BARRIERS TO OPTIMAL HYPERTENSION CONTROL AMONG ADULTS: A CROSS SECTIONAL STUDY

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ABSTRACT:

OBJECTIVES:

The purpose of the study was to assess factors resisting control of hypertension in adults.

METHODOLOGY:

A descriptive cross-sectional study was carried out from 1st of December 2020 till 31st of March 2021 at Hayatabad Medical Complex (HMC) Peshawar Pakistan. The study selected 377 participants by non-probability convenient sampling technique to find out barrier to optimal blood control among adult patients visiting to HMC. Data was collected through an adopted questionnaire based on a study conducted in Rwanda district hospitals. Analysis was carried through SPSS version 22.0.

RESULTS:

In sample of Three seventy seven participants, 54.64% were male and 45.36% were female having mean age 55.28±10.09 years. 66.6% of the participants did not know about the harmful effects of having high blood pressure. Majority 72.4% of the participants often forget to take medication and 50.7% stop to take medication without prior consultation.

CONCLUSION:

Different barriers to optimal hypertension control were identified which include inadequate knowledge of the consequences of poor hypertension control, poor adherence to medication, poor diet management and unhealthy lifestyle.

KEYWORDS: *Hypertension, Optimal Control, Life Style, Medication Compliance, Tertiary Care Hospital*

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INTRODUCTION:

Hypertension (HTN) is one of the major public health problems which causes cardiovascular morbidities and mortalities globally[1]. HTN for long time can be a major risk factor for macro vascular and micro vascular problems such as coronary artery disease (CAD), stroke, heart failure, vision loss, chronic kidney disease (CKD), and dementia[2]. Several evidences on benefits of controlling blood pressure and various other guidelines on detection and management of HTN are present, but still under implemented[3]. Numerous factors are involved in poor handling and suboptimal control of HTN among patients. Many patients are reluctant to treatment, and some are having uncontrolled HTN despite of following the treatment. Lack of physical activities, imbalanced diet, poor medication compliance, and reluctance to change unhealthy behavior is

other obstacles in optimal control of blood pressure[4]. An Indian study reported 22% of the population of the world have hypertension[5]. HTN is common in high, medium, and low income countries[6]. According to "The National Survey of Pakistan" it was estimated that HTN affected 18% of adults and 33% of adults above 45 years of age[7]. Another study from Pakistan reported that 25.6% of the adults having 70.6% male and 29.4% female were hypertensive[8]. According to the 7th report of the Joint National Committee on Detection, Prevention and Evaluation of Hypertension, only 23.4% knew the consequences of poor control of HTN[9]. A cross-sectional study from Pakistan reported that 25.6% of adults were hypertensive and the result of the study showed high prevalence of hypertension among those adults having positive association with family history, poor diet, inactivity, and sedentary life style[8]. Predisposing factors such as little knowledge about HTN, salt intake, non-compliance to treatment, less physical activities and financial constraints are prominent[10]. Poor quality of optimal blood pressure control gives poor results for the patients[10]. These risk factors influencing optimal hypertension care are not known yet[11]. This situation can leads to needless casualties or development of CVD, hence keeping an additional burden on health care system[7]. Pakistan is a developing country and have high prevalence of communicable and non-communicable diseases[7]. So, this cross-sectional study is formulated to identify various barriers to optimal hypertension control among adult patients visiting Hayatabad Medical Complex Peshawar.

