participants' Sociodemographic Profile

Variable	Class	Frequency	Percentage
Marital Status	Single	199	49.8
	Married	181	45.3
	Widowed	14	3.5
	Divorced	4	1.0
	Other	2	0.5
Educational Level	No formal education	1	0.3
	Primary education	20	5.0
	Secondary education	254	63.5
	Tertiary education	111	27.8
	Postgraduate education	12	3.0
Occupation	None (unemployed)	11	2.8
	Trader	70	17.5
	Business	102	25.5
	Student	59	14.8
	Fashion industry	45	11.3
	Caterer	29	7.2
	Healthcare provider	18	4.5
	Beautician	43	10.8
	Civil servant	15	3.8
	Others	6	1.5
Quarter of Residence	Nnewichi	99	24.8
	Uruagu	98	24.5
	Umudim	102	25.5
	Otolo	101	25.3

Physical Activity Levels, Exercise Benefits and Barrier Scores

The mean benefit score recorded by participants was 89.12 ± 20.05, while the mean barrier score was 36.10 ± 9.15 (Table 2). The modal number of days participants engaged in vigorous physical activity was 1 day per week, while the modal number of days for moderate physical activity or walking was 7 days per week.

Regarding duration of physical activity, about one-third of the participants who engaged in vigorous physical activity did so for less than 30 minutes, while a quarter of them engaged in vigorous physical activity for a time range between 30 minutes to 1 hour (Fig. 1). For moderate physical activity, the modal time frame was 30 minutes to 1 hour (39.3%) (Fig. 2). The majority of participants reported walking duration of less than 30 minutes to 1 hour (Fig. 3). The modal sitting time on weekdays was 3 to 6 hours (20.8%) (Fig. 4).

Perceived Exercise Benefits, Barriers, and Associations with Physical Activity Levels

The majority of participants agreed or strongly agreed with most benefit statements, indicating high awareness of the positive effects of exercise. Notable findings include: 89.0% agreed or strongly agreed that "Exercise increases my muscle strength"; 92.5% agreed or strongly agreed that "Exercise increases my level of physical fitness"; 90.8% agreed or strongly agreed that "Exercise improves the functioning of my cardiovascular system"; 87.5% agreed or strongly agreed that "Exercise helps me sleep better at night"; 86.8% agreed or strongly agreed that "I will live longer if I exercise"; 91.7% agreed or strongly agreed that "Exercise improves overall body functioning for me"; and 89.0% agreed or strongly agreed that "Exercise improves the way my body looks."

Regarding perceived barriers, the most commonly endorsed barriers included: "Exercise tires me" (48.3% agreed or strongly agreed); "Places for me to exercise are too far away" (50.6%); "Exercise facilities do not have convenient schedules for me" (38.5%); "I am fatigued by exercise" (39.0%); "Exercise is hard work for me" (30.3%); and "There are too few places for me to exercise" (47.8%). Encouragingly, social barriers such as lack of spousal or family encouragement were less commonly endorsed (18.1% and 17.5%, respectively).

The present study found no significant associations between exercise benefit scores and vigorous physical activity ($p = 0.783$), moderate physical activity ($p = 0.057$), or walking ($p = 0.059$). However, there was a significant association between weekday sitting duration and perceived exercise benefits ($p = 0.003$), with the highest mean rank recorded among persons who reported the highest sitting periods (>12 hours). Conversely, moderate physical activity ($p = 0.039$), walking ($p < 0.001$), and weekday sitting duration ($p = 0.028$) each showed significant associations with perceived barrier scores.

A summary of the key findings on perceived benefits, barriers, and their associations with physical activity levels is presented in Table 3.

Table 2 Mean Age, Benefit and Barrier Scores

Variable	Minimum	Maximum	Mean	Std. Deviation
Age (years)	17	65	30.77	11.145
Days of vigorous PA (per week)	1	7	1.87	0.983
Days of moderate PA (per week)	0	7	4.40	2.221
Days of walking (per week)	1	7	5.41	1.919
Exercise Benefits score	2	116	89.12	20.049
Exercise Barriers score	0	56	36.10	9.150

