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Research Article

Physical Activity and Associated Factors among Patients Attending Hypertension Clinics in Mbarara City, Southwestern Uganda

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ABSTRACT

Background: Physical activity has been shown to prevent mortality and morbidity among people with hypertension. Hypertension has been identified to affect about 33% of the adult population across the globe and 26.4% in Uganda. An increase in hypertension and its adverse outcomes have been observed and reported in Southwestern Uganda. This may be due to physical inactivity. However, there is limited evidence demonstrating physical activity among patients with hypertension within Southwestern Uganda. The current study investigated the extent of physical activity and associated factors among patients attending hypertension clinics in Mbarara City, Southwestern Uganda.

Objective: To investigate the extent of physical activity and associated factors among patients attending hypertension clinics in Mbarara City, Southwestern Uganda.

Methods: A descriptive, quantitative cross-sectional study was conducted. Participants' data was obtained using a structured researcher-administered questionnaire consisting of the International Physical Activity Questionnaire (IPAQ) long form, Motivation for Physical Activity Questionnaire (RM4-FM) and the Barrier to Being Active Quiz (BBAQ). Frequency distribution tables, Fischer's exact test and multivariate logistic regression were used to describe data and establish associations during data analysis. A p-value less than 0.05 with 95% confidence interval was considered to be statistically significant.

Results: Less than half of the participants (45.39%) were found to be physically active. Level of education, having heard of physical activity, place of residence, sedentary behaviour and social influence were associated with physical activity with the Fischer's exact test (p-value<0.05). On multivariate adjustment, only level of education (aOR=1.374; CI=1.055-1.790; p-value=0.018) and sedentary behaviour (aOR=0.276; CI=0.126-0.606; p-value=0.001) remained significant factors associated with physical activity. Majority of those who were active reported to be autonomously motivated. Most reported barriers were lack of skill, social influence and lack of willpower.

Conclusion: More than half of the patients with hypertension were physically inactive and almost half were inactive and sedentary. This is a double disaster especially for patients with hypertension; therefore, emphasis should be put on educating the public about the benefits of physical activity and availing a variety of physical activity options that engage all demographic groups.

Keywords: Physical activity; Hypertension; Sedentary behaviour

INTRODUCTION

Across the globe, 7.6% of deaths due to cardiovascular diseases are attributed to physical inactivity [1]. Evidence also shows that 74.0% of the cardiovascular disease deaths associated with physical inactivity occurs in low and middle-income countries. Physical activity has been recommended in management of hypertension [1]. In 1968, one of the first clinical studies demonstrating the

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antihypertensive effect of physical activity was published. The study found a 13.4 mmHg decrease in the mean systolic pressure and a 2 to 30 mmHg decrease in diastolic pressure, after the completion of the exercise training period [2]. More studies have recently been done to confirm the effect of physical activity on blood pressure control through various mechanisms including, decreasing sympathetic activity and reducing oxidative stress [3,4]. The notion that an individual can be both physically active and also sedentary has come as an eye-opener for most physical activity researchers, and some findings have examined the possible negative effect of sedentary behaviour over physical activity in physically active populations and sedentary behaviour has been reported to produce direct negative effects on outcomes of hypertension [5-7]. Evidence comes from who reported that each one hour of sedentary behaviour was associated with 0.06 mmHg increases in systolic pressure and 0.20 mmHg increase in diastolic pressure among hypertensives [8]. In addition, sedentary behaviour has been reported to compromise outcomes of hypertension leading to stroke and myocardial infarction among others [9]. Despite the known benefits of physical activity, physical inactivity especially among individuals with hypertension is still high across the globe ranging from 23% in adults to 81% in adolescents [10]. It is important to note that the prevalence of physical inactivity varies across various regions and countries and may be as high as 80% among some adult populations [11]. The major form of motivation to physical activity adherence has been reported to be autonomous motivation [12]. Additionally, found that autonomous regulation was the main predictor of exercise intensity, frequency and time among males and females [13]. The major barriers that have been reported include inadequate information about physical activity, fear of physical activity, health illiteracy and fear of changing lifestyle [14].

In East Africa, in a study in Kenya, it was found that majority (63.0%) of the patients with hypertension had low levels of physical activity [15]. In another study done in Kigali Rwanda, it was indicated that the major factors associated with physical activity among patients with hypertension were age, marital status, place of residence, and education level, among others, and the perceived motivators were perceived health benefits, self-efficacy and blood pressure control [16].

On that account, increasing incidences of adverse outcomes of hypertension like heart failure, renal failure and stroke among individuals with hypertension have been reported and observed in this region [17-19]. It is important to note that, in a recent study by at Mbarara Regional Referral hospital, hypertension was cited as a major contributing factor to stroke mortality [20]. These observations could be attributed to poor practice of lifestyle modifications such as physical inactivity among patients with hypertension. However, this argument cannot be fully supported since there is still limited evidence on physical activity among individuals with hypertension in this region. Relatedly, there is inadequate information on the factors associated with physical activity that might influence the extent of physical activity in this population. Therefore, this study sought to investigate the extent of physical activity and associated factors among patients attending hypertension clinics in Mbarara City, Southwestern Uganda.

