Tribhuvan University Journal
Vol. 38, No. 1: 19-30, June, 2023
Research Directorate, Tribhuvan University (TU),
Kathmandu, Nepal
DOI: https://doi.org/10.3126/tuj.v38i01.56140

KNOWLEDGE AND TREATMENT COMPLIENCE AMONG HYPERTENSIVE PATIENT ATTENDING IN A TERTIARY LEVEL HOSPITAL, KATHMANDU

Lalita Rai[1], Roshani Gautam[2]*

[1]Associate Professor, Maharajgunj Nursing Campus, TU, Kathmandu.
[2]Assistant Professor, Maharajgunj Nursing Campus, TU, Kathmandu.
[*]Corresponding author: roshani.gautam@mnc.tu.edu.np

Received date: 2 March 2023 – Accepted date: 6 June 2023

ABSTRACT

Globally, non-communicable diseases are increasing in trend in both developed and developing countries. Hypertension is considered as one of the main cardiovascular disease which is responsible for life threatening complications and premature death. Knowledge and treatment adherence on hypertension are important to control hypertension and prevent long term complications. A descriptive cross-sectional research design was used to find out the knowledge and treatment compliance among hypertensive patients in a Tertiary level hospital. Non-probability sampling technique was used to collect data from 427 people with hypertension through in-person interview. Data analysis was done by using SPSS version 16. Descriptive and inferential statistics was calculated. Out of 427 study participants, half (46.1%) were belong to more than 60 years of age with mean age was 57.30, SD ±12.134, half (55.3%) of the participants were female, 30.44% have positive family history of hypertension and 62.30% had comorbidity. Regarding knowledge on hypertension,more than half (57.8%) of the participants had inadequate knowledge related to hypertension. Overall treatment compliance was poor(6.1%).There was no significant association between knowledge and treatment compliances. So, it is recommended to conduct awareness program related to risk factors and modification of life-style of the people.

Keywords: compliance - hypertension - knowledge - treatment

INTRODUCTION

Non-communicable diseases are increasing in trend globally in both developed and developing countries (*Non Communicable Diseases* 2022). Hypertension is the leading cause of cardiovascular disease and premature

death worldwide. The prevalence of hypertension has been increasing in low and middle-income (LMICs) countries gradually. According to world health organization (WHO), the prevalence of hypertension among adults was higher in LMICs than in high-income countries (HICs) respectively 31.5% (1.04 billion) and 28.5%, (349 million) people (Mills *et al.* 2020). Two thirds of estimated adult patient with hypertension aged between 30-70 years are living in LMICs. Among them 46% are unaware about their condition. Approximately only 21% with hypertension have it under control (WHO 2021). In Nepal, the prevalence of hypertension was 28.4% (22.4–34.7), 25.5% (21.4–29.8), and 24.4% (17.9–31.6) among urban, suburban, and rural populations, respectively. Knowledge on some risk factors of hypertension was extremely low and knowledge gaps and misconceptions regarding hypertension (Huang *et al*. 2019). Moreover, knowledge and awareness of hypertension are important factors in achieving blood pressure control and treatment compliance. The importance of blood pressure (BP) control in preventing cardiovascular disease and stroke is well established.

Having knowledge on disease have positive impact in treatment compliances, and good compliances have considerable effects on good blood pressure control (Akoko *et al.* 2017). Misconception and lack of appropriate information about hypertensionis considered as a major barrier for the hypertension prevention and management (Agyei-Baffour *et al.* 2018). Evidence showed that patients' awareness on hypertension and compliance with treatment were distressingly low, and the optimum control of blood pressure was 44.4% following treatment (Shrestha *et al.* 2021) . Management and control of increased blood pressure depends on adherence to salt limit, regular medication and timely follow-up. Hence, this study was conducted to find out the knowledge regarding hypertension and compliances on prescribed treatment of patient with hypertension in a tertiary level hospital.

