

Research Article

Knowledge, attitude and practice behavior regarding blood pressure among physical therapists of twin cities

Ayesha Sana¹, Sumaiyah Obaid², Mahrukh Saleem³, Hina Ahmed³, Sania Kiani², Muniba Shamshad⁴

ABSTRACT

Background: Blood pressure (BP) monitoring has a very crucial role in physical therapy for accurate evaluation and re-evaluation of the patient, otherwise it can lead to inaccurate clinical decision making and the patient may be falsely diagnosed. It is an important cardinal sign that cannot be neglected in making clinical decision, may put the individual to a greater risk of cardiovascular and other health problems.

Objective: to explore the knowledge, attitude, and practice behavior regarding BP among physical therapists (PT) of twin cities.

Methods: A cross sectional study was conducted in 6 months, from January 2019 to June 2019 in different hospitals of Islamabad and Rawalpindi. The data was collected from n=296 PT of twin cities after obtaining the written consent. The data of knowledge, attitude and practice behaviors towards BP was collected by semi structured questionnaire. The results were presented in table and graph while description was given as Mean \pm SD and f (%).

Results: The mean age of study participants was 28.4 \pm 3.71 years. The overall mean score of knowledge (4.27 \pm 3.05) showed that n=159(53.72%) participants in the study have poor knowledge about the information related to BP. While attitude score (19.74 \pm 2.29) showed that majority of the sample n=179(60.47%) have positive attitude towards the importance of BP evaluation during assessment, management and educating the patient. While observing the behaviour, mean score (14.55 \pm 4.78) showed that physical therapist has acceptable behaviour towards the BP measurement. But frequency distribution showed that n=160(54.05%) physical therapist has poor behaviour towards BP measurement during their practice.

Conclusion: 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.

Keywords: Blood pressure, inpatient clinic, outpatient clinic, physical therapy.

Designation & Affiliation

¹ Research Officer, Armed Forces Institute of Cardiology and National Institute of Heart Diseases (AFIC-NIHD), Islamabad, Pakistan.

² Assistant Professor, Faculty of Rehabilitation & Allied Health Sciences, Riphah International University Islamabad, Pakistan

³ Rehab House Officer, Pakistan Railway Hospital Rawalpindi, Pakistan.

⁴ Lecturer, Institute of Health and Management Sciences, Islamabad, Pakistan

Citation

Obaid S, Sana A, Saleem M, Ahmed H, Kiani S, Shamshad M. Knowledge, attitude, and practice behavior regarding blood pressure among physical therapists of twin cities. T. Rehabili. J. 2023;07(01):488-494. doi: 10.52567/trj.v7i01.161



Copyright (c) 2023

Sumaiyah Obaid, Ayesha Sana, Mahrukh Saleem, Hina Ahmed, Sania Kiani and Muniba Shamshad. This work is licensed under a Creative Commons Attribution 4.0. Authors retain copyright and grant the journal right of first publication and allows others to share the work with an acknowledgment of the work's authorship and initial publication in this journal. No use, distribution or reproduction is permitted which does not comply with these terms.

Received on: 06-05-2022

Revision on: 11-03-2023

Published on: 31-03-2023

Correspondence

Sumaiyah Obaid: Assistant Professor, Riphah International University Islamabad, Pakistan
E-mail: sumaiyah.obaid@riphah.edu.pk

INTRODUCTION

Blood pressures (BP) influence by five physiological factors including cardiac output (CO), circulating blood volume, peripheral vascular resistance, blood viscosity and vessel wall elasticity [1, 2]. It is an important cardinal sign that cannot be neglected in making clinical decisions. The BP monitoring is considering a vital part of clinical examination because a greater value of BP puts the individual to a greater risk of future health problems. There are several methods to measure the including mercury sphygmomanometer but the auscultatory method of measuring BP has always been considered the standard method for measuring BP but with advancing research many more techniques of measuring BP are now in practice [1, 3].

According to Guide to Physical Therapist Practice, vital sign assessment including BP should be made essential during physical therapy examination and management for patients with and without cardiopulmonary disease [4]. The BP should be measured accurately but if the physical therapist fails to do so it can lead to inaccurate clinical decision making and the patient may be falsely diagnosed [5]. The BP monitoring gives the physical therapist an overview about the energy consumption during ambulation and it can help to select the highly appropriate assistive device for the patient. BP evaluation guides the physical therapist in such a way that if the patient shows an abnormal BP report then the therapist is required to reduce the intensity of exercise protocol or intervention [6].

