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Physical Activity as a Predictor of Heart Diseases among Hypertensive Patients in Saudi Arabia

Faisal Mahdi Alalhareth (1) *, Mohammed Yahya Alyami (1), Nawaf Ahmed Alsharif (1), Ali Mahdi Doman Al-Jafer (1), Ibrahim Khudaysh Hameed Alalhareth (1), Yousef Ahmed Saleh Al Rashah (1), Abdullah Nasser Alyami (2)

(1) *Physiotherapy, King Khaled Hospital.*

(2) *Physiotherapy, Najran General Hospital.*

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*Corresponding author

Abstract

Introduction: Physical activity is one of the most important factors that help to control and reduce complications of hypertension disease. This study aimed to evaluate the patterns of physical activity among hypertensive patients in Saudi Arabia.

Methods: This is a cross-sectional study included all hypertensive patients who attend outpatients clinics. Using a sample size calculator website, a total of 210 was calculated as the minimum sample size sufficient to detect the prevalence of physical activity. A self-administered questionnaire was used for data collection which investigated sociodemographic characteristics and patterns of physical activity with Global Physical Activity Questionnaire (GPAQ).

Results: A total sample of 210 hypertensive patients who registered in the clinic of chronic diseases clinic. About half of the patients were males and more than half aged less than 50 years old. Most patients (about 94%) had a light physical activity such as walking or using a bicycle (pedal cycle) for at least 10 minutes continuously to get to and from places. Moderate-intensity activity during work was significantly more common in male gender and patients younger than 40 years old than females or those 40 years or older ($p=0.038$ and <0.001 , respectively).

Conclusions: Prevalence of physical activity among hypertensive patients was less than optimal. Practicing of physical activity was significantly more common in male and young patients.

Keywords: Physical activity, Sports, Hypertension, Saudi

Introduction

Prevention of cardiovascular diseases is considered as a major public health challenge. In the last decades, studies found that physical exercise reduced the risk of mortality by 20-35%, mainly death related to cardiovascular diseases [1-3]. There is a substantial evidence suggesting that physical activity and exercise reduces blood pressure as well as prevention of development of hypertension [4, 5]. The recent evidence demonstrated the temporal and dose-response relation between physical activity and hypertension [6]. However, the prevalence and factors influencing the pattern of physical activity among hypertensive patients have been not well studied. This study aimed to assess prevalence and determinants of physical activity in hypertensive patients.

Physical activity is one of the most important factors that help to control and reduce complications of hypertension disease. Despite the importance of physical activity and its impact on hypertensive patients but there few studies in this aspect in the Kingdom. This study aimed to evaluate the prevalence and determines of physical activity among hypertensive patients in Saudi Arabia.

Methods

This is a cross-sectional study included all hypertensive patients who attend outpatients clinics. Using a sample size calculator website, a total of 210 was calculated as the minimum sample size sufficient to detect the prevalence of physical activity.

A self-administered questionnaire was used for data collection which was divided into two parts. Part 1 contains questions about the sociodemographic characteristics of the participants (age, gender, marital status, education level, job, history of hypertension, history of smoking). Part 2 contains questions about physical activity using Global Physical Activity Questionnaire (GPAQ), Arabic version. The GPAQ covers several components of physical activity, such

as intensity, duration, and frequency, and it assesses three domains in which physical activity is performed (occupational physical activity, transport-related physical activity, and physical activity during discretionary or leisure time).

World Health Organization developed the Global Physical Activity Questionnaire (GPAQ) for physical activity surveillance. Since then, the GPAQ was underwent a research program which assessed its validity and reliability and demonstrated its ability to incorporate cultural and other differences. It has been used in more than 100 countries globally, mainly through the WHO Stepwise approach to NCD risk factor surveillance (8). After explaining the aim and expected study outcomes for the participants with assurance of data confidentiality, the written consents were obtained.