MATERIALS AND METHODS

Study design

A descriptive, quantitative cross-sectional study using a researcher-administered questionnaire was conducted. Hypertensive patients were identified by the nurse and connected to the research members, and a consecutive sampling strategy was used to recruit participants in the study. Interviewer-administered questionnaires were adopted from the International Physical Activity questionnaire (IPAQ) long form to investigate the extent of physical activity, Motivation for Physical Activity Questionnaire (RM4-FM) to explore motivators to physical activity and the Barriers to Being Active Quiz (BBAQ) to explore barriers to physical activity.

Study setting

The study was conducted at two hypertension clinics in Mbarara City, Southwestern Uganda. The two clinics were DMA Diagnostics and Laboratory Limited in Kamukuzi division and Mbarara Medical Specialist clinic located in Kakoba division. The participants got from these clinics were 133 patients and 99 respectively, obtained through proportionate sampling.

Study variables

The level of physical activity (dependent variable) was analyzed by considering the metabolic equivalent of the task, METs-minutes per week and the days of physical activity. MET-minutes per participant were calculated using the formula (MET value) * (time of activity in minutes per day * number of days the activity was done in a week). The independent variables were the associated factors to physical activity. These included: Socio-demographic characteristics (including age, gender, place of residence, monthly income, occupation, marital status, level of education), duration of hypertension, awareness of physical activity, source of information about physical activity, sedentary behaviour, motivators for physical activity, barriers to physical activity and sedentary behaviour. Sedentary behaviour was measured from time spent sitting as average sitting time in the past seven days, assessed by the International Physical Activity Questionnaire (IPAQ). Motivators and barriers were measured using Motivation for Physical Activity Questionnaire (RM4-FM) and Barriers to Being Active Quiz (BBAQ)

Data analysis

Given that the total study sample size was small, Fischer's exact test was used to test for association between physical activity and the independent variables. Multivariate logistic regression was also used to test for further association between physical activity and the independent variables. A p-value less than 0.05 was considered for statistical significance.

RESULTS AND DISCUSSION

Overall, 141 participants participated in the study. Median age of the participants was 58 years (IQR=14). Table 1 shows that females accounted for 67.4% of the participants while males accounted for 32.6% and the age categories were: less than 35 years 3.6%, 35-49 years 18.4% and 50 years above 78.0%. The places of residence of the participants were: Mbarara 44.0%, Greater

Bushenyi 15.6%, Isingiro 13.5% and others 27.0%. The different occupations for the participants were: Farming 27.0%, business 23.4%, housewife 10.6%, retired 9.2% and others 29.8%. The monthly income of the participants was 0-500,000UGX 55.3%, 500,000-1M UGX 31.9% 1M UGX or more 12.8% while the marital status of the participants was: Married 73.8% single 6.4% divorced 5.7% and others 14.2%. The duration of hypertension among the participants was: less than one year 14.2%, 1-5 years 38.3% and more than 6 years 47.5%. The level of education of participants was; completed primary 22.0% secondary 19.9%, tertiary 34.0% and no formal education 24.1%. Those who had heard of physical activity were 85.8% and those who never heard of physical activity were 14.2%. Source of information (from whom) included friends and family 17.7%, health workers 56.0%, mass media 12.1%. The overall physical activity referred to a combination of activities in the different domains. Table 2 shows that overall, of the 141 participants, 54.6% participants had low levels of physical activity, 40.4% achieved moderate levels of physical activity and 5.0% had high levels of physical activity. The factors found to be associated with physical activity on Fishers exact test included place of residence, social influence, level of education, information about physical activity and sedentary behaviour, as shown in Table 3. On bivariate and multivariate logistic regression, only two factors remained statistically significant and these were; sedentary behavior and level of education, as shown in Table 4.

Table 1: Demographic characteristics of study participants.

Characteristics	Frequencies	%
Age group		
less than 35 years	5	3.6
35-49 years	26	18.4
50 years and above	110	78
Gender		
Female	95	67.4
Male	46	32.6
Place of residence		
Greater Bushenyi	22	15.6
Isingiro	19	13.5
Mbarara	62	44
Others	38	27
Occupation		
Business	33	23.4
Farmer	38	27
Housewife	15	10.6
Others	42	29.8
Retired	13	9.2
Monthly income		
0-500000 UGX	78	55.3
500000-1M UGX	45	31.9
1MUGX or more	18	12.8
Marital status		
Divorced	8	5.7
Married	104	73.8

Other	20	14.2
Single	9	6.4
Duration of hypertension		
1-5 years	54	38.3
More than 6 years	67	47.5
less than one year	20	14.2
Level of education		
No formal education	34	24.1
Completed Primary	31	22
Completed Secondary	28	19.9
Completed Tertiary	48	34
Heard of physical activity		
No	20	14.2
Yes	121	85.8
From whom		
Friends and family	25	17.7
Health worker	79	56
Mass media	17	12.1
Never heard of physical activity	20	14.2
Total		
All	141	100

Table 2: Extent of physical activity among the participants.

