Journal of Population Therapeutics & Clinical Pharmacology

RESEARCH ARTICLE
DOI: 10.53555/jptcp.v31i4.5931

BARRIERS TO OPTIMAL BLOOD PRESSURE CONTROL AMONG ADULT HYPERTENSIVE PATIENTS ASSESSMENT OF COMPLIANCE TO TREATMENT

Nasim Rafiq[1], Yasim Azad[2], Saira Ali[3], Amjad Ali[4*], Arooj Aslam[5], Saira Munshi[6], Sara Morris[7], Sana Naz[8]

[1]Ph. D Scholar Nursing, MSN , BSCN , Principal Shalamar College of Nursing Lahore; email: Email: nasim.rafiq@sihs.org.pk
[2]Deputy Director Pakistan Nursing and Midwifery Council, Islamabad; Email: Yasminazad1987@gmail.com
[3]BSN Nursing Instructor Shalamar College of Nursing Lahore; Email: Sairaali7154@gmail.com
[4*]MSN, BSN, Assistant Professor Shalamar College of Nursing Lahore Email: amjadkmu233@gmail.com
[5]BSN Student Shalamar College of Nursing; Email: arooj.aslam0349@gmail.com
[6]BSN Student Shalamar College of Nursing; Email: Sarahmasood.727@gmail.com
[7]BSN Student Shalamar College of Nursing; Email: saramorrisnisar@gmail.com
[8]BSN Student Shalamar College of Nursing; Email: sanazain52711@gmail.com

***Corresponding Author:** Amjad Ali
*Assistant Professor, Shalamar College of Nursing Lahore, Email: amjadkmu233@gmail.com

Abstract

Background: Hypertension is often silent killer and responsible for roughly half of all strokes and ischemic heart diseases, and it is the leading cause of death worldwide, presenting a challenge to healthcare. So this study was carried out to assess compliance of patients to treatment and find the barriers to optimal Blood Pressure control.

Objectives: To assess the compliance of hypertensive patients towards treatment and to identify barriers which affect the normal blood pressure control.

Methods: Descriptive cross-sectional was carried out at out-Patient department of Shalamar Hospital and completed in 6 months. Convenience sampling technique was used with sample size of 97. A modify questionnaire was used for data collection and analyzed by Chi-Square test to find the significance between a categorical variables.

Result: The finding of this study concluded that most of the patients were females, aged 39 to 50, married, primary level of education and were non-smoker. Regarding to patients compliance toward treatment (64.9%) with good compliance; while (35.1%) participants with poor. The reported mean and standard deviation was 17.87+5.31 with P <0.05.

Conclusion: According to this study major of the patients were with a good compliance toward treatment. Furthermore, barriers that affect the optimal blood pressure control were they forget to get the next appointment; they eat fast food and miss scheduled appointments reported. Study suggested that those who visit Shalimar OPD should receive a reminder for their next appointment and diet planner.

Keywords: Blood Pressure, Hypertension, Adult Patients, Barriers.

Introduction: Blood pressure is a frequently assessed physiological and medical parameter that has gained significant importance, normal blood pressure is 120/80mmHg, whereas hypertension is identified when the systolic blood pressure exceeds 140mmHg (1). Hypertensive individuals often struggle with maintaining adequate control over their blood pressure due to various factors such as inadequate health-seeking behavior, inconsistent medication adherence, financial constraints, and other related aspects (2).

However according to the American College of Cardiology (ACC) and American Heart Association (AHA) blood pressure (BP) guideline 2017, lowered the BP thresholds for hypertensive patients because if alterations occur from 130/80 to 140/90 and this alterations persist for a month, the prevalence of hypertension among young adults increases from 2-folds to 3-folds (3).

Furthermore, primary and secondary hypertension can also be distinguished (4). Hypertension, commonly referred to as the "silent killer," is frequently asymptomatic. It is a major contributor to approximately 50% of strokes and ischemic heart diseases, making it the leading cause of global mortality. This poses a significant healthcare challenge due to its wide-ranging impact (5). Individuals with inadequately managed blood pressure have a higher likelihood of experiencing morbidity and a higher mortality rate (6). In low- and middle-income countries worldwide, approximately two-thirds of the population is affected by hypertension, which accounts for over 7 million annual deaths (7).

