ORIGINAL

Medication adherence and quality of life associated with antihypertensive drugs in geriatrics in government hospital, Rajahmundry, Andhra Pradesh, India

Adherencia a la medicación y calidad de vida asociada a los fármacos antihipertensivos en geriatría en el hospital gubernamental, Rajahmundry, Andhra Pradesh, India

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Abstract

Objective: The goal of the research is to to evaluate prescribing pattern, Medication Adherence and Quality of life of Geriatric patients.

Methods: A prospective and observational study was carried out for 6 months in In Government Hospital, Rajahmundry, Andhra Pradesh. 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 Calcium Channel Blockers (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 Angiotensin Receptors blockers (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 positioned as the most accessible health care providers in the community, could improve patient's knowledge and adherence to the management of blood pressure. 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.

Resumen

Objetivo: El objetivo de la investigación es evaluar el patrón de prescripción, la adherencia a la medicación y la calidad de vida de los pacientes geriátricos.

Método: Se llevó a cabo un estudio prospectivo y observacional durante 6 meses en el Hospital Gubernamental de Rajahmundry, Andhra Pradesh. Un total de 120 pacientes participaron en el estudio. El patrón de prescripción se evaluó mediante la comparación de los expedientes de los pacientes con las directrices del JNC 7. El nivel de cumplimiento de la medicación de los pacientes se evaluó mediante la escala de cumplimiento de la medicación de Morisky y la calidad de vida mediante el cuestionario MINICHAL. Tras la recogida de todos los datos, se realizó un análisis estadístico descriptivo e inferencial.

Resultados: Un total de 120 pacientes se inscribieron en el estudio, tanto en el departamento de pacientes internos como en el de pacientes externos. El fármaco más prescrito en ambos departamentos son los bloqueadores de los canales del calcio (BCC) como terapia única, los BCC representan el 43,90 en el departamento de pacientes internos y el 66,66% en el departamento de pacientes externos. La terapia combinada de los bloqueadores de los receptores de angiotensina (ARA) y diuréticos se prescribió con frecuencia en el 69,23% de los pacientes internos y en el 70,74% de los pacientes externos. La mayoría de la población del estudio tenía una buena calidad de vida y un alto nivel de adherencia al tratamiento.

Conclusión: El tratamiento preferido, tanto en el ámbito hospitalario como en el ambulatorio, fue el tratamiento con un solo fármaco. Los bloqueadores de los canales de calcio fueron la clase de fármacos más frecuentemente prescritos en la terapia de un solo fármaco, los bloqueadores de los receptores de angiotensina con diuréticos fueron la clase de fármacos más comúnmente prescritos en el departamento de pacientes internos y en el departamento de pacientes externos también los bloqueadores de los receptores de angiotensina con diuréticos son la combinación de fármacos frecuentemente prescritos. La mayoría de la población del estudio tenía un alto nivel de adherencia a la terapia antihipertensiva, lo que significa que cumplían bien el tratamiento y mostraba que muchos de los pacientes tenían una buena calidad de vida; utilizamos el cuestionario MINIHCAL para evaluar la calidad de vida de los pacientes. Los farmacéuticos, al ser los proveedores de atención sanitaria más accesibles en la comunidad, podrían mejorar el conocimiento y la adherencia de los pacientes a la gestión de la presión arterial. El hospital cumple en gran medida con las directrices del JNC, en la pauta de prescripción de medicamentos antihipertensivos a los pacientes geriátricos.

Palabras clave: Patrón de prescripción, geriatría, calidad de vida, adherencia a la medicación.

Introduction

Hypertension is a significant public health challenge in the world because of its high prevalence and concomitant risks of cardiovascular and kidney diseases[1]. According to the World Health Organization (WHO), high blood pressure (BP) is a major public health problem that kills one in every eight people and is the world's third-leading silent killer [2]. Almost three-quarters of hypertensive people (639 million people) live in countries with limited health resources[1,2]. In Sub- Saharan Africa, it is a major independent risk factor for heart failure, stroke, and kidney failure. These complications arise as a result of a low rate of hypertension diagnosis, poor BP control, high morbidity and mortality, and low resources in health care settings[3]. A systematic review and meta-analysis study conducted in Ethiopia in 2015 estimated the prevalence of hypertension to be 19.6%[4]. Another systematic review and meta-analysis conducted in Ethiopia in 2015 found that the prevalence of hypertension ranged from 20% and 30%[5].

