International Journal of Research in Pharmacy and Pharmaceutical Sciences
ISSN: 2455-698X; Impact Factor: RJIF 5.22
Received: 23-06-2019; Accepted: 26-07-2019
www.pharmacyjournal.in
Volume 4; Issue 5; September 2019; Page No. 58-63

Prevalence of hypertension in geriatrics and drug utilisation evaluation in geriatrics

Shara abraham[1*], Arya o[2], Chinju k sabu[3], sharon varghese[4], Mr. Jayakumar ks[5], Dr. Jiji alfred[6]
[1-4] 6TH Year Pharm D, Nazareth College of Pharmacy, Othera, Thiruvalla, Kerala, India
[5-6] Assistant Professor, Department Of Pharmacy Practice, Nazareth College of Pharmacy, Othera, Thiruvalla, Kerala, India

Abstract
Geriatric patients with in the age group 61-70 were more affected with lifestyle disease and females are more prone to lifestyle disease than males. Hypertension was the most prevalent lifestyle disease in geriatrics followed by diabetes mellitus, dyslipidaemia and osteoporosis. A Prospective cross sectional study was carried out in Eraviperoor Grama Panchayath of Pathanamthitta district in Kerala on the topic prevalence of lifestyle diseases and drug utilization evaluation in geriatrics. The correlation of social history with the lifestyle disease shows that alcohol and smoking were the most prominent risk factors associated with hypertension and tobacco use was associated with the progression of dyslipidaemia. Patients with diabetes were more prone to hypertension. Hypertension was significantly associated with the development of coronary artery disease. Adherence to drug therapy was measured with the help of a score sheet of fourteen questionnaires, highlighted that majority of the population adhered to their drug therapy and only very few were poorly adherent to drug therapy and the main reason for non-adherence was found to be the lack of knowledge about their medications. The pattern of prescribing medications of hypertension according to the standard guideline were monitored and deviation was observed in our study.

Keywords: food habits are also an important risk factor for hypertension but we were not able to monitor it.

1. Introduction
Hypertension is considered as a major public health problem due to its high prevalence all around the world [1, 2, 3]. Due to high blood pressure around 7.5 million deaths or 12.8% of the total of all annual deaths worldwide was reported [4]. Hypertension is defined as abnormally high arterial blood pressure. According to the Joint National Committee 7 (JNC7)guidelines, normal blood pressure is a systolic BP < 120 mmHg and diastolic BP < 80 mm Hg. Hypertension or high blood pressure is defined as systolic BP level of ≥140 mmHg and/or diastolic BP level ≥ 90 mmHg [5, 6].

Increased blood pressure is considered as a major risk factor for chronic heart disease, stroke, and coronary heart disease [7]. Other complications of high blood pressure include heart failure, peripheral vascular disease, renal impairment, retinal haemorrhage, and visual impairment [8].

Epidemology
According to World Health Organization (WHO), the overall prevalence of hypertension in India was 23.5% and gender specific prevalence was 24.2% and 22.7% among the men and women [9]. Men exhibit higher prevalence of hypertension than female (M: 40.9% and F: 26.0%). Similarly, various studies suggest with the higher percentage of hypertension in men than women [10, 11, 12].

Pathophysiology
Lifestyle factors can determine the level of blood pressure in individuals and the prevalence of hypertension in populations [13]. Excess body fat is the major factor predisposing to blood pressure elevation in many cross-sectional and longitudinal studies [14]. Excess Body fat, can lead to impairment of insulin sensitivity, glucose intolerance, and dyslipidemia, which compounds with the effects of blood pressure elevation to increase the risk of cardiovascular disease [15].

There is an inverse relation between physical fitness and blood pressure levels independent of all other risk factors for hypertension [16]. Similar relationships are also seen between physical fitness or activity and cardiovascular morbidity and mortality [17]. Dietary salt intake has a major role in increasing blood pressure [18]. Lifestyle factors have been shown to directly influence blood pressure levels at both an individual and population level. The most important factors are excess body fat, alcohol consumption, physical activity, and a variety of dietary constituents including salt, potassium, and a complex of fruits, vegetables, and saturated fat as well as n_3 fatty acids [18].

