

RURAL-URBAN DIFFERENCE IN LEVELS OF PHYSICAL ACTIVITY
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ABSTRACT

Background: Lifestyles, including physical inactivity are known risk factors for cardiovascular diseases. Urbanization has been associated with physical inactivity. **Objective:** The objective of this study was to determine the level of physical activity among the Hausa-Fulani of Sokoto, Nigeria and to compare physical activity levels between rural and urban Hausa-Fulani of the sub-region. **Method:** This was a cross-sectional study conducted in Sokoto State in Northern Nigeria using multistage sampling design. Seven hundred and eighty two participants were recruited. Using the WHO STEP wise approach to surveillance (STEPS) instrument, information on socio-demographic, physical activity and anthropometric data was obtained. Being physically active was defined as participating in 30 or more minutes of moderate or vigorous activity per day for at least 5 days in a week. **Results:** The mean (SD) age of the study population was 38.9 (36.6) years. Four hundred and sixty two (59.0%) subjects comprising of 182 (46.8%) and 280 (71.2%) from the urban and rural locations respectively, were physically active. The male subjects (64.1%) were more physically active than the females (53.6%) (p=0.002). Occurrence of physical inactivity in the Hausa-Fulani increases with increased age and body mass index. **Conclusion:** Physical inactivity is common among the Hausa-Fulani ethnic group of North-Western Nigeria. It is commoner in the urban compared to the rural dwellers. There is therefore the need for public health interventions to improve physical activity so as to reduce the risk of non-communicable diseases associated with physical inactivity.

Keywords: Physical activity, Hausa-Fulani, urban, rural.

INTRODUCTION

Cardiovascular diseases (CVD) are among the leading causes of death and disability worldwide.¹ Lifestyles including physical inactivity and increased consumption of saturated fat are known risk factors for CVD.²⁻⁶

Physical activity (PA) levels among adults have been found to vary by geographic region and degree of urbanization.^{7,8} There is paucity of data on the physical activity levels among the Hausa-Fulani ethnic group of North-Western Nigeria. The Hausa-Fulani usually

have a lean physique that should prevent against cardiovascular diseases.⁹ Hausa-Fulani mostly live in a subsistence economy with much occupational physical activity such as nomadic cattle rearing related to providing food and subsistence to their families. However, most Hausa-Fulani have adopted western lifestyles with low levels of occupational physical activity, as a consequence of modernization. The objective of this study was to determine the level of physical activity among the Hausa-Fulani of Sokoto, Nigeria, and to compare physical activity levels between rural and urban Hausa-Fulani of the sub-region.

METHOD

The study was conducted in Sokoto metropolis of Sokoto state in the Sudan savannah zone of North-Western Nigeria. The state has a population of 3.69 million.¹⁰ In a cross-sectional study, we recruited 782 (389 urban; 393 rural) adults participants. Urban and rural communities in Sokoto were selected using the multistage sampling method based on existing administrative divisions. The first stage involved random sampling selection of some districts; while the second stage involved selection of some households using clustered sampling technique from the districts selected. Gumbi and Wamakko villages were the selected rural areas from Wamako Local Government Area which has a population of 179,619, while Maberu and Yar'akija areas were the selected urban areas from Sokoto South Local Government Area which has a population of 194,914.¹⁰ The study protocol was based on a modification of the WHO STEPS instrument for surveillance of risk factors for chronic non-communicable diseases.¹¹ Pretested questionnaire was administered by trained research assistants. Demographic and the life style data was obtained from the participants after getting written informed consent.

Evaluation of anthropometric variables and blood pressure measurement was also performed. Subjects with chronic medical conditions like heart failure and chronic kidney disease were excluded from the study.

Physical Activity Assessment

Data on number of hours per day devoted to vigorous activity, moderate activity, light activity, watching television, participation in other sedentary activities, and periods of inactivity/sleeping was obtained. Being physically active was defined as participating in 30 or more minutes of moderate or vigorous activity per day. Additional information regarding work-related and leisure-time physical activity was obtained. Vigorous or moderate physical activity during work or leisure time were classified as participating in work-related or leisure-time physical activity, respectively.

