



IMPORTANCE OF PHYSIOTHERAPY IN HYPERTENSION AMONG MEDICAL PRACTITIONERS: A SURVEY

Arajit Das¹., Pooja Kesharwani² and Suchit S.Shetty³

¹Teerthanker Mahaveer University, uttarpradesh, India

²SDM college of Physiotherapy, Sattur, Dharwad

³DPO's Nett College of Physiotherapy, Thane, India

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ABSTRACT

Aim: To find out the importance of physiotherapy in hypertension among medical practitioners of Teerthanker Mahaveer Medical College and Research Center (T.M.M.C.R.C), Moradabad, Uttar Pradesh, India.

Background: Hypertension is now a well-established, major cardiovascular risk factor. Regular aerobic exercise, or high levels of fitness (VO₂ max), to be protective against the future development of hypertension in men. Importantly, each acute bout of dynamic exercise may reduce blood pressure for a substantial portion of the daylight hours. Aerobic training involves the activation a large skeletal muscle mass through cycling or walking exercise whereas strength training program involve upper and lower body muscle groups. There is strong evidence that exercise training improves functional capacity, quality of life and even long time survival.

Methodology: A total of 50 subjects were recruited conveniently as per the inclusive and exclusive criteria. The subjects then passed through a questionnaire only after given voluntary written consent. Their opinion on "Importance Of Physiotherapy In Hypertension Among Medical Practitioners".

Results: After analysing the data, results are summarized and it was observed that: 199 participants strongly agreed with the average % of 39.8%.278 participants agreed with the average % of 55.6%.22 participants disagreed with the average % of 4.4%.1 participants strongly disagreed with the average % of 0.2%.

Conclusion: This study concluded that major numbers of physiotherapy students are aware and agreed about the need of cardiopulmonary physiotherapy in education and society. Although for carrier point of view cardiopulmonary physiotherapy program provides practicing physiotherapists with an opportunity to study for a specialized post graduate qualification which will significantly contribute towards carrier development.

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INTRODUCTION

In 1975, the house of delegates of the American physical therapy association (APTA) approved the concept of specialization and created the task force on clinical specialization. The task force was charged with identifying and defining physical therapy speciality practise areas and with developing the structure for and functions of aboard-certified process. The document developed by the task force, essentials for delegates in 1978.¹

Hypertension is now a well-established, major cardiovascular risk factor. The relationship is direct, strong, continue, graded, consistent and independent.²⁻⁵

Mortality and morbidity double for every 20mmHg increase in systolic blood pressure (BP) above 150mmHg and for every 10mmHg increase in diastolic blood pressure (BP) above 75mmHg.⁶

Australian guidelines for the classifications of blood pressure (BP)(which are similar to the European and united states guidelines) are shown in table and Mancina *et al.* [European hypertension guidelines; recommended reading (RR)]⁷.

Essential hypertension is probably the product of many factors that interact in a complex manner in the development of high blood pressure, including genetic factors, environmental factors such as diet, physical inactivity and stress, and psychosocial factors.⁸⁻¹² over the past decades, changes in lifestyle for the worse have been decisive for the increased incidence of hypertension and cardiovascular disease, which is especially pronounced in the developing countries⁹.

*Corresponding author: Arajit Das

Teerthanker Mahaveer University, uttarpradesh, India

Table definitions and classifications of blood pressure (BP) levels according to Australian guidelines.

Category	systolic blood pressure (SBP) mmHg	Diastolic blood pressure (DBP) mmHg
Normal	<120	<80
High-normal	120-139	80-89
Grade 1 hypertension (mild)	140-159	90-99
Grade 2 hypertension (moderate)	160-179	100-109
Grade 3 hypertension (severe)	>180	>110
Isolated systolic hypertension	>140	<90
Isolated systolic hypertension with widened pulse pressure ^a	>160	<70

^a high absolute risk for cardiovascular disease is apparent in middle aged and elderly people with cardiovascular risk factors or associated clinical conditions. Reproduced with permission from the heart foundations

Obesity, physical inactivity and increased salt intake are specific factors varying importance in different populations, where physical inactivity alone is estimated to represent 5-13% of the risk of developing hypertension¹³. The remaining 5% of people with hypertension suffer from secondary hypertension resulting from, for example, Reno vascular disease (e.g. renal atrial stenosis), Cushing syndrome, pheochromocytoma or coarctation of the aorta. These types of secondary hypertension are best addressed through possible correction of the underlying cause.¹⁴

