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Prescription pattern of antihypertensive drugs at Janaki Medical College and Teaching Hospital

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Abstract

Background and Objectives:

Hypertension is an important public health problem worldwide and a major contributing factor to the development of noncommunicable diseases, especially cardiovascular disease. This study was done in all hypertensive patients of aged 40 years to above 70 years who visited at Internal Medicine Out-patient Department (OPD), Janaki Medical College and Teaching Hospital(JMCTH).

Materials and Methods: A cross-sectional study was conducted from January 2023 to September 2023 at department of Internal Medicine Out-patient Department (OPD), Janaki Medical College and Teaching Hospital, Janakpur, Nepal. Four hundred and twenty two (n=422) hypertensive patients were enrolled. Data was collected from patients attending OPD. Medical and nursing records were analyzed for patient's socio-demographic characteristics (e.g. age, gender), systolic and diastolic blood pressure readings, number of drugs, monotherapy, combination therapy. The data was analyzed by using Statistical Package for the Social Sciences.

Results: The total, 422 patients were evaluated of which 51.65% were male and 48.34% were female hypertensive patients. Out of 51.65% male hypertensive patients, 58.71% were treated with monotherapy while 44.95% were treated on combination of two drugs therapy. Similarly, out of 48.34% female hypertensive patients, 60.78% were on monotherapy while 39.21% were on combination of two drugs therapy. Findings showed that Calcium channel blockers (CCBs) were the most frequently prescribed group of drugs in the hypertensive patients.

Conclusion: This study showed that both monotherapy as well as combination of two drugs therapy were needed in majority of hypertensive patients to control blood pressure. Calcium channel blockers (CCBs) group of drugs were the most commonly prescribed antihypertensive drug as a monotherapy.

Keywords: Anti-hypertensives, Combination therapy, Monotherapy

Introduction

Hypertension is an important public health problem worldwide and a major contributing factor to the development of non communicable diseases, especially cardiovascular disease [1,2]. Cardiovascular and kidney disease is one of the result of hypertension which remarkably confer to overall mortality [3]. However, probability of stroke, coronary heart disease, and congestive cardiac failure and as a whole mortality can be turned down by appropriate and efficient therapy of hypertension [4]. Non communicable diseases were estimated by the World Health Organization (WHO) to account for 38 million out of an estimated 56 million deaths in 2012; with cardiovascular disease accounting for 46.2% of deaths[5]. The number of deaths from non communicable disease is projected to increase to 52 million by the year 2030, with cardiovascular disease being a major contributor[6].

It is estimated that more than one billion adults are hypertensive worldwide and this figure is projected to increase to 1.56 billion by the year 2025, which is an increase of 60 % from year 2000 [7]. A total of 1.2 million deaths were due to coronary heart disease and 0.5 million due to stroke [8]. A multi-centered study done in India discovered that overall prevalence of hypertension among elderly people was 65% [9].

The aim of this study was to detect the drug utilization pattern of antihypertensive prescribing patterns and adherence to guidelines for hypertension management in an Internal Medicine Out-patient Department of hospital of Eastern Region of Nepal whereas, the specific objectives were to identify antihypertensive drug use pattern, to assess socio-demographic and clinical characteristics of the patients and to analyze the association of monotherapy and combination of two drugs used for hypertension with socio-demographic and clinical characteristics of the patients.

Materials and Methods

This was a descriptive cross-sectional study conducted in Janaki Medical College and Teaching Hospital (JMCTH), Janakpurdham, Nepal. Convenience sampling method was used for the data collection. The sample size was calculated based upon previous similar type of study using Kish Leslie equation [10].

P (Prevalence of hypertensive patients) = 50%,
 $Q=1-P=50$, $e= 5\%$

$N= Z^2pq/ e^2$ where, $N=$ desired, $Z=$ standard normal deviate; usually set at 1.96 which corresponds to 95% confidence level.

$$N= (1.96)^2 \times 50 \times 50/ (5)^2$$

By adding, 10% of non-response $384 + 38 = 422$.
 So, required sample size for this study was calculated as 422.

-) **Inclusion criteria:** All hypertensive patients of aged 40 years to above 70 years who visited medicine OPD.
-) **Exclusion criteria:** Mentally retarded, pregnant women and other co-morbid conditions.
-) Standard proforma was used to collect the information about all hypertensive patients of aged 40 years to above 70 years who visited Internal Medicine Out-patient Department (OPD). The duration of study was 8 months from January 2023- September 2023. (Ref.: 019/IRC.JMC/2024/013). Data was analyzed by using SPSS.

