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HYPERTENSION PREVALENCE AND TREATMENT OUTCOME

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Conflicts of Interest: Nil

Abstract:

High blood pressure (BP) is ranked as the third most important risk factor for attributable burden of disease in south Asia. Raised blood pressure is a major risk factor for chronic heart disease, stroke, and coronary heart disease. WHO rates hypertension as one of the most important causes of premature death worldwide[i] and in India 57% of all stroke deaths and 24% of all coronary heart disease (CHD) deaths are due to hypertension. Other than coronary heart disease and stroke, complications include peripheral vascular disease, heart failure, renal impairment, retinal hemorrhage, and visual impairment.

Material and Methods: Study population was adult patients who had been receiving antihypertensive treatment at hospital for at least 6 months. Interviews were conducted with all the participants and the questionnaires were filled. Demographic and anthropometric data were obtained for the patient which includes height and weight, BMI (Body Mass Index), personal medical history was obtained, and diagnosis of hypertension and other co-morbid conditions were recorded.

Results: 223 patients were included in the study of which 131 (58.74%) were male and 92 (41.26%) were female. Mean age of male patients was 52 ± 18.29 while in female it was 53 ± 17.88.Maximum number of cases were observed in the >60 age group in both the sexes. Hypertension was most prevalent in overweight group in both the sexes.54 male (41.22%) and 45 (48.91%) female had history of hypertension with Less than 5 years. while 78 (59.54%) male and 47 (51.09%) female had hypertension for more than five years. Diabetes was observed in 41 (31.30%) male and 23 (25.00%) female. 14 (10.96%) male and 6 (6.52%) of female had myocardial infarction and in 3 (2.29%) male and 1(1.09%) female had history of renal failure. Before start of the study 142 (63.68%) had controlled blood pressure, 74 (33.18%) had uncontrolled BP, Hypertensive crisis was seen in 5 (2.24%) patients and Resistant hypertension was seen in 2 (0.90%) cases. After study period 163 (73.09%) had controlled blood pressure, 57 (25.56%) had uncontrolled BP, Hypertensive crisis was seen in 2 (0.90%) patients and Resistant hypertension was seen in 1 (0.45%) case.

Conclusion: Chronic uncontrolled high blood pressure which can be reduced by proper management, counselling and lifestyle modification. Prevalence of hypertension in males was slightly higher than female counterparts .Control of hypertension was more in female patients. Also patient assessment should be improved in order to increase the identification and management of hypertension

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INTRODUCTION:

Hypertension is a major public health problem and is considered to be a major risk factor for cardiovascular diseases and other complications[2]. High blood pressure (BP) is ranked as the third most important risk factor for attributable burden of disease in south Asia and Hypertension (HTN) exerts a substantial public health burden on cardiovascular health status and healthcare systems in India[3]. Raised blood pressure is a major risk factor for chronic heart disease, stroke, and coronary heart disease.

WHO rates hypertension as one of the most important causes of premature death worldwide[4] and in India 57% of all stroke deaths and 24% of all coronary heart disease (CHD) deaths are due to hypertension[5]. in 2005, around 20.6% of Indian men and 20.9% of Indian women were suffering from HTN[6].however according to the WHO in 2008 estimates that, the prevalence of hypertension in Indians was 32.5% (33.2% in men and 31.7% in women) Other than coronary heart disease and stroke, complications include peripheral vascular disease, heart failure, renal impairment, retinal hemorrhage, and visual impairment[7]. Hypertension or high blood pressure can be defined as abnormally high arterial blood pressure.

According to the Joint National Committee 7, normal blood pressure is considered as systolic blood pressure < 120 mmHg and diastolic blood pressure < 80 mm Hg. Hypertension is defined as when systolic blood pressure is ≥140 mmHg and/or diastolic blood pressure is ≥ 90 mmHg. The range between 120–139 mmHg systolic BP and 80–89 mmHg diastolic BP is defined as "prehypertension" (JNC7)[8,9].

MATERIAL AND METHODS

Present study was conducted at K.M. Medical College and Hospital, Mathura in the Department of Medicine. Study population was adult patients who had been receiving antihypertensive treatment at hospital for at least 6 months. All eligible patients who were ready to participate in the study were included and their written informed consent was obtained. Structured questionnaire designed specifically for this study. Interviews were conducted with all the participants and the questionnaires were filled. Demographic and anthropometric data were obtained for the patient which includes height and weight, BMI (Body Mass Index), personal medical history was obtained, and diagnosis of hypertension and other co-morbid conditions were recorded.

Data was analysed using SPSS for Windows (Version 22.0). Results were summarised as count and percentages for qualitative variables and mean ±SD (Standard Deviation) for quantitative variables. All data was entered in the Excel sheet and outcome variable set as uncontrolled blood pressure, adherence to medication, increase or decrease in the no of hypertensive drugs, change in body mass index.

Patients were considered as normal weight if BMI is<25 kg/m^2, overweight if BMI is 25.0-29.9 kg/m^2 or obese if BMI is ≥30.0 kg/m^2. If systolic BP of < 140 mmHg and a diastolic BP < 90 mmHg then it was defined as controlled hypertension. According to JNC7 stage I hypertension was defined as BP ≥140/90 mmHg, stage II hypertension if BP ≥160/100 mmHg. Hypertensive crisis was defined as systolic BP ≥180 mmHg and/or diastolic BP ≥120 mmHg and resistant hypertension was defined as BP > 160/100 mmHg despite the use of at least 3 different antihypertensive drugs of which one is diuretic.