METHODOLOGY:

This cross-sectional study was carried out from 1st of December 2020 till 31st of March 2021 at Hayatabad Medical Complex (HMC) Peshawar, Pakistan. Participants were recruited from cardiology department by non-probability convenient sampling technique. All hypertensive patients who were ill for more than three years, having age more than 18 years in cardiology ward were included. Severe ill and not willing to participate in the study were excluded. Rao-soft calculator calculated a sample size of n=377 for the study. The tool used for data collection was an adopted questionnaire consisted of four parts i.e. (i) Demographic data (ii) Lifestyle changes which were further subdivided in to three sub parts including physical activity, diet, and smoking (iii) Medication compliance and (iv) Morisky scale. The Morisky Medication Adherence Scale (MMAS) is a validated assessment tool 95% confidence bound for a cronbach alpha coefficient of 0.80, used to measure non-adherence in a variety of patient populations[12]. The "Medication Assessment Questionnaire" (MGL MAQ) is a validated and reliable tool in patients with hypertension[13-16].

RESULTS:

Table 1: Demographic Variables of Participants

Variable	Categories	Frequencies	Percentage
Gender	Male	206	54.64
	Female	171	45.35
Marital Status	Married	362	96.02
	Unmarried	15	3.98
Religion	Muslim	329	87.30
	Non-Muslim	48	12.70
Ethnicity	Pathan	287	76.10
	Other	90	23.90
Employment Status	Employed	106	28.12
	Unemployed	271	71.88
Educational Status	Literate	125	33.16
	Illiterate	252	66.84
Blood Pressure During the Study	Normal	23	6.10
	Mild	72	19.10
	Moderate	195	51.72
	Severe	87	23.08

Table 2: Lifestyle Changes

(A) Physical Activity				
By which means do you come to hospital?	By Foot 41 (10.9)	Bicycle 27 (7.1)	Public Transport 237 (62.9)	Self Transport 72 (19.1)
If you come by foot, how long does it take you to arrive to hospital?	Less than 30 Minutes 58 (15.3)	Less than One Hour 205 (54.3)	More than One Hour 114 (30.4)	
Do you participate in any sort of physical activities?	Yes 262 (69.3)	No 115 (30.7)		

(B) Diet	All the Times	Some Times	Already Doing so for Other Reasons	Never Did so
Have you limited your salt consumption?	200 (52.9)	119 (31.5)	9 (2.4)	49 (13.2)
Did you limit your fat consumption?	175 (46.3)	143 (37.8)	16 (4.3)	43 (11.6)
Did you make any dietary changes?	138 (36.5)	173 (45.8)	24 (6.3)	42 (11.4)

(C) Smoking	Yes	No		
Have you ever smoked?	129 (34.1)	248 (65.9)		
Are you currently smoking?	50 (13.2)	327 (86.8)		

Table 3: Medication Compliance

Question Statement	Yes	No
Did you take all medication you were prescribed on your last visit?	266 (70.6)	111 (29.4)
Did your doctor ask if you are taking medication correctly?	272 (72.1)	105 (27.9)
Did your doctor ask if you have any side effect?	152 (40.3)	226 (59.7)
Have you experience any side effect?	63 (16.7)	315 (83.3)
Did you ask your physician how much your medication would cost?	177 (46.9)	200 (53.1)
Did you get feedback about your BP reading today?	182 (48.3)	195 (51.7)
Do you have self-monitoring BP machine?	133 (35.3)	244 (64.7)
Do you understand why taking medication is important?	266 (70.6)	111 (29.4)
Do you have caring family members?	310 (82.2)	67 (17.8)
Do you have enough knowledge about your disease?	138 (36.6)	239 (63.4)
Do you know about harmful effects of high blood pressure?	126 (33.4)	251 (66.6)
Do you know HTN is a chronic lifelong incurable but controllable disease?	214 (56.8)	163 (43.2)

Note: Values inside parenthesis denote % while the values outside parenthesis denote "f".