Statistical Analysis

Epi-Info version 3.3.4 was used to perform statistical analysis. Student's t-test was used to determine significance of differences between group means while χ -squared statistic was employed to determine significance of results of comparison of proportions between groups. The level of statistical significance is set at $p < 0.05$.

RESULTS

Socio-demographic and anthropometric characteristics of the study participants

Seven hundred and eighty two subjects comprising of 389 urban and 393 rural dwellers were studied. The mean (SD) age of the subjects was 38.9 (36.6) years. The age and anthropometric characteristics of study subjects are as shown in Table 1. The Table compares the age and anthropometric features across locations and gender.

Table 1: Age and anthropometric characteristics of the study subjects by location

Variable	Mean (SD)		p value
	Rural (n=393){M=210,F=183}	Urban (n=389){M=199,F=190}	
Age (years)			
All	38.5(13.6)	39.4(14.2)	0.45
Males	36.6(13)	36.4(14.1)	0.87
Females	40.3(13.9)	42.1(13.7)	0.173
Weight (kg)			
All	58.5(9.7)	65.9(12.9)	<0.001
Males	60.8(9.3)*	68.8(12.6)*	<0.001
Females	55.8(9.6)	62.8(12.5)	<0.001
Height(cm)			
All	163.0(8.0)	165.5(8.1)	0.001
Males	166.6(7.1)*	170.3(6.5)*	0.001
Females	158.9(7.1)	160.4(6.4)	0.037
Body Mass Index (kg/m²)			
All	21.9(3.1)	24.0(4.2)	0.001
Males	21.9(2.9)	23.7(4)	0.007
Females	22.1(3.3)	24.4(4.4)	<0.001
Waist circumference (cm)			
All	78.6(8.7)	84.3(10.6)	<0.001
Males	79.2(8.7)	85.5(10.3)*	0.001
Females	77.9(8.6)	82.9(10.7)	0.001
Waist Hip ratio			
All	0.86(0.06)	0.87(0.07)	0.199
Males	0.87(0.06)*	0.89(0.06)*	0.001
Females	0.85(0.06)	0.84(0.07)	0.322

Data are expressed as means \pm SD. M= male; F= female, *=significant difference between males and females.

The urban subjects were significantly heavier [65.9 vs. 58.5 kg ($p < 0.001$)] and had higher BMI [24 vs. 21.9 kg/m² ($p < 0.001$)] than the rural subjects. The male subjects were significantly heavier than the female subjects in both urban and rural settings ($p = < 0.001$).

Physical activity levels of the study participants

The association of physical activity with socio-demographic characteristics and BMI is shown in table 2.

Table 2: Association of physical activity with socio-demographic characteristics and BMI

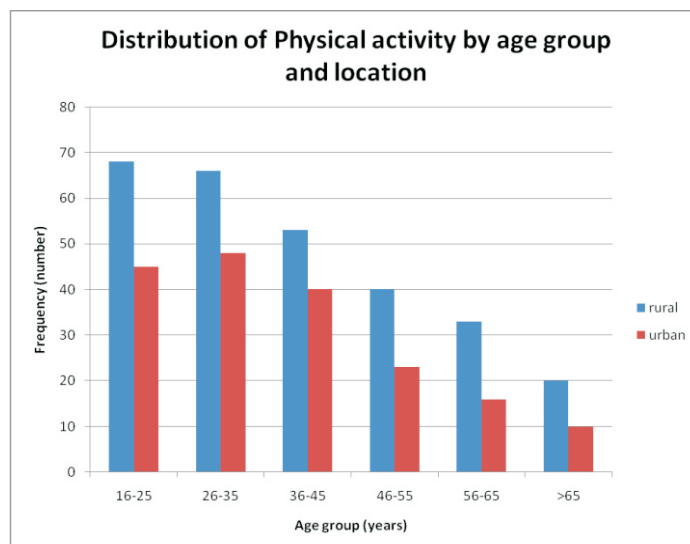
Variable	n (%)	Adequate PA n(%)	Inadequate PA n(%)	p value
All	782 (100)	462 (59.1)	320 (40.9)	
Age (Years)	480 (61.4)	312 (65.0)	168 (35.0)	0.062
40	302 (38.6)	150 (49.7)	105 (50.3)	
>40				
Sex	373 (47.7)	200 (53.6)	173 (46.4)	0.002
Female	409 (52.3)	262 (64.1)	147 (35.9)	
Male				
Location	389 (49.7)	182 (46.8)	207 (53.2)	0.001
Urban	393 (50.3)	280 (71.2)	113 (28.8)	
Rural				
BMI category (kg/m ²)	59 (7.5)	33 (55.9)	26 (44.1)	0.001
<18.5	517 (66.1)	376 (72.7)	141 (27.3)	
18.5-24.9	206 (23.6)	53 (25.7)	153 (74.3)	
25				