Results

In the present study, 422 prescriptions were evaluated of which 218 (51.65%) were male and 204 (48.34%) were female hypertensive patients. Out of 218 (51.65%) male hypertensive patients, 120(58.71%) were treated with monotherapy while 98 (44.95%) were treated on combination

of two drugs therapy. Similarly, out of 204(48.34%) female hypertensive patients, 124(60.78%) were on monotherapy while 80 (39.21%) were on combination of two drug therapy depicted in table 1 and figure 1. Similarly, among 218(51.65%) male, 36(16.51%) were of age group 40 to 59 years and 110(50.45%) were

of age group 59 to 69 years and 72(33.02%) belong to 70 years onwards and among 204(48.34%) female, 68(33.33%) were of age group 40 to 59 years and 91 (44.60 %) were of age group 59 to 69 years and 45 (22.05 %) belong to 70 years onwards are shown in Table 2 and figure 2.

Table 1: Demographic characteristic of hypertensive patients (n=242)

Variable	Male %	Female %
Antihypertensive Prescription	218 (51.65%)	204 (48.34 %)
Monotherapy	120 (58.71 %)	124 (60.78%)
Combination of two drugs	98 (44.95 %)	80 (39.21 %)

Figure 1: Demographic characteristic of hypertensive patients

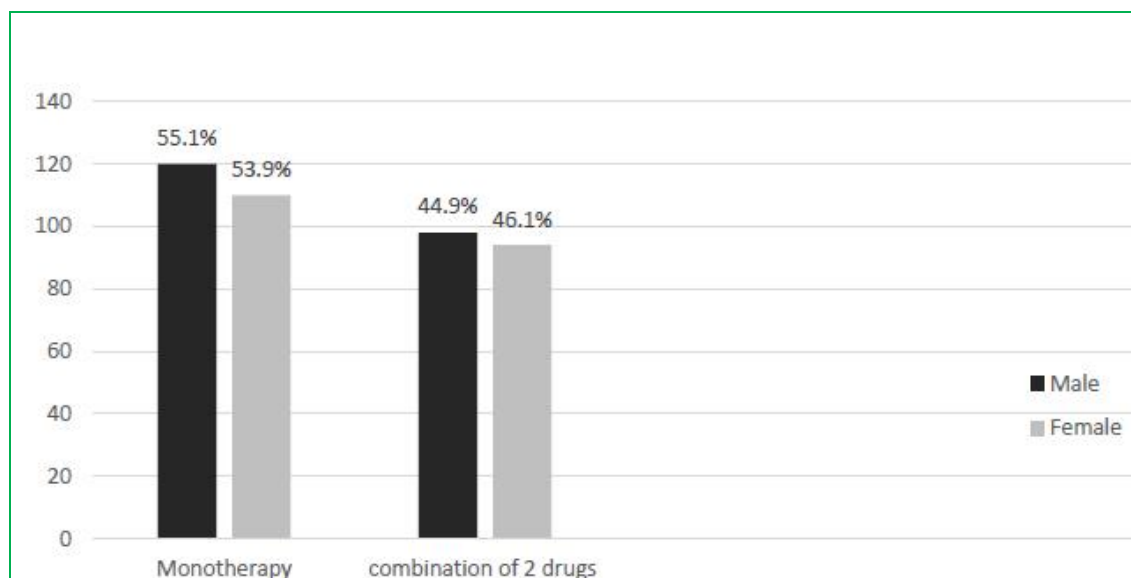
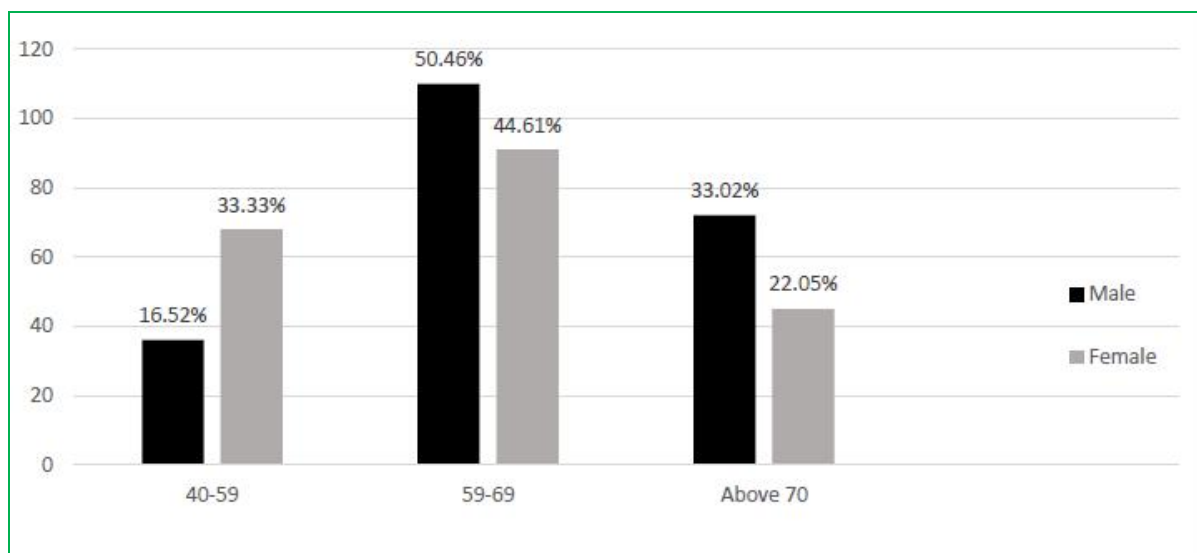