Many clinicians are not able to make optimal decisions based on visual inspection and past medical history of the patient thus making the BP measurement an integral part of examination [7]. Reported records show that many health care professionals including PTs and nursing staff lacked knowledge and skills about taking accurate BP readings [8]. Millar et al [6] have reported that there is a considerably low number of PTs in outpatient clinical settings that follow the practice guidelines for measuring heart rate (HR) and BP which increases the risks of CVS mishaps while giving physical therapy sessions. Low numbers of physiotherapists who measure BP and HR according to the guidelines, which can lead to poor decision making and affects the ability of physical therapist to make an accurate exercise protocol [9]. As the hypertension is a major risk factor for many other diseases and can be a contraindication to intervention so, BP monitoring should be considered important before starting a physical therapy intervention [10].

There is lack of literature regarding the knowledge, attitude and practice of physical therapist for blood pressure measurement before or

after the intervention. So the current study was conducted to explore the knowledge, attitude and practice behavior regarding BP among Physical therapist (PTs) of twin cities (Islamabad & Rawalpindi), also investigate association between blood pressure attitudes, practice behaviors and knowledge in PTs serving for in-out-patient and in-patient units.

METHODOLOGY

The study design was cross sectional survey, conducted at private and government hospitals of Rawalpindi and Islamabad, Pakistan from January 2019 to December 2019, after getting approval from the research and ethical committee (REC) of Faculty of Rehabilitation & Allied Health Sciences, Riphah International University Islamabad Pakistan. (RIPHAH/RCRS/REC/Letter-0642). The non-probability convenient sampling technique was used for data collection. The sample size was $n=296$, Physical therapists working in in-patient and out-patient clinical settings, at least 1 year of work experience in clinical setting, both male and female were included in study. As the Physical therapist assistants, DPT students, and PTs providing Home based physical therapy were excluded.

The data was collected after taking written informed consent from all the study participants. The semi structured questionnaire was used to explore the Attitudes, Knowledge, and Practice Behaviors of Physical therapist regarding Blood Pressure survey tool was used and found good (0.40–0.75) and excellent (>0.75) reliability in respective cultural practices [11].

The 23 items questionnaire was consist of questions related to knowledge (12-items), attitude (5-items) and behavior (6-items) used to explore the Attitudes, Knowledge, and Practice Behaviors of Physical therapist regarding Blood Pressure. The items responses of attitude (Maximum score 25) and behavior (Maximum score 30) were on 5-point Likert scale used while binary options i.e. correct or incorrect were used to evaluate the knowledge (maximum score 12). The higher score shows good, highly positive and very good knowledge, attitude and behavior respectively Data analysis was done with SPSS version 23.

RESULTS

In current study a total of $n=167$ (56.4%) were female and $n=129$ (43.6%) were male respectively. The mean age of study participants was 28.4 ± 3.71 years. The patient population for which physical therapist provide physical therapy services, $n=6$ (2%) from integumentary physical therapist, $n=142$ (48%) from musculoskeletal physical therapist, $n=60$ (20%) from cardiopulmonary physical therapist,

n=85(28.7%) from neuro physical therapist, n=3(1%) from others.

The overall mean score of knowledge (4.27±3.05) showed that n=159(53.72%) participants in the study have poor knowledge about the information related to BP. The mean and frequency of responses regarding knowledge items and overall score can be seen in table 3 & figure 4.

The mean score of attitudes (19.74±2.29) showed that majority of the sample n=179(60.47%) have positive attitude towards the importance of BP evaluation during assessment; management and educating the patients (figure 1). The mean score and frequency of responses for attitude domain can be seen in table 1.

