

Original Article

Attitude and practice regarding effective blood pressure measurement among health professionals at a tertiary care hospital in Hyderabad - Pakistan

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Abstract

Background: Blood pressure (BP) measurement is one of the basic indicator used for the diagnosis, treatment and research investigations of Hypertension. The accuracy of the measurements have the potential to influence the decision making and therefore is a prerequisite, regardless of which technique is used. Still, too often the accuracy of measurement is taken for granted in general practice. This study aims to gauge the attitude and practice of health professionals regarding effective BP measurement at a tertiary care hospital.

Methodology: This cross-sectional study comprised of 50 healthcare professionals, chosen via purposive sampling from Liaquat University Hospital, a tertiary care hospital at Jamshoro, Hyderabad during November, 2015 to January, 2016. A self-administered structured qualitative and quantitative questionnaire was used to evaluate the attitude and practice of effective BP measurement. The data was analyzed through SPSS version 19 and Microsoft Excel.

Results: According to the study results, 88% of the participants had clinical experience of up to 5 years. Around 56% of the respondents rated their BP measurement skills as very good, 38% as good while 6% as acceptable. It was found that 46% of the respondents use to measure BP only once whereas 54% do it twice to get a mean value. For the location of measuring the BP, 60% responded to use only one arm while, 40% reported to measure it from both arms. Furthermore, many of the respondents reported for never attending any Continuous Medical Education (CME) regarding BP measurement along with the 48%, who declared that they had never updated their knowledge regarding BP measurement guidelines.

Conclusion: It is evident from the survey that selected set of healthcare professionals had lesser focus toward accurate methods of BP measurement as well as low interest in updating their knowledge regarding the standard protocols. It is concluded that up gradation of knowledge and awareness reading standard and current practices must be taught regularly and must be mandatory to follow for all healthcare providers.

Keywords

Blood pressure, Tertiary care hospital, Healthcare professionals, Blood pressure measurement



Introduction

The guidelines for BP measurement were first published by American Heart Association published in 1988 but from then till now studies showed that these are either less known or overlooked by health care workers¹. BP is most common of vitals used routinely in healthcare setting with Auscultation method being the most common one. The most widely used method for BP measurement is the Auscultation method giving systolic and diastolic values. Normal systolic and diastolic values are <120 mmHg and <80 mmHg respectively and anything more than that falls into the categories of Prehypertension (120-139 mmHg/80-89 mmHg), Stage 1 Hypertension (140-159 mmHg/90-99 mmHg) and Stage 2 Hypertension (\geq 160 mmHg/ \geq 100 mmHg) as per the American Heart Association². High BP increases the risk of developing narrowed arteries that lead to heart problems and strokes. In the Asian-Pacific region, up to 66% of some subtypes of Cardiovascular Disease (CVD) can be attributed to hypertension, underscoring the immense impact that BP lowering strategies could have in this populous region³. For treating and controlling cardiac morbidity, accurate diagnosis is a requirement. Therefore it is imperative to have an early and accurate assessment of BP to diagnose and treat such diseases.

Accurate measurement of BP is essential to categorize individuals on the basis of their pressure type, to ascertain BP-related risk, and to guide management². The auscultatory technique with a trained observer and mercury sphygmomanometer continues to be the method of choice for measurement, using the first and fifth phases of the Korotkoff sounds, including in pregnant women². Worldwide prevalence estimates for hypertension may be as much as 1 billion individuals and approximately 7.1 million deaths may be credited to hypertension every year⁴. It has

been identified as the leading global risk factor for death or disability⁵. Studies have shown that worldwide, high BP affects > 40% of the adult population older than the age of 25 years⁶. The estimated number of adults with raised blood pressure increased from 594 million in 1975 to 1.13 billion in 2015, comprising 597 million men and 529 million women⁷.

Hypertension is one of the prominent causes of cerebrovascular and cardiac morbidity. It is also a major risk factor for cardiovascular disease, chronic kidney disease, and death, remaining largely silent until the development of complications⁸. Hypertension not only increases the risk of heart attack and stroke but also is an originator for congestive heart failure, chronic occlusive peripheral vascular disease, aortic aneurysm, and renal failure⁹. Terminal digit preference, which is a common source of error during manual BP examinations, is the rounding off the numbers to nearest zero. Usually, the result is an inappropriate increase in the diagnosis of hypertension because SBP in the upper 130s are rounded up to 140 mm Hg⁹. A study demonstrated that traditionally trained nurses had terminal digit preference while measuring the BP¹⁰. This resulted in underestimation by >5%mm Hg among 57.5% of the patients causing misjudgements for hypertensive patients¹⁰. Healthcare professional's attitude and practice towards BP measurement may lead to overestimation or underestimation of arterial BP which may result in patients being labelled with hypertension even when they aren't hypertensive and vice versa¹¹. Nurses often find that it is faster and easier to take a forearm BP than to search for a larger cuff¹². Studies have shown that forearm BP generally runs 3.6/2.1 mm Hg higher than upper arm BP¹³.