Pakistan is a low middle income country with an estimated one in four adults in Pakistan is living with hypertension. About 59% deaths in Pakistan are caused by non-communicable diseases where cardiovascular disease is the leading cause with hypertension accounting for 200,000 deaths per year (8).

Uncontrollable hypertension and its co morbidities increase the overall treatment cost, thereby affecting the affordability of the patient and their families. Direct and indirect health care cost for hypertension in Pakistan is around PKR 19789.88 (US$ 201.21) and PKR 11990.90 (US$ 121.92) respectively (9). Such huge numbers indicate a high burden on the pocket of common man and is the major reason for treatment non-adherence (10).

As per the World Health Organization, compliance or adherence to treatment refers to the degree to which an individual's behavior aligns with prescribed actions, such as taking medication and adhering to a specific diet (11). Additionally, according to the National Health Survey of Pakistan, hypertension affects 18% of adults and 33% of adults over the age of 45. Similarly, according to another report, 18% of Pakistanis suffer from hypertension, with every third person over the age of 40 (12).

Hypertension is not only a leading public health issue; reported data of Pakistan indicate rapidly rising prevalence over time and need of effective prevention. Due to being a developing country with a significant prevalence of both communicable and non-communicable diseases, Pakistan aims to conduct a cross-sectional study. The primary objective of this study is to identify and examine diverse obstacles hindering optimal hypertension control among adult patients. Additionally, the study aims to identify the compliance gap and the barriers impeding optimal blood pressure control.

Material and Methods: A descriptive cross-sectional study was conducted at the Out-Patient department (OPD) of Shalamar Hospital. The study received approval for data collection and was completed within a period of 6 months. The sample consisted of 97 adult patients diagnosed with hypertension, selected through convenience sampling. Inclusion criteria encompassed both male and female participants aged between 18-45 years, diagnosed with hypertension, having blood pressure readings greater than 130/80 mmHg, undergoing regular check-ups, and on hypertensive medication. Patients with psychiatric disorders and those admitted to the hospital were excluded from the study. The study employed the Bone hill HTN Questionnaire, which consisted of 10 questions adapted from the study by Islam and Ahmad Study with LIKERT Scale using terms None of the time =1, Some of the time=2, Most of the time=3 and All the time =4; maximum scores was

the 40 and minimum scores 10 (13). A score less than or equal to 20 indicates the good Compliances while a score greater than 20 indicates the poor Compliances. Data collection involved two phases: participant recruitment with obtained consent, and distribution of the questionnaire followed by a 30-minute response period. The data was analyzed using SPSS Version 21, with descriptive statistics being analyzed through frequency distribution and percentage. Inferential statistics were analyzed using the Chi-Square test with a significance level of ($P<0.05$).

Results:

Table 1*:* Adult Hypertensive patient's demographic data

Demographic variables		**Frequency(n)**	**Percent (%)**
Gender	Male	24	24.7
	Female	73	75.3
Age	18-28	14	14.4
	29-38	27	27.8
	39-50	56	57.7
Marital Status	Single	20	20.6
	Married	63	64.9
	Divorced	12	12.4
	Widow	2	2.1
Level of Education	Primary	54	55.7
	Secondary	27	27.8
	Degree level	16	16.5

Analyzed by frequency (n), percentage (%) with a CI: 95% and d:5%

The data collected (displayed in table 1) indicated that in this study out of 97participants, 24(24.7%) were male and 73(75.3%) were female. Regarding the age of the participants, 18-28 years old were 14 (14.4%), 29-38 year old participants were 27(27.8%), and 39-50 years old were 56(57.7%). Regarding marital status 20(20.6%) participants were single, 63(64.9%) were married, 12(12.4%) were divorced, and 2(2.1%) were widow. Regarding the level of education 54(55.7%) had primary level of education, 27(27.8%) had secondary level and 16(16.5%) were graduated.