Regular aerobic exercise, or high levels of fitness (VO₂ max), to be protective against the future development of hypertension in men.¹⁵⁻¹⁷ There is compelling evidence that dynamic aerobic training (even at relatively low intensity [e.g. 50% VO₂ max]) reduces resting blood pressure as well as light exercise blood pressure and 24 hour ambulatory blood pressure in both normotensive and hypertensive individuals, irrespective of gender (RR)¹⁸⁻²³. Importantly, each acute bout of dynamic exercise may reduce blood pressure for a substantial portion of the daylight hours.²⁴

Pescatello LS *et.al* stated that low to moderate intensity exercise (approximately 60%-85% of age predicted maximum heart rate) is more effective in lowering blood pressure when compared to higher intensities²⁵. Spruit *et.al* showed that exercise based rehabilitation program including aerobic and strength training. Aerobic training involves the activation a large skeletal muscle mass through cycling or walking exercise whereas strength training program involve upper and lower body muscle groups. There is strong evidence that exercise training improves functional capacity, quality of life and even long time survival.²⁶

MATERIALS AND METHODS

Study Design

Type of study – Questionnaire based exploratory study
Duration of study – 1 year

Location – Teerthanker Mahaveer Medical College and Research Centre (TMMCRC).

Sample Design

Sample size – 50
Sample population – Medical practitioners
Sampling – convenient sampling

Materials Used

Self-administered quantitative questionnaire is used. Every questionnaire carried 10 (Ten) questions with 4 options each. Options are Strongly Agree (SA), Agree (A), Strongly Disagree (SD), and Disagree (D).

Inclusion Criteria

1. Age 30-60 years.
2. Both male and female medical practitioners of Teerthanker Mahaveer Medical College and Research Centre (TMMCRC).

Exclusion Criteria

1. Medical practitioners below 30 years.
2. Medical practitioners who does not belongs to Teerthanker Mahaveer Medical College and Research Centre (TMMCRC)

Procedure

Fifty medical practitioners were selected conveniently as per the inclusive and exclusive criteria. The subjects then passed through a questionnaire only after given voluntary written consent and questionnaire validity has approved by the scientific committee members of Department of Physiotherapy of TMU.

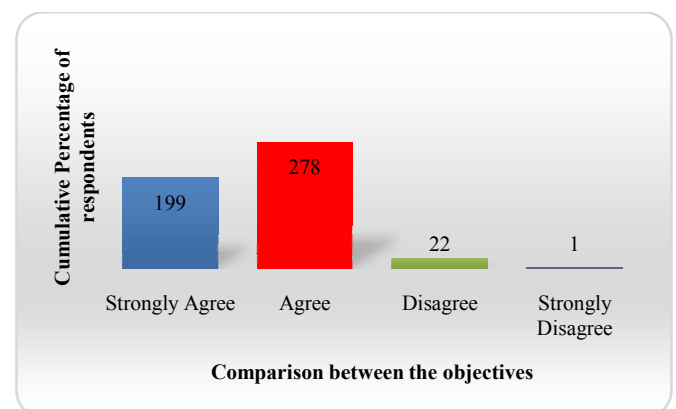
RESULT

Total fifty medical practitioners participated in the survey. The questionnaire were completed (response rate=100%) and all 50 participants scores were included in the data analysis. A self-devised pre validated questionnaire was administrated to the study subjects via face to face method. To avoid any misinterpretation, the questionnaire was kept self-informed and self administrated .also the questions were closed ended to prevent any statistical errors.

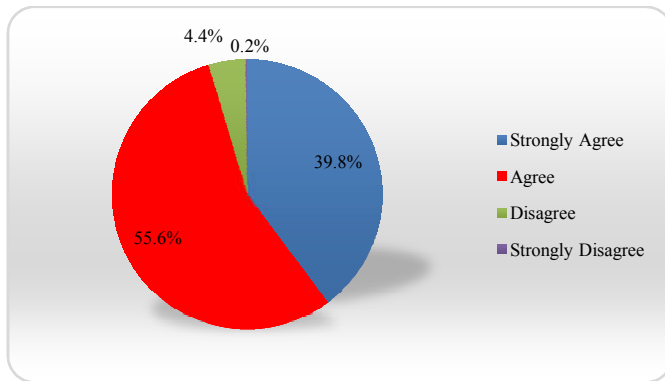
After analysing the data, results are summarized and it was observed that:

1. 199 participants strongly agreed with the average % of 39.8%.
2. 278 participants agreed with the average % of 55.6%.
3. 22 participants disagreed with the average % of 4.4%.
4. 1 participant strongly disagreed with the average % of 0.2%.

