

Impact of Kinesiophobia on Physical Activity in Patients with Arterial Hypertension

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ABSTRACT

Introduction: Hypertension as a non communicable disease is at a rise in India and raises public health concern. Though drugs are the primary mainstay of treatment, physical activity has proved to be therapeutic in controlling blood pressure. Kinesiophobia has been a major perceived barrier to physical activity. Till date, there is paucity of literature directly designed to assess impact of kinesiophobia to physical activity in these patients.

Aim of the study was to evaluate degree of kinesiophobia and physical activity in patients with arterial hypertension and to examine relationship between them.

Materials and methods: Total of 150 patients with diagnosed hypertension was a part of the study. Kinesiophobia was assessed using Tampa Scale of Kinesiophobia. International Physical Activity Questionnaire (IPAQ) was used to determine the physical activity levels. Pearson's correlation test was used to study relationship between kinesiophobia and physical activity.

Results: Out of 150 subjects, 58% were male and 42% were females with a mean age of 55.06 ± 9.48 years. More than half of subjects (68%) belonged to Category 1 (i.e.) Inactive on IPAQ scale. About 78% subjects were kinesiophobic. Mean kinesiophobia score was found to be 38.98 ± 6.85 . A strong negative correlation was found between kinesiophobia score and physical activity levels ($r = -0.6785$, $p < 0.05$).

Conclusions: There was a negative relationship between Kinesiophobia score and physical activity levels in patients with arterial hypertension indicating that treating kinesiophobia should be a primary concern in physical therapy treatment of these patients.

Key words: Kinesiophobia, Physical activity, hypertension.

INTRODUCTION

Hypertension (HTN) is a chronic medical condition in which blood vessels have persistently raised pressure. [1] It is an important public health challenge due to its high prevalence and strong association with cardiovascular disease and premature death and also is ranked third as a cause of disability-adjusted life-years.

It is a public health problem in both economically developed and developing nations. [2] Worldwide prevalence estimates that nearly one billion people of the adult

population had hypertension (333 million in economically developed countries and 639 million in economically developing countries), and approximately over 7 million deaths per year may be attributable to hypertension. [3] As per the World Health Statistics 2012, hypertension is reported to be the fourth contributor to premature death in developed countries and the seventh in developing countries. Recent reports indicate that nearly 1 billion adults (more than a quarter of the world's population) had hypertension in 2000, and this is

predicted to increase to 1.56 billion by 2025. Earlier reports also suggested that the prevalence of hypertension is rapidly increasing in developing countries and is one of the leading causes of death and disability. [4]

In India, the prevalence of hypertension in the last six decades has increased from 2% to 25% among urban residents and from 2% to 15% among the rural residents. [5] According to Directorate General of Health Services, Ministry of Health and Family Welfare, Government of India, the overall prevalence of hypertension in India by 2020 will be 159.46/1000 population. [4]

Hypertension is considered as a “silent killer” because high blood pressure is a major risk factor for serious disorders like coronary artery disease, heart failure, hemorrhagic stroke, kidney failure, aortic aneurysm, pulmonary embolism and other health problems. [6] Despite the availability of several therapies for arterial hypertension, the morbidity and mortality of this disease remains high. Studies have shown age, male gender, urban residence, generalized obesity, diabetes, physical inactivity and alcohol consumption to be significantly associated with HTN. [5] Physical inactivity is believed to be strongly positively associated with hypertension. [7] Unhealthy lifestyle in the form of junk food, lack of sleep, stress, lack of physical activity are the common modifiable causes of hypertension.

There is a significant amount of evidence that regular physical activity is beneficial for both prevention as well as treatment of hypertension. [8, 9] Physical activity is said to be commonly recommended as an important lifestyle modification that may aid in the prevention of hypertension. [10,11] Physical activity is defined as any bodily movement produced by contraction of skeletal muscles that increases energy expenditure above resting levels and comprises routine daily tasks such as commuting, occupational tasks, or household activities, as well as purposeful

health-enhancing movements/activities. [12] Decreased physical activity and increased sedentary behavior may contribute to reduced quality of life in patients with HTN. Improved methods of assessing physical activity and sedentary behavior are needed for overcoming the decrease in physical activity levels in hypertensives as revealed in other studies. [2]