Table 3: Knowledge items with their mean score and frequency distribution

Items	Mean±SD	Incorrect	Correct
BP value between 120 mm Hg - 139mm Hg considered to indicate systolic pre-hypertension	.60±.49	118(39.9)	178(60.1)
BP value(s) between 80 mm Hg -89 mm Hg considered to indicate diastolic pre-hypertension	.43±.49	167(56.4)	129(43.6)
BP value(s) between 140 mm Hg-159 mm Hg considered to indicate systolic hypertension	.48±.50	152(51.4)	144(48.6)
BP value between 90 mm Hg – 99 mm Hg considered to indicate diastolic hypertension	.40±.49	175(59.1)	121(40.9)
It is contraindicated to start exercise with a systolic BP reading of 180mm Hg or above	.32±.47	199(67.2)	97(32.8)
It is contraindicated to start exercise with a diastolic BP reading of 110 mm Hg or above	.13±.34	256(86.5)	40(13.5)
It is recommended to terminate exercise with a systolic BP reading of 180mm Hg or above	.35±.48	190(64.2)	106(35.8)
It is recommended to terminate exercise with a diastolic BP reading of 110 mm Hg or above	.28±.45	211(71.3)	(28.7)
It is recommended to inform a physician or similar health care provider of a systolic BP reading between 80mmHg – 99 mmHg	.09±.29	268(90.5)	28(9.5)
It is recommended to inform a physician or similar health care provider of a diastolic BP reading between 40mmHg -69mmHg	.37±.48	186(62.8)	110(37.2)
It is recommended to inform a physician or similar health care provider of a systolic BP reading 140mmHg -169mmHg	.27±.44	214(72.3)	82(27.7)
It is recommended to inform a physician or similar health care provider of a diastolic BP reading 100mmHg-139mmHg	.08±.27	271(91.6)	25(8.4)
Knowledge Score	4.27±3.05		

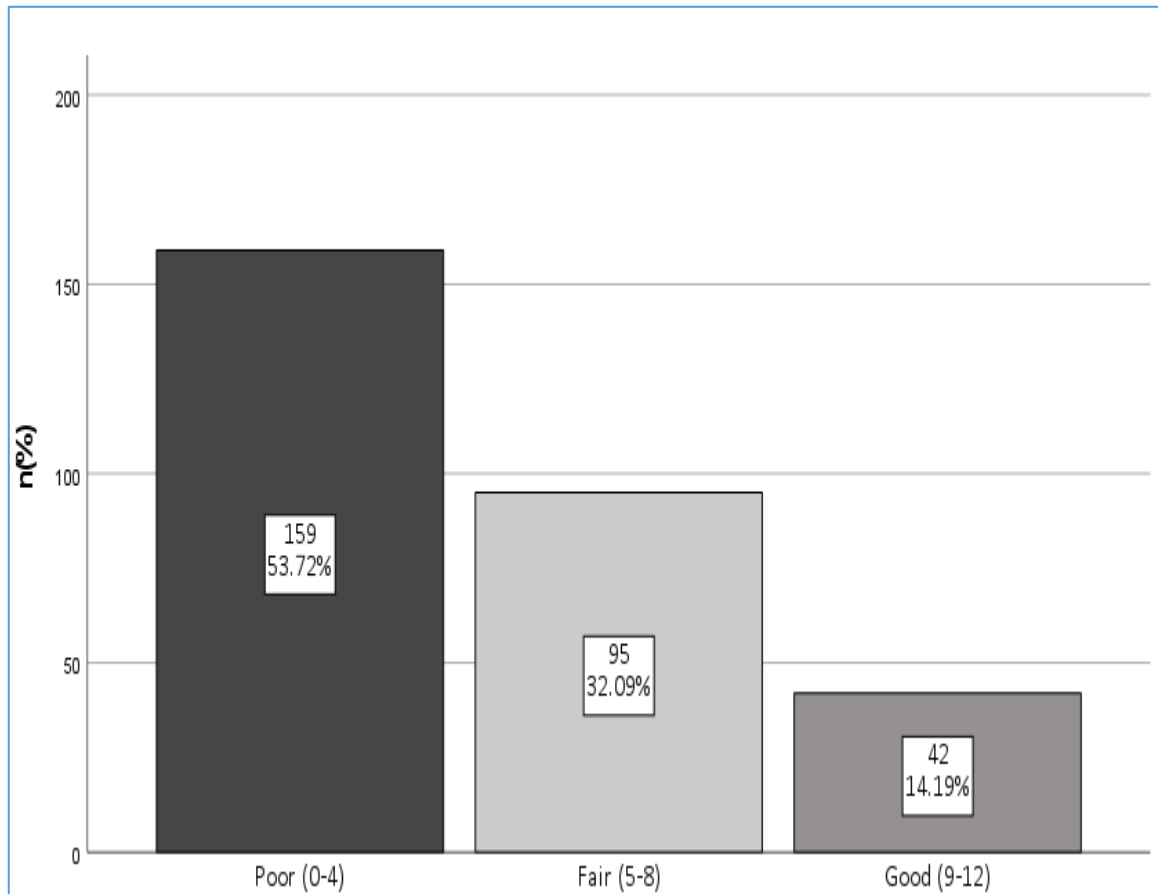
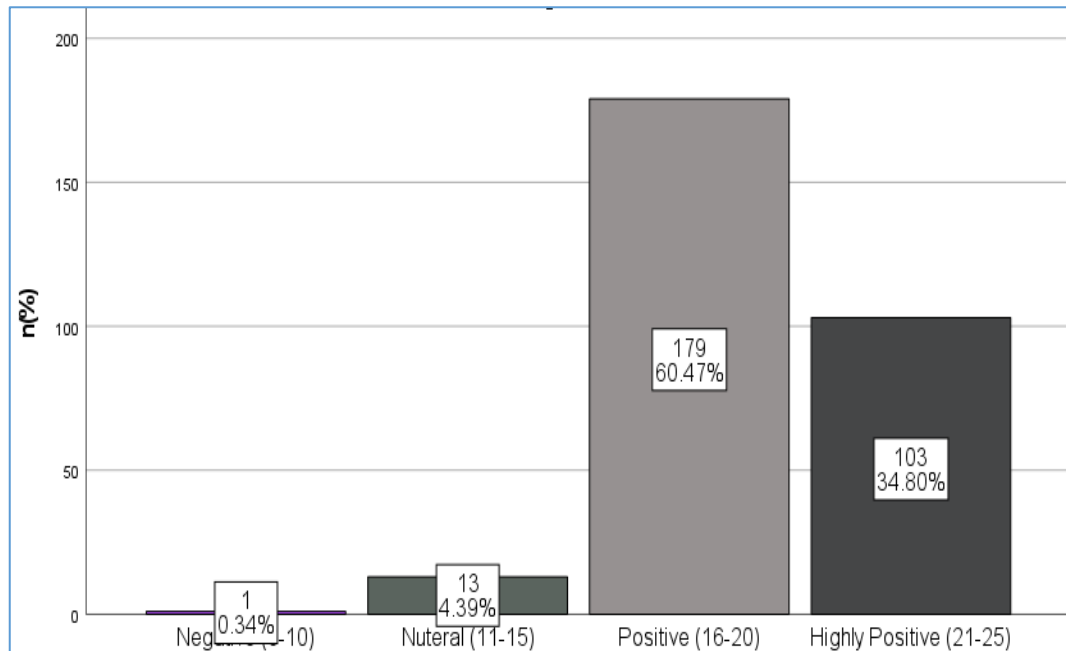


