J Biochem Tech (2018) Special Issue (2): 176-182
ISSN: 0974-2328

Prescription Pattern, Medication Adherence and Quality of Life Associated with Antihypertensive Drugs in Geriatrics, Dr. B. R. Ambedkar Medical College and Hospital, Bangalore, India

Seyedeh Sara Saboori*, C. Suhas Reddy, Srinivasa K.V

Received: 25 December 2017 / Received in revised form: 14 May 2018, Accepted: 18 May 2018, Published online: 05 September 2018

Abstract

Objective: The study was designed to evaluate prescribing pattern, Medication Adherence and Quality of life associated with antihypertensive drugs in Geriatric patients in Dr. B. R. Ambedkar Medical College and Hospital, Bangalore, India. Methodology: A prospective and observational study was carried out for 6 months in Dr. B. R. Ambedkar Medical College and Hospital. A total of 120 patients were involved in the study. Prescribing pattern was evaluated by referring to patient case files comparing with JNC 7 guidelines. Patients medication adherence level was assessed by using Morisky medication adherence scale and quality of life by using MINICHAL questionnaire. After collection of complete data, appropriate descriptive and inferential statistical analysis was performed. Result: A Total of 120 patients were enrolled in the study both from in-patient and outpatient department. The commonly prescribed drug in both the department is CCB's as single dug therapy, CCB's account for 43.90 in In-Patient department, 66.66% in Out-patient department. Under combination therapy ARB + Diuretics was commonly prescribed 69.23% in In-patient & 70.74% in Out-patient department. Majority of the study population were having good quality of life and having high level of medication adherence towards the therapy. Conclusion: The most preferred prescribing therapy in both in-patient and out-patient was single drug therapy. Calcium Channel Blockers were the most frequently prescribed class of drugs in single drug therapy, Angiotensin Receptors blockers with Diuretics were the most commonly prescribed class of drugs in in-patient department and in out-patient department also Angiotensin Receptors blockers with Diuretics are the frequently prescribed combination of drugs. Majority of the study population were having the high level of adherence towards the anti-hypertensive therapy, which means they are in good compliance with the treatment and showed that many of the patients are having the good quality of life, we used MINIHCAL questionnaire to assess the quality of life of patients. Pharmacists situated as the most available health care providers in the community, could improve patient's information and adherence to the administration of BP. The hospital is in large compliance with JNC guidelines, in prescribing pattern of anti-hypertensive medications to the Geriatric patients.

Key words: Prescribing Pattern, Geriatrics, Quality of Life, Medication Adherence

Introduction

Hypertension, characterized as systolic blood pressure (BP) ≥140 mm Hg, diastolic BP ≥90 mm Hg, increments with age, influencing more than 50% of patients aged ≥60 years, and roughly 66% of those aged ≥65 years. (Burt et al., 1995; Ostchega et al., 2007; Vasan et al., 2001) It is outstanding that by 2030, 1 of 5 Americans is relied upon to be 65 years or older. Hypertension is the main determination in the ambulatory setting, and is one of the top diagnoses in the nursing home.[1] Data from the Framingham Heart Study recommend that patients who are normotensive at age 55 years have a 90% lifetime risk of creating hypertension. (Vasan et al., 2002) Hypertension is vital and regularly asymptomatic chronic disease, which must be in charge and steady adherence to endorsed drug to diminish the risks of cardiovascular, cerebrovascular and renal disease. (Lionakis et al., 2012)

Antihypertensive treatment has been appeared to reduce morbidity and mortality in older patients with raised systolic or diastolic blood pressures. Systolic blood pressure is the most imperative indicator of cardiovascular disease. Blood pressure measurement in older people ought to incorporate an assessment for orthostatic hypotension. Low-dose thiazide diuretics remain first-line therapy for older

Seyedeh Sara Saboori*, C. Suhas Reddy

Department of Pharmacy Practice, Acharya & B.M. Reddy College of Pharmacy, Bengaluru, India.

