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ARTICLE

Factors associated with physical activity amongst patients with hypertension in two community health centres in uMgungundlovu health district, KwaZulu-Natal, 2018

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Background: Hypertension (HPT) is a global public health challenge. It predisposes to cardiovascular diseases, kidney diseases and disability as well as contributing to high death rates. HPT is increasing tremendously in sub-Saharan Africa with HPT-related mortality risk having increased by 25% in less than 10 years in South Africa. Physical activity is a cost-effective way of reducing, controlling and preventing hypertension. The aim of the study was to establish the level of physical activity, and factors associated with physical activity, amongst patients with hypertension, in two community health centres in uMgungundlovu Health District, KwaZulu-Natal, 2018.
Methods: An observational, cross-sectional descriptive study with an analytic component was implemented. Data were collected utilising an interviewer-administered questionnaire. Frequency distribution tables and the chi-square test were used in the analysis of data. A *p*-value less than 0.05 was deemed statistically significant.
Results: A total of 374 questionnaires were administered of which 373 were adequately completed, yielding a response rate of 99.7%. The results showed that 39.1% were highly physical active, 32.4% were moderately physical active and 28.4% had low physical activity. Age, marital status, employment status and level of education were significantly associated with physical activity. Major barriers to physical activity included health problems and having no time to exercise. Health-related reasons were reported to be the major motivator towards physical activity.
Conclusion: Over a third of the participants presented with high levels of physical activity. Health education should focus on promoting physical activity for HPT clients.

Keywords: physical activity level, hypertension, exercise, non-communicable diseases

Introduction

Hypertension (HPT) is the leading risk factor for morbidity and mortality, causing an estimated 9.4 million deaths worldwide.[1] HPT or raised blood pressure is the most widely recognised risk factor for cardiovascular disease, cerebrovascular disease and end-stage renal disease.[2,3] HPT accounts for at least 45% of heart disease-related mortality and 51% of stroke-related mortality.[4,5] HPT is often referred to as a silent killer; about 50% of people with raised blood pressure are not aware of it because they are experiencing no symptoms.[6] This predisposes them to the dangers of stroke and cardiovascular disease.[6] The prevalence of HPT continues to increase and is estimated to rise by 60% by 2025.[7] The primary prevention of hypertension has become a global public health challenge.[7]

Physical activity (PA) is a cost-effective, practical, natural and effective way of controlling HPT.[2,8] Regular PA is a key component of lifestyle therapy for the primary prevention and treatment of hypertension.[2,8] Studies have demonstrated the beneficial effects of exercise on HPT with reductions in both systolic and diastolic blood pressure with as much as 5–7 mmHg reductions in those with hypertension.[9–12] The reduction in blood pressure with PA is thought to be due to attenuation in peripheral vascular resistance, which may be due to neurohormonal and structural responses with reductions in sympathetic nerve activity and an increase in arterial lumen diameters, respectively.[9,10,12]

Physical inactivity is a common behavioural risk factor associated with high blood pressure and other secondary complications.[13] According to the WHO, between 60% and 80% of adults around the world are physically inactive and therefore not taking advantage of the health benefits of PA.[14] In 2004, the WHO developed a worldwide strategy for diet, PA and health (DPAS), aimed at promoting a healthy lifestyle and reducing the burden of chronic diseases such as HPT.[15] This strategy outlines measures to promote PA, thus reducing and preventing the burden of chronic diseases such as HPT.[15]

A number of factors influence adherence to physical activity and these include pain and perception that being physically active involves intensive and hard activities.[16] A majority of older people indicate being physically unfit as the reason for not engaging in any form of physical activity.[17,18] In a study conducted by Wilcox *et al.*, participants reported lack of time, motivation and enjoyment as contributing factors to them not participating in any form of exercise or physical activity.[18] In addition, healthcare professionals do not emphasise the need to exercise as well as the positive impact associated with being active for HPT clients.[1,18]

In South Africa (SA), the National Hypertension Survey indicated that the prevalence of hypertension in people 15 years and above was 22.9% amongst males and 24.6% in females.[7] Research shows that the prevalence of HPT in SA has increased tremendously since 1998.[7,19] In less than 10 years in SA, HPT

increased by 25%.[19] According to the District Health Information System (DHIS), in uMgungundlovu District, a total of 181 304 HPT clients were seen in 2017; on a monthly basis, an average of 16 500 HPT clients are seen. The community health centres (CHCs) where the study was conducted attended to a total of 12 159 and 12 261 HPT clients, respectively, in 2017 and on a monthly basis they attend to an average of 1 100 and 1 200 HPT clients, respectively.