Table 2: Age wise distribution

Age	Male %	Female %
40-59 years	36 (16.51%)	68 (33.33 %)
59-69 years	110 (50.45)	91 (44.60 %)
Above 70 years	72 (33.02 %)	45 (22.05 %)

Fig 2. Age wise distribution of hypertensive patients



In Table 3 and figure 3, Out of 218 (51.65%) male hypertensive patients were treated with monotherapy, 68 (56.8%) were on CCBs, while 20 (16.6%) with ACEIs and 20 (16.6%) were on ARBs and 12(10%) were on Diuretics. 30 (30.6%) patients were treated with combination of ARBs with CCBs while 25 (25.5%) patients were on combination diuretics with ARBs and 28(28.5%)were on combination of Diuretics with CCBs and 15(15.3%) were on combination of ACEIs with β -Blockers. Similarly, total numbers of 204(48.34%) hypertensive patients were female, of which, hypertensive patients were on monotherapy, 50 (45.5%) were on CCBs, while 25(22.8%) were on ACEIs and 20(18.1%) were

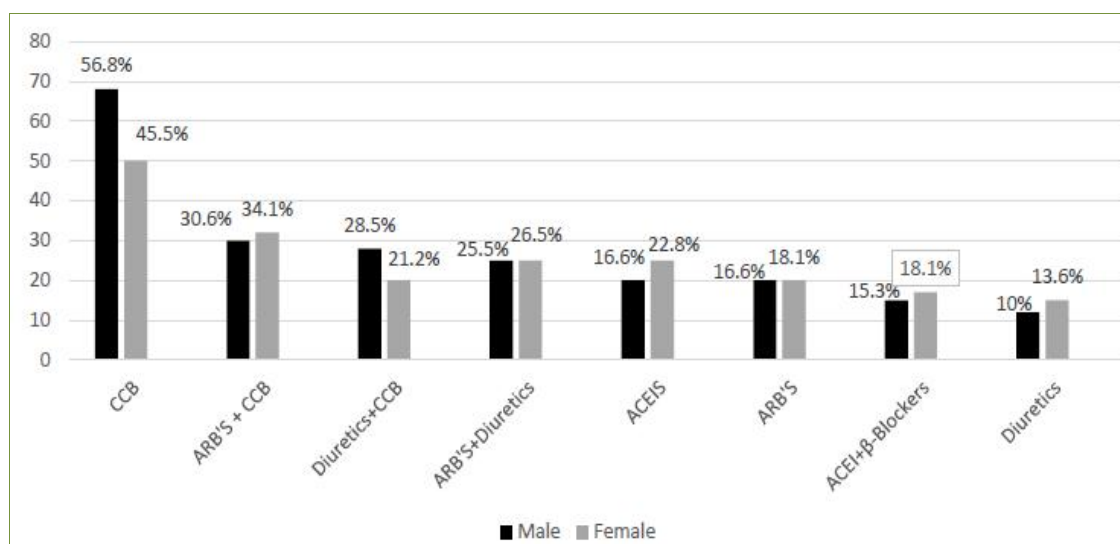
on ARBs and 15(13.6%) were on diuretics. Similarly, 32(34.1%) patients were treated with combination of ARBs with CCBs while 25 (26.6%) patients were on combination of diuretics with ARBs and 20(21.2%) were on combination of diuretics with CCBs and 17(18.1%) were on combination of ACEIs with β -Blockers.