Srinivasa K.V

Department of General Medicine, Dr. B. R. Ambedkar Medical College and Hospital, Bengaluru, India.

***Email:** Sara.saboori90@gmail.com

[1] Centers for Disease control and prevetion hypertension Accessed April 18, 2012. www.cdc.gov/nchs/hyprtens.htm

patients. Beta blockers (BB), angiotensin-converting enzyme inhibitors (ACEI), angiotensin-receptor blockers (ARB), and calcium channel blockers (CCB) are second-line medications that should be selected based on comorbidities and risk factors. (Dickerson and Gabison, 2005)

Several guidelines on hypertension classification and management have been developed. One of the bodies which have created rules is Joint National Committee (JNC) on Detection, Evaluation, and Treatment of High Blood Pressure. The JNC 8 rules distributed in 2014 are the latest rules for the administration of hypertension in different clinical settings. In spite of these guidelines, and proof demonstrating that hypertension is a major public health concern, numerous clinicians neglect to survey BP routinely, and in those with a diagnosis of hypertension, do not begin treatment or titrate the dosage of the drugs effectively. (Jarari et al., 2016)

Adherence to medications has dependably been an issue among patients. As the old are inclined to numerous comorbidities, they are at higher risk of polypharmacy, and along these lines may give higher risk of non-adherence to medications contrasted to the younger population. This outcome in diminished therapeutic advantages for the patient, frequent hospital and physician visits due to the deterioration of their medical condition, increased health care expenditure, and even overtreatment of a condition. (Yap, Thirumoorthy and Kwan, 2016)

Not only compliance to therapy but also quality of life of elderly is another challenge for them. when the World Health Organization defined health as being not only the absence of disease and infirmity but also the presence of physical, mental, and social well-being, quality-of-life issues have become steadily more important in health care practice and research. The terms “quality of life” and, more specifically, “health-related quality of life” allude to the physical, psychological, and social spaces of health, seen as unmistakable territories that are affected by a person’s experiences, beliefs, expectations, and perception. (Testa and Simonson, 1996) we will briefly discuss in this article about evaluate the Prescribing trends, Medication Adherence and Quality of life (QoL) of Geriatric patients. in Dr. B. R. Ambedkar Medical College and Hospital.

Materials and Methods

The study was conducted at Dr. B.R Ambedkar Medical College and Hospital which was in east Bengaluru. Total numbers of cases included in the study were 140, which included patients attending OP and admitted to IP wards of general medicine subject to inclusion and exclusion criteria.

Study Criteria is include:

Inclusion Criteria

a) Patients of either gender, whose age is ≥ 65 years (According to WHO).
b) Patients attending OP and admitted to IP of general medicine.
c) Patients with hypertension with or without complications and other co-morbid factors

Exclusion criteria

a) Patients below 65 years of age.
b) Patients who are not willing to participate in the study.

his study was a prospective observational study. All the patients admitted to the wards and visiting outpatient department with inclusion criteria will be enrolled to the study. Sample size includes all hypertensive geriatric patients. The patient will be informed the details and their consent will be obtained. The data will be collected from the patient case sheet chart, by communicating with the physician and nurses and by interacting with patient data like demography, habits, past medical history, reason for admission, any co-morbidities, clinical data such as laboratory reports and therapeutic data including duration, frequency, route, time of administration and concomitant medication. This report will be collected and documented in suitably designed patient data collection form. Medication adherence will be evaluated by Moriskey Medication Adherence Scale. Quality of life will be evaluated by using quality of life questionnaire. Conclusion will be made from the available data concerning the project.

Result and Discusion

In present study, out of 120 study population from In-patient and Out-patient department, majority of patients, 94 (78.33%) belonged to age group of 66-70 years. Out of 120 patients enrolled 68 (48.57%) were from in-Patient and 72 (51.42%) were from Out-Patient

department. Out of 57 study population from in-patient department, majority 40 (70.17%) are from an age group of 60-77 years. Out of 63 study population from Out-patient department, majority 54 (85.71%) are from, an age group of 66-70 years. In our study out of 120 patients enrolled in the study, majority of the study population were female, and out of 57 patients from in-patient department, female's patients were significantly high 40 (70.17%).