Symptoms
- Headaches
- Shortness of breath or nosebleeds
- Fatigue
- Confusion.
- Vision problems.
- Chest pain [19].

Risk Factors
- Age
- Family history.
- Being overweight or obese.
- Too much salt (sodium) in your diet.
- Too little potassium in your diet.
- Drinking too much alcohol.
- Stress [20].

Complications
- Stroke, transient ischaemic attack, dementia[21]
- Left ventricular hypertrophy Heart failure[21]
- Myocardial infarct [21]

- Angina [21]
- Coronary artery disease [21]
- Renal impairment [22]

Drug Utilization Pattern of Antihypertensives

Pharmacologic Therapy

- Angiotensin receptor blocker (ARB) [23]
- Angiotensin converting enzyme inhibitor (ACEI) [23]
- Beta blocker [24]
- Calcium channel blocker [25, 26]
- Vasodilator [27]
- Diuretics [28, 29]

Non-Pharmacologic Therapy

- Smoking cessation [30]
- Weight reduction [30]
- Decrease in mental stress [30]
- Increased physical activity [30]
- Sodium and alcohol restriction [31]

Life Style Changes

- Decrease the salt in your diet
- Maintain a healthy weight
- Increase physical activity.
- Limit alcohol
- Don't smoke.
- Manage stress.
- Monitor your blood pressure at home.
- Practice relaxation or slow, deep breathing [32, 33]

Observations

Table 1.1: Distribution of Subjects According To Their Age

SI.NO:	Age of the subjects	Frequency	Percentage
1	61-70	255	51
2	71-80	168	33.6
3	81-90	71	14.2
4	91-100	7	1.2
	Total	500	100

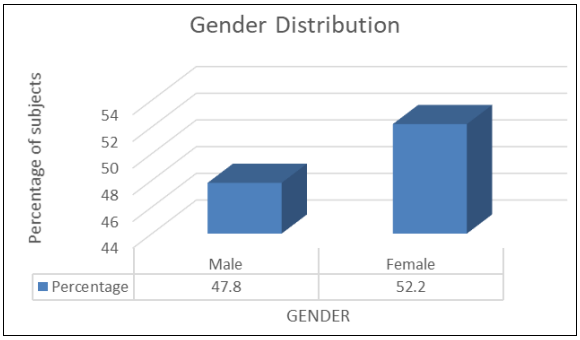

Fig 1.1: Gender of the subjects

The above histogram demonstrates that lifestyle diseases are more common in female (52.2%) when compared to males (47.8%).

Table 1.2: Distribution of Subjects According to Their Employment Status

Si. No:	Employment Status	Frequency	Percentage
1	Employed	39	7.8
2	Unemployed	383	76.6
3	Business	10	2
4	Farmer	4	0.8
5	Retired	64	12.8
	Total	500	100

The table specifies that lifestyle diseases are more evident in unemployed patients (76.6%) followed by retired (12.8%), these unemployment is attributed to their sedentary lifestyle which can be a major cause for lifestyle diseases.

Table 1.3: Distribution of Subjects According To Their Physical Activity

Si. No:	Physical activity	Frequency	Percentage
1	Yes	187	37.4
2	No	313	62.6
	Total	500	100

The present table supports the above statement of employment because out of 500 patients, majority of them are not doing any physical activity (62.6%) and only (37.4%) are having some physical activity which increases the risk for lifestyle diseases.

Table 1.4: Distribution of Subjects According To Their Social History

Si.no:	social history	with HTN	with DM	with DLP	with osteoporosis
1	Tobacco	6	9	15	0
2	Alcohol	46	7	3	1
3	Smoking	17	0	0	3
4	Tobacco & alcohol	2	1	7	1
5	Tobacco and smoking	1	0	0	0
6	Alcohol and smoking	21	4	8	2
7	No social history	157	66	18	29

The above table illustrates the correlation of social history with the lifestyle disease and it was observed that alcohol (46) and smoking (17) were the most prominent risk factors associated with hypertension and tobacco was associated with the progression of dyslipidaemia. From the graph we can conclude that social history is not alone a cause for

lifestyle disease because only a small part of the population with social habits are having lifestyle disease.