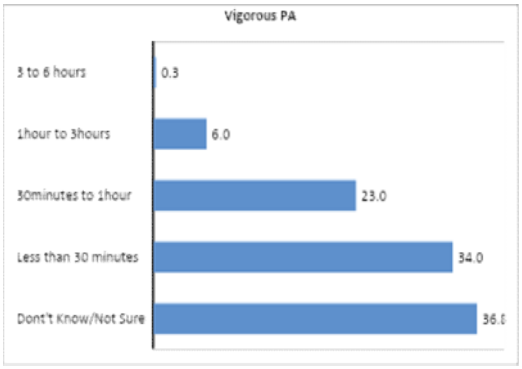


Fig 1 Level of Vigorous PA

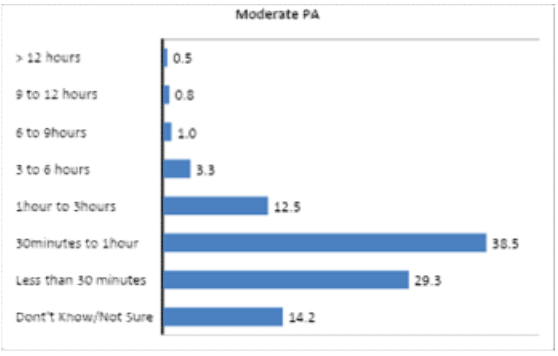


Fig 2 Moderate PA

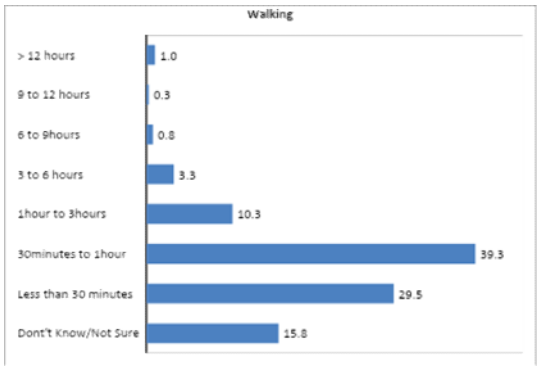


Fig 3 Walking

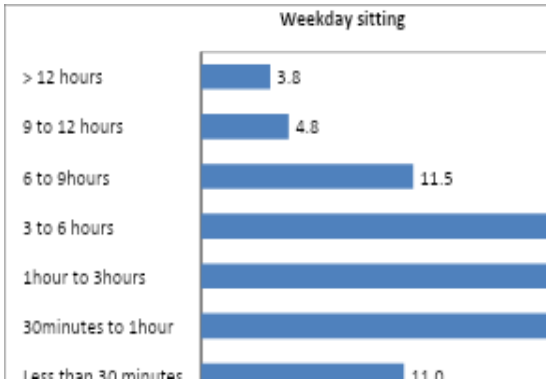


Fig 4 Weekday Sitting

Table 3 Summary of Perceived Exercise Benefits, Barriers, and Associations with Physical Activity Levels

Category	Variable / Item	Finding	tatistical Value
Perceived Benefits	Mean benefit score (max 116)	89.12 ± 20.05	–
	Exercise increases muscle strength	89.0% agreed/strongly agreed	–
	Exercise increases level of physical fitness	92.5% agreed/strongly agreed	–
	Exercise improves cardiovascular functioning	90.8% agreed/strongly agreed	–
	Exercise helps sleep better at night	87.5% agreed/strongly agreed	–
	I will live longer if I exercise	86.8% agreed/strongly agreed	–
	Exercise improves overall body functioning	91.7% agreed/strongly agreed	–
	Exercise improves the way my body looks	89.0% agreed/strongly agreed	–
Perceived Barriers	Mean barrier score (max 56)	36.10 ± 9.15	–
	Exercise tires me	48.3% agreed/strongly agreed	–
	Places to exercise are too far away	50.6% agreed/strongly agreed	–
	Exercise facilities lack convenient schedules	38.5% agreed/strongly agreed	–
	I am fatigued by exercise	39.0% agreed/strongly agreed	–
	Exercise is hard work for me	30.3% agreed/strongly agreed	–
	There are too few places to exercise	47.8% agreed/strongly agreed	–
	Lack of spousal encouragement	18.1% agreed/strongly agreed	–
	Lack of family encouragement	17.5% agreed/strongly agreed	–
Associations with Benefits	Vigorous PA vs. Benefits	Not significant	p = 0.783
	Moderate PA vs. Benefits	Not significant	p = 0.057
	Walking vs. Benefits	Not significant	p = 0.059
	Weekday sitting duration vs. Benefits	Significant	p = 0.003
Associations with Barriers	Vigorous PA vs. Barriers	Not significant	p = 0.575
	Moderate PA vs. Barriers	Significant	p = 0.039
	Walking vs. Barriers	Significant	p < 0.001
	Weekday sitting duration vs. Barriers	Significant	p = 0.028

DISCUSSION

This study aimed to determine the levels of physical activity as well as perceived exercise benefits and barriers among adult women residing in Nnewi, Anambra State. The study found that most participants had at least secondary school education. Participants reported high perceived benefits of exercise alongside moderate perceived barriers. Most women engaged frequently in moderate-intensity activities and walking, whereas vigorous exercise was much less common.