Table 2: Adult Hypertensive patient's demographic data

Demographic variables		**Frequency(n)**	**Percent (%)**
Smoking	Yes	23	23.7
	No	74	76.3
If yes ,time when started	1<Year	13	56.5
	>1Year	10	43.4
Exercise and walking	Yes	70	72.2
	No	27	27.8
If yes, how many times a week	1-2	42	60.0
	3-4	28	40.0
	7-8	27	38.5

Analyzed by frequency (n), percentage (%) with a CI: 95% and d: 5%

This table (2) basically showed that in this study 23(23.7%) participants were smoker and 74(76.3%) were non-smoker. According to the time from which patients stared smoking were 13 (56.5%) who just recently started, and 10(43.4%) were smoking from several years. 70 (72.2%) were taking exercise on regular basis and 27(27.8%) were not. Those who were doing exercise and

walk on regular basis; about 42(60.0%) participants used to take exercise 1-2 times a week, 28(40.0%) took exercise 3-4 times a week and 27(38.5%) used to take exercise 7-8 times a week.

Table 3: Compliance of Hypertensive patients towards treatment.

	n	%	X	S.D	P-Value
<20 Score Good Compliance	63	64.9			
>20 score Poor Compliance	34	35.1	17.87	5.31	0.003

Analyzed by a chi square test with a significance value <0.05

This table basically indicated that out of 97 participants, 63(64.9%) scored less than 20 which means they have good compliance to treatment and 34(35.1%) participants scored more than 20. which means they have poor compliance to treatment of high blood pressure. The mean value of compliance of the hypertensive patients toward treatment is 17.87 with standard deviation 5.31.

Table 04: Barriers which affect the normal blood pressure control

Barriers to optimal Blood pressure	N	All the time	
		n	%
Forget to take your HBP medicine?	97	3	3.1
Decide not to take your HBP medicine?	97	3	3.1
Eat salty food ?	97	14	14.4
Shake salt on your food before you eat it?	97	7	7.2
Eat extra salty foods such as pickles and salty grounded red pepper?	97	5	5.2
Eat fast food?[Fat cook, Burger,Chips]	97	15	15.5
Get the next appointment before you leave the clinic?	97	17	17.5
Miss scheduled appointments?	97	9	9.3
Leave the dispensary without obtaining your prescribed pills ?	97	3	3.1
Run out of blood pressure pills?	97	6	6.2

The higher %age indicating common barriers which affects Blood Pressure control

The result shows the major barriers that affect the optimal blood pressure control which are: they forget to get the next appointment before they leave the clinic (17.5%), they used to eat fast food [fat cooked, burger, chips] (15.5%). Participants of this study used to eat salty food (14.4%), and miss scheduled appointments reported (9.3%). These were the reported barrier which affects most of the patients and makes the compliance poor toward the treatment.

Discussion: Blood pressure is a widely measured parameter in the fields of physiology and medicine, and it has gained significance as a crucial variable in recent studies in psychological, physiological, and behavioral medicine. Our study showed that most of the participants were females 73.3%, aged between 39-50, married 64.9%, and having a primary level of education 55.7%. However a study conducted in Peshawar finding of the study stated that the most of the participants were male 54.64% and 96.02% were married. In our study most of the hypertensive patients were female because of sedentary lifestyle, geographical area and fast food (13). Obesity is the leading cause of hypertension in females of Lahore. Additionally according to study found that were 35% overweight and 45% obese (14).

The finding of our study stated that 23.7% participants were smoker, mostly started smoking recently, mostly did exercise on regular basis; However due to our culture most of the females do not smoke; supported by akbarpour and his colleague (15). This finding were justify by Islam and his colleague study smoking is not directly related to HTN because the study reported that 65.9%

participants never smoked and 86.8% participants were not smoking at the time of data collection, but still they were hypertensive (13)

According to our research, 64.9% of the participants showed satisfactory adherence to the prescribed treatment for high blood pressure, while 35.1% had poor adherence. However, a study conducted by Islam and his colleagues yielded contrasting results. They found that 49.3% of the participants experienced worsened conditions while on medication and discontinued their treatment without consulting their physicians. Additionally, 53% of the participants ceased taking their medication once they perceived their hypertension symptoms to be under control. Furthermore, 35.71% of the participants frequently forgot to take their antihypertensive medication, leading to the persistence of high blood pressure (13). The primary reason for non-adherence to antihypertensive medication, as revealed by a study on poor medication compliance, is the patient's insufficient understanding of the significance of these drugs in managing hypertension (16). In a separate study, it was found that 41.5% of patients reported inadequate adherence to their prescribed antihypertensive medication (17).