METHODS AND MATERIALS

Descriptive cross-sectional design was adopted to assess the knowledge and treatment compliance among hypertensive patients attending in tertiary level hospital. This study was conducted in the outpatient department (OPD) of Manmohan Cardiothoracic Vascular and Transplant Center (MCVTC), Maharajgunj, Kathmandu, among 427 purposively selected adult hypertensive patients who have been taking anti-hypertensive medication since last six months, age over 20, interested for volunteer participation and both male and female were included in the study. In-person interview was conducted from the selected sample to collect data from 1st September –

30th November, 2018. Interview was conducted before visiting the doctor in the waiting area of the outpatient department.

Written ethical permission was obtained from IRC of institute of medicine[Ref:31(6-11-E2)075/076], MCVTC and written informed consent was obtained from each participants. To assess the knowledge on hypertension, structured questionnaire was used which includes single and multiple responses with total score of 30. The mean score (19.77) was considered as cut off point and above mean was considered as adequate knowledge. Hill-Bone Compliance to high blood pressure therapy scale was used to evaluate treatment compliance. The Hill-Bone Compliance to HBP therapy scale developed by (Kim *et al.* 2000), a screening tool recommended to assess compliance in hypertensive patient. It is validated and translated in Nepali language with Cronbach's alpha score for the entire HBCTS scale was 0.846 (Uchmanowicz *et al.* 2016, shakya *et al.* 2022). It contains 14 items Likert scale rated as all the time (4), most of time (3), some of time (2), and never (1) which assess patient's behaviours for three important domains of high blood pressure treatment: 1) reduced sodium intake; 2) appointment keeping; and 3) medication taking. Score =14 was considered as perfect compliance and >15 as non-compliance (Shakya *et al.* 2020).Pre-test of the instrument was done in 10% of the sample size in Tribhuvan University Teaching Hospital (TUTH) and necessary modification as done. Ethical consideration was maintained throughout the study.

Statistical Package for Social Sciences (SPSS) version 16 was used for analysis. Mean, standard deviation, frequency and percentage was calculated to describe socio-demographic, disease related variables, and knowledge on hypertension and treatment compliances. Chi square test was done to find the association between knowledge on hypertension and treatment compliances.

RESULTS

Socio-demographic and Disease Related characteristics

Out of 427 respondents, Table 1 shows that nearly half (46.1%) were belong to more than 60 years of age and the mean age was 57.30, SD ±12.134, half (55.3%) of the participants were female, 87.1% were married and almost half (50.8%) lived in joint family. Regarding educational status, 29.7% were illiterate, 34.90% were homemaker and 48.2% of the participants' income was enough for more than 12 months and surplus. Among them, 30.44% have positive family history of hypertension and 62.30% had comorbidity.

Table 1: Participants' socio-demographic and disease related characteristics

n=427

Personal characteristic	Number	Percentage
Age (completed years)		
<40	43	10.1
40-59	187	43.8
>60	197	46.1
Mean age ± SD = 57.30±12.134		
S Sex		
Male	191	44.7
Female	236	55.3
Marital status		
Unmarried	14	3.3
Married	372	87.1
Divorced	2.0	0.5
Widow	39.0	9.1
Family type		
Single	210	49.2
Joint	217	50.8
Education		
Illiterate (unable to read and write)	127	29.7
Literate	300	70.3
Primary	110	36.6
Secondary	61	20.4
Higher secondary	58	19.3
Bachelor	50	16.7
Master and above	21	7.0
Occupation		
House maker	149	34.9
Service	60	14.1
Farming	63	14.8
Business	62	14.5
Retired	29	6.7
Unemployed	29	6.8
Labour	7	1.6
Others	28	6.5
Family income per annum		
Income enough for <6 months	67	15.7
Income enough for 6- 12 months	154	36.1
Income enough for 12 months and surplus	206	48.2
Disease status		
FFamily history of HTN	130	30.4
Presence of comorbidity	266	62.3

Source: Field survey

Disease related characteristics

Table 2 shows that mean systolic and diastolic blood pressure was 126.46 and 81.43 mm of Hg. Mean and standard deviation of duration of diagnosis were 7.24±6.62. They did 4.41 times follow up in a year and took 84.95 minute to reach health facility.