Table 1.5: Comorbidities of Hypertension

Si. No	Comorbidities	Frequency
1	Diabetes Mellitus	1
2	Stroke	16
3	Retinopathy	48
4	Cardiovascular disease	33
5	Osteoporosis	1
6	DLP, Retinopathy, Cardiovascular disease	1
7	DLP, Cardiovascular disease	1
8	Asthma and Cardiovascular disease	1
9	Stroke and Retinopathy	1
10	Stroke, Retinopathy and Neuropathy	1
11	Stroke, Retinopathy and Cardiovascular disease	9
12	Stroke and Cardiovascular disease	41
13	Neuropathy and Retinopathy	8
16	DLP and Retinopathy	3
17	Asthma and Retinopathy	1
18	Retinopathy and Neuropathy	3
19	Retinopathy, Neuropathy and Cardiovascular disease	1
20	Retinopathy and Cardiovascular disease	17

The above table illustrates, out of the sample of 250 hypertensive patients in which the most common individual co-morbidity observed was retinopathy (48) followed by cardiovascular disease (33) and the most common multiple morbidity was stroke and cardiovascular disease (41).

Table 1.6: Risk Factors of Hypertension

Si. No:	Risk factors	Frequency
1	Age	4
2	Family history	9
3	Diabetes	2
4	Age and Diabetes	16
5	Age and Family history	62
6	Age, Family history and Diabetes	12
7	Age, Family history and Insomnia	1
8	Age, Family history, Insomnia, DLP and Diabetes	2
9	Age, Family history and DLP	8
10	Age, Family history, DLP and Diabetes	3
11	Age, Family history and Obesity	10
12	Age, Insomnia and DLP	1
13	Age, Insomnia, DLP and Diabetes	2
14	Age and Menopause	11
15	Age and DLP	1
16	Age, DLP and Diabetes	14
17	Gender, Family history and Obesity	2
18	Family history and Diabetes	8
19	Family history and Insomnia	2
20	Family history, Insomnia and DLP	1
21	Family history, Insomnia, DLP and Diabetes	4
22	Family history and DLP	16
23	Family history, DLP and Diabetes	4
24	Family history, DLP and Diabetes	4
25	Family history and Obesity	16
26	Family history, Obesity and Diabetes	1
27	Insomnia and Diabetes	1
28	Insomnia and DLP	3
29	Insomnia, DLP and Diabetes	2
30	DLP and Diabetes	6

The table infers the risk factors of, 250 patients who were diagnosed with hypertension, the most common individual risk factor leading to hypertension is family history (9), age also occurs as a concurrent individual risk factor and the most common multiple risk factor leading to hypertension was found to be age and family history (62).

Table 1.7: Monitoring Parameter for Hypertensive Patients

Monitoring parameter	weekly	monthly	Half yearly	Yearly	Not monitored
Blood pressure	0	135	84	59	86
Body weight	0	92	96	146	30
Blood glucose	0	75	103	99	87
Blood cholesterol	0	66	119	93	86

The above table characterizes the 364 patients who were previously and presently diagnosed with hypertension, none of them were measuring their blood pressure weekly and about 135 patients are measuring their blood pressure monthly, followed by 84 half yearly, 59 yearly and 89 of them are taking the medication without monitoring level of blood pressure. It has been observed that Blood glucose and blood cholesterol were checked on half yearly basis, while some of them were not monitoring these parameters.