Figure 3: Frequency distribution of Knowledge domain

Table 1: individual items of Attitude domain with mean value and response frequency

	Mean±SD	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I feel it is important to take a BP reading on every patient/client during an evaluation or re-evaluation	3.97±.73	2(0.7)	10(3.4)	42(14.2)	181(61.1)	61(20.6)
I feel it is important to take a BP reading on every patient/client PRIOR to physical therapy treatment	3.82±.86	8(2.7)	20(6.8)	33(11.1)	189(63.9)	46(15.5)
I feel it is important to take a BP reading on every patient/client AFTER physical therapy treatment	3.89±.72	5(1.7)	10(3.4)	34(11.5)	208(70.3)	39(13.2)
I feel I am able to take an accurate BP reading	3.97±.77	8(2.7)	2.0(7)	39(13.2)	188(63.5)	59(19.9)
I feel confident in my ability to educate patients/clients about BP related findings	4.06±.68	4(1.4)	2(0.7)	29(9.8)	196(66.2)	65(22)
Attitude Score	19.74±.2.29					

**Figure 1: Frequency distribution of attitude categories**

While observing the behaviour, mean score (14.55±4.78) showed that physical therapist has acceptable behaviour towards the BP measurement. But frequency distribution showed that n=160(54.05%) physical therapist has poor

behaviour towards BP measurement during their practice. (Figure 2)

The descriptive statistics of individual item can be seen in table 2.

