

A study to assess the self-care practices among hypertensive patients in a tertiary care center, Chennai



Krithiga Sivakumar¹, Megavi Ramasamy², Mayadevi Thankayyan³, Seenivasan P⁴

¹Assistant Professor, ⁴Professor and Head, Department of Community Medicine, ^{2,3}Final Year MBBS, Government Stanley Medical College and Hospital, Chennai, Tamil Nadu, India

Submission: 02-07-2023

Revision: 30-08-2023

Publication: 01-10-2023

ABSTRACT

Background: Hypertension is one of the important chronic diseases. Blood pressure (BP) control depends on adherence to self-care practices. Hence, the factors associated with poor adherence can help the policymakers in formulating and directing interventions at specific groups.

Aims and Objectives: The current study was conducted to assess the self-care practices and to explore the factors associated with them. **Materials and Methods:** A cross-sectional study was conducted among 119 hypertensive patients who attended the outpatient department between July 2022 and September 2022 using a semi-structured interview schedule containing information on sociodemographic characteristics, morbidity profile, and self-care practices. Data were entered in MS Excel and analyzed using SPSS16. Chi-square test and Fisher's exact test were used wherever appropriate. $P < 0.05$ was considered statistically significant.

Results: Among the study participants, 19.3% (23) had poor adherence to self-care practices and 80.7% (96) had good adherence to self-care practices (medication adherence = 80.5%, regular monitoring of BP = 89.1%, alcohol abstinence = 94.1%, non-smoking = 93.3%, diet modification = 71.4%, and physical exercise = 45.4%). Sociodemographic characteristics such as age, sex, occupation, education, family income, duration of hypertension, and place of purchase of medicine were found to be statistically significant to at least one of the recommended self-care practices. **Conclusion:** Overall adherence to self-care practices was found to be good in the majority of the study participants. Among the self-care practices, adherence to medication, monitoring BP, alcohol abstinence, non-smoking, and diet modification were found satisfactory (> 70%). However, engagement in physical exercise still needs improvement. Health education and other interventions to promote physical exercise, especially among high-risk groups are suggested.

Key words: Patient compliance; Self-management; Blood pressure control

Access this article online

Website:

<http://nepjol.info/index.php/AJMS>

DOI: 10.3126/ajms.v14i10.56237

E-ISSN: 2091-0576

P-ISSN: 2467-9100

Copyright (c) 2023 Asian Journal of Medical Sciences



This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License.

INTRODUCTION

Systemic hypertension is defined as the increase in systolic blood pressure (SBP) above 140 mmHg or diastolic blood pressure (DBP) >90 mmHg based on at least 2 separate readings on different occasions or 130/85 mmHg at home.^{1,2} According to the 2019 World Hypertension Report, an estimated 1.13 billion people have hypertension, more than 2/3rd of whom live in low- and middle-income countries.³ Hypertension affects about 3 in 10 people (29.8%; rural – 25.1% and urban – 41.9%) and accounts

for 10% of deaths in India.^{4,5} A nationwide blood pressure (BP) survey (2019) revealed the prevalence of hypertension in India as 30.7%.⁶ According to National Family Health Survey-5 (2019 – 2021), 21% of women and 24% of men aged 15 years and over have hypertension.

Control of hypertension depends on various factors such as monitoring of BP, medication intake, diet modification, alcohol abstinence, non-smoking, and physical exercise. Currently, only about 1/4th (24.9%) of the known hypertensives in rural India are availing

Address for Correspondence:

Dr. Krithiga Sivakumar, Assistant Professor, Department of Community Medicine, Government Stanley Medical College and Hospital, Chennai, Tamil Nadu, India. **Mobile:** +91-9943059069. **E-mail:** krithigasivakumar@gmail.com

treatment, while in urban India, just about 1/3rd (37.6%) are receiving treatment.⁷ The WHO defines adherence as, “the extent to which a person’s behavior of taking medication, following a diet, and/or executing lifestyle changes, corresponds with agreed recommendations from a health-care provider.”

