Original Article

Assessing the Knowledge and Perception of Hypertension Among Patients in a Cardiology Clinic in a Tertiary Care Hospital in Pakistan: A Cross-Sectional Study

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Abstract

Background: The impact of Hypertension on global cardiovascular disease morbidity and mortality is a significant concern as a global health issue. Although these complications are serious, some patients do not know about the condition, how to manage it, or what possible risks it poses.

Objective: The objective of the study is to ascertain the knowledge and perceptions of patients visiting the cardiology clinic regarding hypertension, so as to identify the knowledge and misconceptions (if any) that could impact the management and outcomes of the disease.

Methods: A cross-sectional study was carried out with the support of the cardiology clinic of Liaquat University Hospital, Pakistan, with the participation of 200 patients who were included in the study using convenience sampling technique. The Hypertension Knowledge-Level Scale (HKLS) was used to collect data, which are divided into six sub-dimensions: definition, medical treatment, compliance, lifestyle, nutrition, and complications. Instrument data were first assessed for normality using the Shapiro-Wilk test. For the analysis the frequency and percentage descriptive statistics of SPSS were used.

Results: The average age of the two-hundred people that participated in the project was 41 years old. The participants overall average score for HKLS was 14.1/22 which shows a mid-range average for knowledge level. The primary hypertension definitions were correctly answered by most, however, knowledge gaps were more than evident. Particular misconceptions were that no medication is required when there are no symptoms (40% incorrect), hypertension is older age is not necessary to treat (67% incorrect), and frying food is a healthy cooking (79% incorrect). Knowledge on the complications varied, as there was a high awareness on heart attack complication (70.5%), but a lower awareness on the complication of stroke (49%).

Conclusion: The gaps in knowledge of hypertension shows the necessity for hypertension related information educational programs, as this can assist in improving medication adherence and lifestyle changes in patients and should be integrated in future health care systems.

Keywords: Hypertension, Blood Pressure, Health Knowledge, Attitudes, Practice, Patient Education, Risk Factors, Pakistan

Introduction

Hypertension refers to medical condition assocusiated with persistent blood pressure levels of 140/90 mmHg or greater. This condition also leads to a high levels of global premature death with targets of 10% reduction expected between 2010 to 2030. This challenge, like many of such nature, is is made complex by the large void of symptoms until that medical condition can progress to life-threa-tening complications such as a stroke, heart attack or a failure of the kidneys.[1] This clearly points to the importance of the damaged, dilated and vm weak-ened left ventricle of the heart especially as blood pressure levels increase until hypotension dah consti-tution the left ventricle of the heart especially as blood pressure levels increase until hypotension dah must also be increased. Silological hypertension also

increases the overall burden on the heart over time, resulting in the dilated and weakened left ventricle of the heart especially as blood pressure levels increase until hypotension dah must also be increased. Silological hypertension also increases the overall burden on the heart over time, resulting in the left ventricle of the heart especially as blood pressure levels en with exercise.[2] The empty time hypertension is a global health problem in hypertension is a global health problem in hypertension as the chronic economic situation and urbanization in economic situation of the chronic urbanization and of the chronic situation of the sedentary urbanization and chronic economic sedentary chronic economic health situatio and to a lack of such excessive inactivity lifestyle with chronic.[3] It is therefore important to evaluate a patient's understanding and awareness of hypertension. The World Health Organization estimates that 1.28 billion adults aged 30 to 79 around the world have high blood pressure, and most of them live in low- and middle-income countries. It is common, and yet hypertension is usually undiagnosed and untreated; hence it inflicts a huge health burden.[1]

Recent studies have highlighted the importance of patient KAP (knowledge, attitudes and practices) toward hypertension. Sa'adeh et al (2018) studied knowledge, attitudes and practices towards prevention of chronic kidney disease among hypertensive patients in Palestine. A higher implementation of prevention measures was associated with increased knowledge and attitude, in line with the results of this study.[4] The research was on Chinese community pharmacists in comparing their knowledge, attitude and practice toward patient education about hypertension, where they found that although the attitude is good, however knowledge and practice are not Chen et al. (2022).[5]