Table 4: Morisky Scale

Items of Morisky Scale	Yes	No
Do you sometimes forget to take your medicine?	273 (72.4)	104 (27.6)
Have you ever stopped taking your medicines without telling your doctor because you felt worse when you took it?	191 (50.7)	186 (49.3)
When you travel or leave home, do you sometime forget to take your medicines?	230 (61)	147 (39)
Did you take all your medicines yesterday?	280 (74.3)	97 (25.7)
When you feel like your symptoms are under control, do you sometimes forget/stop taking your medicines?	177 (47)	200 (53)
Taking medicines every day is a real inconvenience for some people. Do you ever feel hassled about sticking to your treatment plan?	206 (54.6)	171 (45.4)
Taking medicine every day is a real inconvenience for some people. Do you ever feel hassled about sticking to your treatment plan?	132(35.01)	245(64.98)

DISCUSSION:

Our findings showed that some of the participants had salt and fat restrictions while some of the participants had never salt or fat restrictions allover. Salts and fats are directly related to HTN, despite of salts and fats restrictions most of the participants had HTN. A study conducted by Dixon W. Wilde et al, showed an increase in plasma fatty acid levels following fat intake, which had led to hypertension[17]. Similarly, (65.9%) participants never smoked and (86.8%) participants were not smoking at the time of data collection, but still they were hypertensive. It proposes that smoking is not directly related to HTN. Of the participants 63.4% knew their disease, while 66.6% of participants were not aware about the side effects of high blood pressure. A study reported that lack of knowledge about HTN has a major role in the etiology of HTN[18]. Another study showed that basic knowledge of hypertension was low among illiterate[19]. Moreover, poor adherence of anti-hypertensive drugs among the participants in this study was demonstrated by Morisky scale. By this scale, 49.3% of participants felt worse while taking drugs and discontinued taking medication without consultation with their concerned physicians, while 53% of the participants stopped taking their medicines when they felt symptoms of HTN were under control, and 35.71% participants often forgotten to take anti-hypertensive medication which led to HTN. A study on poor adherence to drugs showed the main cause of non-adherence was due to lack of patient knowledge of the importance of anti-hypertensive drugs in the control of HTN[20]. Another study showed 41.5% of patients had poor self-reported compliance with anti-hypertensive drugs at different levels, ranging from routinely missing to take their medication on time to rarely taking their medication on a daily basis[21]. Vrijens B et al, conducted a study showed that despite of improved awareness about HTN, but poor adherence to hypertensive therapy is still a global problem[22]. Global HTN disparities are vast and growing. Combined energies are immediately desirable to fight the evolving hypertension burden in low- and middle-income countries[6]. The overall results show that this study is significant in terms of exploring the barriers optimal control of HTN, which need to be tackled to reduce or overcome the issue and its complications.

CONCLUSION:

Hypertension is one of the major public health issues. Its optimal control could have significant impacts on patient"s quality of life and reduction on hospital burden. Different barriers were seen which affect HTN control such as sedentary lifestyles, poor dietary management, and inadequate knowledge of the consequences of poor blood pressure control, forget to take anti-hypertensive medicines, stop taking anti-hypertensive medication without consultation, and poor medication compliance. Patients need to be educated properly about all barriers and its potential harms sooner or later on their lives. This study will create dominant contribution in optimal blood pressure control.

CONFLICT OF INTEREST: None

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REFERENCES:

1. Wu CY, Hu HY, Chou YJ, Huang N, Chou YC, Li CP. High blood pressure and all-cause and cardiovascular disease mortalities in community-dwelling older adults. Medicine. 2015;94(47):e2160.
2. Levanovich PE, Diaczok A, Rossi NF. Clinical and molecular perspectives of monogenic hypertension. Curr Hypertens Rev. 2019;16(2):91-107.
3. Singh S, Shankar R, Singh GP. Prevalence and associated risk factors of hypertension: a cross-sectional study in urban Varanasi. Int J Hypertens. 2017;2017:1-10.
4. Devkota S, Dhungana RR, Pandey AR, Bista B, Panthi S, Thakur KK, et al. Barriers to treatment and control of hypertension among hypertensive participants: a community-based cross-sectional mixed method study in municipalities of Kathmandu, Nepal. Front Cardiovasc Med. 2016;3:26.