When an individual fails to follow the prescribed recommendations of his or her physician in terms of medication and behavioral change, he or she is said to be non-adherent. Non-adherence can not only lead to adverse health outcomes but also increased health-care costs.⁸ Poor management of hypertension has become a heavy burden on public health care. Rates of non-adherence are greater in low- and middle-income countries, compared to the developed countries. Due to poor adherence, the BP control is inadequate in more than half of the hypertensive patients.⁹ A study conducted in Chennai (2021) showed that over 1/4th (28%) of diagnosed individuals were not taking daily treatment.¹⁰

Ensuring self-care practices is as important as diagnosis itself as the benefits of the treatment are not fully realized unless the BP is adequately controlled. Knowledge about the factors contributing to poor adherence can greatly help the policymakers to devise and direct the interventions. Only few studies have explored the self-care practices among hypertensive patients. Therefore, this study is done to assess the self-care practices among hypertensive patients and to explore factors associated with self-care practices for managing hypertension.

Aims and objectives

1. To assess the self-care practices among hypertensive patients.
2. To explore factors associated with self-care practices for managing hypertension.

MATERIALS AND METHODS

Ethical committee approval was obtained from the Institutional Ethical Committee, Government Stanley Medical College, Chennai, Tamil Nadu, India (Dated July 13, 2022). A hospital-based cross-sectional study was conducted in General Medicine outpatient department (OPD), Government Stanley Hospital, Chennai, from July 2022 to September 2022 among hypertensive patients aged ≥ 30 years, diagnosed with hypertension for at least 6 months. Written informed consent was obtained from all the participants before data collection.

Inclusion criteria

Hypertensive patients aged ≥ 30 years, diagnosed with hypertension for at least 6 months (SBP of 140 mmHg or

above or DBP of 90 mmHg or above), who have provided written informed consent.

Exclusion criteria

Participants who could not communicate effectively, seriously ill patients, patients with severe complications, and participants who do not provide informed consent.

According to a study in India conducted by Sahoo *et al.*, in 2018, 44.63% of the study population adhered to anti-hypertensive drugs¹¹ ($P=44.63$, $q=55.37$, $z\alpha=1.96$, d [relative precision] = 20% of $P=8.926$). Using the formula $(z\alpha)^2 pq/d^2$, sample size was estimated to be 119. By adding non-response rate of 10%, final sample size was 131.

Patients attending Medicine OPD fulfilling the inclusion criteria were selected consecutively and interviewed using a semi-structured interview schedule containing three parts, namely,

- I. Demographic factors (Name, age, sex, religion, education level, occupation, number of family members, total family income, and marital status)
- II. Current morbidity profile (Duration of hypertension, diabetes mellitus status, and any other chronic medical illness)
- III. Self-care practices (Adherence to medication, regular BP monitoring, alcohol abstinence, non-smoking, diet modification, and physical activity).

In the present study, study participants who adhered to at least 3 of the abovementioned self-care practices were classified as having good adherence and others as having poor adherence.¹²

After obtaining a written informed consent, data was collected by interview method using a semi-structured questionnaire. Data were entered in MS Excel and analyzed using SPSS16. Continuous variables were expressed as mean and standard deviation. Categorical data were expressed as frequency and percentage. The Chi-square test and Fisher’s exact test were used wherever appropriate. $P<0.05$ was considered statistically significant. Multiple regression model was used to analyze the strength of association between self-care practices and demographic and health characteristics and to eliminate the confounding factors.

RESULTS

Demographic and health characteristics

A total of 119 individuals participated in the study. Demographic characteristics are shown in Table 1. The mean age was 57.16 ± 9.212 (mean \pm standard deviation) years. The majority of the study participants were female

Table 1: Demographic characteristics

Variables	Frequency (n)	Percentage
Age		
≤55	54	45.4
>55	65	54.6
Sex		
Male	41	34.5
Female	78	65.8
Education		
Uneducated	30	25.2
Educated	89	74.8
Occupation		
Unemployed	69	58.0
Employed	50	42.0
Monthly family income (₹)		
≤10,000	69	58.0
>10,000	50	42.0

(78 [65.8%]), 74.8% (89) were educated, 58% (69) were unemployed, and 73.1% (87) were married. 78.2% (93) were having hypertension for ≤10 years and 92.4% (109) purchased medicine from government pharmacy.