The predominance of moderate physical activity and walking among women in Nnewi suggests that their activity could be largely incidental and derived from daily functional tasks such as transportation, trading, household chores, and occupational movement rather than structured exercise. This pattern is consistent with reports among Nigerian women where intentional exercise participation remains limited [3]. This finding supports existing evidence that women may meet some physical activity requirements through daily routines but still fall short of recommended levels of vigorous or structured exercise [2].

Perceived benefits of exercise were generally high among participants, reflecting good awareness of its positive effects on physical fitness, cardiovascular health, mental well-being, and overall quality of life. This is consistent with previous findings that women often recognise these benefits even when their participation is suboptimal [10]. The high mean exercise benefit score indicates that participants generally held positive perceptions of physical activity, a finding consistent with studies from low- and middle-income countries showing high awareness of exercise benefits despite low participation levels [3,12].

The lack of significant associations between perceived benefits and most physical activity measures suggests that awareness alone does not increase participation, aligning with behavioural models that highlight environmental and psychosocial constraints on health behaviour change [13]. Women may value exercise but still be unable to prioritise it due to competing demands such as work, childcare, and household responsibilities.

Interestingly, women who reported longer sitting periods also demonstrated higher perceived exercise benefits, which may reflect greater health awareness among those engaged in sedentary occupations such as office work or trading. Similar observations have been reported in urban African populations, where sedentary workers often possess greater health knowledge but face structural barriers to physical activity engagement [3].

Perceived barriers to physical activity were moderately high and significantly associated with moderate activity, walking, and sitting duration, highlighting their influence on actual physical activity behaviour. Barriers such as lack of time, fatigue, distance to exercise facilities, and cost have been consistently identified as major determinants of inactivity among women [14]. In Nigeria, time constraints related to economic activities and

domestic roles remain prominent barriers, particularly for women of reproductive and working age [12].

CONCLUSION

Physical activity among women in Nnewi was marked by low participation in vigorous activities, with higher engagement in moderate activities and walking. Women in Nnewi generally have a high perception of the benefits of physical activity, especially in relation to physical health, mental well-being, and functional capacity. Perceived barriers to physical activity exist at a moderate level and commonly include time constraints, fatigue, limited access to exercise facilities, and cost-related factors. There was no significant relationship between physical activity levels and perceived benefits, indicating that awareness of benefits alone may not be enough to increase participation. Perceived barriers show a significant association with moderate physical activity, walking, and sedentary behaviour, suggesting that barriers influence physical activity participation more strongly than perceived benefits.

RECOMMENDATIONS

Based on the findings of this study, the following recommendations are made:

1. Community-based exercise programmes that respect the culture and traditions of women in Nnewi should be created to help them stay active.

2. Healthcare professionals such as physiotherapists should design practical programmes on how to fit exercise into a busy schedule, even when feeling tired.

3. Further research should be carried out using intervention-based designs and repeated measures to identify effective strategies that can reduce perceived barriers and increase physical activity participation among women.

Ethical Approval and Consent to Participate

Ethical approval for this study was obtained from the ethical review committee of the Faculty of Health Sciences and Technology, Nnamdi Azikiwe University, Nnewi Campus (Protocol Number: FHST/REC/024/1063). The study was conducted in accordance with the Declaration of Helsinki. Written informed consent was obtained from all participants prior to enrolment. Participants were assured of anonymity and the right to withdraw from the study at any time without consequence.

Availability of Data and Materials

The datasets generated and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing Interests

The authors declare that they have no competing interests.

Authors' Contributions

NOC and AIA conceptualised the study, NOC and OCC performed data collection, AIA supervised the study, provided methodological guidance,

performed data analysis. APO and AIA drafted the manuscript. OCC and NPO revised the manuscript critically for important intellectual content. NPO supervised the study and provided administrative support. All authors read and approved the final manuscript.

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