Studies that look at the level of PA in clients living with HPT are limited in South Africa, yet it is important to know factors associated with barriers to and motivators of physical activity in order to implement appropriate strategies. The aim of the study was to establish the level of physical activity, and factors associated with physical activity, amongst patients with hypertension, in two community health centres in uMgungundlovu Health District, KwaZulu-Natal (KZN), in 2018.

Methods

Study design

An observational, cross-sectional, descriptive study design with an analytic component was implemented.

Patients who have been diagnosed with HPT between the ages of 18 and 69[20] years and who had been on treatment for more than six months were invited to participate in the study. A systematic random sampling strategy was used to select study participants. Interviewer-administered questionnaires were used to assess the PA and factors associated with physical activity in HPT patients. The questionnaire was adopted from the International Physical Activity Committee (IPAQ), which measured the PA level and factors associated with physical activity.

The questionnaire was pretested with 10 patients to ensure that it was user-friendly.

Study area

The study was conducted in two Community Health Centres (CHCs) in uMgungundlovu Health District, KZN. The CHCs where the study was conducted are two high-volume CHCs, both in the Msunduzi Local Municipality. According to data from the DHIS, a total of 12 159 and 12 261 HPT clients were seen in each of them respectively in 2018, and on a monthly basis 1 200 and 1 100 HPT clients came for follow-up care in each of these CHCs.

Study variables

The level of physical activity was analysed by taking into consideration the metabolic equivalent of task (MET)-minutes per week indicators and the days of physical activity.[21,22] To calculate MET-minutes per week per participant, the following formula was used: (MET value) × (time of activity in minutes per day) × (days of activity per week) = MET-minutes per week. The overall PA level was categorised as high, moderate or low.[21]

High PA level refers to seven or more days of any combination of walking, moderate-intensity or vigorous-intensity activities achieving a minimum total physical activity of at least 3 000 MET-minutes/week.[21] For the moderate PA level, the criteria are five or more days of any combination of walking, moderate-intensity or vigorous-intensity activities, and achieving a minimum total physical activity of at least 600 MET-minutes/week. Low PA level is the lowest level of physical activity and is below 600 MET-minutes/week.[21]

Data analysis

Data were first captured onto an Excel spreadsheet (Microsoft Corp, Redmond, WA, USA), cleaned and then imported to the Statistical Package of Social Sciences (SPSS) version 25 (IBM Corp, Armonk, NY, USA). A *p*-value of less than 0.05 was deemed as statistically significant. Categorical variables were presented using proportions and frequency distribution tables whilst numerical variables were summarised using measures of central tendency after assessing their normality. A chi-square test was used to assess associations between categorical variables.

Results

A total of 374 questionnaires were administered of which 373 were adequately completed yielding a response rate of 99.7%. Participants' ages ranged from 33 to 69 years, with a mean age of 56.54 (SD = 8.193). Three-quarters of the participants were aged between 51 and 69 years ($n = 284$; 76%); 261 (70%) were female; 253 (67.8%) were not employed, and 254 (68%) were urban dwellers. Almost half of the participants were married ($n = 182$; 48.8%) and had secondary school education ($n = 160$; 42.9%) (Table 1). In terms of physical activity, two-fifths ($n = 146$; 39.1%) presented with high levels of physical activity, achieving a median of 6 336.00 MET-minutes per week. A third of the participants ($n = 121$; 32.4%) were moderately physical active, with a median of 1 462.00 MET-minutes per week, and 28.4% ($n = 106$) had low levels of physical activity, with a median of 132.00 MET-minutes per week (Table 2). Age, marital status, employment status and level of education were

Table 1: Participants' sociodemographic characteristics

Variable	Characteristics	Frequency	Percentage
Age	18–34	10	2.7
	35–50	79	21.3
	51–69	284	76.0
Gender	Male	112	30.0
	Female	261	70.0
Marital status	Single	89	23.9
	Married	182	48.8
	Divorced	26	7.0
	Widowed	76	20.4
Employment	Employed	91	24.4
	Not employed	253	67.8
	Self-employed	29	7.8
Education levels	No formal education	35	9.4
	Primary	116	31.1
	Secondary	160	42.9
	Tertiary	62	16.6
Dwelling place	Rural	118	31.6
	Urban	254	68.1

Table 2: Levels of participation in physical activity

Level of physical activity	Percentage %	Median MET-mins/week (IQR)	Standard MET-mins/week
High	39.1	6 336.00 (5 742.00)	≥ 3 000
Moderate	32.4	1 462.00 (1 112.50)	≥ 2 999
Low	28.4	132.00 (305.25)	< 599