Self-care practices among hypertensive patients in a tertiary care center, Chennai (Figure 1).

More than 3/4th of the samples (79.8%) reported being adherent to medication. 89.1% (106) of the study participants monitored their BP at least once in a month. 94.1% (112) of the participants abstained from drinking alcohol and 93.3% (111) were non-smokers. 71.4% (85) of the study participants modified their diet after being diagnosed with hypertension. Less than half of the study participants (45.4%) were engaged in some form of physical activity.

Adherence to self-care practices among hypertensive patients in a tertiary care center, Chennai

In the present study, study participants who adhered to at least 3 of the above mentioned self-care practices were classified as having good adherence and others as having poor adherence. It was found that majority (80.7% [96]) had good adherence to self-care practices.

Factors related to adherence to self-care practices

Using bivariate analysis, adherers and non-adherers to each of the hypertension self-care practices were compared using the demographic and health-related characteristics (Table 2). Medication adherence was found to be associated with monthly family income ($P=0.023$) and place of purchase of medicine (Fisher exact value=0.002). Association was also observed between alcohol abstinence and occupation (fisher exact value=0.041). Non-smoking ($P=0.046$) and diet modification (fisher exact value=0.030) were observed to be associated with the duration of hypertension. Physical exercise was found

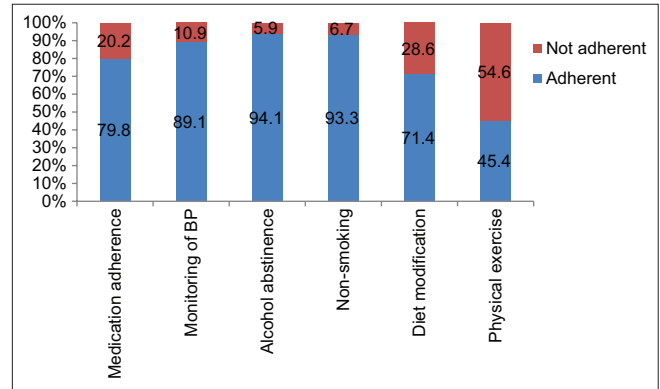


Figure 1: Self-care practices of hypertensive patients in a tertiary care center, Chennai, 2022

to be associated with age ($P=0.016$), sex ($P<0.01$), and education ($P=0.017$).

Multiple logistic regression (Table 3) showed that hypertensive patients who were buying medicine from government pharmacy have 10.150 times more odds of being adherent to medication ($P=0.009$) ($B=2.318$). Hypertensive patients with disease duration ≤10 years have 26.057 times more odds of being non-smoker ($P=0.039$) ($B=3.260$). Hypertensive male patients have 5.404 times more odds of being adherent to physical exercise ($P=0.002$) ($B=1.687$).

DISCUSSION

Adherence to medication and identification of the factors affecting adherence is always a matter of concern, especially in chronic diseases, since it will help to improve the outcomes. In the present study, good adherence to self-care practices was noted among 80.7% of the study participants, and poor adherence to self-care practices was noted among 19.3% of the study participants. This result is higher compared to the studies conducted in South India (good adherence=61.6% and poor adherence=39.4%)¹³ and Ethiopia (good adherence=59.4% and poor adherence=40.6%).¹⁴ The possible reasons for the difference might be due to the study setting and study period variation between the current study and previous studies. In addition, the state government's focus and commitment are on non-communicable disease control programs.