A WHO report in 2018 also gave a detailed account of the way hypertension could be controlled and emphasised the necessity of educating patients as a way of improving treatment results. Attitudes and beliefs of patients regarding hypertension in three low- and middle-income countries. HBPM together with medication self-titration so as to manage cost and safety: Patients' preference during the trial, patients favoured HBPM and medication self-titration. The study, however, spotted defects in hypertension causes, measurement, and treatment adherence. It suggests that closing these gaps through focused

interventions and teaching programs would result in better blood pressure management. The study also compares understanding and perception of patients from various demographic groups.[6] By means of systematic review, the analysis of the studies exposes the hurdles that hinder hypertension awareness, treatment, and follow-up, which include among others shortage of resources and time, lack of knowledge, low motivation, and incorrect beliefs about treatment consequences. These barriers differ between high-income and low- and middle-income countries. The study states that the implementation of targeted interventions and methodologically rigorous studies will result in better hypertension control (Khatib et al 2014).[7] This research is about bridging the knowledge gaps that patients have in the case of high blood pressure, figuring out the misunderstandings and the possible risks. It assesses the understanding of patients about hypertension, its causes, symptoms, risk factors, and treatments. The study also looks into the patients' perception of hypertension and their feelings towards it, thereby identifying possible risks and misunderstandings. Besides, it explores the effect of knowledge on self-care activities and the characteristics of the population. The project is intended to elevate the quality of patient education and health-care policies. The significance of patient understanding is acknowledged worldwide, however, the different kinds of wrong ideas about the health that exist in the local Pakistani community have not been sufficiently researched. As a result, this research is intended to provide an answer to the following question: What is the level of knowledge about hypertension definition, treatment, medication compliance, lifestyle, diet, and complications among patients attending a tertiary care cardiology clinic in Pakistan?

Methods

This study employed a cross-sectional study design to evaluate the knowledge of hypertension among patients who came to the cardiology clinic of Liaquat University Hospital, Hyderabad/Jamshoro, Pakistan. Participants for this study were selected through convenience sampling from a cardiological clinic during a predefined timeframe, i.e., one month from May 2024 to June 2024. This sampling method was chosen for its practicality and efficiency in enrolling participants who are readily available and willing to

participate. The sample size was formally calculated using the Raosoft online sample size calculator. Based on a 5% margin of error, a 95% confidence level, and an assumed 50% response distribution (to ensure maximum sample size), a minimum of 196 participants was required. A total of 200 participants were enrolled to account for potential data incompleteness.

Data was collected using the Hypertension Knowledge Level Scale (HKLS), a validated questionnaire designed to measure knowledge regarding the causes, symptoms, risk factors, and treatment options of hypertension. The HKLS consists of 22 statements categorized into six sub-dimensions: Definition (items 1 and 2), Medical Treatment (items 6, 7, 8, and 9), Drug Compliance (items 3, 4, 5, and 12), Lifestyle (items 10, 11, 13, 16, and 17), Diet (items 14 and 15), and Complications (items 18, 19, 20, 21, and 22). The survey included three response options for each statement: "Correct," "Incorrect," or "Don't Know." For the purpose of statistical analysis and scoring, each "Correct" response was assigned 1 point, while "Incorrect" and "Don't Know" responses were both assigned 0 points, indicating a lack of correct knowledge. This binary scoring system (1 for correct, 0 for incorrect/unknown) allowed for a total possible score ranging from 0 to 22.[8]

To ensure the data's accuracy and completeness, trained medical students conducted face-to-face interviews using the HKLS. The internal consistency of the HKLS was evaluated using Cronbach's alpha, which yielded a coefficient of 0.82 in this study population, indicating good reliability. The data obtained from the HKLS was analyzed using SPSS software (Version 26.0, IBM Corp, Armonk, NY) for statistical analysis. Since the study's primary aim was to describe knowledge levels, descriptive statistics (frequencies, percentages) were used for the analysis in SPSS. The results were utilized to identify significant knowledge gaps or patterns that could be targeted through subsequent educational interventions. There are certain limitations to this study. The use of convenience sampling at a single tertiary care center and the short data collection duration (one month) may limit the generalizability of the findings to the broader Pakistani population. Additionally, the cross-sectional nature of the study prevents the establishment of any causal relationships.