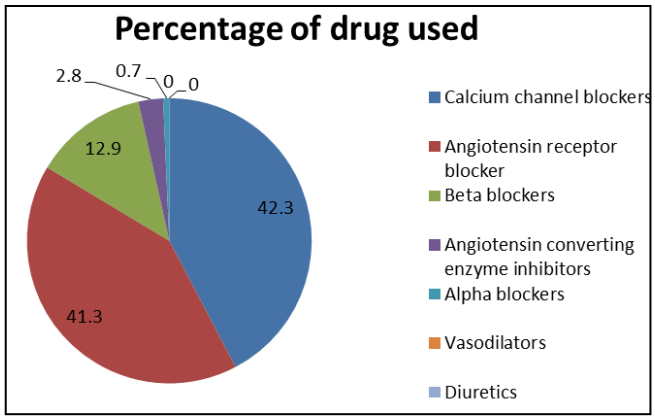

Fig 1.8: Percentage of Hypertensive drug used

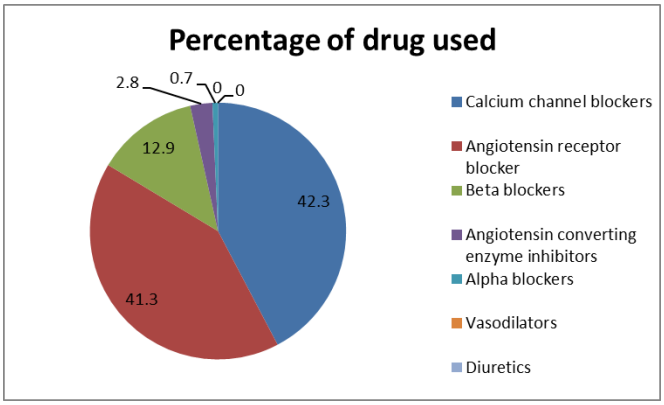

Fig 1.8: Percentage of Hypertensive drug used

From the above pie chart, the most commonly used class of antihypertensive was found to be Calcium channel blocker (42.3%) followed by Angiotensin receptor blocker (41.3%) preceded by Beta blockers (12.9%) and Angiotensin converting enzyme inhibitors (2.8%) and the less commonly used class of antihypertensive is Alpha blockers which is only 0.7% and both vasodilators and Diuretics are not used as anti-hypertensive
e of them were not monitoring these parameters.

Results

The salient findings of the study were

- Geriatric patients with in the age group 61-70 were more affected with lifestyle disease and hypertension was the most prevalent lifestyle disease followed by diabetes mellitus, dyslipidaemia and osteoporosis in this age group.
- Females are more affected with lifestyle disease than males.
- Considering the employment status lifestyle disease were more prevalent in unemployed patients.
- With respect to the physical activity lifestyle disease were more in population with least physical activity.
- The correlation of social history with the lifestyle disease shows that alcohol and smoking were the most prominent risk factors associated with hypertension and tobacco was associated with the progression of dyslipidaemia.
- Most common incident lifestyle disease in geriatrics was hypertension followed by diabetes mellitus and dyslipidaemia.
- Family history was found to be individual risk factors for hypertension supported by age which leads to risk factors.
- The pattern of prescribing medications for lifestyle diseases according to the standard guideline were monitored. The most deviation was observed in the case of hypertension.

Discussion

1. The most prevalent lifestyle disease for geriatric patients included in our study was hypertension. The reason for increase in hypertension is due to loss of texture of vascular smooth muscles as well as endothelial dysfunction and this has been contributed by diabetes mellitus as well as alcohol and smoking and increasing age which is evident from our study [34]. Hypertensive patients were more prone to be affected by cardiovascular disease, the reason behind was due to the high blood pressure which exerts force against arteries, making them vulnerable to the narrowing and plaque associated with atherosclerosis [34]. A study conducted in Chhattisgarh observed the overall prevalence of hypertension 50% among age ≥ 60 years [35].
2. According to our study the most common comorbidity for hypertension was found to be retinopathy (41) and stroke (16) because high blood pressure can cause damage to the retina's blood vessels, limit the retina's function. When combined with cholesterol deposits in

the blood vessels, the risk of heart attack and stroke increases [35].

3. The prescribing pattern of drugs were studied by comparing with standard drug regimens [35, 36, 37, 38]. According to American Heart Association, Angiotensin II receptor blockers were preferred first line for hypertension but our study revealed that calcium channel blockers were used as anti-hypertensive. Present guidelines suggest that diuretics, calcium channel blockers (CCBs), angiotensin- converting enzyme (ACE) inhibitors, and angiotensin II receptor blockers (ARBs) are all suitable for the initiation of antihypertensive treatment, either as monotherapy or in combination therapy. Initial use of CCBs in hypertensive patients might be superior to ARBs for prevention of stroke and MI events, independent of their antihypertensive effect [38].