Table 2: Morbidity and health service related variables of the participants

n=427

Variables	**Mean**	**Standard Deviation**
Status of Blood Pressure (BP)		
Systolic BP	126.46	16.1
Diastolic BP	81.43	13.2
Duration of illness (Year)	7.24	6.6
Duration of treatment (Year)	6.95	6.2
Frequency of follow up in a year(Times)	4.41	3.4

Knowledge on Hypertension

Regarding knowledge on hypertension, (Table 3) more than half (61.8%) of the participants correctly mentioned value of normal blood pressure, 34% answered about hypertension 73.1% answered it was controllable disease and most (88.1%) of them correctly mentioned that medicine cannot be stopped without consultation. Majority the participants correctly mentioned that diet containing high salt and fat (78.2%), stress (69.1%) and heredity (60.4%) were risk factors of HTN. Only 21.1% answered HTN is asymptomatic. Nearly one-third of them mentioned that measuring blood pressure is the screening test for HTN. Most of them mentioned decrease salt (94.4%) and fat (87.6%) intake, brisk walking (94.1%), taking medicine in prescribed time (89.7%), regular exercise (79.2%), not skipping medicine (78.2%), were management and control measures of HTN.

Treatment Compliances

Hill-Bone Compliance to High Blood Pressure Therapy Scale was used to assess the treatment compliances of the participants (Table 4). All most all of the participants never add salt on food before eat (95.8%), skip High Blood Pressure medicine 1–3 days before go to the visit doctor (94.8%), never missed to take medicines due to care less (94.8 %), felt sick (90.9 %), and felt better (90.4%). For the appointment keeping subscale,

only 38.45 of the participants always visit doctor's clinical as schedule for follow-up.

Table 3: Participants' knowledge on hypertension

n=427

Variables	No	Percentage
General information		
Normal value of blood pressure	264	61.8
Hypertension	145	34.0
Hypertension is controllable Disease	312	73.1
Medicine cannot be stopped without consultation	376	88.1
Risk Factors/ Causes*		
Diet containing High salt and fat	334	78.2
Stress	295	69.1
Heredity	258	60.4
Increasing age	245	57.4
Over weight	216	50.6
Alcohol consumption	255	59.7
Smoking and tobacco consumption	221	51.8
Sedentary life style	217	50.8
Hypertension is asymptomatic	90	21.1
Screening can be done by measuring BP	311	72.8
Complications*		
Heart Problem	355	83.1
Renal Problem	287	80.3
Eye Problem	302	70.7
Brain attack	343	80.3
Management and Control measures*		
Decrease salt intake	403	94.4
Decrease Fat Intake	374	87.6
Regular physical exercise	338	79.2
Brisk walking	402	94.1
Quit Smoking	302	70.7
Limit alcohol consumption	278	65.1
Stress Management	282	66.0
Weight Management	306	71.7
Yoga and Meditation	325	73.8
Do not skip antihypertensive medicine	334	78.2
Take medicine in prescribed time each day	383	89.7