There was no significant association between overall adherence to self-care practices and demographic and health-related characteristics in this study. However, the study conducted by Joseph et al., (2016) among hypertensive patients in South India had found significant association between adherence to self-care practices and

Table 2: Differences between adherers and non-adherers to self-care practices among hypertensive patients in a tertiary care center, Chennai

Variables	Medication adherence		Monitoring of BP		Alcohol abstinence		Chi-square, P value
	Non-adherers (n=24) Frequency (%)	Adherers (n=95) Frequency (%)	Satisfactory (n=106) Frequency (%)	Not satisfactory (n=13) Frequency (%)	Non-adherers (n=7) Frequency (%)	Adherers (n=112) Frequency (%)	
Age							
≤55	13 (24.1)	41 (75.9)	30 (55.6)	24 (44.4)	5 (9.3)	49 (90.7)	0.243*, P=0.154
>55	11 (16.9)	54 (83.1)	26 (40.0)	39 (60.0)	2 (3.1)	63 (96.9)	
Sex							
Male	10 (24.4)	31 (75.6)	22 (53.7)	19 (46.3)	4 (9.8)	37 (90.2)	0.231*, P=0.192
Female	14 (17.9)	64 (82.1)	34 (43.6)	44 (56.4)	3 (3.8)	75 (96.2)	
Education							
Uneducated	3 (10.0)	27 (90.0)	11 (36.7)	19 (63.3)	4 (13.3)	26 (86.7)	0.066*, P=0.044
Educated	21 (23.6)	68 (76.4)	45 (50.6)	44 (49.4)	3 (3.4)	86 (96.6)	
Occupation							
Unemployed	12 (17.4)	57 (82.6)	28 (40.6)	41 (59.4)	1 (1.4)	68 (98.6)	0.041*, P=0.016*
Employed	12 (24.0)	38 (76.0)	28 (56.0)	22 (44.0)	6 (12.0)	44 (88.0)	
Monthly family income (₹)							
≤10,000	9 (13.0)	60 (87.0)	33 (47.8)	36 (52.2)	4 (5.8)	65 (94.2)	1.000*, P=0.963
>10,000	15 (30.0)	35 (70.0)	23 (46.0)	27 (54.0)	3 (6.0)	47 (94.0)	
Duration of hypertension							
≤10 years	22 (23.7)	71 (76.3)	46 (49.5)	47 (50.5)	5 (5.4)	88 (94.6)	0.646*, P=0.657
>10 years	2 (7.7)	24 (92.3)	10 (38.5)	16 (61.5)	2 (7.7)	24 (92.3)	
Place of purchase of medicine							
Government pharmacy	18 (16.4)	92 (83.6)	51 (46.8)	58 (53.2)	-	-	-
Private pharmacy	6 (66.7)	3 (33.3)	5 (55.6)	4 (44.4)	-	-	-

Variables	Non-smoking		Diet modification		Physical exercise		Chi-square, P-value
	Non-adherers (n=8) Frequency (%)	Adherers (n=111) Frequency (%)	Adherers (n=85) Frequency (%)	Non-adherers (n=34) Frequency (%)	Adherers (n=54) Frequency (%)	Non-adherers (n=65) Frequency (%)	
Age							
≤55	3 (5.6)	51 (94.4)	38 (70.4)	16 (29.6)	18 (33.3)	36 (66.7)	5.786, P=0.816
>55	5 (7.7)	60 (92.3)	47 (72.3)	18 (27.7)	36 (55.4)	29 (44.6)	P=0.016*
Sex							
Male	5 (12.2)	36 (87.8)	31 (75.6)	10 (24.4)	28 (68.3)	13 (31.7)	13.251, P<0.01*
Female	3 (3.8)	75 (96.2)	54 (69.2)	24 (30.8)	26 (33.3)	52 (66.7)	

*Significant at P<0.05; *Fisher exact value

(Contd...)