Table 1: individual items of Behaviour domain with mean value and response frequency

	Mean±SD	Never	Seldom	<Half Of Time	>Half The Time	Always
A physical therapy assistant, technician, or other health care provider obtains the BP measurement in my practice setting	1.60±.98	188(63.5)	67(22.6)	20(6.8)	13(4.4)	8(2.7)
I measure BP during patient/client evaluation or re-evaluation	1.50±.94	205(69.3)	59(19.9)	17(5.7)	4(1.4)	11(3.7)
I measure BP on a patient/client PRIOR to physical therapy treatment	1.61±1.06	197(66.6)	53(17.9)	25(8.4)	6(2)	14(4.7)
I measure BP on a patient/client AFTER physical therapy treatment	1.53±1.03	212(71.6)	39(13.2)	9(3)	12(4.1)	2(0.7)
I inform a patient/client of their BP reading after each measurement	2.93±1.85	120(40.5)	34(11.5)	10(3.4)	9(3)	123(41.6)
I standardize the patient/client position each time I perform a BP measurement	1.85±1.32	187(63.2)	38(12.8)	23(7.8)	23(7.8)	23(7.8)
Behaviour Score	14.55±4.78					

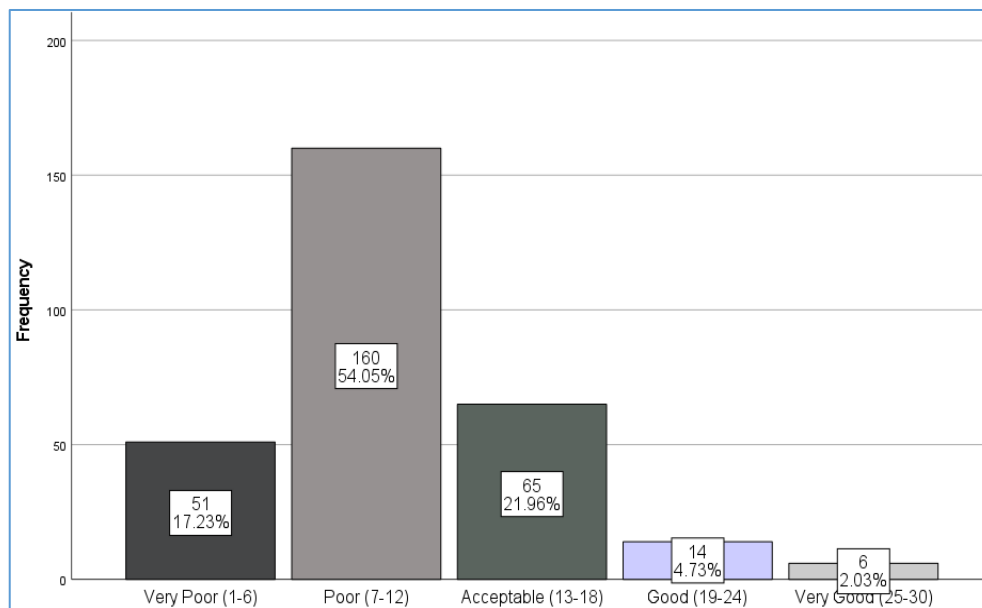


Figure 2: frequency distribution of Behaviour category

DISCUSSION

The main objective of this study was to explore the physical therapist (PT) attitudes, practice behaviors and knowledge regarding blood pressure during patient evaluation and management. The results showed that PT has poor knowledge and practice behavior about the blood pressure characteristics and importance during their clinical practice but having the positive attitude.

The results of the current study show that more than three fourth of the respondents were agreed and strongly agreed on the fact that BP monitoring is essential for patient evaluation and reevaluation but only 7% of the respondents performed BP measurement during evaluation [12]. It is considered very important to measure BP prior to physical therapy as it tells about the cardiovascular risk factors of the patient, a study conducted by Scherer SA et al shows that most of the physical therapists working in the in-patient and out-patient clinical settings admit that measuring BP is necessary for cardiovascular risk factor screening and exercise prescription but majority of them do not monitor vital signs including BP before starting an intervention[13]. According to the study conducted by Sara Arena about 50% of the respondents showed disagreement in measuring BP during patient evaluation/ re-evaluation. More than half of the respondents were disagreed and strongly disagreed that BP measurement is important prior and after the physical therapy treatment. The research showed that about more than three fourth of the participants felt confident in their ability to measure BP and educate patient regarding their BP readings and these results coincide with the previous literature[11]. Conversely our research showed that a significant

ratio of physical therapists were agreed and strongly agreed that BP evaluation should be made essential before and after physical therapy intervention.