In the present study, it was found that Calcium channel blockers (CCBs) were most frequently prescribed group of drugs as a monotherapy in the hypertensive patients followed by antihypertensive drugs that was ACEIs, ARBs and diuretics.

Table 3: Prescribing patterns of antihypertensive drugs (N=422)

Group of Drugs	Male (N=218)		Female (N=204)	
	Number	Percentage	Number	Percentage
CCBs	68	56.8%	50	45.5%
ACEIs	20	16.6%	25	22.8%
ARBs	20	16.6%	20	18.1%
Diuretics	12	10%	15	13.6%
ARBs+CCB	30	30.6%	32	34.1%
ARBs+Diuretics	25	25.5%	25	26.6%
Diuretics + CCB	28	28.5%	20	21.2%
ACEIs+ β -Blockers	15	15.3%	17	18.1%

Figure 3: Prescribing patterns of antihypertensive drugs (N=422)



Discussion

Assessment of antihypertensive drugs is an essential tool to promote rational and appropriate use of drugs. Rational use of drugs is the process of appropriate use of drugs for prevention, diagnosis and treatment of disease. They provide good contribution in reduction of morbidity, mortality and burden of treatment that may lead to medical, social and economic benefits [11,12].

In the present study, a total of 422 patients were enrolled among the 422 patients, 218 (51.65%) patients were male and 204(48.34%) patients were female. It was found that the prevalence of hypertension was more in male patients as compared to female so male was affected more than female, which correlates with the previous study done by Anuradha et al. In that study, a total of 500 patients were enrolled, 281 (56.2%) patients were male and 219 (43.8%) patients were female [13]. Similar study done by Raut B et al. In his study hypertension was found to be more prevalent in male patients compare to female patients in which 55.38% were male whereas 44.62% were female the reason could be due to habit of consuming alcohol, smoking, overweight and obesity which was more in male patient which may have led to increase in blood pressure [14].

Rajeev Mishra et al. in their study done in Department of Pharmacology, TSM Medical College and Hospital, Lucknow, Uttar Pradesh,

India showed similar results as ours and proclaimed that the prevalence of hypertension was more in male patients (66.1%) as compared to female (33.9%), so male was more affected than female [15].

Our study also demonstrated that CCBs (56.8%) were most commonly prescribed antihypertensive agent as a monotherapy followed by ACEIs, ARBs, Diuretics, and combination of ARBs with CCBs, diuretics with ARBs, ACEIs with β -Blockers. Similar study done by Konwar et al. it was found that CCBs (31.2%) were frequently prescribed antihypertensive agent as a monotherapy. [16]

Study done by Ethiraj Dhanaraj et al. showed that. ACEI and ARBs were more commonly prescribed drugs, followed by calcium channel blockers, diuretics and beta-blockers irrespective of mono or poly therapy [17].

Accordance with the previous study done by Kuchake et al. revealed that hypertension was better controlled by combination therapy and was the most commonly prescribed [18,19].

Conclusion

This study reveals that male of aged 59 to 69 years were more affected and the most commonly prescribed drug was from the group of CCBs (calcium channel blockers) as a monotherapy followed by ACEIs (angiotensin enzyme inhibitors), ARBs (angiotensin receptors blockers), diuretics and in combination therapy of two drugs were ARBs with CCB, Diuretics with CCBs, ARBs with Diuretics and ACEIs with -Blockers. This study showed that both monotherapy as well as combination of two drugs therapy were needed in majority of hypertensive patients to control blood pressure

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Conflict of Interest: None Declared

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Author's Contribution

Concept, design, supervision, funding, materials, data collection and processing, analysis and interpretation, literature review, writing- **SD; RKJ**; Analysis, interpretation literature review, writing- **SD, RS, LC**; Analysis, interpretation, literature review, writing, review—**SD, LC; RKJ** Analysis, interpretation, literature review, writing, review-**SD, RS, LC; RKJ**. All the Authors have equally contributed to this Research.

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