Gross Analysis of the Questions



Percentage Analysis of the Questions



DISCUSSION

The survey helps to understand existing awareness of Physiotherapy among medical practitioners. Awareness about Physiotherapy and its referral indicated that 39.8% of strongly agree and 55.6% of agree. A similar survey conducted in the institute in 2002 reviewed that 75% (n=100) of general population (non-medicos) and 100 % (n=100) of group 2 comprising of medical population were aware about Physiotherapy.²⁷

The results of our study are supported by studies in the literature showing that an acute slow and regular breathing pattern may beneficially affect reflex control of the cardiovascular system and modulate blood pressure, probably via stimulation of slowly adapting pulmonary stretch receptors. More specifically, slowing down breathing rate increases Baroreceptor sensitivity as well as study shows that breathing exercises guided by the BIM (breathe with interactive music) device for 10 minutes daily are effective in a lowering blood pressure.²⁸

The strongest indication for the six minute walk test is for measuring the response to medical interventions in patients with moderate to severe heart or lung disease. The six minute walk test has also been used as one time measure of functional status of patients, as well as a predictor of morbidity and mortality.²⁹ Where as the majority people of present study also agreed that six minute walk test can be used for rehabilitation protocol in hypertension.

Deep breathing was effective in reducing the blood pressure of the women with hypertension due to regularity and compliance on the part of the women in practicing the exercise.³⁰

Pinto. A found that deep breathing exercises performed 2-3 times daily for 14 days for duration of 10 minutes at a time, was associated with a significant reduction of blood pressure in women with hypertension by a clinically meaningful value of 24/16 mmHg for systolic and diastolic blood pressure respectively.³¹ Outcomes of present study also strongly agreed that breathing exercise is effective for reducing blood pressure. Our results were consistent with a study done by Apurva Shimpi (2014) a cross-sectional survey to study awareness and perspective among referring doctors in colleges of Mumbai and Pune which found that a significant number of doctors (69.9%) were acquainted with the physiotherapist working with them. They also found that a majority of doctors from their study (95.5%) referred people for physiotherapy.³²

A study review by Anila Paul in the year 2015 own awareness of physiotherapy across the globe included studies conducted

from 1979 till 2015 were included lead to the conclusion that there is less awareness regarding the field where our present study results showed that physiotherapy is much more aware in current scenario among medical practitioners.³³

Medical professionals play an important role in referral of patients of physiotherapy besides direct contact. Hence awareness of role of physiotherapy in various disease and dysfunctions in of paramount importance. Though there is adequate awareness about physiotherapy in musculoskeletal, sports and neurological dysfunctions, it is limited to field of cardiovascular and pulmonary dysfunction i.e. Cardiac and pulmonary rehabilitation, physiotherapy post-plastic surgery in women health for following pregnancy in gynaecological and obstetric disorders and oncology. Lack of acknowledgement by them will indeed affect the patients who are unknown to the potential of the field in improving their quality of life. Albeit our study results showed that for hypertension management physiotherapy plays a major role.³⁴

Miller VM *et al* showed that cardiovascular disease can change vascular function and structure. In patients with hypertension, the interaction between different regulatory systems can damage the environment vessel wall. It was shown that the contraction of one of the renal arteries in mice can cause hypertension. Although our medical practitioner also agreed that the following patho-physiology is the main factor for hypertension. Katusic ZS *et al.* indicated in their research that hypertension leads to vascular damage. In other models angiotensin II that as the most important biological factor in the rennin angiotensin system is responsible for hypertension and vascular injury. Cobanian AV *et al.* also indicates that endothelial dysfunction involved in this process. Cell proliferation, fibrosis and adhesion molecules in the vessels wall are features of endothelial dysfunction. Although present study results also agree the following patho-physiological factor responsible for hypertension.³⁵

Present study survey result is well accepted and correlate with the result of Collier SR *et al.* who found that the effect of 4 weeks of aerobic and resistance training on arterial stiffness, blood flow and blood pressure in pre hypertension and stage 1 hypertensive found that resistance exercise resulted in increased arterial stiffness where as aerobic exercise training decrease arterial stiffness in individuals with pre hypertensive to essential hypertension despite similar reductions in blood pressure.³⁶