The study considers ethical issues by informing, obtaining consent from, and keeping the participants' confidentiality. The storage of data and access to it are done securely, and participant identification is also kept confidential. The study reduces the risks by creating a supportive environment, maintaining confidentiality, and allowing withdrawal without any negative consequences. Every aspect of this research, including the design and consent procedures as well as participant protections, was thoroughly reviewed and approved by the LUMHS Research Ethical Committee (LUMHS/REC/-312), thereby ensuring that the study conformed to the ethical guidelines and standards.

Results

The study comprised a total number of 200 participants, whose sociodemographic characteristics, when taken as a whole, were typical for a wide variety of people with different levels of knowledge about hypertension management. The age ranges of the people involved were diversified, the highest number of individuals were in the age range of 40-49 (41%) then in 20-29 years group (22%), 30-39 years group (16.5%), 50-59 years group (17.5%), and only (3%) in the 60-65 years group. The average age of the population under the study was 41 years. The origin of participants' living places was also very different; 58.5% of them were city dwellers, and the rest 41.5% were country residents. This combination reveals differences in environmental and lifestyle conditions that may have influenced their knowledge and management of hypertension.

Regarding the level of education, the sample consisted mostly of people with moderate and high-level education; 36% of them were university graduates, and 30% had completed upper secondary education. The proportions of people with elementary (7%) or secondary (4%) education are significantly low, which can be considered as an indication of a generally educated group. The gender structure was almost equally divided with women (51.5%) having a minor advantage over men (48.5%). This almost equal split minimizes gender-specific biases and enhances the study findings' generalizability to all genders. The examination of marital status revealed that most of the participants (72.5%) were married, and only unmarried persons (27.5%) were found. The vast majority of the sample (74%) has

been exposed to the issue of hypertension, while only 26% have never been diagnosed with it. The most common condition was a family history of hypertension, 63.5% of the participants indicating a relation to the disease and 36.5% reporting no such history. The occupational status was equally divided, 49.5% were not working and 50.5% were working. These sociodemographic characteristics (Table 1) provide an excellent overview of the research population.

Table 1: *Sociodemographic characteristics of the participants. (N=200)*

Demographic Characteristics	Frequency	Percentage
Age		
20-29 years	44	22%
30-39 years	33	16.5%
40-49 years	82	41%
50-59 years	35	17.5%
60-65 years	6	3%
Residence		
Rural	83	41.5%
Urban	117	58.5%
Education		
Uneducated	46	23%
Primary	14	7%
Secondary	8	4%
Higher Secondary	60	30%
Graduation	72	36%
Gender		
Female	97	51.5%
Male	103	48.5%
Marital Status		
Married	55	72.5%
Unmarried	145	27.5%
Previous History of Hypertension		
No	52	26%
Yes	148	74%
Family History of Hypertension		
No	73	36.5%
Yes	127	63.5%
Employment		
Unemployed	99	49.5%
Employed	101	50.5%

The Table 2 offers a comprehensive evaluation of the patient's understanding and beliefs about hypertension and is assessed by the Hypertension Knowledge-Level Scale (HKLS). Under the Definition sub-dimension (Items 1 & 2) a significant number of patients demonstrated correct knowledge that high systolic (61%) or diastolic (64.5%) blood pressure levels indicate hypertension, however, a few misunderstandings still lingered as around 12% to 17.5% of the answers were identified as incorrect. The Medical Treatment sub-dimension ((items 6, 7, 8 and 9)) had a high rate of correct responses on the need for continuous medication at Component Six as shown by an average of 83.5%. Almost 50% misunderstood medication as only required during symptomatic periods or when free from symptoms hence leaving a notable knowledge gap on how to adhere properly to medication.

