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Review Article

Physical therapists' knowledge, attitudes, and practices in cardiovascular assessment: a brief review

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ABSTRACT

This comprehensive review paper investigates current practices, attitudes, and knowledge related to cardiovascular risk and blood pressure monitoring in physical therapy settings. A thorough search strategy was employed for the review, covering key databases like PubMed and Google Scholar up to march 2024. This approach ensured comprehensive retrieval of studies that cover a range of topics related to cardiovascular risk assessment, blood pressure management, and the knowledge and practices of physical therapists in these areas. The study concludes that there is a notable gap in the knowledge and practice of blood pressure (BP) and heart rate (HR) assessment among physical therapists. There is need to address knowledge deficits of physical therapists regarding screening of cardiovascular parameters. Also, revision of clinical policies could enhance the implementation of assessment of these parameters in regular clinical practises and ultimately improve patient outcomes.

Keywords: Blood pressure screening, Cardiovascular diseases, Heart rate screening, Physical therapists

INTRODUCTION

Cardiovascular disease (CVD) remains the leading cause of mortality globally, with related conditions like stroke, diabetes, and chronic kidney disease also ranking among the top causes of death. Hypertension (HTN), a key modifiable risk factor for CVD, and is a leading cause of death both independently and in combination with other conditions.[1] Acc. to World Heart Report 2023 high blood pressure was responsible for 10.8 million CVD deaths globally in 2021.[2] Despite advancements in medical management, HTN mortality rates have increased by 23%, while mortality from other causes has decreased. This rise is partly attributed to HTN's asymptomatic nature, which complicates awareness, treatment, and control. In addition to these challenges, factors like white coat HTN, masked HTN and measurement errors complicate HTN management. Medication adherence is a significant issue, with about half of patients discontinuing their medications within a year.[3] Furthermore, even the patient adherence to medication may exhibit exaggerated blood pressure responses to exercise, raising the risk of major cardiovascular events.[3] Physical therapists (PTs), particularly in outpatient settings, frequently encounter patients with HTN and associated conditions such as obesity, diabetes and physical inactivity. Many orthopaedic physical therapists report that a substantial portion of their caseload includes patients with diagnosed CVD or at risk for it. Regular blood pressure measurement should be integrated into routine examinations for all new patients, especially in outpatient settings where advanced monitoring tools may be lacking and also as physical therapists may be the initial point of contact in healthcare systems. BP assessments in patient evaluations is crucial for informed clinical decision-making, timely referrals, and effective management.[3] Monitoring blood pressure during physical exercise is a crucial diagnostic measure used in submaximal exercise tests conducted in diagnostic

labs. During dynamic, isotonic exercise, systolic blood pressure is expected to increase in response to escalating workloads. In individuals with normal health, systolic arterial pressure typically rises with exercise and stabilizes after 2-3 minutes at a constant intensity. Conversely, diastolic blood pressure usually remains stable or may slightly decrease under these conditions.

During high-intensity dynamic exercise, systolic blood pressure can peak at around 250 mmHg, and diastolic pressure can reach up to 110 mmHg. The American College of Sports Medicine suggests that for every 1 MET increase in exercise intensity, systolic blood pressure should rise by approximately 10 mmHg.[4] Exercise testing can reveal abnormal physiological responses not evident at rest. Over recent years, exaggerated blood pressure responses during exercise have been linked to elevated ambulatory blood pressure, incident hypertension and cardiovascular disease.

A rapid increase in blood pressure during exercise may indicate poor vascular function. Despite the recognized importance of exercise-induced blood pressure responses in disease prediction and pathophysiology, clinical application of blood pressure screening is limited due to a lack of knowledge and positive attitude. Clinical guidelines recommend using peak systolic blood pressure thresholds (≥210 mmHg for men, ≥190 mmHg for women). However, highly fit individuals might achieve higher peak systolic values due to superior cardiac and peripheral muscle performance, which does not necessarily indicate a higher risk of cardiovascular disease.[5] Despite encountering many patients with hypertension (HTN) or at risk for HTN, outpatient physical therapists rarely measure resting blood pressure (BP) routinely. Only 10% to 15% report checking BP for all new patients, even though they have access to the necessary equipment and feel competent in its use. Common reasons for not including BP measurement in routine screenings are perceived lack of importance, absence of clinic policies, and time constraints. Physical therapists who do regularly screen for BP often work in clinics with established policies and recognize its importance.[6]

To improve screening rates, it is crucial to change perceptions about the value of BP screening and implement evidence-based guidelines and institutional policies.[6] This study aims to capture the essence of evaluating current practices, attitudes, and knowledge related to cardiovascular risk and blood pressure monitoring in physical therapy settings.

Importance of cardiovascular assessment during physical therapy practices

Physical therapists, who treat patients with various conditions, need to monitor vital signs as part of their clinical assessments. The Guide to Physical Therapist Practice recommends that therapists should evaluate the cardiovascular system, including measuring blood pressure (BP) and heart rate (HR), for all patients, regardless of whether they have cardiovascular disease.