Kinesiophobia is defined as irrational, weakening and devastating fear of movement from the belief of fragility and susceptibility of injury. [13] Alternatively it is also described as “fear of movement (re)injury, a specific fear of movement and physical activity that is (wrongfully) assumed to cause re-injury.” [14] There are various validated measures used to calculate the level of Kinesiophobia, such as Kinesiophobia Causes Scale (KCS) and Tampa Scale of Kinesiophobia (TSK). [15] Previous literature has shown presence of kinesiophobia in various medical conditions, such as low back pain, musculoskeletal pain, fibromyalgia, cancer survivors and Coronary Artery Disease. [1] However, there is limited literature available on presence of Kinesiophobia in hypertensives and also lack of study assessing the physical activity and kinesiophobia in these subjects. Hence, this study was undertaken to first, evaluate the degree of kinesiophobia and physical activity level in patients with arterial hypertension. Secondary aim was to examine the relationship between the two.

MATERIALS AND METHODS

After obtaining Institutional ethical approval, a total of 150 medically diagnosed hypertensive patients above 40 years of age were recruited from general medical outpatient department. Patients with known musculoskeletal, neurological disorder, any recent surgery or hospitalization, psychologically unstable and non co-operative patients were excluded from the study. Study procedure was explained and a written informed consent was obtained from every subject. Demographic data, medical

history and current Blood Pressure were recorded. Tampa Scale of Kinesiophobia (TSK) which is a valid, reliable [15] tool was used to assess Kinesiophobia. It consists of 17 questions, wherein there were four options namely: 1-strongly disagree, 2-disagree, 3-agree, 4-strongly agree and the total score of which adds up to 68. A score ≥ 34 is suggestive of Kinesiophobia.

Short form of International Physical Activity Questionnaire (IPAQ) based on 7 day recall was used to measure the physical activity levels. It is a widely used reliable and valid tool for physical activity monitoring [16,17] which includes 7 questions categorized as follows: Category 1- inactive, Category 2-minimally active, Category 3-Health Enhancing Physical Activity (HEPA). Physical activity level of the patient was calculated by using the formula $x+y+z$.

($x=8.0 \times$ vigorous-intensity activity minutes \times vigorous intensity days, $y=4.0 \times$ moderate-intensity activity in minutes \times moderate intensity days, $z=3.3 \times$ walking in minutes \times walking in days).

Statistical Analysis:- Data was analyzed using SPSS version 17 software. Descriptive statistical analysis was done to find out the mean, standard deviation of the variables studied. Pearson's correlation test was used to find relationship between Kinesiophobia score and Physical activity levels.

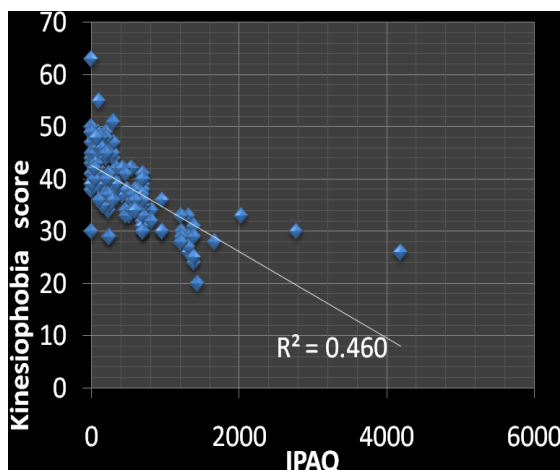
RESULTS

Out of 150 subjects, 58% were males and 42% were females with a mean age of 55.06 ± 9.48 years. Majority of subjects (42%) were in the age group of 51-60 years. About 72% of subjects were diagnosed with hypertension since 10 years.

More than half (68%) of subjects belonged to Category 1 (i.e.) Inactive whereas only 3% belonged to Category 3 (involved in Health Enhancing Physical Activity) as per IPAQ scale (Table 1). Majority (78%) subjects were kinesiophobic (scoring ≥ 34 on TSK). Mean score of Kinesiophobia was found to be 38.98 ± 6.85 . The Pearson's correlation test showed a "strong" negative correlation between the IPAQ and Kinesiophobia score ($r = -0.6785$, $p < 0.05$). (Graph 1)

Table 1 showing Category of Physical activity levels using Short form IPAQ.