Sub-dimensions of Drug Compliance showed glaring misconceptions especially that old age hypertension does not need medication, with 67% responding wrongly. This sub-dimension has shown how much patients do not understand the connection between lifestyle changes and medication in dealing with hypertension.

The Lifestyle Sub-Dimension had mixed results, with a serious misconception highlighted by 79% of participants erroneously identifying frying as a healthy cooking method for hypertensive individuals. On the positive side, there was strong agreement among respondents on the importance of regular intake of fruits and vegetables (83%) and the dangers associated with smoking (75.5%).

In the Diet Sub-dimension, 72.5% of respondents recommended white meat for hypertensive patients as they identified it correctly as the healthier option but concerning red meat there was a gross misunderstanding in which 59.5% of them chose it. At last, moderate to high levels of awareness about the dangers of untreated hypertension were noted under Complication Sub-dimension; for instance, heart attacks (70.5% correct) and premature death (71.5%) were uniformly recognized by most individuals. However, only around half of participants accurately identified that stroke risk accounted for 49%. Henceforth, more health education should be directed towards this direction.

Regarding the responses of the instrument, the average total percentage of correct answers were 64.46%.

Table 2: *Responses to Hypertension Knowledge Level Scale Components*

HKLS Components	Responses	Frequency	Percentage	Mean	Standard Deviation
1) High systolic (maximum) or diastolic (minimum) blood pressure indicates increased blood pressure.	Incorrect Correct Don't Know	24 122 54	12% 61% 27%	1.15	0.608
2) High diastolic (minimum) blood pressure also indicates increased blood pressure.	Incorrect Correct Don't Know	35 129 36	17.5% 64.5% 18%	1	0.597
3) High blood pressure is caused by aging, so it does not require treatment.	Incorrect Correct Don't Know	134 55 11	67% 27.5% 5.5%	0.39	0.59
4) If the medicine for high blood pressure can control blood pressure, there is no need to change lifestyle.	Incorrect Correct Don't Know	138 33 29	69% 16.5% 14.5%	0.46	0.735
5) If people with high blood pressure change their lifestyle, there is no need for treatment.	Incorrect Correct Don't Know	135 42 23	67.5% 21% 11.5%	0.44	0.692
6) People with high blood pressure should take their medications as they believe it is the best way.	Incorrect Correct Don't Know	30 167 3	15% 83.5% 1.5%	0.87	0.384
7) High blood pressure medicines should be taken daily.	Incorrect Correct Don't Know	94 89 17	47% 44.5% 8.5%	0.62	0.639
8) People with high blood pressure should take their medication only when they feel bad.	Incorrect Correct Don't Know	80 80 40	40% 40% 20%	0.8	0.75
9) People with high blood pressure should take their medication for the rest of their lives.	Incorrect Correct Don't Know	104 87 9	52% 43.5% 4.5%	0.53	0.584
10) For people with high blood pressure, frying is the best way to prepare food.	Incorrect Correct Don't Know	158 34 8	79% 17% 4%	0.25	0.519
11) For people with high blood pressure, cooking only in water or grilling are the best ways to prepare food.	Incorrect Correct Don't Know	43 142 15	21.5% 71% 7.5%	0.86	0.521
12) People with high blood pressure can eat food without controlling the amount of salt provided they take their medications every day.	Incorrect Correct Don't Know	149 25 26	74.5% 12.5% 13%	0.38	0.707
13) People with high blood pressure should eat fruits and vegetables often.	Incorrect Correct Don't Know	19 166 15	9.5% 83% 7.5%	0.98	0.413
14) The best type of meat for people with high blood pressure is red meat.	Incorrect Correct Don't Know	119 50 31	59.5% 25% 15.5%	0.56	0.748
15) The best type of meat for people with high blood pressure is white meat.	Incorrect Correct Don't Know	25 145 30	12.5% 72.5% 15%	1.02	0.525
16) People with high blood pressure should not smoke.	Incorrect Correct Don't Know	37 151 12	18.5% 75.5% 6%	0.88	0.48