Classification of study population (BP) according to JNC 7 Classification

In present study we have followed JNC 7 guidelines for analyzing the severity of hypertensive patients, and their condition classification and found out that, majority 35.08% of patients will fall under stage II hypertension in In-patient. In out-patient department, out of 63 patient's majority 42.85% of the patients are belongs to stage in hypertension. Table 1

Table 1: Classification of hypertensive patients with respect to severity of hypertension in In-patients and Out-patients

In-patients (n1)		
Stage of Hypertension	Number of patients	Percentage (%)
Normal	9	15.78
Pre HTN	10	17.54
Stage I	18	31.57
Stage II	20	35.08
Total	57	100
Out-patients (n2)		
Normal	2	3.17
Pre HTN	15	23.8
Stage I	27	42.85
Stage II	19	30.15
Total	63	100

Prescription pattern of anti-hypertensive:

The prescription pattern of anti-hypertensive drugs was categorized into two types, Single drug therapy and Combinations therapy. Single drug therapy was most preferred therapy by physicians in both the departments. Under single dug therapy, CCB's account for 43.90%, ACE Inhibitors for 12.19%, ARB's for 31.70% and Beta-Blockers for 17.07% in In-Patient department, whereas in Out-patient department 66.66% of study population were under CCB's, 5.12 were under ACEI, 25.64% were under ARB's and 7.69% were under Beta- Blockers. Under combination drug therapy, CCB+BB account for 23.01%, CCB + ARB for 7.69%, ARB+D for 69.23%, in In-patient department, whereas in out-patient department ARB + BB account for 7.40%, CCB+BB and CCB+ARB and BB+D for 14.81% each, ARB+D for 70.74%, CCB+D for 7.40%. similar study as conducted by Gupta SK et al., (2014) and in that out of 106 patients, the most combinational therapy was calcium channel blockers + diuretics (19.8%), calcium channel blocker + beta blockers (7.5%), calcium channel blocker + ACE inhibitors (1.9%), ACE inhibitors and diuretics (2.8%), calcium channel blocker +angiotensin receptor blocker (1.9%), beta blocker + diuretics (1.9%), beta blocker + calcium channel blocker +angiotensin receptor blocker (0.9%), beta blocker + ACE inhibitors + diuretics (0.9%), beta blocker +angiotensin receptor blocker + diuretics (1.9%) and calciumchannel blocker + beta blocker + ACE inhibitors + diuretics (0.9%). (Gupta and Nayank, 2014) Table 2, 3

Table 2: Single drug therapy among In-Patients and Out-Patients

In-Patients (n1) (41 Patients)					
Category	**Drug Name**	**Male (07)**	**Female (34)**	**Total**	**Percentage**
CCB's	Amlodipine	4	12	16	43.9
	Diltiazem	1	1	2	
	Nifedipine	0	1	0	
ACE inhibitors	Enalpril	1	1	2	12.19
	Ramipril	1	1	2	

	Pridironpril	0	1	1	
ARB'S	Telmisartan	1	9	10	31.07
	valsartan	0	1	2	
	Losartan	0	1	1	
Beta-Blockers	Atenolol	0	3	3	17.07
	Metaprolol	1	3	4	
Out-Patients (n2) (39 Patients)					
CCB's	Amlodipine	11	13	24	66.66
ACE inhibitors	Enalpril	0	1	1	5.12
	Pridironpril	0	1	1	
ARB'S	Telmisartan	3	6	9	25.64
	Losartan	0	1	1	
Beta-Blockers	Atenolol	0	2	2	7.69
	Metaprolol	1	0	1	

