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ANALYSIS OF BLOOD PRESSURE MEASUREMENT AND TREATMENT OF HYPERTENSION IN PAKISTANI HOSPITALS

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Abstract:
Aims of the study: *The basic aim of the study is to find the treatments of hypertension and high blood pressure in local hospitals of Pakistan.* ***Material and method:*** *Thiscross sectional study was done at Bahawalpur Victoria Hospital, during 2018 to 2019, targeting outpatients. The study population comprised adult (> 18 years) patients, with or without hypertension, who accessed primary care at the hospital and who gave consent to participate in the study.****Results:*** *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 demographic values of all male and female patients.****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.[1] 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.[2] A large number of surveys have shown that physicians, along with other healthcare providers, seldom follow established guidelines for measurement of BP.[3] 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.

Hypertension is a common health burden affecting both developed and developing nations.[4] The prevalence of high BP increases dramatically with age, with the lifetime risk of high BP approaching 100%.[5] Extensive data have shown beyond doubt the benefit of controlling hypertension.[6]

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, it is performed poorly by all categories of healthcare professional.[4] There are, in general, three sources of error in the indirect measurement of BP: (1) observer bias; (2) faulty equipment; and (3) failure on the part of clinicians to standardise the measurement techniques.[7]

The mercury sphygmomanometer, because of its accuracy and reliability, is widely regarded as being the gold standard against which all other devices for BP measurement should be compared.[5] As a result of environmental awareness, there has been increasing pressure to remove medical devices containing mercury from clinical areas, which is leading to the gradual decline in use of the mercury sphygmomanometer and, as a result, automated BP devices have been adopted by clinicians for their convenience and ease of use.[8]

Aims of the study

The basic aim of the study is to find the treatments of hypertension and high blood pressure in local hospitals of Pakistan.

MATERIAL AND METHODS:

This cross sectional study was done at Bahawalpur Victoria Hospital, during 2018 to 2019, targeting outpatients.The study population comprised adult (> 18 years) patients, with or without hypertension, who accessed primary care at the hospital and who gave consent to participate in the study.Every fourth patient who had attended the outpatient clinic was eligible for selection. A sample size of 60 was used, based on statistical calculations and sample size from similar studies. Informed consent was obtained from eligible patients. 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

Microsoft® Excel was used to capture the data and the data analysis software system, STATISTICA version 9 (StatSoft Inc., 2009), was used to analyse the data.

RESULTS:

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 demographic values of all male and female patients.

Table 01: Demographic characteristics of participants.

Characteristics	Variables	S.D.
Males	32	-
Females	28	-
Mean age in years (standard deviation)	43	14.2
Mean body mass index	29	-
Prevalence of hypertension	25%	-
Mid-upper arm circumference (in centimeters)	32	-

Table 02 explains the treatment decision according to the history of a patients. It is based on the pragmatic blood pressure and standard blood pressure.

Table 02: 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 03 clearly explains the medication which is used in local hospitals of Pakistan for the treatment of hypertension and high blood pressure.

Table 03: 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:

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.[8] 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]

The mercury sphygmomanometer is generally regarded as the gold standard against which all other devices for BP measurement should be compared.[5] However, recent studies have shown that ambulatory BP measurements correlate better with the exact BP. Hodgkinson et al. have recently concluded that ambulatory BP was more cost effective than clinic or home BP.However, guidelines for diagnosis and treatment of hypertension are still based on clinic BP measurements.[10]

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.[11]

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. There are also marked differences between wrist- and standard BP devices which also affect treatment decision-making.

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