BMI=Body mass index; PA=Physical activity

This study shows 462 (59.1%) subjects were physically active comprising of 182 (46.8%) and 280 (71.2%) from the urban and rural locations respectively.

Physical activity by age group

The distribution of physical activity by age group and location is shown in figure 1.



The younger rural subjects were more physically active than the urban subjects.

DISCUSSION

This study shows that 462 (59.1%) subjects from the region studied met the recommended levels of physical activity. The level of PA is similar to those previously reported from Nigeria and several other African countries.¹²⁻¹⁴ Previous reports from 22 African countries showed great variation in level of physical activities across Africa, with country prevalence ranging from 46.8% (Mali) to 96.0% (Mozambique).¹⁴

The study also revealed that the proportion of the population classified as physically inactive (40.9%) surpasses the global estimate of 31% reported in 2012.⁸ Studies have shown that the prevalence of physical inactivity in Africa is increasing as a result of urbanization, epidemiological transition and demographic transition.^{15,16} This trend is characterized by a rise in the burden of non-communicable diseases arising from sedentary lifestyle.

The findings from this study showed prevalence of physical inactivity to be higher in urban than in rural populations. This may be due to the fact that rural subjects mostly live a subsistence economy where they farm and rear cattle. Much of their physical activity is occupational in nature and related to providing food and subsistence to their families. In contrast, the urban subjects have adopted western lifestyle with low level of occupational physical activity. The findings are similar to Sobngwi *et al*¹⁷ in Cameroon that found significantly lower physical activity, light occupation, and reduced walking and cycling time in urban compared to rural subjects. Study by Benjamin *et al*¹⁸ also found that rural subjects had a higher physical activity level than their urban counterparts in Guatemala. They reported that most of the rural inhabitants (73%) had a physically moderate or heavy lifestyle, compared to 14% with very light activity.

We also found physical inactivity to be commoner among the elderly, a finding consistent with previous studies showing inverse relationship between physical activity and age.¹⁹⁻²¹ Aging is associated with reduced physical fitness (strength, endurance, agility, and flexibility) resulting in difficulties with activities of daily living and normal functioning of the elderly.^{22,23} Decrease in the number of muscle fibers and atrophy of type II muscle fiber that tends to occur after 50 years of age usually results in reduced muscle strength and mass by 30-50%, contributing to reduced capacity for physical activity.²⁴

Physical inactivity was found to be commoner in females than males across the region. This is consistent with other findings in which males are physically more active than females.^{25,26} The higher prevalence of physical inactivity in females may be due to cultural practices in which physical activity is restricted to household chores.

LIMITATION OF THE STUDY

The use of self-report questionnaire has the tendency to overestimate or underestimate the level of physical activity. This can affect the accuracy of the findings.

CONCLUSION

Physical inactivity is common among the Hausa-Fulani ethnic group. It is commoner in the urban than the rural population. The result underscores the need for public health awareness and interventions to emphasize lifestyle modification towards being physically active.

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