Category	Type of activity	Subjects (n)	Percentage
Category 1	Inactive	102	68%
Category 2	Minimally active	43	29%
Category 3	Health Enhancing Physical Activity (HEPA)	05	3%



Graph1 showing Correlation between of Kinesiophobia score with IPAQ score

DISCUSSION

Present study revealed that majority (68%) of hypertensive patients was physically inactive whereas 29% were minimally active. Similar findings were reported in a recent study from Jaipur that 69.6% of men and 52.4% of women were physically inactive. [18] These findings are contrary to findings reported by Shah et al., in 2005 in six regions of India showing that overall inactivity levels were 12.6% in males and 18.9% in females. [19] This could again point to declining physical activity levels as noted in recent times. [20] Only 3% of subjects in the present study were involved in Health enhancing physical activity; findings being similar to that

reported from amongst a large percentage of people in India where fewer than 10% engaged in recreational physical activity. Physical activity is not only related to leisure activity, but also refers to expenditure of energy during work. However, most of the subjects in the study spent 8-10 hours sitting per day (44%) followed by others (33%) who spend their work time sitting for 4-7 hours per day. The high prevalence of insufficient recreational activity observed across all age groups and both genders could reflect limited access to and availability of facilities for recreational physical activity as indicated in literature. [21] Causes of inactivity could be extrinsic lack of facilities or intrinsic where there is fear, lack of motivation and laziness.

Majority of hypertensive subjects were found to be kinesiophobic with a mean TSK score of 38.98 ± 6.85 . Findings were similar to one observed by Janusz Kocjan in patients with arterial hypertension. [1] It has been previously studied that TSK correlates not only with measures of pain-related fear, but also with catastrophizing, depression, anxiety, and pain intensity. [22] There is a possibility that hypertensives are anxious about risk for developing future cardiac events which makes them more kinesiophobic. [23] A Norfazilah [24] in a study had stressed the importance of taking into account illness perception as an important aspect in managing patients with chronic diseases including hypertension to achieve a better outcome of an illness. Improved perception can go a long way in reducing fear related to disease.

Physical activity levels showed a strong negative correlation with Kinesiophobia. Physical activity level could possibly be decreased because subjects suffering from HTN are involved in less activities with the fear of being ill. Additionally metabolic and cardiac morbidity factors associated with hypertension could result in reduced normal physical activity in them. As affirmed by Mariola (2016), [25] a raised kinesiophobia level can become a significant emotional

barrier determining one's intrinsic motivation to be physically active. These findings were similar to findings noted in patients with coronary artery disease wherein Kinesiophobia influenced attendance of patients in exercise-based cardiac rehabilitation. Patients with higher levels of kinesiophobia were reported to have participated to a lesser extent in cardiac rehabilitation, had lower levels of physical activity, poorer muscle function and health-related quality of life and a higher degree of anxiety and depression, compared with the group with low levels of kinesiophobia. [26] Fear of movement has been reported to be strongly associated with limitations in physical activities, and previous studies have suggested that Fear Avoidance Belief and kinesiophobia are likely to occur in patients with heart-related problems. [27] Patients who cannot cope with fear have a tendency to develop long term avoidance behavior which reflects in their attitude towards physical activity.

As rightly stated by Janusz Kocjan (2014), [28] early identification and diagnosis of the causes of the motor passivity can make a big difference in the primary prevention of the risk factors leading to hypertension. Widely studied mechanisms for blood pressure reduction include changes in endothelial function, oxidative stress, inflammation, arterial compliance, body fat, renin-angiotensin system activity, parasympathetic activity, renal function, and insulin sensitivity. [10,29]

Results of this study provides evidence that kinesiophobia may be an important factor contributing to the limitation of physical activity and can play a significant role in modulation of physical activity level. Kinesiophobia being a major factor leading to hypokinesia, should be included in planning and designing of exercise protocol for secondary prevention and rehabilitation of hypertensives as seconded by Halbert J (1997). [30]

Major limitation of this study could be the possibility of recall bias being present

while using IPAQ scale, resulting into over- or under-reporting of physical activity.

CONCLUSION

There is an impact of kinesiophobia on physical activity in patients suffering from hypertension. An increase in kinesiophobia leads to decreased level of physical activity. This indicates the need for including therapies for treatment of kinesiophobia as an additional component in Physiotherapy rehabilitation program.

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