In the older adult population, increased levels of BP are associated with an increased risk of cardiovascular morbidity and mortality[6,7]. Thus, at the same level of BP, the risk of stroke, heart failure, coronary heart disease, peripheral artery disease, chronic kidney disease or dementia is several folds higher in elderly than in younger hypertensive patients[6]. Today, there is a strong evidence that hypertension in the elderly as well as in the very elderly must be treated and this is supported by international guidelines and a Cochrane meta-analysis[8-12]. A sub-analysis of the Systolic Blood Pressure Intervention Trial (SPRINT) in elderly has recently confirmed the benefits of lowering BP in hypertensive patients older than 75 years with some potential benefits on cognitive function and white matter lesions[13,14].

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[15]. We will briefly discuss in this article about evaluate the Prescribing trends, Medication Adherence and Quality of life (QoL) of Geriatric patients in Government Hospital, Rajahmundry, Andhra Pradesh.

Materials and methods

This study was a prospective observational study in Government Hospital, Rajahmundry, Andhra Pradesh, India. 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. This study data was entered and analyzed by using Microsoft Excel. Descriptive statistical methods like measures of central tendencies and variance was performed using Micros.

Result and discussion

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. Similar study was conducted by Mohed A H et al[16] and the result was out of total of 100 prescriptions (72%) of patient were 65-67 years of age.3 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. **Table I** 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%). Similar study was conducted by Rajasekhar G et al[17] conducted a similar study and the result was a total of 394 included 251 (63.70%) males and 143 (36.29%) females were present.

Table I: Age distribution of patients (n=120).

Age distribution (in years)	Number of patients	Percentage (%)
66-70	94	78.33
71-75	14	11.66
76-80	11	9.16
81-85	0	0
86-90	1	0.8
Total	120	100

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 I hypertension, Similar study was conducted by *Mohed A H et all*[16] the result of study was a total of 100 prescriptions were analyzed in six month During the study (80%) of the patients were pre-hypertensive systolic (80-89mmHg) and diastolic (120-139 mmHg), followed by stage I and stage II hypertension. **Figure 1**

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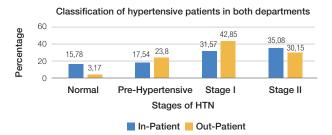

Classification of hypertensive patients in both departments

Table II: 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	Enalapril	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
	Metoprolol	1	3	4	
Out-Patients (n₂) (39 Patients)					
CCB's	Amlodipine	11	13	24	66.66
ACE inhibitors	Enalapril	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
	Metoprolol	1	0	1	

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%, Angiotensin-converting enzyme (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 (BB). 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+ (Diuretics) D for 70.74%, CCB+D for 7.40%. similar study was conducted by Gupta SK et al[18] 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 calcium channel blocker + beta blocker + ACE inhibitors + diuretics (0.9%). **Table II** & **III**.

Medication Adherence level in both the departments (MMAS 8)

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

Table III: 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 + DIU-RETCIS	Losartan + Hydrochlorthi azide	4	2	6	70.74
	Telmisartan + Hydrochlorthi azide	2	3	5	
CCB+ DIU-RETCIS	Amlodipine + Hydrochlorothi-azide	1	1	2	7.4

52 (82.53%) of the people are in high adherence level. **Table IV**. Similar study was conducted by *Lee GKY et al.*, (2013)[19] using Morisky Medication Adherence. A good adherence is 6 point according to MMAS out of a total 8 point. The result was out of 1.114 patients 725 (65.1%) having a good adherence.

Table IV: Level of medication adherence in In-patient department (n1).

Level of Adherence	Number of patients	Percentage (%)
High	44	77.19
Medium	7	12.28
Low	6	10.52

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.

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. **Tables V** & **VI**.

Table V: Age related prescription pattern of anti-hypertensive drugs in In-patients and outpatient in single drug therapy.

Age group	ACEI	%	ARBS	%	BB	%	CCB	%
In-patients (n1) (single drug therapy)								
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

Table VI: Age related prescription pattern of anti-hypertensive drugs in In-patients and outpatient in Combination therapy.

Age group	ARBs +CCB	%	ARBs +D	%	BB +ARBs	%	BB +CCB	%	BB +D	%	CCB +D	%	a +BB	%
In-patients (n1) (Combination therapy)														
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	17.39	10	43.47	2	8.69	4	17.39	1	4.34	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 VII**.

Conclusion

The present study was conducted in a Government Hospital, Rajahmundry, Andhra Pradesh., 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 categorize the Stages of hypertension in present population, majority of the population were under stage I. The most preferred prescribing therapy

Table VII:
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

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 positioned as the most accessible health care providers in the community, could improve patient's knowledge and adherence to the management of BP. The hospital is in large compliance with JNC guidelines, in prescribing pattern of anti-hypertensive medications to the Geriatric patients.

Conflict of interest

Authors do not have any conflict of interest to declare.

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