**Multiple responses* *Source: Field survey*

Table 4: Hypertension treatment compliance of the participants

n=427

Hill-bone compliance items with Sub- scale	**Never N(%)**	**Occasionally N(%)**	**Most of the time N(%)**	**Always N(%)**
Reduce sodium intake (Mean and SD;4.08±1.08)				
Eat salty food	319(74.7)	52(12.2)	23(5.4)	33(7.7)
Add salt on food before eat	409(95.8)	17.0(4.0)	1.0(0.2)	0
Eat fast food	201(47.1)	209(48.9)	12(2.8)	5.0(1.2)
Appointment keeping(Mean and SD;3.90±1.66)				
Visit to your doctor for follow up*	184(43.1)	31.0(7.3)	48(11.2)	16.4(38.4)
Miss scheduled appointments	302(70.7)	82.0(19.2)	16(3.7)	27(6.3)
Medicine taking(Mean and SD;11.27±3.09)				
Leave the dispensary without obtaining prescribed medicines	333(78.0)	83.0(19.4)	4.0(0.9)	7.0(1.6)
Forget to take your HBP medicine	244(57.1)	119(27.9)	26(6.1)	38(8.9)
Run out of HBP medicines	294(68.9)	39.0(9.1)	43(10.1)	51(11.9)
Decide not to take HBP medicine	308(72.1)	53.0(12.4)	31(7.3)	35(8.2)
Skip HBP medicine 1–3 days before go to the clinic	405(94.8)	18.0(4.2)	2.0(0.5)	2.0(0.5)
Miss taking HBP medicines when feel better	386(90.4)	36.0(8.4)	2.0(0.5)	3.0(0.7)
Miss taking HBP medicines when feel sick	388(90.9)	31.0(7.3)	6.0(1.4)	2.0(0.5)
Take someone else's HBP medicines	418(97.9)	8.0(1.9)	0	1.0(0.2)
Miss taking HBP medicines when care less	405(94.8)	20.0(4.7)	0	2.0(0.5)

*Reverse coding**

Regarding level of knowledge treatment compliances (Table 5), For the overall level of the knowledge, Total score was 30 and mean score was 19.77 with SD 5.23. Less than half (42.2%) had adequate knowledge on HTN. 93.9 % of study participants had non perfect compliances.

Table 5: Level of knowledge and treatment compliance of the participants

n= 427

Variables	Number	Percentage
Level of knowledge		
Adequate knowledge (> mean score)	180	42.2
Inadequate knowledge< mean score)	247	57.8
Treatment compliances		
Perfect compliances (score = 14)	26	6.1
Non-perfect compliances(score >14)	401	93.9

Association between knowledge on hypertension and treatment compliances

To measure the association between knowledge and treatment compliance (table 6), chi-square test) p =0.005) was done. There were no significant association between knowledge and treatment compliances among study participants was observed.

Table 6: Association between knowledge on hypertension and treatment compliance

n=427

Knowledge on HTN	Hill-Bone compliance		P- Value
	Perfect	Non perfect	
Adequate	18(8.0%)	207(92.0%)	0.081
Inadequate	8(4.0%)	194(96.0%)	

DISCUSSIONS

There were 254 hypertensive patients, of which 44.7% were males and 55.3% were females, giving a male: female ratio of 1:1.3. However, in a prevalence study conducted in Nepal showed the prevalence was significantly higher among male (Hasan *et al.* 2018, Gupta *et al.* 2019).

Various study evidenced the family history is the important risk factors for hypertension (Ranasinghe *et al.* 2015, Li *et al.* 2021). In present study, 30.44% of the study participants have positive family history of hypertension and 62.30% had comorbidity which is parallel to the findings in a study conducted by Mannan *et al.* (2022) in which 65%reported having at least one comorbid condition.

Health knowledge related to chronic disease is crucial for an individual for the adoption of self-care strategies for management chronic diseases and quit unhealthy behaviour (Tian *et al.* 2011). In this study, more

than half of the participants had inadequate knowledge related to HTN. In a similar study showed the matching evidence in which 44.0% had inadequate knowledge on HTN (Worku Kassahun *et al.* 2020). Study depicted the low health literacy is linked with poor outcomes, low use of preventive health services and in prevention of comorbidities (Liu 2020).

Regarding item wise knowledge, more than two-third correctly mentioned it was controllable disease and majority understand that diet containing high salt and fat (78.2%), stress (69.1%) and heredity (60.4%) were risk factors of HTN. Perception of disease as controllable showed positive relationship with treatment adherence so it is beneficial to improve illness perception regarding hypertensive disease for the perfect treatment compliances (Shakya *et al.* 2020)

For the management and control of disease, people with hypertension must modify the environmental/ lifestyle related factors to achieve the goal of disease control (Whelton *et al*. 2018) In the present study, most of the participants mentioned decrease salt (94.4 %) and fat (87.6%) intake, brisk walking (94.1%), always take medicine in prescribed time (89.7%), regular exercise (79.2%) were management and control measures of HTN. In a study conducted by Satyal *et al* (2020) among the people with hypertension showed the similar findings in which the study participants had mentioned intake of prescribed medicine, taking low salt and fat diet were the key measures for the management of hypertension.

