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ANALYSIS OF BLOOD PRESSURE AND HYPERTENSION MEASUREMENT AND ITS TREATMENT IN PAKISTAN

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Abstract:
Introduction: Hypertension is a consistent, powerful and independent risk factor for cardiovascular disease, stroke and renal disease.
Aims and objectives: The basic aim of the study is to analyze the blood pressure and hypertension measurement and its treatment in Pakistani hospitals.
Material and methods: This cross-sectional study was conducted in Fatima Memorial hospital, Lahore during March 2019 to July 2019. The data was collected from 100 hypertension patients who visited the OPD of the hospital. Participants had BP assessed in a pragmatic way by nurse practitioners who would give their therapeutic decision based on their readings. Participants had BP re-assessed according to the standard protocol, using mercury sphygmomanometer and wrist sphygmomanometer alternately.
Results: The data was collected from 100 hypertensive patients. Demographic values and treatment of hypertension have direct relationship. As there are many factors which are responsible for medication and treatment in a country like Pakistan. Table 01 explains the treatment decision according to the history of a patients. It is based on the pragmatic blood pressure and standard blood pressure.
Conclusion: It is concluded that there is a difference between standard BP treatments which affect the decision to start medication and the decision to initiate treatment, but not the decision regarding alteration of regime for those already on treatment.

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INTRODUCTION:
Hypertension is a consistent, powerful and independent risk factor for cardiovascular disease, stroke and renal disease. Diagnosis of hypertension is based on measurement of blood pressure (BP). Obtaining accurate BP readings has been noted to be a challenge faced by health professionals at all levels. A large number of surveys have shown that physicians, along with other healthcare providers, seldom follow established guidelines for measurement of BP [1]. Hypertension is a consistent, powerful and independent risk factor for cardiovascular disease, stroke and renal disease. Diagnosis of hypertension is based on measurement of blood pressure (BP). Obtaining accurate BP readings has been noted to be a challenge faced by health professionals at all levels. A large number of surveys have shown that physicians, along with other healthcare providers, seldom follow established guidelines for measurement of BP [2]. This study analysed variations between pragmatic and standardized (as per protocol) BP measurement. Technology has brought in various BP measuring devices, a common one in primary care being the wrist sphygmomanometer as opposed to the 'gold standard', but environmentally unfriendly, mercury sphygmomanometer [3].

Hypertension is a common health burden affecting both developed and developing nations. The prevalence of high BP increases dramatically with age, with the lifetime risk of high BP approaching 100%. Extensive data have shown beyond doubt the benefit of controlling hypertension [4].

Control of BP begins with accurate measurement that leads to appropriate diagnosis, assessment of cardiovascular risk and treatment decisions. The target BP for patients using anti-hypertensive treatment has been lowered for those with diabetes or renal disease, thus, it has become increasingly important to be able to detect small differences in BP. Whilst BP measurement is a vital clinical skill, and it is performed poorly by all categories of healthcare professional [5].

AIMS OF THE STUDY:
The basic aim of the study is to analyze the blood pressure and hypertension measurement and its treatment in Pakistani hospitals.

MATERIAL AND METHODS:
This cross-sectional study was conducted in Fatima Memorial hospital, Lahore during March 2019 to July 2019. The data was collected from 100 hypertension patients who visited the OPD of the hospital. Participants had BP assessed in a pragmatic way by nurse practitioners who would give their therapeutic decision based on their readings. Participants had BP re-assessed according to the standard protocol, using mercury sphygmomanometer and wrist sphygmomanometer alternately. To reduce bias, the order of measurement for pragmatic or standard BP measurements was alternated for successive patients. Finally, demographic and relevant clinical data were collected into a 'Data Collection' form, which was subsequently entered into a Microsoft® Excel spreadsheet for analysis.

Statistical analysis: The data was collected and analyzed using SPSS version 20.0. All the values were expressed in mean and standard deviation.

RESULTS:
The data was collected from 100 hypertensive patients. Demographic values and treatment of hypertension has direct relationship. As there are many factors which are responsible for medication and treatment in a country like Pakistan. Table 01 explains the treatment decision according to the history of a patients. It is based on the pragmatic blood pressure and standard blood pressure.

Table 01: Clinical characteristics of participants.

Treatment decision	No treatment		Treat		Change treatment	
	n	*%*	*N*	*%*	*n*	*%*
Based on pragmatic blood pressure	32	53	18	30	10	17
Based on standard blood pressure	41	68	11	18	8	13

Table 02 clearly explains the medication which is used in local hospitals of Pakistan for the treatment of hypertension and high blood pressure

Table 02: medication that used for high blood pressure

Medication	Dosage	Analysis
Telmisartan	40 mg once per day	Consider alternative in patients with acute kidney injury or severe renal disease; may cause hyperkalemia
Atenolol	25 to 50 mg once per day	Avoid in patients with bradycardia; may cause bronchospasm
Metoprolol succinate (Toprol XL)	25 to 100 mg once per day	
Amlodipine (Norvasc)	2.5 to 5 mg once per day	May cause flushing and edema
Nifedipine*	30 mg once per day	
Hydrochlorothiazide	12.5 to 25 mg once per day	Use with caution in patients with gout; may cause hypokalemia and hyponatremia

DISCUSSION:

Blood pressure elevations during hospitalization are often exacerbated by pain, anxiety, or acute illness. When these factors have been excluded and the patient remains hypertensive, it is best practice to reinitiate or adjust oral antihypertensive therapy in those with preexisting hypertension. Our approach to understand disease development in early life, identify key pathways of interest in predisposition to hypertension and develop specific preventive approaches has been to use multi-modality imaging to capture information on cardiovascular structure and function 'from heart to capillary [6]. With this approach it becomes possible to model the interrelationship between features of the cardiovascular system and, with longitudinal data, study the progression of disease across vessel and heart. By extending the data collection to other organs such as brain and liver, a holistic view of disease development can be captured [7].

Comparison of wrist and mercury BP measurements was subsequently performed. Standard mercury diastolic and systolic BPs were consistently higher when using a wrist device. For systolic BP, the difference was as much as 20 mmHg, whilst it was approximately 10 mmHg for diastolic BP, a sharp contrast to previous studies which found similarities between mercury and wrist devices [8]. We suspected that the difference was mostly because of the precise arm position and a known problematic phenomenon of wrist devices in which there is a systematic error introduced by the hydrostatic effect of differences in the position of the wrist relative to the heart. This can be avoided if the wrist is always at heart level when the readings are taken, but there is no way of knowing retrospectively whether this was performed when a series of readings are reviewed [9].

High blood pressure was the leading risk factor for the overall global burden of disease in 2010. The recent decrease in cardiovascular mortality in high-income countries has been associated with a rise in the numbers of patients living with cardiovascular disease, and the wider use of preventive drugs [10].

CONCLUSION:

It is concluded that there is a difference between standard BP treatments which affect the decision to start medication and the decision to initiate treatment, but not the decision regarding alteration of regime for those already on treatment.

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