This study aims to analyse the competency of health care professionals in the measurement of BP in relation to the standard guidelines of BP measurement. It also evaluates their attitude

towards learning and improving their knowledge regarding pre-existing techniques, the use of appropriately sized instruments with regard to different patients and their insight on its importance.

Methodology

This cross-sectional study comprised of 50 healthcare professionals chosen via purposive sampling from November 30th, 2015 to January 28th, 2016 at a tertiary care hospital i.e. Liaquat University Hospital, Jamshoro. For inclusion into the study, the subjects were required to have a minimum experience of 6 months in BP measurement with sphygmomanometer only. Subjects using a digital device for measurement and students were excluded from the study sample.

A self-administered structured qualitative and quantitative questionnaire was used to evaluate the knowledge of healthcare professionals regarding BP measurement. The study

continued for 2 months. Data was collected from the subjects through the questionnaire on period of experience, self-evaluation for their skills in the measurement of BP, the last time they updated their knowledge on recent guidelines and how well the standard guidelines were followed. The data was analyzed through SPSS version I9 and Microsoft Excel. The results were tabulated as frequency and percentages.

Results

Out of the 50 healthcare providers 19 (38%) were males and 31 (62) were females. Majority of the subjects i.e. 88% had work experience of up to 5 years in the medical field. According to the results 56% study subjects rated their BP skills as very good, 38% as good and 6% of the sample rated their skills as acceptable. It was observed that 60% of the healthcare providers preferred measuring BP from one arm while only 40% measured on both arms.

Table I: Demographic details and measurement rating & practices of study population regarding BP measurement

Variables	Sub-categories	n(%)
Gender	Male	19(38)
	Female	31(62)
Age (years)	20-29	39(78)
	30-39	9(18)
	Above 39	2(4)
Professional Experience (years)	I-5	44(88)
	6-10	2(4)
	11-15	2(4)
	Above 15	2(4)
Professional Status	Non doctoral staff	8(16)
	House Officer	18(36)
	Resident	16(32)
	Consultant	8(16)
BP measurement skills (Self-Rating)	Very Good	28(56)
	Good	19(38)
	Acceptable	3(6)
BP Measurement Practice (*BP=Blood Pressure)	In Both arms	20(40)
	In One arm only	30(60)

As per table I, 48% of the subjects declared that they had never updated their knowledge regarding BP measurement guidelines. Moreover, 74% of the respondents had never attended any CME regarding BP measurement.

Table 2: Records for personal knowledge up-gradation and CME lectures last attended regarding BP measurement

Time (month ago)	Last updated their Knowledge	Last attended CME Lecture
Never	24(48)	37(74)
1-20 months	25(50)	10(20)
21-40 months	1(2)	2(4)
41-60 months	0(0)	1(2)

*value are given as n(%)

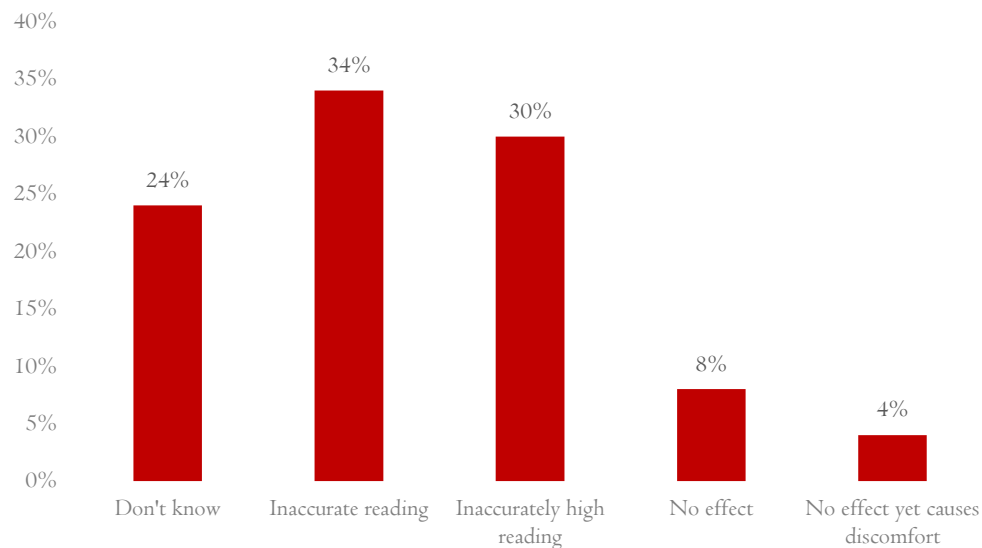


Figure I: Study subjects presenting their opinion regarding the impact of an overly tight cuff on BP reading