In our study there was good compliance among hypertensive patients because most of the participants were female 73.3%; supported by Meekusol and his colleague gender differences medication adherence vary by age young women show much better adherence than young men (18). According to another study as one of the enabling factors, patient–provider communication was a strong and significant predictor influencing adherence to hypertensive treatment (19).

In our study, the findings show that in adult hypertensive patients the most important barrier towards optimal blood pressure control is that they forget to get the next appointment before they leave the clinic. Patients don't know when to report back to clinic. However , In the study Isalm and Colleague, findings showed that diet is one of the common barrier (13). A study conducted by Mehta shows fat intake diet is the main (20). Abanew and Hussien identified various obstacles to hypertension control, including economic limitations, stress, reliance on traditional remedies like herbal medicine, medication side effects, and limited awareness within the community (21). Likewise, a study conducted in Uzbekistan revealed that reasons for non-adherence included transitioning to traditional therapies, concerns about addiction, financial constraints, limited availability of drugs, and the duration of therapy (22). Furthermore, a study carried out in Sri Lanka identified cultural practices, adverse drug reactions, drug shortages, and financial burdens as reported barriers to medication non-adherence (23). Likewise, the findings of another study indicated that the primary predictors of inadequate medication adherence were inadequate knowledge, negative perceptions about medication, concerns about side effects, fear of dependency, limited availability, and high medication costs (24). A previous qualitative study demonstrated that financial obstacles, specifically the cost of blood pressure medication, were linked to non-adherence (23). Furthermore, a study conducted in India suggests that the expense of medication serves as a barrier for women, resulting in low adherence to antihypertensive medication (25). Cost was identified as a significant barrier for certain patients, as reported by other researchers (26).

Conclusion: The study found that most had good compliance with their high blood pressure treatment. The major barriers to optimal blood pressure control included forgetting to schedule appointments, consuming unhealthy fast food and salty foods, and missing scheduled appointments. At the Shalamar Cardiac OPD, participants regularly visited their physicians, establishing familiarity and good patient-physician communication. This led to better information support for self-care management, including medication adherence, healthy diet, physical activity, and blood pressure and weight monitoring. Trust in physicians also played a role in enhancing patient adherence to treatment.

References

1. Kleindorfer DO, Towfighi A, Chaturvedi S, Cockroft KM, Gutierrez J, Lombardi-Hill D, et al. 2021 guideline for the prevention of stroke in patients with stroke and transient ischemic attack: a guideline from the American Heart Association/American Stroke Association. 2021;52(7):e364-e467.
2. Oseni T, Affusim C, Salam T, Dele-Ojo B, Ahmed S, Edeawe I, et al. Factors affecting medication adherence in patients with hypertension attending a tertiary hospital in southern Nigeria. Nigerian Journal of Family Practice. 2021;12(3):53-62.
3. Yano Y, Reis JP, Colangelo LA, Shimbo D, Viera AJ, Allen NB, et al. Association of blood pressure classification in young adults using the 2017 American College of Cardiology/American Heart Association blood pressure guideline with cardiovascular events later in life. Jama. 2018;320(17):1774-82.
4. Fuchs FD, Whelton PK. High blood pressure and cardiovascular disease. Hypertension. 2020;75(2):285-92.
5. Boro B, Banerjee S. Decomposing the rural–urban gap in the prevalence of undiagnosed, untreated and under-treated hypertension among older adults in India. BMC Public Health. 2022;22(1):1-16.
6. Abu-El-Noor NI, Aljeesh YI, Bottcher B, Abu-El-Noor MK. Assessing barriers to and level of adherence to hypertension therapy among Palestinians living in the gaza strip: a chance for policy innovation. International Journal of Hypertension. 2020;2020.
7. Mishra CP. Prevalence and predictors of hypertension: Evidence from a study of rural India. Journal of Family Medicine and Primary Care. 2022;11(3):1047.
8. Rijal A, Adhikari TB, Khan JAM, Berg-Beckhoff G. The economic impact of non-communicable diseases among households in South Asia and their coping strategy: A systematic review. PLOS ONE. 2018;13(11):e0205745.
9. Murphy A, Palafox B, Walli-Attaei M, Powell-Jackson T, Rangarajan S, Alhabib KF, et al. The household economic burden of non-communicable diseases in 18 countries. BMJ global health. 2020;5(2):e002040.
10. Aslam N, Shoaib MH, Bushra R, Farooqi FA, Zafar F, Ali H, et al. Out of pocket (OOP) cost of treating hypertension in Karachi, Pakistan. Pakistan journal of pharmaceutical sciences. 2018;31.
11. Burnier M, Egan BM. Adherence in hypertension: a review of prevalence, risk factors, impact, and management. Circulation research. 2019;124(7):1124-40.
12. Riaz M, Shah G, Asif M, Shah A, Adhikari K, Abu-Shaheen A. Factors associated with hypertension in Pakistan: A systematic review and meta-analysis. PLOS ONE. 2021;16(1):e0246085.
13. Islam Nu, Ahmad IW, Abdullah, Khan A, Ilyas M, Rahim T, et al. Barriers to Optimal Hypertension Control among Adults: A Cross Sectional Study. Journal of Farkhanda Institute of Nursing And Public Health (JFINPH). 2021;1(2):9-14.
14. Alefan Q, Huwari D, Alshogran OY, Jarrah MI. Factors affecting hypertensive patients' compliance with healthy lifestyle. Patient Prefer Adherence. 2019;13:577-85.
15. Akbarpour S, Khalili D, Zeraati H, Mansournia MA, Ramezankhani A, Fotouhi AJSr. Healthy lifestyle behaviors and control of hypertension among adult hypertensive patients. 2018;8(1):8508.
16. Nakalema I, Kaddumukasa M, Nakibuuka J, Okello E, Sajatovic M, Katabira E. Prevalence, patterns and factors associated with hypertensive crises in Mulago hospital emergency department; a cross-sectional study. African Health Sciences. 2019;19(1):1757-67.
17. Sarfo FS, Mobula LM, Burnham G, Ansong D, Plange-Rhule J, Sarfo-Kantanka O, et al. Factors associated with uncontrolled blood pressure among Ghanaians: evidence from a multicenter hospital-based study. PloS one. 2018;13(3):e0193494.
18. Meekusol S, Maneesriwongul W, Orathai P, Pongthavornkamol K, Phyllis Williams S. Factors