Results

A total sample of 210 hypertensive patients who registered in the clinic of chronic diseases in . About half of the patients were males and more than half aged less than 50 years old, while only 19% were older than 60 years old. The majority of the patients had a university degree (58.9%) and most of them were married (93%). About 3 quarters of the patients had an income higher than 5,000 SAR per month. The prevalence of smoking among the respondents was 33.7% (table 1).

Only 2 patients (less than 1%) had a job work involve vigorous-intensity activity that causes large increases in breathing or heart rate for at least 10 minutes continuously. A slightly higher percentage of patients (3.1%) worked in a job with moderate-intensity activity, that causes small increases in breathing or heart rate such as brisk walking for at least 10 minutes continuously. However, most patients (about 94%) had a light physical activity such as walking or using a bicycle (pedal cycle) for at least 10 minutes

Table (1): Background characteristics of the hypertensive patients (n = 263)

<i>Characteristics</i>	<i>Frequency</i>	<i>Percent</i>
Gender		
<i>Male</i>	107	51.1
<i>Female</i>	102	48.9
Age		
<i>30-40</i>	78	36.9
<i>41-50</i>	51	24.3
<i>51-60</i>	42	19.8
<i>>60</i>	40	19.0
Education		
<i>Secondary school</i>	73	35.3
<i>University level</i>	122	58.9
<i>Other</i>	12	5.8
Marital status		
<i>Married</i>	190	93.0
<i>Not married</i>	14	7.0
Income		
<i><5000 SAR</i>	155	74.3
<i>≥5000 SAR</i>	54	25.7
Smoking		
<i>Yes</i>	70	33.7
<i>No</i>	137	66.3

continuously to get to and from places. Twenty two percent of the patients had moderate-intensity sports, fitness or recreational (leisure) activities that cause a small increase in breathing or heart rate for at least 10 minutes continuously (table 2).

Tables 3 presented the association between patients' characteristics and moderate physical activity in

hypertensive patients. Moderate-intensity activity during work was significantly more common in male gender and patients younger than 40 years old than females or those 40 years or older ($p=0.038$ and <0.001 , respectively). Education, income, or smoking were not significantly associated with practicing moderate-intensity activity during work.

Discussion

Prevention of cardiovascular diseases is considered as a major public health challenge. In the last decades, studies found that physical exercise reduced the risk of mortality by 20-35%, mainly death related to cardiovascular diseases [1-3]. There is a substantial evidence suggesting that physical activity and exercise reduces blood pressure as well as prevention of

development of hypertension [4, 5]. The recent evidence demonstrated the temporal and dose-response relation between physical activity and hypertension [6]. However, the prevalence and factors influencing the pattern of physical activity among hypertensive patients have been not well studied. This study aimed to assess prevalence and determinants of physical activity in hypertensive patients.

In the hypertensive patients, included in this study, only 2 patients (less than 1%) had a job involves vigorous-intensity activity that causes large increases in breathing or heart rate for at least 10 minutes continuously. This finding seems to be reasonable since patients with hypertensive are either have non-physical work or opted to non-physical work after being diagnosed with hypertension or associated cardiovascular diseases [7]. However, the majority of the respondents (about 94%) had a light physical activity such as walking or using a bicycle (pedal cycle) for at least 10 minutes continuously to get to and from places.

This study found a 22% prevalence of moderate-intensity sports, fitness or recreational (leisure) activities that cause a small increase in breathing or heart rate for at least 10 minutes continuously in hypertensive patients. This is better than the level of physical activity reported, by Al-Nozha et al., in general Saudi population as 4% found to be physically active. However, the assessment of physical inactivity