Martin JL *et al* showed that neurochemical assays suggested that regular physical exercise mediates the receptor activity by elevating brain derived neurotrophic factor (BDNF) expression and secretion. Increased BDNF concentration in serum and plasma levels results in a reduction in blood pressure (BP) and attenuation in the symptoms of hypertension over time.³⁷

Turk.adawi KI *et al* reviewed that patient with cardiovascular disease participation in cardiac rehabilitation is associated with reduced rate of all-cause mortality and cardiac mortality by 13%-26% and 20%-36%, respectively where the results of the present study are consistent and well agreed by the medical practitioner.³⁸

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References

1. Anne K, Alexandra S, Angela A C and Ioman, cardiovascular and pulmonary physical therapy speciality practice: Determining the current status: *cardiopulmonary physical therapy. J.* 2008 Mar;19(1):11-16
2. MacMahon S, Peto R, Cutler J, *et al.* Blood pressure, stroke, and coronary heart disease. Part 1, Prolonged differences in blood pressure: prospective observational studies corrected for the regression dilution bias. *Lancet.* 1990; 335(8692): 765-774.
3. Stamler J, Stamler R, Neaton JD. Blood pressure, systolic and diastolic, and cardiovascular risks. US population data. *Arch Intern Med.* 1993; 153(5): 598-615.
4. Chobanian AV, Bakris GL, Black HR, *et al.* The seventh report of the Joint National Committee on prevention, detection, evaluation, and treatment of high blood pressure: the JNC 7 report. *JAMA.* 2003; 289(9): 2560-2572.
5. The sixth report of the Joint National Committee on prevention, detection, evaluation and treatment of high blood pressure. *Arch Intern Med.* 1997 nov 14; 157(21): 2413-2446.
6. Vasan RS, Laerson MG, Leip EP, Kannel WB *et al.*, assessment of frequency of progression to hypertension in non-hypertensive participants in the Framingham heart study: a cohort study. *Lancet.* 2001 Nov 17; 358(9294):1682-1686.
7. James E. Sharman, Michael Stowasser, Australian Association for Exercise and Sports Science Position Statement on Exercise and Hypertension: *journal of science and medicine in sport.* March 2009;12(2),252-257
8. ESC. 2007 guidelines for the management of arterial hypertension. *J Hypertension.* 2007; 25(6):1105-87.
9. WHO. The World Health Report. Reducing risks, promoting healthy life. Geneva: World Health Organization. 2002:1-230
10. Hajjar I, Kotchen T. Trends in prevalence, awareness, treatment and control of hypertension in the United States. *JAMA.* 1998-2000, 2003; 290(2):199-206.
11. Kearney PM, Whelton P, Reynolds K, Muntner P, Whelton PK, He J. Global burden of hypertension. Analysis of worldwide data. *Lancet* 2005.365; 9455:217-23.
12. Dahlöf B. Hypertoni handboken [The Hypertension Handbook]. Sollentuna: Merck, Sharp & Dohme (Sweden) AB; 2000.(6).
13. Geleijnse JM, Kok FJ, Grobee DE. impact of dietary and lifestyle factors on the prevalence of hypertension in western populations. *Eur J Public health.* Sep 2004;14(3):235-239.
14. Mats Borjeson, Swerre Kjeldsen, Bjorn Dahl *et al.* Hypertension physical activity in the prevention and treatment of disease, 410-425 .
15. Haapanen N, Miilunpalo S, Vuori I, Oja P, Pasanen M. Association of leisure time physical activity with the risk of coronary heart disease, hypertension and diabetes in middle-aged men and women. *Int J Epidemiol* 1997;26(4):739-47.
16. Paffenbarger Jr RS, Wing AL, Hyde RT, Jung DL. Physical activity and incidence of hypertension in college alumni. *Am J Epidemiol* 1983;117(3):245-57.
17. Sawada S, Tanaka H, Funakoshi M, Shindo M, Kono S, Ishiko T. Five year prospective study on blood pressure and maximal oxygen uptake. *Clin Exp Pharmacol Physiol* 1993;20(7-8):483-7.
18. Whelton SP, Chin A, Xin X, He J. Effect of aerobic exercise on blood pressure: a meta-analysis of randomized, controlled trials. *Ann Intern Med* 2002;136(7):493-503.
19. Fagard RH. Exercise characteristics and the blood pressure response to dynamic physical training. *Med Sci Sports Exerc* 2001;33(Suppl. 6):S484-492 [discussion S484-S493].
20. Halbert JA, Silagy CA, Finucane P, Withers RT, Hamdorf PA, Andrews GR. The effectiveness of exercise training in lowering blood pressure: a meta-analysis of randomised controlled trials of 4 weeks or longer. *J Hum Hypertens* 1997;11(10):641-9
21. Cornelissen VA, Fagard RH. Effects of endurance training on blood pressure, blood pressure-regulating mechanisms, and cardiovascular risk factors. *Hypertension* 2005;46(4):667-75.
22. Pescatello LS, Franklin BA, Fagard R, Farquhar WB, Kelley GA, Ray CA. American College of Sports Medicine position stand. Exercise and hypertension. *Med Sci Sports Exerc* 2004;36(3):533-53
23. Kokkinos PF, Narayan P, Colleran JA, Pittaras A, Notargiacomo A, Reda D, *et al.* Effects of regular exercise on blood pressure and left ventricular hypertrophy in African-American men with severe hypertension. *N Engl J Med* 1995; 333(22):1462-7.
24. Pescatello LS, Franklin BA, Fagard R, Farquhar WB, Kelley GA, Ray CA. American College of Sports Medicine position stand. Exercise and hypertension. *Med Sci Sports Exerc* 2004;36(3):533-53
25. Pescatello LS, Franklin BA, Fagard R, Farquhar WB, Kelley GA, Ray CA. American college of sports medicine position stand .exercise and hypertension. *med sci sports exerc* 2004;36(3):533-553.
26. Spruit MA, Singh SJ, Garvey C *et al.*, an official American Thoracic Society/European Respiratory Society Statement: key concepts advances in pulmonary rehabilitation. *American journal of respiratory and critical care medicine* 2013; 188(8):e13-64.
27. Daly M de B, Pitzalis MB, Novak V, Cooke WH *et al.*, breathing- control lowers blood pressure, *j hum hypertens.* 2001;15(4):263-269.
28. American thoracic society. *am j Respir crit care med* 2002;166: pp 111-117.
29. Ms. Adriana Pinto, effect of deep breathing on blood pressure in women with hypertension in selected community areas, Cognitive discourses *international multidisciplinary journal.* July 2013; 1(1).
30. Shimpi A, Writer H, Shyam A, Dabadghav R. Role of physiotherapy in india-a cross sectional survey to study the awareness and perspective among referring doctors. *Journal medical thesis.* 2014 may-aug; 2(2):11-15.
31. Devanshi Doshi, Neha shetty *et al.* physiotherapy awareness in medical and non medical population: a