Treatment compliances is essential to reduce the risk of hypertension related complications by 20% and reduce the premature death by 40% (Carey *et al.* 2018). In this study, very few (6.1%) had perfect compliances on treatment. The findings of the study conducted by Shakya *et al*. (2020) revealed the slightly higher percentage(14.7%) of participants had perfect treatment compliances in comparison with the present study. Present study found the non-significant association between knowledge on hypertension and treatment compliances. Study showed that knowledge positively impacts on treatment compliance, and good compliance was associated with good blood pressure control (Akoko *et al.* 2017) and patients with good knowledge about the disease and its complications were seven times more likely to have good adherence to medication (Sefah 2021).

The present study is a single centre, hospital based study and purposively selected study participants so the findings may lack generalization in all settings. It is recommended for further study to conduct in community settings to identify the status of treatment compliances.

CONCLUSIONS

Based on the findings of the study, it is concluded that more than half of the participants had inadequate knowledge related to hypertension and almost all participants had non perfect treatment compliances. There was no significant association between knowledge and treatment compliance. It is recommended to conduct awareness class and distribute reading material to the patients.

ACKNOWLEDGEMENTS

The authors are thankful for the University Grant Commission, Sanothimi, for faculty grant (Faculty research grant-7073/74-HS-01) to conduct this study. This is a part of faculty research.

REFERENCES

Agyei-Baffour, P., Tetteh, G., Quansah, D. Y. & Boateng, D. (2018). Prevalence and knowledge of hypertension among people living in rural communities in Ghana: A mixed method study. *African Health Sciences*, **18**(4): Article 4. https://doi.org/10.4314/ahs.v18i4. Accessed: 20.12.2022.

Akoko, B. M., Fon, P. N., Ngu, R. C. & Ngu, K. B. (2017). Knowledge of Hypertension and Compliance with Therapy Among Hypertensive Patients in the Bamenda Health District of Cameroon: A Cross-sectional Study. *Cardiology and Therapy* **6**(1): 53–67. https://doi.org/10.1007/s40119-016-0079-x

Huang, Y., Guo, P., Karmacharya, B. M., Seeruttun, S. R., Xu, D. R. & Hao, Y. (2019). Prevalence of hypertension and prehypertension in Nepal: A systematic review and meta-analysis. *Global Health Research and Policy* **4**(1): 11. https://doi.org/10.1186/s41256-019-0102-6

World Health Organization (WHO*): Hypertension*. (2021, August 25). https://www.who.int/news-room/fact-sheets/detail/hypertension

Kim, M. T., Hill, M. N., Bone, L. R. & Levine, D. M. (2000). Development and Testing of the Hill-Bone Compliance to High Blood Pressure Therapy Scale. *Progress in Cardiovascular Nursing* **15**(3): 90–96. https://doi.org/10.1111/j.1751-7117.2000.tb00211.x

Mills, K. T., Stefanescu, A., & He, J. (2020). The global epidemiology of hypertension. *Nature Reviews. Nephrology* **16**(4): 223–237. https://doi.org/10.1038/s41581-019-0244-2

Non communicable diseases. (2022, September). https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases

Sefah, B. (2021). Knowledge, Attitude and Lifestyle Practices Pertaining to Hypertension among the People of Ahoe-Ho. *Journal of Hypertension and Management* 7(1): 061. https://doi.org/10.23937/2474-3690/1510061

Shrestha, D. B., Budhathoki, P., Sedhai, Y. R., Baniya, A., Lamichhane, S., Shahi, M., Karki, B. J., Baniya, R. & Patel, N. (2021). Prevalence, awareness, risk factors and control of hypertension in Nepal from 2000 to 2020: A systematic review and meta-analysis. *Public Health in Practice* **2**: 100119. https://doi.org/10.1016/j.puhip.2021.100119