The results of our study also showed that there are actually a very low number of physical therapists who actually pay importance to measure BP in the clinical settings. A study conducted by Millar et al [6] which states that there is a considerably low number of physical therapists in outpatient clinical settings that follow the practice guidelines for measuring heart rate and blood pressure. Ferese et al has also reported that there is a low frequency of physiotherapists who measure blood pressure and heart rate according to the guidelines which can lead to poor decision making and affects the ability of physical therapist to make an accurate exercise protocol. The majority of the physical therapists and health care providers have enough training in the techniques of measuring BP, but due to lack of attitude and interest they do not implement these guidelines in the practice settings[9]. Current study depicts that 92.9% (n=275) shows A physical therapy and other health care provider not obtained the BP measurement in there practice setting.

As far as behavior was concerned the respondents showed a poor behavior regarding BP measurement. The present research also shows that about 90% of the physical therapist population in the twin cities did not consider measuring BP important prior and after physical therapy treatment. A study conducted by Ferese et al showed that nearly quarter of the participants did not measure BP routinely because they thought that the information can be obtained by patient's history [9]. Another study conducted by Sara Arena also supports that about 85% and 96% physical therapists did not

consider BP measurement important before and after physical therapy intervention respectively[11]. The findings of our conducted research shows that about half of the respondents did not felt important to inform their patients about their BP readings. Nearly three fourth of the respondents did not standardize the position of their patient while measuring BP and this statement is supported by the research conducted by Ferese et al [9] as they observed that most of the health care providers only check BP in the sitting position.

Despite having established guidelines and classification[14] of BP the incorrect answers to the knowledge questions is a question mark. The findings of a study show that the knowledge of the physical therapists regarding HTN and P-HTN SBP values was at the rate of 23% and 17% and the DBP values at the rate of 25% and 19% respectively[11]. The findings of our study showed that about more than half of the respondents had correct knowledge about Pre hypertension systolic blood pressure value but the ratio of the respondents knowing the correct DBP value was less than half. The respondents that mentioned correct HTN SBP and DBP ranges were less than half. American College of Sports Medicine guideline suggest that exercise should be terminate at the SBP value higher than 200mmHg and another reference shows that SBP value higher than 260mmHg is recommended to terminate exercise [14, 15].

In the current study about half of the respondents did not even bother to guess the value and in the remaining half, most respondents mentioned incorrect values regarding terminating exercise. In evidence, it indicates the blood pressure control with exercise improves the health, but it requires educating knowledge for development of attitude and practicing[16].The conducted research shows that almost three fourth of the respondents had manual BP apparatus with the cuff size of an adult in their practice settings. Almost 70% of the respondents felt barriers in measuring BP in their clinical sites due to lack of time due to multitasking, in availability of proper BP apparatus and lack of proper knowledge, training and insufficient behavior regarding BP measurement. Furthermore, inaccurate BP equipment's and work load were a main issue[10].

The sample size is very low and study is only conducted in twin cities. So the external validity may be compromised. Although the questionnaire has good reliability but need to be improved further for accurate information.

CONCLUSION

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. As a Doctor of Physical Therapy (DPT), It is claimed that we can have direct access of the patients on the bases of their knowledge and training during education. It is recommended the institutions offering the DPT must improve there standard of teaching and training not regarding the BP but also about the other related subjects which facilitate direct access of the patients. It is also recommended to explore these areas with more reliable measures.

Furthermore, the health care departments should take an initiative to make BP examination and assessment an essential part of patient's primary health care protocol.

Author's Contribution

SO: Critical Appraisal, Questionnaire design, conception, and design of the study.

AS: Questionnaire design, data collection and manuscript drafting of the study.

MS and HA: data collection and manuscript drafting of the study.

SK and MSh: analysis of the data and interpretation of the study.

SO, AS, MS, HA, MSh and SK: final approval of the version to be published and agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. All authors contributed to the article and approved the submitted version.

Ethical Statement

The study was conducted at private and government hospitals of Rawalpindi and Islamabad, Pakistan after getting approval from the research and ethical committee of Faculty of Rehabilitation & Allied Health Sciences, Riphah International University. Islamabad (RIPHAH/RCRS/REC/Letter-0642).

Consent Statement

Informed consent was obtained from all subjects involved in the study.

Data Availability Statement

The data presented in this study are available on request from the corresponding author.

Acknowledgments

None to declare.