Table 3: Combination therapy among In-Patients and Out-Patients

In-Patients (n1) (13 patients)					
Category	**Drugs**	**Male (10)**	**Female (6)**	**Total**	**Percentage (%)**
CCB + BB	Amlodipine + Atenolol	1	1	3	23.01
CCB + ARB	Amlodipine + Telmisartan	0	1	1	7.69
ARB + DIURETCIS	Telmisartan + Chlorthalidone	3	2	5	69.23
	Telmisartan + Hydrochlorthi azide	3	1	4	
	Olmesartan + Hydrochlorthi azide	2	1	3	
Out-Patients (n2) (27 Patients)					
ARB+BB	Telmisartan + Metoprolol	1	0	1	7.4
	Atenolol + Losartan	0	1	1	
CCB + BB	Amlodipine + Atenolol	1	1	2	14.81
CCB + ARB	Amlodipine + Telmisartan	1	3	4	14.81
BB+ DIURETCIS	Atenolol + Chlorthalidone	1	2	3	14.81
ARB + DIURETCIS	Losartan + Hydrochlorthi azide	4	2	6	70.74
	Telmisartan + Hydrochlorthi azide	2	3	5	
CCB+ DIURETCIS	Amlodipine + Hydrochlorothiazide	1	1	2	7.4

Medication Adherence level in both the departments

Morisky Medication Adherence Scale (8-questionnaire) was used to find out-patients medication adherence, most of the people in both the departments are in high medication adherence level. Majority 44 (77.19%) of the people are in high adherence level in In-patients department, were as in Out-patient's department majority 52 (82.53%) of the people are in high adherence level. Figure 1

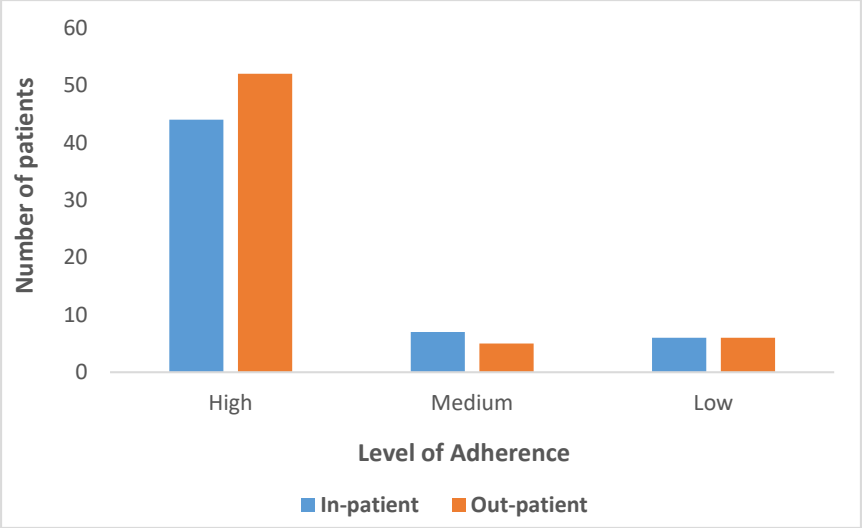

Figure 1: Level of medication adherence in Out-patient and In-patient department

Mostly prescribed anti-hypertensive drugs in both in-patient and out-patient departments were calcium channel blockers (CCB). In in-patient department CCB were the most commonly 41.93% prescribed drugs in an age group of 66-70 years, where as in age group of 71-75 years both the CCB & ARBs equally prescribed, in out-patient department also CCB were the most commonly 67.74% prescribed drugs in an age group of 66-70 years, where as in age group of 71-75 years ARBs were the most 42.85% prescribed anti-hypertensive drugs. Mostly prescribed combination of anti-hypertensive drugs in both in-patient and out-patient departments were ARB's + Diuretics, 75% in age group of 66-70 years in In-patient, were as in out-patient it was 43.47% in an age group of 66-70 years.