Conclusion

The study concluded that Geriatric patients with in the age group 61-70 were more affected with lifestyle disease, considering gender, females are more affected with lifestyle disease than males. Hypertension was the most prevalent lifestyle disease followed by diabetes mellitus, dyslipidaemia and osteoporosis. Lack of physical activity as well as sedentary lifestyle has become a major contributing factor for lifestyle disease. Social habits such as alcoholism, smoking and tobacco use has a positive impact in the development of lifestyle disease. With regards to drug therapy given, the pattern of prescribing has shown deviation from standard guidelines.

References

1. Kumar MR, Shankar R Singh S. Hypertension among the adults in rural Varanasi: a cross sectional study on prevalence and health seeking behavior. Indian Journal of preventive and socialmedicine. 2016; 47(1-2):78-83.
2. Chobanian AV, Bakris GL, Black HR. *et.al.* report of the joint National committee on detection, evaluation and treatment of high bloodpressure 1206-1252.doi:10.1161/01.Hypertension. 0000107251.
3. World Health Organisation-Global Health observatory data repository 2015.2015.
4. Kumar MR, Shankar R Singh S. Hypertension among the adults in rural Varanasi: a cross sectional study on prevalence and health seeking behavior. Indian Journal of preventive and socialmedicine. 2016; 47(1-2):78-83.
5. Chobanian AV, Bakris GL, Black HR. *et. al.* report of the joint National committee on detection, evaluation and treatment of high bloodpressure 1206-1252.doi:10.1161/01.Hypertension.0000107251.
6. World Health Organisation-Global Health observatory data repository 2015.2015.
7. Chobanian AV, Bakris GL, Black HR, *et.al.* report of the joint National committee on detection, evaluation and treatment of high bloodpressure 1206-1252.doi:10.1161/01.Hypertension.0000107251.
8. https://www.cdc.gov/chronicdisease/index.htm
9. Beilin LJ. Editorial Review: The fifth sir George memorial lecture - Epitapts to Essential hypertension –a preventable disorder of known aetiology. Hypertension. 1988; 6:85-94.
10. Stamler J. Epidemologic findings on body mass and blood pressure in adults. Ann epidemiol. 1995; 1:347-362.
11. Pockliot MC, Despres JP, Lemieux, Moorjani Bouchad C, Trembley A, Nadeau A, *et al*. circumference and abdominal sagittal diameter: best single anthropometric indexes of abdominal visceral adipose tissue accumulation and related cardiovascular risk in men and women. Am J cardiol. 1994; 73:460-468.
12. Blair SN, Goodyear NN, Gibbons LW, CooperKH. physical fitness and incidence of hypertension in healthy normotensive men and women JAMA. 1984; 252:487-490.
13. Paffenbarger RSJR, Hyde RT, Wing AL, Lee IN, Jung DL, Kampert JB. The association of changes in physical activity level and other lifestyle characterstics with mortality among men N Engl J med. 1993; 328:538-545.
14. Law MR, Epidemological evidence on salt on blood pressure.1997; 10:425-455
15. High blood pressure and African Americans. American Heart Association. http://www.heart.org/HEARTORG/Conditions/HighBloodPressure/UnderstandSymptomsRisks/High-Blood-Pressure-and-African-Americans_UCM_301832_Article.jsp#.Wrqv3-R1rcs. Accessed March 12, 2018.
16. Know your risk factors for high blood pressure. American Heart Association. http://www.heart.org/HEARTORG/Conditions/HighBloodPressure/UnderstandSymptomsRisks/Know-Your-Risk-Factors-for-High-Blood-Pressure_UCM_002052_Article.jsp#.WrqvNeR1rcs. Accessed March 12, 2018.
17. Hamilton GA. Measuring adherence in hypertension clinical trial.Eur J Cardiorase Nurs. 2003; 2:219-228.
18. Krzesinski JM, Cohen EP. "Hypertension and the kidney". Acta Clinica Belgica. 2007; 62(1):5–14.
19. Lindholm LH. Ibsen H, Dahlof B. *et.al.* Cardiovascular morbidity and mortality in patients with diabetes in the Losartan Intervention For Endpoint reduction in hypertension study(LIFE):a randomized trial against atenolol. Lancet. 2002; 359:1004-1010.
20. Lefflerova K, Widimsky J, Lupinek Z. Beta- blockers in the treatment of hypertension in elderly patients.Vnitr Lek. 1991; 37:128-134.
21. Mariani L, Marino M, Cosentino N, Torrisi G, (Amlodipine in isolated systolic hypertension in the aged).ClinTer. 1993; 143:35-43.
22. Clement DL, De BM, Duprez D. Antihypertensive effects of calcium antagonists. Clinical facts and modulating factors Am J Hypertens. 1994; 7:16S-22S
23. Aronow WS, Fleg JLPepine CJ. *et.al.* ACCF/AHA 2011 expert consensus document on hypertension in the elderly.a report of the American college of Cardiology Foundation Task Force on Clinical Expert Consensus Documents Circulation. 2011; 123:2434-2506.
24. Susic D Varagic JA, hn J Matavelli L, Frohlich ED. Long-term mineralocorticoid receptor blockade reduces fibrosis and improves cardiac performance and coronary hemodynamics in elderly SHR Am J Physical HeartCirc Physical. 2007; 292:H175-H179.
25. Sander GE, Giles TD. Resistant Hypertension:concepts and approach to management Curr Hypertens Rep. 2011; 13:347-355.
26. Oghana T Antihypertensive int guidelines for elderly