Table 2: (Continued)

Variables	Non-smoking		Diet modification		Physical exercise		Chi-square, P-value
	Non-adherers (n=8) Frequency (%)	Adherers (n=111) Frequency (%)	Adherers (n=85) Frequency (%)	Non-adherers (n=34) Frequency (%)	Adherers (n=54) Frequency (%)	Non-adherers (n=65) Frequency (%)	
Education							
Uneducated	1 (3.3)	29 (96.7)	22 (73.3)	8 (26.7)	8 (26.7)	22 (73.3)	5.666, P=0.017*
Educated	7 (7.9)	82 (92.1)	63 (70.8)	26 (29.2)	46 (51.7)	43 (48.3)	0.279, P=0.597
Occupation							
Unemployed	2 (2.9)	67 (97.1)	48 (69.6)	21 (30.4)	30 (43.5)	39 (56.5)	1.006, P=0.316
Employed	6 (12.0)	44 (88.0)	37 (74.0)	13 (26.0)	24 (48.0)	26 (52.0)	
Monthly family income (₹)							
≤10,000	5 (7.2)	64 (92.8)	49 (71.0)	20 (29.0)	34 (49.3)	35 (50.7)	
>10,000	3 (6.0)	47 (94.0)	36 (72.0)	14 (28.0)	20 (40.0)	30 (60.0)	
Duration of hypertension							
≤10 years	4 (4.3)	89 (95.7)	62 (66.7)	31 (33.3)	42 (45.2)	51 (54.8)	0.008, P=0.925
>10 years	4 (15.4)	22 (84.6)	23 (88.5)	3 (11.5)	12 (46.2)	14 (53.8)	

*Significant at P<0.05; †Fisher exact value

sociodemographic factors such as age, sex, education, and occupation.¹³ This might be because of the difference in the study population and study setting between these studies.

In the present study, 19.5% of the study participants had irregular medication intake. This result is similar to that of Sudharsanan et al., (2020) who conducted the study among hypertensive adults in Chennai (18%).¹⁰ In the present study, irregular medication intake had significant association with the place of purchase of medicine and monthly family income, similar to the study conducted by Venkatachalam et al., (2013) among rural population of Kancheepuram district (place of purchase of medicine).¹⁵ Results in the present study showed that the adherence might be better among those who purchase medicine from government pharmacy. This might be because of better accessibility and affordability in government pharmacies. The result is also similar to the study conducted by Sahoo et al., (2017) who conducted the study among geriatric hypertensive patients in India (monthly family income).¹¹

Frequency of monitoring BP was found to be satisfactory among 89.1% of the present study participants. According to the study conducted by Springer et al., among US adults, 51.2% self-monitored their BP regularly.¹⁶ 5.9% of the study participants in this study were found to be consuming alcohol, similar to the study conducted by Awosan et al., (2013) among traders in Sokoto (10.8%).¹⁷ Furthermore, alcohol consumption was found to be significantly associated with occupation. This is in concordance to the study conducted by Vignesh et al., (2014) among individuals living in an Indian setting.¹⁸ This might be attributed to high work stress.

6.7% of participants in this study were found to be currently smoking. This result is similar to the study conducted by Awosan et al., (2013) among traders in Sokoto (5.2%)¹⁷ and also similar to the study conducted by Gelaw et al., (2021) in Ethiopia (2.6%).¹⁹ 71.4% of study participants had modified their diet after being diagnosed with hypertension. This result is similar to the study conducted by Tibebe et al., (69.1%) and Joseph et al., (65.4%) among hypertensive patients in Ethiopia²⁰ and South India,¹³ respectively. It was found that smoking and diet modification were significantly associated with disease duration, supporting the well-established fact that smoking and diet both have a significant impact on BP.

In this study, 45.4% of study participants engaged in physical exercise. This result is similar to the study conducted by Gelaw et al., (2021) conducted in Ethiopia (51.8%).¹⁹ The result is also in concordance to the study conducted by Joseph et al., (2016) among hypertensive patients in South India (51.1%).¹³ It is found that physical

Table 3: Multiple regression analysis of demographic and health characteristics with self-care practices

Dependent variable	Independent variable	Category	Regression coefficient (B)	Adjusted odds ratio with 95% Confidence Interval (Exp (B))	P-value
Adherence to medication	Place of purchase of medicine	Government pharmacy	2.318	10.150 (1.784–57.750)	0.009
		Private pharmacy			
Non-smoking	Duration of hypertension	≤10 years	3.260	26.057 (1.178–576.364)	0.039
		>10 years			
Adherence to physical exercise	Sex	Male	1.687	5.404 (1.859–15.706)	0.002
		Female			

exercise was significantly associated with age, sex, and education. This might be attributed to societal, cultural, and individual factors.