Domains of physical activity	Frequencies	%
Job-related physical activity		
Low	130	92.2
Moderate	10	7.1
High	1	0.7
Transportation physical activity		
Low	131	92.9
Moderate	10	7.1
High	0	0
Housework and house maintenance		
Low	124	87.9
Moderate	16	11.4
High	1	0.7

Recreation, sport and leisure-time physical activity		
Low	125	88.7
Moderate	16	11.4
High	0	0
Overall physical activity score		
Low	77	54.6
Moderate	57	40.4
High	7	5
Total		
All	141	100

Table 3: Extent of physical activity and sociodemographic characteristics.

Characteristic	Frequencies			Total	%			Total	p-value
	Physical activity score				Physical activity score				
	Low	Moderate	High	All	Low	Moderate	High	All	
Age group									
less than 35 years	4	1	0	5	80	20	0	100	0.549
35-49 years	16	8	2	26	61.5	30.8	7.7	100	
50 years and above	57	48	5	110	51.8	43.6	4.5	100	
Gender									
Female	50	42	3	95	52.6	44.2	3.2	100	0.211
Male	27	15	4	46	58.7	32.6	8.7	100	
Place of residence									
Greater Bushenyi	7	15	0	22	31.8	68.2	0	100	0.016
Isingiro	15	3	1	19	78.9	15.8	5.3	100	
Mbarara	31	26	5	62	50	41.9	8.1	100	
Others	24	13	1	38	63.2	34.2	2.6	100	
Occupation									
Business	18	12	3	33	54.5	36.4	9.1	100	0.705
Farmer	20	17	1	38	52.6	44.7	2.6	100	
Housewife	9	6	0	15	60	40	0	100	
Others	25	14	3	42	59.5	33.3	7.1	100	
Retired	5	8	0	13	38.5	61.5	0	100	
Monthly income									
0-500000 UGX	46	31	1	78	59	39.7	1.3	100	0.166
500000-1M UGX	22	19	4	45	48.9	42.2	8.9	100	
1M UGX or more	9	7	2	18	50	38.9	11.1	100	
Marital status									
Divorced	2	6	0	8	25	75	0	100	0.376
Married	58	39	7	104	55.8	37.5	6.7	100	
Single	4	5	0	9	44.4	55.6	0	100	
Other	13	7	0	20	65	35	0	100	

Duration of hypertension									
less than one year	11	8	1	20	55	40	5	100	0.825
1-5 years	30	20	4	54	55.6	37	7.4	100	
More than 6 years	36	29	2	67	53.7	43.3	3	100	
Level of education									
No formal education	24	10	0	34	70.6	29.4	0	100	0.026
Completed Primary	21	10	0	31	67.7	32.3	0	100	
Completed Secondary	12	14	2	28	42.9	50	7.1	100	
Completed Tertiary	20	23	5	48	41.7	47.9	10.4	100	
Heard of physical activity									
No	16	3	1	20	80	15	5	100	0.027
Yes	61	54	6	121	50.4	44.6	5	100	
From whom									
Friends and family	11	14	0	25	44	56	0	25	0.39
Health worker	42	31	6	79	53.2	39.2	7.6	79	
Mass media	8	9	0	17	47.1	52.9	0	17	
Never heard of physical activity	16	3	1	20	80	15	5	20	
Total All	77	57	7	141	54.6	40.4	5		

Note: Figures in the parentheses are column relative frequency; Others for place of residence include districts of Rukungiri, Ntunga1mo, Kiruhura, Kitagwenda; Others for occupation include teacher, health worker, office workers, security guards; The p-values were reported from the Fischer's exact test. Kabale, Kasese, Rwampara, Kamwenge, Ibanda.

Table 4: Significant associated factors to physical activity on bivariate and multivariate adjustment.