Age related prescription pattern of anti-hypertensive drugs in both the department

Mostly prescribed anti-hypertensive drugs in both in-patient and out-patient departments were calcium channel blockers. CCB were the most commonly 41.93% prescribed drugs in an age group of 66-70 years, where as in age group of 71-75 years both the CCB & ARBs equally prescribed. The information is given in table 4.

Table 4: Age related prescription pattern of anti-hypertensive drugs in In-patients and out patient

In-patients (n1) (single drug therapy)								
Age group	**ACEI**	**%**	**ARBS**	**%**	**BB**	**%**	**CCB**	**%**
66-70	4	12.9	8	25.8	6	19.35	13	41.93
71-75	1	12.5	3	37.5	1	12.5	3	37.5
76-80	0	0	2	50	0	0	2	50
81-85	0	0	0	0	0	0	0	0
86-90	0	0	0	0	0	0	1	100
Out-patient (n1) (single drug therapy)								
66-70	1	3.22	7	22.58	2	6.45	21	67.74
71-75	1	14.28	3	42.85	1	14.28	2	28.57
76-80	0	0	0	0	0	0	1	100
81-85	0	0	0	0	0	0	0	0
86-90	0	0	0	0	0	0	0	0

Mostly prescribed combination of anti-hypertensive drugs in both in-patient and out-patient departments were ARB's + Diuretics. ARB's + Diuretics were the most commonly 75% and 50% prescribed drugs in an age group of 66-70 and 76-80 years respectively and ARB's + Diuretics were the most commonly 43.47% prescribed anti-hypertensive drugs in an age group of 66-70 years. The information is given in table 5.

Table 5: Age related prescription pattern of anti-hypertensive drugs in In-patients(n1) and Out-patients(n2) (Combination therapy)

In-patients (n1) (Combination therapy)														
AGE GROU P	**ARBs +CCB**	**%**	**ARBs +D**	**%**	**BB +ARBs**	**%**	**BB +CCB**	**%**	**BB + D**	**%**	**CCB+D**	**%**	***a* +BB**	**%**
66-70	1	12.5	4	50	0	0	2	25	0	0	0	0	1	12.5
71-75	0	0	0	0	0	0	0	0	0	0	0	0	0	0
76-80	0	0	3	75	0	0	1	25	0	0	0	0	0	0
81-85	0	0	0	0	0	0	0	0	0	0	0	0	0	0
86-90	0	0	1	100	0	0	0	0	0	0	0	0	0	0
Out-patients (n2) (Combination therapy)														
66-70	4	17.3 9	10	43.4 7	2	8.69	4	17.3 9	1	4.3 4	2	8.69	0	0
71-75	0	0	0	0	0	0	0	0	0	0	0	0	0	0
76-80	0	0	1	100	0	0	0	0	0	0	0	0	0	0
81-85	0	0	0	0	0	0	0	0	0	0	0	0	0	0
86-90	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Assessment of Health-Related Quality of Life of patients in both the departments

Quality of life of patients involved in this study was analyzed by using MINICHAL questionnaire. The quality of life was better when the score was closer to zero. Most of the patients from in-patient department are having the good quality of life. Female patients are having good quality of life than males. Most of the patients from Out-patient department are having the good quality of life. Female patients are having good quality of life than males. Table 6

Table 6: Health Related Quality of Life of patients in In-patient (n1) and Out-patients(n2) department

In-patient				
Score	Female	Male	Total	Percentage (%)
0-5	14	4	18	31.27
6--10	16	6	22	38.59
11--15	7	4	11	19.29
16-20	2	1	3	5.26
21-25	1	1	2	3.5
26-30	0	0	0	0
31-33	1	0	1	1.75
out-patient				
Score	Female	Male	Total	Percentage (%)
0-5	24	19	43	68.25
6--10	11	4	15	23.08
11--15	1	3	4	11.11
16-20	1	0	1	1.58
21-25	0	0	0	0
26-30	0	0	0	0
31-33	0	0	0	0