Limitations of the study

The main limitation of the study is that it is institution-based survey and the results may not be generalized to entire population. Also, the data regarding self-care practices were self-reported and no objective measurement was done. Lastly, as this is a cross-sectional study, causality could not be determined.

CONCLUSION

Overall adherence to self-care practices was found to be good in the majority of the study participants. Age, sex, occupation, education, family income, duration of hypertension, and place of purchase of medicine were found to be significantly associated with adherence to at least one of the recommended self-care practices.

Health education to promote physical exercise, especially among high-risk groups is recommended. Counseling regarding prevention of long-term complications and the importance of life-style modifications should be emphasized at the time of diagnosis itself. The government should ensure uninterrupted drug supply and best quality health care along with health education programs to create awareness on self-care practices to achieve BP control.

ACKNOWLEDGMENT

Authors would like to acknowledge all the study participants and their caregivers for their support.

REFERENCES

- Aztatzi-Aguilar OG, Vargas-Domínguez C, Debray-Garcia Y, Ortega-Romero MS, Almeda-Valdés P, Aguilar-Salinas CA, et al. Biochemical and hematological relationship with the evaluation of autonomic dysfunction by heart rate recovery in patients with asthma and Type 2 diabetes. *Diagnostics (Basel)*. 2021;11(12):2187. <https://doi.org/10.3390/diagnostics11122187>
- Bromfield S and Muntner P. High blood pressure: The leading global burden of disease risk factor and the need for worldwide prevention programs. *Curr Hypertens Rep*. 2013;15(3):134-136. <https://doi.org/10.1007/s11906-013-0340-9>
- WHO. Hypertension Key Facts. Geneva, Switzerland: WHO; 2019. Available from: <https://www.who.int/news-room/fact-sheets/detail/hypertension> [Last accessed on 2023 May 23].
- Anchala R, Kannuri NK, Pant H, Khan H, Franco OH, Di Angelantonio E, et al. Hypertension in India: A systematic review and meta-analysis of prevalence, awareness, and control of hypertension. *J Hypertens*. 2014;32(6):1170-1177. <https://doi.org/10.1097/HJH.000000000000146>
- Mohan S, Campbell N and Chockalingam A. Time to effectively address hypertension in India. *Indian J Med Res*. 2013;137(4):627-631.
- Ramakrishnan S and Gupta K. Prevalence of hypertension among Indian adults: Results from the great India blood pressure survey. *Indian Heart J*. 2020;72(3):217. <https://doi.org/10.1016/j.ihj.2020.04.013>
- Balasubramanian A, Nair SS, Rakesh PS and Leelamoni K. Adherence to treatment among hypertensives of rural Kerala, India. *J Family Med Prim Care*. 2018;7(1):64-69. https://doi.org/10.4103/jfmpc.jfmpc_423_16
- Nielsen JØ, Shrestha AD, Neupane D and Kallestrup P. Non-adherence to anti-hypertensive medication in low- and middle-income countries: A systematic review and meta-analysis of 92443 subjects. *J Hum Hypertens*. 2017;31(1):14-21. <https://doi.org/10.1038/jhh.2016.31>
- Mathur D, Deora S, Kaushik A, Bhardwaj P and Singh K. Awareness, medication adherence, and diet pattern among hypertensive patients attending teaching institution in western Rajasthan, India. *J Family Med Prim Care*. 2020;9(5):2342-2349. https://doi.org/10.4103/jfmpc.jfmpc_193_20
- Sudharsanan N, Ali MK and McConnell M. Hypertension knowledge and treatment initiation, adherence, and discontinuation among adults in Chennai, India: A cross-sectional study. *BMJ Open*. 2021;11(1):e040252. <https://doi.org/10.1136/bmjopen-2020-040252>
- Sahoo SK, Preeti PS and Biswas D. Adherence to Anti-hypertensive drugs: A clinic based study among geriatric hypertensive patients in rural, India. *Natl J Community Med*. 2018;9(4):250-254.
- Assefa B, Zeleke H, Sergio T, Misganaw M and Mekonnen N. Self-care practice and associated factors among hypertensive follow-up patients at East Gojam zone public hospitals, North West Ethiopia, 2021. *J Hum Hypertens*. 2022;15-24. <https://doi.org/10.1038/s41371-022-00775-w>
- Joseph N, Chiranjeevi M, Sen S, Singh P, Saini M and Beg S. Awareness on hypertension and its self-management practices among hypertensive patients attending outreach clinics of a