Figure I showed that 34% of the subjects said the values would be inaccurate with the tight cuff. Moreover, 30% replied that values would be inaccurately high. While 24% didn't know what effect it might cause.

Discussion

Guidelines for BP measurement are frequently updated and that is why it is considered very important for health care workers to update their knowledge regarding BP measurement guidelines. A lot of professionals tend to ignore

this fact and do not put any effort in updating or revising BP guidelines. Hence their competency in measuring BP is overlooked. Medical professionals often estimate their BP skills overwhelmingly high. Overestimation of skills is a reason for a reluctant approach towards correct measurement and upgradation

of knowledge concerning the subject. Our results indicated that the majority of the study subjects rated their BP skills as very good (Table I), yet failed to follow measurement guidelines. BP knowledge regarding BP is not a common practice in the healthcare world, as professionals tend to stick to similar measurement routine and trust their ability to measure BP quite a lot.

A daily routine skill is neglected by healthcare systems and there is no emphasis on training and educating the staff for basic skills such as BP measurement which is why 48% of the participants confessed to never updating their knowledge and 78% of the sample never attended any CME concerning BP measurement (Table 2). Health care systems should operate in a way that supports a better and safer environment for patients but unfortunately alike the professionals the system doesn't focus on such learning/training programs. This lack of knowledge could lead to incorrect labelling of hypertensive and non-hypertensive patients according to modern guidelines and classifications¹⁴.

Mis-cuffing is a very well researched topic but still remains a common medical mistake in the healthcare community. A very long study from different regions of the world published in The New England Journal of Medicine indicates that an increase of 10 mmHg in SBP increases the relative risk of death from coronary heart disease by 28% also 5 mmHg increase in DBP had a similar effect¹⁴. This demonstrates the significance of slight increases in BP and the necessity of accurate BP measurement for diagnosis, treatment and management¹⁴. Using a standard BP arm cuff on an obese patient, leading to a tight cuff falsely raises systolic blood pressure by approximately 10 mm Hg¹². Our survey explains that healthcare professionals have insufficient understanding of mis-cuffing as only 30% of the respondents (Figure 1), answered accurately to a question about effects of the overly tight cuff which

leads us to state that most of the mis-cuffing happens due to under cuffing large arms. In general, this error can be reduced by using a large adult sized cuff for all except the skinniest arms. The British Hypertension Society (BHS) recommends that if the arm circumference exceeds 33 cm, a large adult cuff should be used (width 12.5 to 13 cm, length 35 cm)¹⁵.

Hospitals have a strenuous and demanding atmosphere which causes health care professionals to be reluctant towards their commonly practiced skills and promotes ignorance towards important factors like patient's position, right size cuff, measuring values for both arms¹⁶. Factors such as arm position, cuff size, body position and difference between two arms have an impact on BP readings by >2 mmHg to >10 mmHg¹⁶. Values for the left arm and right arm tend to vary, though it is an established fact that at least 20% of patients can have difference of >10mmHg between their arm pressure. Thus it. It is important for an observer to measure BP on both arms moreover record the higher value¹⁷. A large number of medical professional's i.e. 60% (Table I) under our observation didn't measure BP on both arms simply overlooking the consequences of incorrect measurements which grows the chances of misdiagnosing and mistaking treatments, ultimately risking lives.

The overall study showed that the majority of the subjects believed that they had sufficient BP measuring skills for their profession. Failure to update knowledge regarding BP through CMEs or any other methods made them self-satisfied and competent enough to challenge and work without insecurities and held them unaware of the new and updated facts about BP measurement. There are also technical errors in their measurement practices and many of the subjects are not aware of it and relevant authorities should pay attention to organizing awareness through initiating session and training programs.

Conclusion

The study results concluded that the healthcare professionals of selected tertiary care hospital were not fully equipped with the updated knowledge and put less efforts in using standard procedures. It is recommended that focused training of health professional with contemporary and standard protocols will be beneficial to improve quality of healthcare outcomes.

Conflicts of Interest

None.

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