Understanding a patient's baseline HR and BP helps therapists gauge cardiovascular health before starting treatment, monitor responses to rehabilitation, and minimize the risk of cardiovascular events. The risk of such events is increased in inactive patients beginning an exercise program. Additionally, assessing cardiovascular status helps therapists identify patients who may need to be referred to physicians for further evaluation.[7]

Table 1: Summary of studies related to cardiovascular assessment, knowledge and practices of physical therapists.

Author journal year	Objective	Design	Sample size characteristics of participants	Method	Outcome measures	Results	Limitations
Ayesha Sana et al, 2023.[8]	To explore the knowledge, attitude, and practice behavior (KAP) regarding BP among physical therapists (PT) of twin cities.	Cross sectional observational study	296 Both male and female Physical therapists working in in-patient and outpatient clinical settings, at least 1 year of work experience.	The data of knowledge, attitude and practice behaviors towards BP was collected by semi structured questionnaire.	Knowledge, attitude and practice behaviors	The knowledge and practice behavior regarding the BP assessment and evaluation among the physical therapist is very poor, while their attitude is positive towards the importance of BP evaluation during assessment, management and educating the patients.	Sample size is very low and study is only conducted in twin cities. So, the external validity may be compromised.

Continued.

Author journal year	Objective	Design	Sample size characteristics of participants	Method	Outcome measures	Results	Limitations
Faletra et al[9], 2022	To investigate cardiovascular knowledge and screening practices among Italian physiotherapists, according to the current practice recommendations.	Cross-Sectional Survey	387 Physiotherapists practicing in Italy, all other healthcare professionals were excluded.	The questionnaire on current recommendations on CVD screening by physiotherapists to investigate the Italian physiotherapists knowledge of cardiovascular assessment.	Knowledge, understanding and skills towards cardiovascular assessment.	Study revealed that a concerning proportion of Italian physiotherapists are not versed in funda- mentals of properly performing cardiovascular screenings. This lack of knowledge is present across the profession and may impact on appropriate triage and management.	Though require sample size is collected but low number of responses/completed surveys may effect generalization of the study.
Parekh et al[10], 2021	To check the knowledge of hypertension amongst undergraduate physiotherapy students.	Observational study	125 BPT students	hypertension knowledge	hypertension knowledge assessment questionnaire	The study concludes that there is moderate knowledge of hypertension amongst undergraduate physiotherapy students.	Low sample size
Severin et al[4], 2019	to assess the current attitudes and behaviors of physical therapists in the United States regarding the screening of patients for CVD or risk factors in outpatient orthopedic practice.	cross-sectional, online survey study	1812 licensed physical therapists in the United States and members of the orthopedic section of the APTA.	survey consisted of 30 multiple choice questions which assessed demographics, clinical decision making, CVD risk screening behaviors.	CVD risk screening behaviors	Despite the high prevalence of patients either diagnosed with or at risk for CVD, few physical therapists consistently included BP and HR on the initial examination. On the basis of the results of this survey, efforts to improve understanding regarding the importance of screening and modifications of clinic policy may be effective strategies for improving rates of HR and BP screening.	Although the sampling population included was large and representative of the profession, only members of the APTA orthopedic section were included in this survey that is approximately 30% of licensed Physical Therapists in the US.
Deshmukh et al[11], 2019	To assess perceptions of physiotherapists regarding the role of physiotherapy in cardiovascular disease risk prevention.	Cross sectional survey study	1600 Physiotherapists who are members of the Indian Association Physiotherapy and having working experience of 0-5 years or 6-10 years or	Knowledge of clinical behaviours regarding cardiovascular disease risk prevention.	The 20- item questionnaire assessing education of CVD/CVD Risk factors, CVD Prevention protocols, Identification of underlying (undiagnosed) CVD Risk,	Physiotherapists support most CVD prevention behaviors, but there less implementation of the behaviors.	Not given