Conflicts of Interest

The authors declare no conflict of interest. The funders had no role in the design of the study;

in the collection, analyses, or interpretation of data; in the writing of the manuscript; or in the decision to publish the results.

exercise for blood pressure control: a cross-sectional survey. *J. Exerc. Sci. Physiother.* 2014;10(1):1-10. [[CrossRef](#)]

REFERENCES

1. John O, Campbell NR, Brady TM, Farrell M, Varghese C, Velazquez Berumen A, et al. The 2020 "WHO technical specifications for automated non-invasive blood pressure measuring devices with cuff". *Hypertension.* 2021;77(3):806-12. [[CrossRef](#)] [[PubMed](#)]
2. Vincent J-L. Understanding cardiac output. *Critical care.* 2008;12:1-3. [[CrossRef](#)] [[PubMed](#)]
3. Pickering TG, Hall JE, Appel LJ, Falkner BE, Graves JW, Hill MN, et al. Recommendations for blood pressure measurement in humans: an AHA scientific statement from the Council on High Blood Pressure Research Professional and Public Education Subcommittee. *J. Clin. Hypertens.* 2005;7(2):102-9. [[CrossRef](#)] [[PubMed](#)]
4. Grim C, Li J, Grim C. Entering medical students, who say they have been trained to take blood pressure, do not follow the American heart association guidelines. *Am. J. Hypertens.* 1999;4(12):150. [[CrossRef](#)]
5. Frese EM, Fick A, Sadowsky HS. Blood pressure measurement guidelines for physical therapists. *Cardiopulm. Phys. Ther. J.* 2011;22(2):5-12. [[PubMed](#)]
6. Millar AL, Village D, King T, McKenzie G, Lee J, Lopez C. Heart rate and blood pressure assessment by physical therapists in the outpatient setting—an observational study. *Cardiopulm. Phys. Ther. J.* 2016;27(3):90-5. [[CrossRef](#)].
7. Feldman K, Householder M, Hale S, Jackson A, McKinney D, McVey L. Physical therapists' ability to predict hypertensive status based on visual observation with and without past medical history. *Cardiopulm. Phys. Ther. J.* 2016;27(2):49-55. [[CrossRef](#)]
8. Franklin BA, Brubaker P, Harber MP, Lavie CJ, Myers J, Kaminsky LA. The journal of cardiopulmonary rehabilitation and prevention at 40 yr and its role in promoting preventive cardiology: part 2. *J. Cardiopulm. Rehabil.* 2020;40(4):209-14. [[CrossRef](#)] [[PubMed](#)]
9. Frese EM, Richter RR, Burlis V. Self-reported measurement of heart rate and blood pressure in patients by physical therapy clinical instructors. *Phys Ther.* 2002;82(12):1192-200. [[PubMed](#)]
10. Medicine ACoS. ACSM's health-related physical fitness assessment manual: Lippincott Williams & Wilkins; 2013
11. Severin R, Sabbahi A, Albarrati A, Phillips SA, Arena S. Blood pressure screening by outpatient physical therapists: a call to action and clinical recommendations. *Phys Ther.* 2020;100(6):1008-19. [[CrossRef](#)] [[PubMed](#)]
12. Nelson JM, Cook PF, Ingram JC. Utility of the theory of planned behavior to predict nursing staff blood pressure monitoring behaviours. *J Clin Nurs.* 2014;23(3-4):461-70. [[CrossRef](#)] [[PubMed](#)]
13. Scherer SA, Noteboom JT, Flynn TW. Cardiovascular assessment in the orthopaedic practice setting. *J Orthop Sports Phys Ther.* 2005;35(11):730-7 [[CrossRef](#)] [[PubMed](#)]
14. Chobanian AV, Bakris GL, Black HR, Cushman WC, Green LA, Izzo Jr JL, et al. Seventh report of the joint national committee on prevention, detection, evaluation, and treatment of high blood pressure. *hypertension.* 2003;42(6):1206-52. [[CrossRef](#)] [[PubMed](#)]
15. Carroll AJ, Mohanty N, Wallace AS, Langman CB, Smith JD. Perspectives of Primary Care Clinicians on the Diagnosis and Treatment of Pediatric Hypertension. *Fam Community Health.* 2023;01;46(2):123-127. [[CrossRef](#)] [[PubMed](#)]
16. Awotidebe T, Adedoyin R, Rasaq W, Adeyeye V, Mbada C, Akinola O, et al. Knowledge, attitude and practice of