Characteristic	Bivariate analysis		Multivariate analysis	
	crude OR (cOR), (95% CI)	p-value	adjusted OR (aOR), (95% CI)	p-value
Place of residence				
Isingiro	-	-	-	-
Greater Bushenyi	0.964 (0.751-1.238)	0.773	-	-
Mbarara	-	-	-	-
Others	-	-	-	-
Level of education				
No formal education	-	-	-	-
Completed Primary	-	-	-	-
Completed	1.420 (1.106-1.824)	0.006	1.374 (1.055-1.790)	0.018
Secondary	-	-	-	-
Completed Tertiary	-	-	-	-
Heard of physical activity				
No	3.934 (1.243-12.452)	0.02	3.262 (0.953-11.166)	0.06
Yes	-	-	-	-
Sedentary behaviour				
More than 6 hours	0.262 (0.123-0.557)	0.001	0.276 (0.126-0.606)	0.001
Barrier				
Social influence	0.970 (0.851-1.106)	0.651	-	-

Notes: Others for place of residence include districtis of Rukungiri, Ntungamo, Kiruhura, Kitagwenda, Kabale, Kasese,Rwampara,Kamwenge,Ibanda.

This study sought to establish the extent of physical activity and associated factors among patients attending hypertension clinics in Mbarara City, Southwestern Uganda. Physical activity is an effective way of managing hypertension. A participant is physically active if they achieve ≥ 600 METs in a period of 5 days or more per week. Therefore, an individual who had moderate or high levels of physical activity was considered to be physically active.

This study found that only 45.39% of the participants were physically active. These findings are in agreement with a study among hypertensive patients attending hospitals in the Central Gander Zone in Addis Ababa who found that (45%) of the participants were physically active [21]. These findings suggest that the majority of hypertensives are physically inactive. Therefore, interventions to increase physical activity among hypertensives should be emphasized. Few participants were active for transport compared to other domains. Creation of low traffic neighborhoods can improve walking and cycling as forms of active transport [22]. Therefore, policy formulation to include pedestrian and bicycle lanes during road infrastructure planning may be the solution to solve this transportation physical activity challenge.

Findings of this study reveal that participants who had higher levels of monthly income had high physically activity levels. Also found that participants with higher income levels were more physically active [23]. Poverty is more likely to be linked with poor health outcomes, even on the aspect of engaging in physical activity. Therefore, poverty eradication strategies and campaigns can be equally used as platforms for physical activity awareness and counselling.

This study found that those who had information about physical activity were more physically active and contrary to many studies, the study found that those who heard of physical activity from family and friends were more physically active compared to those who heard from health workers therefore health workers may need to assess available family support so as to achieve and sustain physical activity.

36.17% of participants were sedentary (spent more than 6 hours of daily sitting). Almost half of the participants who were physically inactive were also sedentary, reported similar findings [24]. This is a double disaster for people with hypertension [25]. Therefore, interventions to improve levels of physical activity should be put in place so as to address this issue.

The current study found level of education was associated with physical activity. Participants who had higher levels of education were more physically active. These results agree with a study by which reported that participants with hypertension who had completed high school and higher levels of education, were more physically active [26]. It has been noted that more educated participants are more aware of the normal values of blood pressure and their significance hence they partake in physical activity. It was also found that, with high education levels, one can easily obtain information, practice counselling, organise and carry out physical activities as per their schedule [21,27,28]. Higher levels of education have also been associated with better economic outcomes, which consequently influence physical activity positively [29]. Contrasting results where participants with low levels of education were more physically active have been reported. This was explained in relation to the kind of jobs those with low levels of education engage in that is; more strenuous or physically demanding jobs [16,30].

Approximately, half of the physically inactive participants were also sedentary in the current study. A decrease in physical activity alongside an increase in sedentary behaviour has been reported in other studies [24,31,32]. A study among hypertensive subjects reported that each one hour of sedentary behaviour was associated with 0.06 mmHg increase in systolic blood pressure and 0.20 mmHg or diastolic blood pressure [8]. Further noted that higher periods of sedentary behaviour during television viewing are associated with higher risk of death among hypertensive individuals [33]. Therefore, being inactive and sedentary is a double disaster for ill health especially among people with chronic diseases such as hypertension, hence interventions to improve levels of physical activity should be put in place [24]

CONCLUSION

Our study revealed that majority of hypertensive patients was physically inactive despite physical activity benefits. Almost half of the hypertensive patients were both physically inactive and sedentary, each of which has an independent negative effect on blood pressure control. Therefore, programs or interventions informing of the benefits of physical activity in management of hypertension should be greatly emphasized in the local settings. We recommend that, urban planners and ministry of transport provide for pedestrian and cyclists' lanes during road construction, and for ministry of health to establish cardiac rehabilitation programs in all government hospitals for all patients with hypertension and other cardiovascular diseases.

STUDY LIMITATIONS

This study used subjective study tools therefore the results were subject to recall bias. The study tool adopted only assessed physical activity of individuals aged 18-69 years only therefore our results cannot be used to inform possible interventions and recommendations for improving physical activity among patients younger than 18 years and older than 69 years of age. The study sample size was small which makes our results unrepresentative to the general population.

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DISCLOSURE

As the authors of this article, we disclose that there is no conflict of interest regarding this research.

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