17) People with high blood pressure can drink alcohol at will.	**Incorrect**	98	49%	0.54	0.557
	Correct	96	48%		
	Don't Know	6	3%		
18) If high blood pressure is not treated it can cause stroke.	**Incorrect**	23	11.5%	1.28	0.659
	Correct	98	49%		
	Don't Know	79	39.5%		
19) If high blood pressure is not treated it can cause a heart attack.	**Incorrect**	27	13.5%	1.02	0.544
	Correct	141	70.5%		
	Don't Know	32	16%		
20) If high blood pressure is not treated, it can lead to premature death.	**Incorrect**	27	13.5%	1.01	0.535
	Correct	143	71.5%		
	Don't Know	30	15%		
21) If high blood pressure is not treated, it may cause the kidneys to stop working.	**Incorrect**	30	15%	1.06	0.595
	Correct	129	64.5%		
	Don't Know	41	20.5%		
22) If high blood pressure is not treated, it can cause eye problems.	**Incorrect**	43	21.5%	0.9	0.567
	Correct	134	67%		
	Don't Know	23	11.5%		

The study illustrates wide range of knowledge levels among the participants. Of the 200 participants, 54 patients (27%), had a score of greater than 10. 68% of the total scored in the most common range, which was between 11 and 20. 4.5% patients in a smaller portion obtained nearly perfect scores, demonstrating exceptional awareness and comprehension. Just one patient, or 0.5% of the total, showed that they were fully aware of every topic related to hypertension. The distribution of scores among 200 patients at a cardiology clinic from the Hypertension Knowledge-Level Scale (HKLS) is shown in the Table 3.

Table 3: *Distribution of HKLS Scores Among Patients in a Cardiology Clinic*

HKLS Score (T=22)	Frequency (200)	Percentage
>10	54	27%
11-20	136	68%
21	9	4.5%
22	1	0.5%

The distribution indicates that most people have a decent comprehension of hypertension, with a noticeable proportion still at basic knowledge level and a very limited number achieving high understanding. Overall, these findings suggest that a number of individuals recognize certain characteristics associated with hypertension, however, there are still considerable knowledge gaps especially in the areas of non-adherence to medical treatment regimens and lifestyle implications as well as serious potential complications resulting from uncontrolled blood pressure. This situation necessitates targeted educational interventions that aim to eliminate such misconceptions and, therefore, enhance the overall management of high blood pressure patients.
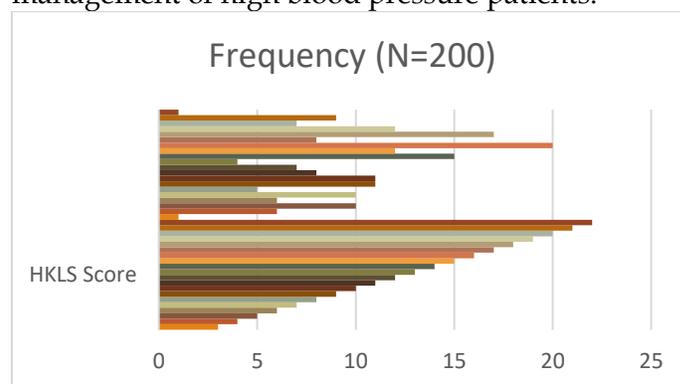