Conclusion

The present study was conducted in a tertiary care teaching hospital, focusing mainly on Geriatrics. From the study we want to conclude that, females are the most group of population suffering with hypertension, compare to males. We used JNC 7 classification of hypertension to categories the Stages of hypertension in present population, majority of the population were under stage I. The most preferred prescribing therapy in both in-patient and out-patient was single drug therapy. Calcium Channel Blockers were the most

frequently prescribed class of drugs in single drug therapy, Angiotensin Receptors blockers with Diuretics were the most commonly prescribed class of drugs in in-patient department and in out-patient department also Angiotensin Receptors blockers with Diuretics are the frequently prescribed combination of drugs. Majority of the study population were having the high level of adherence towards the anti-hypertensive therapy, which means they are in good compliance with the treatment and showed that many of the patients are having the good quality of life, we used MINIHCAL questionnaire to assess the quality of life of patients. Pharmacists situated as the most available medicinal services suppliers in the community, could improve patient's information and adherence to the administration of BP. The hospital is in large compliance with JNC guidelines, in prescribing pattern of anti-hypertensive medications to the Geriatric patients.

References

Burt VL, Whelton P, Roccella EJ, et al. Prevalence of hypertension in the US adult population. Results from the Third National Health and Nutrition Examination Survey, 1988–1991. Hypertension. 1995; 25: 305–313

Centers for Disease control and prevetion hypertension Accessed April 18, 2012. www.cdc.gov/nchs/hyprtens.htm

Dickerson LM, Gabison MV. Management of hypertension in older persons. Am Fam Physician [Internet] 2005[Cited 2016 Dec 11];71(3):469-76. Available from: http://www.aafp.org/afp/2005/0201/p469.pdf

Gupta SK, Nayank RP. The pattern of antihypertensive medication uses among elderly patient in a tertiary care teaching hospital in south India. Trop J Med Res [Internet]. 2014 [Cited 2016 Nov]; 17:81-5. Available from: http://www.tjmrjo1urnal.org/article.asp?issn=1119.

Jarari N, Rao N, Peela JR, Ellafi KA, Shakila S, Said AR et al., A review on prescribing pattern of antihypertensive drugs. J Clin Hypertens [Internet]. 2016[Cited 2016 Dec 11]; 22(7): [about8p.]. Available from: https://clinicalhypertension.biomedcentral.com/articles/10.1186/s40885-016-0042-0

Lionakis N, Mendrinos D, Sanidas E, Favatas G, Georgopoulou M. Hypertension in elderly. World J Cardiol [Internet] 2012 May 26 [Cited 2016 Nov 10];4(5):135-47. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3364500/

Ostchega Y, Dillon CF, Hughes JP, et al. Trends in hypertension prevalence, awareness, treatment, and control in older U.S. adults: data from the National Health and Nutrition Examination Survey 1988 to 2004. J Am Geriatr Soc. 2007; 55: 1056–1065

Testa MA, Simonson DC. Assessment of quality of life outcomes. N Engl J Med [Internet] 1996 [Cited 2016 Dec 20]; 334:835-40. Available from: http://www.nejm.org/doi/pdf/10.1056/NEJM199603283341306

Vasan RS, Beiser A, Seshadri S, et al. Residual lifetime risk for developing hypertension in middle-aged women and men: The Framingham Heart Study. JAMA. 2002; 287: 1003–1010

Vasan RS, Larson MG, Leip EP, et al. Assessment of frequency of progression to hypertension in non-hypertensive participants in the Framingham Heart Study: a cohort study. Lancet. 2001; 358: 1682–1686

Yap AF, Thirumoorthy T, Kwan YH. Medication adherence in the elderly. Journal of clinical Gerontology and Geriatrics [Internet] 2016 [Cited 2016 Dec 20]; 7(2): 64-7. Available from: http://www.sciencedirect.com/science/article/pii/S2210833515000441