

A Study on Body Mass Index, Physical Activity and Hypertension among Legal Practitioners

Vijay Kumar Edward¹, Shanthi Edward², Praveena P³

¹Assistant Professor, Department of General Medicine, ²Professor, Department of Community Medicine, Sree Balaji Medical College and Hospital, Chromepet, Chennai, Tamil Nadu, ³Assistant Professor, Trichy SRM, Medical College and Hospital and Research Centre, Irungalur, Trichy.

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Abstract

Background: Advocates practise for long hours with hectic work schedules. Work pressure, changing legal landscapes, uncertainty of legal cases is a great challenge to lawyers. They are unable to concentrate on their health related activities. Physical inactivity causes obesity leading to risk of hypertension. In view of above issues one of the main objectives of the study is to evaluate the relationship between physical activity, Body Mass Index and hypertension among practising advocates.

Methods: A sample of 300 practising advocates at Madurai district court was selected by simple random sampling method. Data was collected using structured interview schedule and analysed using SPSS.

Results: Nearly 90% advocates with raised body mass index were hypertensives and 68.42% advocates with inadequate physical activity developed hypertension. The difference of observation was found to be statistically significant ($p=0.0000$).

Conclusions: Practice of health fitness activities amidst busy schedule and Self-care management modifies the effect of Body Mass Index on hypertension risk.

Keywords: Hypertension, physical inactivity, Self-care management.

Introduction

Law is a noble profession which requires full time dedication. Advocates practice for long hours with hectic work schedules. Work pressure, changing legal landscapes, uncertainty of legal cases is a great challenge to lawyers. They are unable to concentrate on their health related activities. Therefore physical inactivity causes obesity leading to risk of hypertension. In view of above issues one of the main

objectives of the study is to evaluate the relationship between physical activity, Body Mass Index and hypertension among practising advocates.

Methods

The current study is a cross sectional study conducted at bar association and law chamber, District court, Madurai from September 2015 to August 2016. Advocates in the age group of 30 years and above practicing in Madurai city were included.

Corresponding Author: Praveena P, Assistant Professor, Trichy SRM, Medical College and Hospital and Research Centre, Irungalur, Trichy.

E-mail: pravicares@gmail.com

Cell No: +91 9941128592

Inclusion criteria

Inclusion criteria were advocates in age group of 30 and above; regularly practicing advocates (attending court at least thrice a week); advocates practicing for a period of more than 5 years.

Sample size

According to available study ¹, relating to prevalence of hypertension among advocates, the prevalence was 36%, considering it as 'p' with limit of accuracy as 16% of prevalence and with 10% attrition the sample size is calculated.

$$N = Z_{\alpha}^2 \times P \times Q / L^2$$

$$= 1.96 \times 1.96 \times 36 \times 64 / 5.76 \times 5.76 = 266.72.$$

With 10% attrition i.e., 26.6, minimum sample size calculated, (266+26.6) = 293.32 rounded off to 300. Hence sample size for this study will be 300.

Sampling method

From Madurai Bar Association (M.B.A) Advocates voters' affidavit list, 600 advocates were selected by 'simple random sampling' technique using computerized random numbers. Out of that a sample of 300 advocates who satisfy the inclusion criteria were selected by enquiry through phone dialing. Permission from Madurai Bar Association Secretary was obtained prior to the data collection.

Data collection tool

Three blood pressure readings as per JNC VII were measured in all study subjects at an interval of 3 hours in sitting position and the average was calculated using 'sphygmomanometer' (mechanical type with a dial). The participants were advised to refrain use of tobacco in any form or ingestion of caffeine during the 30 minutes preceding measurement. Newly detected hypertensives were examined again after 2 days in the same manner to confirm hypertension. Apart from the known hypertensives, based on the blood pressure measurements, the remaining study subjects were classified according to JNC VII criteria. Data was collected using the final proforma, 'structured interview schedule' (modified after pilot study). Data on background characteristics and risk factors were obtained from all participants.

Statistical analysis

The data was entered and analysed using SPSS version 16.0. Descriptive statistical analysis done by calculating percentages and chi-square test and odds ratio for association of risk factor and 95% CI were computed. Among the factors evaluated, association between Body Mass Index, Physical activity and hypertension are discussed in this research article.

Results

Table 1: Distribution of hypertensive subjects and BMI:

BMI	Hypertensives	Normotensives	Odds ratio	95% CI	P value, X ² static Degree of Freedom DF
Raised BMI (overweight & obese)	79	9	33.5	15.0-80.8	0.00001 X ² = 122.45 DF = 1
Normal BMI	44	168			
Total	123	177			

Table 2: Distribution of hypertensives and their level of physical activity:

Level of Physical activity	Hypertensives	Normotensives	Odds ratio	95% CI	P value, X ² static Degree of Freedom
Inadequate	65	30	5.5	3.1-9.6	0.00001 X ² = 43.21 DF = 1
Adequate	58	147			
Total	123	177			

Hypertension and Body Mass Index (BMI):

Table 1 shows that, 88(29.33%) and 212(70.67%) study participants had raised BMI and normal BMI respectively. Among the participants with raised BMI 79(89.77%) were hypertensives (which constitutes 67(88.2%) of overweight and 12(100%) obese subjects) and only 44(20.75%) participants with normal BMI were found to be hypertensives. The difference of observation was found to be statistically significant ($p=0.000$). The odds ratio was 33.51, which indicates individuals with raised BMI (ie) who are overweight and obese are 33 times greater odds of developing hypertension as compared to individuals who are having normal BMI. Hence over weight and obesity are significant factors for development of hypertension.