Author journal year	Objective	Design	Sample size characteristics of participants	Method	Outcome measures	Results	Limitations
			11-15 years and postgraduate physiotherapy students.		Monitoring CV Status of Patients with known CVD		
Albarrati et al[5], 2018	to examine the current practice and opinion of outpatient physical therapists toward HR and BP measurements in clinics.	Survey study	285 Participants from the Saudi Physical Therapy Associatio (SPTA), working in private and governmental sector outpatient clinics.	Knowledge on recommended cardiovascular risk assessment, experience, and area of practice.	12-item Survey questionnaire assessing the clinician knowledge on recommended cardiovascular risk assessment, experience, and area of practice.	Out of 285 (56% male) Only 68 (24%) measured HR and BP; of these, 27 (41%) used manual sphygmomanometers. Nearly one-fifth reported that cardiovascular adverse events, such as syncope and chest pain, occurred during therapeutic exercise of their patients and were the highest among the sport and orthopedic physical therapists. Most physical therapists felt that measuring cardiovascular indices is not their job and does not add value to their treatment plan.	The overall response was moderate, although the researcher attempted to maximize the response and attempted to reach every therapist listed on the SPTA database but unfortunately, not all practicing therapists were included in this list.
Arena et al[12], 2017	To describe and determine correlations among blood pressure (BP) attitudes, practice behaviors, and knowledge among physical therapists (PTs) practicing in the outpatient (OP) settings.	Survey study	1440 Outpatient PTs residing in 6 Midwestern states were randomly selected from the American Physical Therapy Association (APTA.)	Attitude, behaviors and knowledge of blood pressure measurement.	Survey tool to assess outpatient physical therapists' attitudes, behaviors and knowledge of blood pressure measurement.	Initiatives to address misinformed BP attitudes and behaviors as well as gaps in knowledge of PTs providing care in OP settings is warranted.	this study include regional biasing as survey responses were only obtained from 6 Midwestern states. So, this survey may be implemented in other geographic regions or in other subsets of physical therapy clinical practice.
Zant et al[13], 2013	To assess perceptions of physical therapists (PTs) regarding the role of physical therapy in cardiovascul	Survery study	516 Cardiopulmonary physical therapy in accredited physical therapy education programs.	Education of CVD/ CVD risk factors and CVD prevention.	A 25- item survey on education of CVD/ CVD risk factors, development/administration of primary CVD prevention protocols, identification of	Physical therapists support most CVD prevention behaviors, but not given elements of patient education and identifying underlying CVD/risk factors.	Overall response rate was low and a majority of respondents were APTA members and came from an academic practice

Continued.

Author journal year	Objective	Design	Sample size characteristics of participants	Method	Outcome measures	Results	Limitations
	ar disease (CVD) prevention.				underlying (undiagnosed) CVD/CVD risk, monitoring of cardiovascular status of patients with known CVD.		setting, which is not reflective of the physical therapist population in the US.

The search was carried out using several major databases to ensure comprehensive coverage of relevant studies, including PubMed and Google Scholar. This approach helped in retrieving a wide range of studies related to cardiovascular risk assessment, blood pressure management, and the knowledge and practices of physical therapists in these fields summary of these studies is shown in table 1.[4-11] Keywords used to search studies are Cardiovascular diseases, Blood pressure, heart rate screening, physical therapists.

Cardiovascular screening by PTs in physical therapy practice

In outpatient settings, physical therapists often recommend aerobic exercise, making cardiovascular screening a crucial part of patient management. However, the practice of screening for cardiovascular risk before starting an exercise program is inconsistent, even in health and fitness environments where vigorous exercise is common.11 Current literature indicates that outpatient physical therapists often do not routinely assess heart rate (HR) and blood pressure (BP) during clinical examinations and the reasons for this lack of assessment remain unclear.[14]

Studies conducted till date by various authors to explore the knowledge, attitude and practice behavior regarding cardiovascular screening among physical therapists in different geographical regions has shown average knowledge about the information related to cardiovascular assessment. Even though the majority of physical therapists have positive attitude towards BP screening and believe that BP evaluations are important for assessment, management, and patient education, and majority of respondents do not routinely measure BP during evaluations. Furthermore, a positive correlation was identified between attitude and practice behaviours, however, not between attitude or practice behaviour and knowledge.

It remains unclear why physical therapists are not routinely including the assessment of cardiovascular signs in their clinical examination. As the previous studies have surveyed and targeted a specific group of physical therapists in different regions. Considering limitations of mentioned studies there is need for further research expanding the survey assessing knowledge, attitude, and practices of physical therapists regarding BP screening to different geographic areas or other specific areas within physical therapy practice. Additionally, studies are needed to evaluate the impact of routine implementation of blood pressure screening and assessments on patient outcomes. Finally, employing regression analysis to understand the reasons behind therapists' decisions to measure blood pressure could help guide educational efforts aimed at increasing the frequency of blood pressure measurements among outpatient physical therapists.

CONCLUSION

The study concludes that there is a notable gap in the knowledge and practice of blood pressure (BP) and heart rate (HR) assessment among physical therapists. While therapists generally exhibit a positive attitude towards the importance of BP evaluation in patient management and education, their practical application of these assessments remains insufficient. A significant number of physiotherapists lack fundamental skills in performing cardiovascular screenings, which could affect appropriate patient triage and management. Despite the high prevalence of cardiovascular disease (CVD) risk among patients, many therapists do not consistently include BP and HR measurements in initial evaluations. This issue is made worse by many therapists downplaying the importance of these assessments, thinking they don't significantly impact treatment plans. There is need to further evaluate knowledge and practices of physical therapists regarding bp screening in different geographical regions. This will help to address knowledge deficits of physical therapists regarding screening of cardiovascular parameters. Also, revision of clinical policies could enhance the implementation of assessment of these parameters in regular clinical practises and ultimately improve patient outcomes.

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