Predicting Women's Adherence to Hypertensive Treatment. Pacific Rim International Journal of Nursing Research. 2020;25(1):131-42.
19. Schoenthaler A, Knafl GJ, Fiscella K, Ogedegbe G. Addressing the Social Needs of Hypertensive Patients: The Role of Patient-Provider Communication as a Predictor of Medication Adherence. Circ Cardiovasc Qual Outcomes. 2017;10(9).
20. Mehta V. Emergence of new risk factors for causing hypertension. Journal of Medical Research and Innovation. 2017;1(1):9-11.
21. Abaynew Y, Hussien M. A Qualitative Study on Barriers to Treatment and Control of Hypertension Among Patients at Dessie Referral Hospital, Northeast Ethiopia, Ethiopia: Healthcare Workers' Perspective. Integrated Blood Pressure Control. 2021:173-8.
22. Maffoni M, Traversoni S, Costa E, Midão L, Kardas P, Kurczewska-Michalak M, et al. Medication adherence in the older adults with chronic multimorbidity: a systematic review of qualitative studies on patient's experience. European geriatric medicine. 2020;11:369-81.
23. Zoyirov T, Sodikova S, Elnazarov A. THE STRUCTURE OF PERIODONTAL AND ORAL MUCOSA DISEASES IN PREGNANT WOMEN AGAINST THE BACKGROUND OF IRON DEFICIENCY ANEMIA (LITERATURE REVIEW). Вопросы науки и образования. 2021(27 (152)):33-45.
24. Tilea I, Petra D, Voidazan S, Ardeleanu E, Varga A. Treatment adherence among adult hypertensive patients: a cross-sectional retrospective study in primary care in Romania. Patient preference and adherence. 2018:625-35.
25. Gupta S, Dhamija JP, Mohan I, Gupta R. Qualitative study of barriers to adherence to antihypertensive medication among rural women in India. International Journal of Hypertension. 2019;2019.
26. Gardiner FW, Nwose EU, Bwititi PT, Crockett J, Wang L. Blood glucose and pressure controls in diabetic kidney disease: narrative review of adherence, barriers and evidence of achievement. Journal of Diabetes and its Complications. 2018;32(1):104-12.