Figure 1: *HKLS Scoring of the participants*

Discussion

Hypertension (HTN) is one of the main causes of high cardiovascular diseases (CVD) the main cause of mortality in the world. It has been estimated that HTN is causing up to 7.6 million (12.8 percent) deaths each year.[9] In addition to the risks of stroke, myocardial infarction, and renal failure, well-documented, hypertension may trigger atherosclerosis, which finally makes up the major etiology of vascular pathologies, including Subclavian Steal Syndrome (SSS). Patients need to be aware of these complications so that they can have a full under-

standing of the extent of cardiovascular risk that hypertension is associated with.[10] The research examined the pre-existing information about the patients of hypertension and the variables related to it. The results show the existence of heterogeneous degrees of knowledge since the knowledge possessed by the patients with respect to the practices of managing hypertension and hypertension-related care. These gaps in the knowledge, which are the most salient gaps in our analysis, are in line with the existing literature and make important contributions to the field. Most of the respondents showed reasonable understanding of essential hypertensive principles and symptomatology. It, therefore, recognized high systolic pressure and high diastolic reading with high accuracy 61 and 64.5 %, respectively. However, a significant percentage of the respondents gave the wrong answers, and the misclassification levels were between 12% and 17.5. These data are consistent with the results of earlier studies that have identified similar vague aspects and that emphasize the necessity to improve the baseline education in hypertension in medical schools.[11] The recognition of the necessity for lifetime therapy by a significant portion of the participants (83.5% correct in Component 6) is a positive finding. Nevertheless, more than half of the subjects misunderstood that medicines should be taken only when they have symptoms of the disease. Researchers have found that wrong suggestions about taking meds when there are no symptoms can lead to the situation in which patients hardly manage their hypertension effectively.[12] Furthermore, the Drug Compliance sub-dimension showed that 67% of the subjects disagreed that hypertension in elderly people requires medication. Similar errors of understanding have been uncovered which reveal that the general view of older people as being at less risk of hypertension is pervasive and that the importance of targeted educational program for this age group is significant.[13]

The point of departure for intervention is the absolutely wrong idea that frying is a healthful way of cooking for people with high blood pressure, which was endorsed by 79% of our subjects. This observation goes hand in hand with the previous studies' results which point to dietary misconceptions as major obstacles in the management of hypertension. On the other hand, the good replies regarding the consumption of fruits and vegetables and the quit-

ting of smoking reflect the success of present lifestyle-related educational programs, like those research works that have shown that guided public health promotion led to better lifestyles.[14,15] Only half (54) of the respondents reported stroke as a risk factor, despite the fact that our data reflected the moderate to high awareness of the main sequela of uncontrolled hypertension. The research revealed a severe knowledge gap on the risks of non-treated hypertension, especially stroke, which the authors found was the root of the problem and the major stimulus behind patient education.[16] Knowledge assessment among patients on hypertension is irreplaceable in differentiating patients who require hypertensive education. The knowledge of patients is often a requirement to pursue the best self-care, which has been supported by previous research.[17,18]

The study several limitations, including a small sample size of 200 participants, a cross-sectional design, self-reported data, a limited geographic scope, lack of longitudinal follow-up, and not assessing the impact of specific educational interventions. The research also failed to comprehensively investigate the influence of various confounding factors that include socioeconomic status, access to healthcare, and prior health education. Without a control group, it is challenging to compare the results to those of an unexposed group. However, the study expands on the awareness and views of hypertension among Pakistani patients, providing significant insights into identifying important teaching programs. Future research should involve larger and more diversified samples, a longitudinal design, and rigorous methodology capable of contributing to a worldwide understanding of hypertension and its therapy.

Conclusion

In conclusion, the study found inequalities in hypertension awareness among cardiology patients. Furthermore, the study underlines a lack of patient education. Conflict over pharmacological and food modifications persists, indicating the need for focused therapy. Raising awareness of hypertension would undoubtedly improve patient outcomes and assist to the prevention of the global spread of cardiovascular illnesses. Healthcare professionals must provide comprehensive patient education programs to empower people to manage their own health.

Authors' Contribution:

FK: Conception and design; acquisition, drafting of article, analysis and interpretation of data, final approval of the version to be published

MO: Acquisition of data, critical revisions for important intellectual content

ITD: Drafting of article

FA: Acquisition of data, drafting of article

Absar: Acquisition of data, drafting of article

AK: Analysis and interpretation of data

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