Table (2): Pattern of physical activity among hypertensive patients

<i>Responses</i>	<i>Frequency</i>	<i>Percent (%)</i>
<i>Does your work involve vigorous-intensity activity that causes large increases in breathing or heart rate, such as carrying or lifting heavy loads, digging or construction work, for at least 10 minutes continuously?</i>		
Yes	2	0.8
No	257	99.2
<i>Does your work involve moderate-intensity activity, that causes small increases in breathing or heart rate, such as brisk walking or carrying light loads, for at least 10 minutes continuously?</i>		
Yes	8	3.1
No	246	96.9
<i>Do you walk or use a bicycle (pedal cycle) for at least 10 minutes continuously to get to and from place?</i>		
Yes	244	93.8
No	16	6.2
<i>Do you do any moderate-intensity sports, fitness or recreational (leisure) activities that cause a small increase in breathing or heart rate, such as brisk walking, cycling, swimming, or volleyball, for at least 10 minutes continuously?</i>		
Yes	56	22.0
No	198	78.0

by Al-Nozha et al. was strict and only those who reported 150 minutes of moderate-intensity activity per week were considered physically active [8]. Similar prevalence of moderate physical activity (23.3%) was reported by Al-Hamdan et al. who recruited Saudi hypertensive patients in a large scale comparative cross-sectional community-based study [9]. The prevalence of moderate physical activity among Indonesian middle aged men was 13.4% but 57.2% had a high level of physical activity [10].

Despite the majority of these Indonesian men were either prehypertensive (39%) or hypertensive (44%), the effect of physical activity on reduction of progression to hypertension stage was significant. The identification of high-risk groups who have low level of physical activity such as women and elderly are important in order to develop targeted interventions focusing on high-risk people. In the literature, it has always been a challenge to quantify the level of physical activity suitable for these demographic groups [11].

We found that both moderate-intensity activity during work and moderate-intensity sports, fitness or recreational (leisure) activities were significantly more common in male gender and patients younger than 40 years old than females or those 40 years or older. This gender and age differences are commonly reported by clinical or epidemiological studies [12]. A longitudinal study, recruited 3,001 Australian women with hypertensive, found a 28% higher odds of hypertension in women who reported no physical activity in comparison to those who reported high physical activity [13]. Moreover, physical activity seems to reduce the effect of obesity on the development of hypertension. In Saudi women, the level of physical activity was significantly lower than that in men [8].

Effect of age on the likelihood of physical practices and subsequently on the risk of cardiovascular disease were reported by several studies [14, 15]. Elderlies with moderate physical activity had 31% reduction in the risk of hospital admission from cardiovascular diseases regardless of gender [16].

The self-assessment of the physical activity is the main limitation of the present study which may lead to misclassification error but this error is usually random. The random error can dilute the strength of the associations but it does not lead to bias during identification of determinants of physical activity. Moreover, it is recommended to assess the determinants using prospective study designs to reduce recall bias.

Conclusions

Prevalence of physical activity among hypertensive patients was less than optimal. Practicing of physical

activity was significantly more common in male and young, patients.

Conflict of interests

The authors declared no conflict of interests.

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Table (3): Association between respondents' characteristics and moderate intensity activity during work

<i>Factors</i>	<i>Moderate physical activity</i>		<i>Chi-square</i>	<i>P value</i>
	Yes	No		
<i>Gender</i>				
<i>Male</i>	7 5.4%	123 94.6%	4.3	0.038*
<i>Female</i>	1 0.8%	122 99.2%		
<i>Age</i>				
<40	4 13.8%	25 86.2%	12.2	<0.001*
≥50	4 1.8%	221 98.2%		
<i>Marital status</i>				
<i>Married</i>	7 3.0%	223 97.0%	0.407	0.523
<i>Not married</i>	1 5.9%	16 94.1%		
<i>Education</i>				
<i>Secondary school</i>	3 3.4%	84 96.6%	0.527	0.768
<i>University degree</i>	5 3.4%	144 96.6%		
<i>Other</i>	0 0.0%	15 100.0%		
<i>Income</i>				
<5000 SAR	5 2.7%	180 97.3%	0.5	0.478
≥5000 SAR	3 4.5%	64 95.5%		
<i>Smoking</i>				
<i>Yes</i>	5 5.9%	80 94.1%	2.9	0.084
<i>No</i>	3 1.8%	162 98.2%		