Hypertension and Physical activity:

It is observed in table 2 that, among the study participants, a majority of 205 (68.33%) had adequate level of physical activity and 95(31.66%) had inadequate level of physical activity. Among the participants who had inadequate physical activity, a majority of 65(68.42%) developed hypertension, whereas only 58(28.29%) who had adequate physical activity developed hypertension. The difference of observation was found to be statistically significant ($p=0.000$). The odds ratio is 5.491, it indicates that hypertensives who had inadequate physical activity are 5.4 times greater odds of developing hypertension as compared to individuals who had adequate physical activity. Hence the level of physical activity has an association with hypertension.

Discussion

The following discussion is based on above findings obtained as a result of evaluation of association between Body Mass Index, level of physical activity and hypertension.

Hypertension and Body Mass Index

In the present study, 88(29.33%) and 212(70.67%) study participants had raised BMI and normal BMI respectively. Among the participants with raised BMI 79(89.77%) were hypertensives whereas only 44(20.75%) participants with normal BMI were found to be hypertensives. The above observation was

found to be statistically significant ($p=0.000$). The odds ratio is 33.51, which indicates individuals with raised BMI (ie) who are overweight and obese are 33 times higher risk of developing hypertension as compared to individuals who are having normal BMI. Hence over weight and obesity are significant factors for development of hypertension. This evidence can be proved by previous literatures of similar findings as follows, obesity increases the risk of the development of hypertension. This linkage has been the subject of several reviews²⁻⁵. A study by Ghosh A et al⁶, conducted in doctors community in Eastern India, nearly 48.15% of doctors show BMI ≥ 25 kg/m² and observed significant positive correlation between the BMI and mean BP of the subjects, which supports the fact that high body weight and high BMI increases the risks of hypertension. Several clinical studies⁷⁻⁸ indicate that maintenance of a BMI < 25 kg/m² is effective in primary prevention of hypertension and weight loss reduces blood pressure in most hypertensive subjects. Richard N. Re⁹ in his review study discussed that, obesity is associated with increased blood flow, vasodilatation, cardiac output, and hypertension. Obesity predisposes to hypertension and alters the course of hypertensive cardiovascular disease. Even though this is difficult to achieve, weight loss must be the first preventive measure to reduce development of hypertension

Hypertension and physical activity

It was observed in the current study that among the study participants who had inadequate physical activity, a majority of 65(68.42%) developed hypertension, whereas only 58(28.29%) who had adequate physical activity developed hypertension. The above observation was found to be statistically significant($p=0.000$). The odds ratio is 5.491; it indicates that hypertensives who had inadequate physical activity are 5.4 times greater odds of developing hypertension as compared to individuals who had adequate physical activity. Hence level of physical activity has an association with hypertension. This relationship between the physical activity and hypertension can be evidenced by the following literature. Keith M. Diaz and DaichiShimbo¹⁰, reviewed prospective studies and reported that the most recent evidence for the role of physical activity in the prevention of hypertension, suggest that there is relationship between physical activity and incident

hypertension. Current guidelines recommend increasing physical activity as a means to prevent hypertension¹¹⁻¹⁴. SubithaLakshminarayanan et al¹⁵, in rural South India observed that out of 485 subjects, 265 (54.6%) complied with walking on more than four days / week, while 156 (32.2%) walked on one to four days / week, and 64 (13.2%) dropped out during the intervention period. This study has shown that a 10-week intervention to promote physical activity was effective in significantly decreasing the population's blood pressure by 1.56 / 0.74 mm Hg, fasting blood sugar levels by 2.82 mg%, body weight by 0.17 kg, and BMI by 0.06 kg / m².

Conclusion

In conclusion the study shows that 89.7% advocates with raised Body Mass Index had hypertension and 68.42% advocates with inadequate physical activity developed hypertension. Advocates being well educated professionals, ideally should be health conscious and practice health fitness activities amidst their busy schedule. Pro-active self-care plays an effective role in performing day to day health related activities such as walking, jogging, yoga and exercise. Self-care management can be promoted among advocates by providing periodic counselling services at bar council associations. Therefore adopting regular physical activities as daily routine could modify the effect of body mass index on hypertension risk. Family support too should facilitate in practising healthy life style.

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Ethical approval: The study was approved by the Institutional Ethics Committee SRMC &RI (SRU), Chennai (IEC Ref: CSP-MED/15/AUG/24/37)

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