hypertension.Nihon Rinsho. 2001; 59:919-926.
27. Appel LJ, Espeland MA, Easter L, Wilson AC, Folmer S, Lacy CR. Effects of reduced sodium intake on Hypertension Control in order individual:results from trial of Nonpharmacologic Intervention in the elderly (TONE). 2001; 161:685-693.
28. Forman JP. Diet in the treatment and prevention of hypertension. https://www.uptodate.com/contents/search. Accessed March 26, 2018.
29. Limiting alcohol to manage high blood pressure. American Heart Association. http://www.heart.org/HEARTORG/Conditions/HighBloodPressure/MakeChangesThatMatter/Limiting-Alcohol-to-Manage-High-Blood-Pressure_UCM_303244_Article.jsp#.WrqvfOR1rcs. Accessed March 12, 2018.
30. World Health Organization https://www.who.int/gho/ncd/risk_factors/cholesterol_text/en/
31. Qi L Prevalence. Risk Factors Associated with Dyslipidemia, Int J Environ Res Public Health. 2015; 26; 12(10):13455-65
32. R walker, h. Williams,dyslipedimia;clinical pharmacy and therapeutics; roger walker and cate whittlesea;5th edition; pg. 401-407
33. Urvi Sharma, MBBS, Dyslipidemia and associated risk factors in a resettlement colony of Delhi, journal of clinical lipidology. 7(6):653–660.
34. Barlassina C, Lanzani C, Manunta P, Bianchi G. Genetics of essential hypertension: from families to genes. J Am Soc Nephrol: JASN. 2002; 13(3):S155–S164.
35. Farida Chentli, Said Azzoug, Souad Mahgoun, Diabetes mellitus in elderly, Indian J Endocrinol Metab. 2015; 19(6):744–752.
36. farhud DD. Impact of Lifestyle on Health. Iran J Public Health. 2015; 44(11):1442–1444.
37. Huml D, Stimac D, Culig J, Andabaka I, Tadic I, Portolan M:Improving patients medication adherence in chronic disease.37th ESCP Symposium,Dubrovnik,croatia, 21-24 october 2008. Abstract book, p 90.
38. Tabrizi JS, Sadeghi-Bazargani H, Farahbakhsh M, Nikniaz L, Nikniaz Z. Prevalence and associated factors of prehypertension and hypertension in Iranian population: the lifestyle promotion project (LPP) PLoS ONE, 2016, 11(10).