Table 3: Relationships between levels of physical activity and sociodemographic profile

Character	Physical activity score (%)			*p*-value
	Low *n* (%)	Moderate *n* (%)	High *n* (%)	
Age:				
18–34	0 (90.0)	0 (0.0)	10 (100)	< 0.001**
35–50	8 (9.1)	33 (37.5)	79 (53.4)	
51–69	98 (34.5)	83 (29.2)	103 (36.3)	
Gender:				
Male	31 (27.7)	36 (32.1)	45 (40.2)	0.95
Female	75 (28.7)	80 (30.7)	106 (40.6)	
Marital status:				
Single	10 (11.2)	34 (38.2)	45 (50.6)	< 0.001**
Married	41 (22.5)	63 (34.6)	78 (42.9)	
Divorced	8 (30.8)	6 (23.1)	12 (46.2)	
Widowed	47 (61.8)	13 (17.1)	16 (21.1)	
Employment status:				
Employed	9 (9.9)	34 (37.4)	48 (52.7)	< 0.001**
Not employed	97 (38.3)	72 (28.5)	84 (33.2)	
Self-employed	0 (0.0)	10 (34.5)	19 (65.5)	
Level of education:				
No formal education	15 (42.9)	6 (17.1)	14 (40.0)	0.004**
Primary	40 (34.5)	29 (25.0)	47 (40.5)	
Secondary	40 (25.0)	50 (31.3)	70 (43.8)	
Tertiary	11 (17.7)	31 (50.0)	20 (32.3)	
Nature of dwelling place:				
Rural	41 (34.7)	29 (24.6)	48 (40.7)	0.140
Urban	65 (25.6)	86 (33.9)	103 (40.6)	

significantly associated with physical activity. Most participants were highly motivated to engage in physical activity by wanting to be healthy ($n = 238$; 63.8%) and being told to exercise ($n = 104$; 27.9%). Major barriers to physical activity included health problems ($n = 171$; 45.8%), getting dizzy ($n = 63$; 16.9%) and having no time to exercise ($n = 61$; 16.4%) (Tables 3–5).

Discussion

This study sought to establish the level of physical activity and factors associated with physical activity, amongst patients with HPT in two CHCs in uMgungundlovu Health District. Physical activity plays an important role in preventing and managing HPT.[8,19] Physical activity is a cost-effective, practical, natural and effective way of controlling HPT.[2,8] Despite the existence of evidence that confirms the health benefits of PA in reducing and preventing diseases, a majority of people in the world remain physically inactive.[2,23] The results of this study showed that 39.1% of the participants demonstrated high levels of PA, with a median of 6 336.00 MET-minutes per week. Similar results have been reported where clients with chronic diseases reported low levels of physical activities.[2,23–26] A study that looked at physical activity and hypertension amongst black adults found that 57% of the participants were not physically active.[27] More educational programmes and intervention measures for reducing the prevalence of physical inactivity should be targeted to patients with HPT.

Physical activity research shows that physical activity declines with age.[27–29] A study conducted in Australia reported that adults 60 years and above were not physically active due to ill-health and injuries.[17] The current study found a statistically significant relationship between physical activity and age

Table 4: Motivators of physical activity

Motivators to physical activity	Not a motivator *n* (%)	Slight motivator *n* (%)	Moderate motivator *n* (%)	Major motivator *n* (%)
I want to be healthy	36 (9.7)	37 (9.9)	61 (16.4)	238 (63.8)
I was told to exercise	77 (20.6)	62 (16.6)	130 (34.9)	104 (27.9)
I have someone to exercise with	97 (26.0)	65 (17.4)	141 (37.8)	70 (18.8)
I have money to go to the gym	180 (48.3)	52 (13.9)	70 (18.8)	71 (19.0)
I have time to exercise	206 (55.2)	43 (11.5)	93 (24.9)	31 (8.3)
I like exercising	181 (48.5)	62 (16.6)	64 (17.2)	66 (17.7)
I want to lose weight	200 (53.6)	46 (12.3)	77 (20.6)	50 (13.4)
I want to look good	188 (50.4)	57 (15.3)	38 (10.2)	90 (24.1)
Other	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)