- social media survey. *Int J Physiother res.*2017; 5(2):1971-1975. ISSN 2321-1822
32. Devanshi Doshi, Neha shetty *et.al.* Physiotherapy awareness in medical and non medical population: a social media survey. *Int J Physiother res.*2017;5(2):1971-1975. ISSN 2321-1822.
33. Miller VM, Vanhoutte PM. Endothelium-dependent contractions to arachidonic acid are mediated by products of cyclooxygenase. *Am J Physiol.*1985; 248(4 Pt 2): H432-H437
34. Goldblatt H, Lynch J, Hanzal RF, Summerville WW. Studies on experimental hypertension: I. The production of persistent elevation of systolic blood pressure by means of renal ischemia. *J Exp Med.*1934; 59(3): 347-79.
35. Ilnaz Rahimmanesh1, Marzieh Shahrezaei1, Bahman Rashidi2, *Journal of Research in Medical Sciences.* March 2012 ;(2):298-311
36. Collier SR, Kanaley JA, Carahart R Jr, *et.al.*(2008) the effect of 4 weeks of aerobic or resistance training on arterial stiffness, blood flow and blood pressure in pre and stage-1 hypertensives. *Journal of human hypertension.* 22 (10):678-686.
37. Martin JL, Jenkins VK, *et al.* brain-derived neurotrophic factor in arterial baroreceptor pathways: implications for activity-dependent plasticity at baroreceptor synapse. *J Neurochem* 108(2):450-464, 2009.
38. Turk-Adawi KI, Grace SL. Narrative review comparing the benefits of and participation in cardiac rehabilitation in high- middle- and low income countries. *Heart Lung Circ.* 2015; 24(5):510–520.

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