5. Mangal A, Kumar V, Panesar S, Talwar R, Raut D, Singh S. Updated BG Prasad socioeconomic classification, 2014: a commentary. Indian J Public Health. 2015;59(1):42-4.

6. Mills KT, Bundy JD, Kelly TN, Reed JE, Kearney PM, Reynolds K, et al. Global disparities of hypertension prevalence and control. Circulation. 2016;134(6):441-50.

7. Saleem F, Hassali AA, Shafie AA. Hypertension in Pakistan: time to take some serious action. Br J Gen Pract. 2015;60(575):449-50.

8. Gul S, Hussain A, Ishtiaq M, Ahmad Z, Imranullah, Khalil MK. Assessment of risk factors for hypertension among adult population of Hayatabad, Peshawar. J Med Sci. 2015;23(3):158-62.

9. Okwuonu CG, Ojimadu NE, Okaka EI, Akemokwe FM. Patient-related barriers to hypertension control in a Nigerian population. Int J Gen Med. 2014;7:345-53.

10. Sibomana JP, McNamara RL, Walker TD. Patient, clinician and logistic barriers to blood pressure control among adult hypertensives in rural district hospitals in Rwanda: a cross-sectional study. BMC Cardiovasc Disord. 2019;19(1):1-8.

11. Naanyu V, Vedanthan R, Kamano JH, Rotich JK, Lagat KK, Kiptoo P, et al. Barriers influencing linkage to hypertension care in Kenya: qualitative analysis from the LARK hypertension study. J Gen Intern Med. 2016;31(3):304-14.

12. Sison G. The Morisky Medication Adherence Scale: An Overview [Internet]. 2018. Available from: https://www.pillsy.com/articles/the-morisky-medication-adherence-scale-definition-alternatives-and-overview

13. Janežič A, Locatelli I, Kos M. Criterion validity of 8-item Morisky Medication Adherence Scale in patients with asthma. PLOS ONE. 2017;12(11):e0187835.

14. Michel B, Egan BM. Adherence in hypertension. Circ Res. 2019;124(7):1124-40.

15. Uchmanowicz B, Jankowska EA, Uchmanowicz I, Morisky DE. Self-reported medication adherence measured with Morisky Medication Adherence Scales and its determinants in hypertensive patients aged ≥60 years: a systematic review and meta-analysis. Front Pharmacol. 2019;10:168.

16. Derington CG, Gums TH, Bress AP, Herrick JS, Greene TH, Moran AE, et al. Association of total medication burden with intensive and standard blood pressure control and clinical outcomes: a secondary analysis of SPRINT. Hypertension. 2019;74(2):267-75.

17. Mehta V. Emergence of new risk factors for causing hypertension. J Med Res Innov. 2017;1(1):9-11.

18. Da Silva Vasconcelos TR, Da Silva JM, Miranda LN. Factors associated with non-compliance in the treatment of patients with systemic arterial hypertension: an integrative literature review. Cad Grad. 2018;4(2):385-96.

19. Estrada D, Sierra C, Soriano RM, Jordán AI, Plaza N, Fernández C. Grade of knowledge of hypertension in hypertensive patients. Enferm Clin. 2020;30(2):99-107.

20. Mugwano I, Kaddumukasa M, Mugenyi L, Kayima J, Ddumba E, Sajatovic M, et al. Poor drug adherence and lack of awareness of hypertension among hypertensive stroke patients in Kampala, Uganda: a cross sectional study. BMC Res Notes. 2016;9(3).

21. Zhang Y, Li X, Mao L, Zhang M, Li K, Zheng Y, et al. Factors affecting medication adherence in community-managed patients with hypertension based on the principal component analysis: evidence from Xinjiang, China. Patient Prefer Adherence. 2018;12:803-12.

22. Vrijens B, Antoniou S, Burnier M, de la Sierra A, Volpe M. Current situation of medication adherence in hypertension. Front Pharmacol. 2017;8:1-8.

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