Uchmanowicz, I., Jankowska-Polańska, B., Chudiak, A., Szymańska-Chabowska, A. & Mazur, G. (2016). Psychometric evaluation of the polish adaptation of the hill-bone compliance to high blood pressure therapy scale. *BMC cardiovascular disorders* **16**: 1-6. DOI**:** 10.4314/ahs.v18i4.12

Shakya, R., Shrestha, S., Gautam, R., Rai, L., Maharjan, S., Satyal, G. K., ... & Rai, M. K. (2020). Perceived illness and treatment adherence to hypertension among patients attending a tertiary hospital in Kathmandu, Nepal. *Patient preference and adherence*, 2287-2300. https://www.tandfonline.com/doi/full/10.2147/PPA.S270786

Hasan, M., Sutradhar, I., Akter, T., Das Gupta, R., Joshi, H., Haider, M. R. & Sarker, M. (2018). Prevalence and determinants of hypertension among adult population in Nepal: Data from Nepal Demographic and Health Survey 2016. *PloS one* **13**(5): e0198028.

Gupta, R. D., Zaman, S. B., Wagle, K., Crispen, R., Hashan, M. R., & Al Kibria, G. M. (2019). Factors associated with hypertension among adults in Nepal as per the Joint National Committee 7 and 2017 American College of Cardiology/American Heart Association hypertension guidelines: a cross-sectional analysis of the demographic and health survey 2016. *BMJ open* **9**(8): e030206.

Li, A. L., Peng, Q., Shao, Y. Q., Fang, X. & Zhang, Y. Y. (2021). The interaction on hypertension between family history and diabetes and other risk factors. *Scientific Reports* **11**(1): 4716.

Ranasinghe, P., Cooray, D. N., Jayawardena, R., & Katulanda, P. (2015). The influence of family history of hypertension on disease prevalence and associated metabolic risk factors among Sri Lankan

Mannan, A., Akter, K. M., Akter, F., Chy, N. U. H. A., Alam, N., Pinky, S. D., ... & Rana, M. (2022). Association between comorbidity and health-related quality of life in a hypertensive population: a hospital-based study in Bangladesh. *BMC Public Health* **22**(1): 1-12. adults. *BMC public health 15*:1-9Tian, M., Chen, Y., Zhao, R., Chen, L., Chen, X., Feng, D. & Feng, Z. (2011). Chronic disease knowledge and its determinants among chronically ill adults in rural areas of Shanxi Province in China: a cross-sectional study. *BMC public health* **11**(1): 1-9.

Liu, L., Qian, X., Chen, Z. & He, T. (2020). Health literacy and its effect on chronic disease prevention: evidence from China's data. *BMC Public Health* **20**(1): 1-14.

Worku Kassahun, C., Asasahegn, A., Hagos, D., Ashenafi, E., Tamene, F., Addis, G. & Endalkachew, K. (2020). Knowledge on hypertension and self-care practice among adult hypertensive patients at university of Gondar comprehensive specialized hospital, Ethiopia, 2019. *International Journal of Hypertension*, *2020*.

Whelton, P. K., Carey, R. M., Aronow, W. S., Casey, D. E., Collins, K. J., Dennison Himmelfarb, C., ... & Wright, J. T. (2018). 2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA guideline for the prevention, detection, evaluation, and management of high blood pressure in adults: a report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. *Journal of the American College of Cardiology* **71**(19): e127-e248.

Satyal, G. K., Rai, L., Gautam, R., Dangol, B. K., & Shakya, R. (2020). Knowledge and self-care practice on hypertension among hypertensive patients in a tertiary level hospital of Kathmandu. *Journal of Institute of Medicine Nepal* **42**(2): 10-15.

Carey, R. M., Muntner, P., Bosworth, H. B., & Whelton, P. K. (2018). Prevention and control of hypertension: JACC health promotion series. *Journal of the American College of Cardiology* **72**(11): 1278-1293