- medical college in South India. Kathmandu Univ Med J (KUMJ) 2016;14(55):202-209.
14. Kassahun CW, Asasahegn A, Hagos D, Ashenafi E, Tamene F, Addis G, et al. Knowledge on hypertension and self-care practice among adult hypertensive patients at university of Gondar comprehensive specialized Hospital, Ethiopia, 2019. *Int J Hypertens.* 2020;2020:5649165.
<https://doi.org/10.1155/2020/5649165>
 15. Venkatachalam J, Abrahm SB, Singh Z, Stalin P and Sathya GR. Determinants of patient's adherence to hypertension medications in a rural population of Kancheepuram District in Tamil Nadu, South India. *Indian J Community Med.* 2015;40(1):33-37.
<https://doi.org/10.4103/0970-0218.149267>
 16. Springer MV, Malani P, Solway E, Kirch M, Singer DC, Kullgren JT, et al. Prevalence and frequency of self-measured blood pressure monitoring in US adults aged 50-80 years. *JAMA Netw Open.* 2022;5(9):e2231772.
<https://doi.org/10.1001/jamanetworkopen.2022.31772>
 17. Awosan KJ, Ibrahim MT, Essien E, Yusuf AA and Okolo AC. Dietary pattern, lifestyle, nutrition status and prevalence of hypertension among traders in Sokoto Central market, Sokoto, Nigeria. *Int J Nutr Metabol.* 2014;6(1):9-17.
 18. Vignesh BT, Singh AK, Mohan SK, Murthy S and Joshi A. Association between socio-demographics and alcohol dependence among individuals living in an Indian setting. *Glob J Health Sci.* 2014;6(3):16-26.
<https://doi.org/10.5539/gjhs.v6n3p16>
 19. Gelaw S, Yenit MK and Nigatu SG. Self-care practice and associated factors among hypertensive patients in Debre tabor referral hospital, Northwest Ethiopia, 2020. *Int J Hypertens.* 2021;2021:3570050.
<https://doi.org/10.1155/2021/3570050>
 20. Tibebe A, Mengistu D and Negesa L. Adherence to recommended lifestyle modifications and factors associated for hypertensive patients attending chronic follow-up units of selected public hospitals in Addis Ababa, Ethiopia. *Patient Prefer Adherence.* 2017;11:323-330.
<https://doi.org/10.2147/PPA.S126382>

Authors Contribution:

KS- Concept, design, definition of intellectual content, data interpretation, manuscript review; **MR-** Literature search, data collection, data analysis, data interpretation, manuscript preparation, manuscript editing; **MT-** Literature search, data collection, data analysis, data interpretation, manuscript preparation, manuscript editing; **SP-** Concept, design, definition of intellectual content, coordination, manuscript review.

Work attributed to:

Department of Community Medicine, Government Stanley Medical College and Hospital, Chennai, Tamil Nadu, India.

Orcid ID:

Dr. Krithiga Sivakumar - <https://orcid.org/0000-0002-1961-3144>
 Dr. Megavi Ramasamy - <https://orcid.org/0009-0004-5687-8004>
 Dr. Mayadevi Thankayyan - <https://orcid.org/0009-0009-5314-4925>
 Dr. Seenivasan P - <https://orcid.org/0000-0003-2993-1936>

Source of Support: Nil, **Conflicts of Interest:** None declared.