Table 5: Barriers to physical activity

Barriers to physical activity	Not a barrier *n* (%)	Slight barrier *n* (%)	Moderate barrier *n* (%)	Major barrier *n* (%)
I have health problems	111 (29.8)	44 (11.8)	47 (12.6)	171 (45.8)
I do not have time	220 (59.0)	39 (10.5)	53 (14.2)	61 (16.4)
I have no one to exercise with	170 (45.6)	63 (16.9)	107 (28.7)	33 (8.8)
I have no access to a place to exercise	215 (57.6)	63 (16.9)	62 (16.6)	33 (8.8)
I feel unsafe	218 (58.4)	58 (15.5)	59 (15.8)	37 (9.9)
I was not told of the importance of exercise	209 (56.0)	61 (16.4)	88 (23.6)	15 (4.0)
I get dizzy	244 (65.4)	45 (12.1)	21 (5.6)	63 (16.9)
I do not like exercising	254 (68.1)	25 (6.7)	54 (14.5)	40 (10.7)
I have no one to look after the children	258 (69.2)	55 (14.7)	29 (7.8)	31 (8.3)
Other	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)

($p < 0.001$). Participants who were aged between 18 and 34 years displayed high physical activity (100%), followed by the 35–50-year-olds, where 53.4% had high levels of physical activity. Lastly, only about a third (36.3%) of participants aged between 51 and 69 years demonstrated high physical activity levels. This could be attributed to the fact that the majority of the older people could have higher comorbidities, which may limit their participation in physical activity.

This study also found that there is a statistically significant relationship between marital status and physical activity ($p < 0.001$). Half of the participants who were single had high PA levels (50.6%), followed by divorced participants (46.2%), and married participants displayed the lowest level of PA (42.9%). This is consistent with the results of the study conducted by Banyangiriki, which concluded that single participants were more physically active when compared with their married counterparts.[30] In addition, a study conducted in Cooper Clinic, Dallas, Texas demonstrated that transitioning from being single to being married slows down physical activity.[31]

The current study also found a significant statistically significant relationship between employment status and PA ($p < 0.001$). Almost two-thirds of the self-employed participants had high levels of PA (65.5%), followed by employed participants, half of whom showed high PA levels (52.7%). Only one-third (33.2%) of the unemployed participants had high levels of PA levels. The findings of this study concur with a study conducted at Gavleborg County, which found a statistically significant relationship between PA and employment status.[26]

Research shows that people with formal education are more active than those without formal education.[32–34] A study that was looking at the levels of PA amongst patients with diabetes mellitus found that participants with high education displayed higher levels of PA than those with a lower level of education.[21] The findings of this study revealed that there is a statistically significant relationship between levels of education and PA ($p = 0.004$). In this study participants with low levels of education were more highly active than those with high levels of education. The findings are comparable to a study conducted in Kigali, Rwanda conducted amongst clients with HPT, which also found that participants with less education displayed higher PA than those with high levels of educations.[24] One possible explanation could be that participants with low levels of education were primarily engaged in physically strenuous jobs, hence they reported high physical activity levels.

Most participants (63.8%) were highly motivated to engage in PA because they want to be healthy. These findings are in line with findings from a number of research studies that also revealed exercising for health-related reasons as a major motivator to actively engage in physical activity.[24,26,35,36] A study investigating the factors that influence regular exercise amongst those with different chronic diseases demonstrated that 98% of the participants responded by saying that knowing the health benefits would motivate them to exercise regularly.[24,34]

Health problems (45.8%) and having no time to exercise (16.4%) were major barriers to physical activity in the current study. Research shows that being physically unfit is a barrier to PA.[24,34,35,37] Previous studies also indicate that lack of time to exercise is identified as a barrier to physical activity.[2,17,38,39] A qualitative study conducted in South Carolina University amongst clients with chronic arthritis found that participants stated that competing responsibilities rob them of time to exercise.[35] Healthcare workers should counsel patients with HPT and highlight the benefits of physical activity to regulate blood pressure.

Study limitations

This was a cross-sectional study, making determinations of cause and effect impossible; therefore, only levels of associations were described but not causality. The information given is subjective since all data were self-reported. The self-reported level of physical activity was based on what participants could recall at the time of responding to the research questionnaire; therefore, it was vulnerable to exaggeration and/or understatement. Recall bias may also be a limitation as patients had to remember their activities from the previous seven days.

Conclusion

This study was aimed at establishing the level of physical activity, and factors associated with physical activity, amongst patients with HPT, in two CHCs in uMgungundlovu Health District. Over a third of the participants presented with high levels of physical activity. Health problems and having no time to exercise were common barriers to physical activity. Health-related reasons were found to be the major motivator towards physical activity, and this aspect can be used effectively when promoting physical activity amongst patients with hypertension and other chronic diseases.

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