RESULTS

A total of 246 patients were included in the study of which only 223 were observed and traced up to 6 month period of the study. Finally 223 patients were included in the study of which 131 (58.74%) were male and 92 (41.26%) were female. Mean age of male patients was 52 ± 18.29 while in female it was 53 ± 17.88.

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Table 1: Hypertension according to age group

n=223	Male	%	Female	%
Total	131	58.74%	92	41.26%
Age groups, years		0.00%		0.00%
<20	1	0.76%	0	0.00%
20 - 39	16	12.21%	8	8.70%
40 - 59	55	41.98%	36	39.13%
>60	59	45.04%	48	52.17%

We have divided our patients into four group in <20 years only one male patient (0.76%) was having hypertension. In 20 – 39 years age group 16 (12.21%) male and 8 (8.70%) female were observed. In 40 to 59 age group 55 (41.98%) male and 36 (39.13%) female were observed. In >60 age group there were 59(45.04%) male and 48 (52.17%) female were observed. Maximum number of cases were observed in the >60 age group in both the sexes.

Table 2: Body mass index calculation

BMI classification, kg/m^2	Male	N=131	Female	N= 92
Normal weight	15	11.45%	4	4.35%
Overweight	95	72.52%	79	85.87%
Obese	21	16.03%	9	9.78%

Out of 131 male 15 (11.45%) were normal weight, 95 (72.52%) were overweight and 21 (16.03%) were obese. In female 4 (4.35%) were normal weight, 79 (85.87%) were overweight and 9 (9.78%) were obese. Hypertension was most prevalent in overweight group in both the sexes.

Table 3: Duration of hypertension

Duration of hypertension	Male	N=131	Female	N= 92
Less than 5 years	54	41.22%	45	48.91%
More than 5 years	78	59.54%	47	51.09%

54 male (41.22%) and 45 (48.91%) female had history of hypertension with Less than 5 years. while 78 (59.54%) male and 47 (51.09%) female had hypertension for more than five years.

Table 4: Co morbid conditions associated with hypertension

Co-morbidities	Male	n=131	Female	n=92
Diabetes Mellitus	41	31.30%	23	25.00%
Myocardial infarction	14	10.69%	6	6.52%
Renal Failure	3	2.29%	1	1.09%

Diabetes was observed in 41 (31.30%) male and 23 (25.00%) female. 14 (10.96%) male and 6 (6.52%) of female had myocardial infarction and in 3 (2.29%) male and 1(1.09%) female had history of renal failure.

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Table 5: Treatment outcome

	Before treatment N= 223	%	After treatment of 6 months	%
Controlled blood pressure	142	63.68%	163	73.09%
Uncontrolled blood pressure	74	33.18%	57	25.56%
Hypertensive crisis	5	2.24%	2	0.90%
Resistant hypertension	2	0.90%	1	0.45%

Before start of the study 142 (63.68%) had controlled blood pressure, 74 (33.18%) had uncontrolled BP, Hypertensive crisis was seen in 5 (2.24%) patients and Resistant hypertension was seen in 2 (0.90%) cases. After study period 163 (73.09%) had controlled blood pressure, 57 (25.56%) had uncontrolled BP, Hypertensive crisis was seen in 2 (0.90%) patients and Resistant hypertension was seen in 1 (0.45%) case.

DISSUSION

India is a developing country and is going through a rapid demographic and epidemiological transition. According to World Health Organization WHO (2015), the prevalence of hypertension in India was 23.5% and gender specific prevalence was 24.2% and 22.7% among the men and women, respectively[10].

Present study was conducted on 223 patients and were followed up up to 6 months. In our study 58.74% male and 41.26% female were observed. There was slight preponderance of male population in our study. It was opposite to the study by Singh H et al[11] in which 301 (47%) were male subjects and 339 (53%) were female also The median age (±SD) of the study subjects was 39.0 (±11.9) years and for male and female it was 40.0 (±11.9) years and 38 (±11.8) years, respectively in Singh H et al. in our study Mean age of male patients was 52 ± 18.29 while in female it was 53 ± 17.88 which was higher. It may be due to geographic variation and other habits and prevalence. In some studies men had higher prevalence of HTN than female.[12],[13] the reason could be due to biological sex difference and may be due to behavioural risk factors like smoking, alcohol consumption, or physical activity.

Age is an important risk factor for hypertension with the advancing age hypertensive cases increases. In our study, in 20 – 39 years age group 16 (12.21%) male and 8 (8.70%) female were observed. In 40 to 59 age group 55 (41.98%) male and 36 (39.13%) female were observed. In >60 age group there were 59(45.04%) male and 48 (52.17%) female were observed. Maximum number of cases were observed in the >60 age group in both the sexes. Same theory was proposed by Abebe S et al[14].

In our study we found positive correlation observed between increasing BMI and increasing rate of hypertension. Out of 131 male 15 (11.45%) were normal weight, 95 (72.52%) were overweight and 21 (16.03%) were obese. In female 4 (4.35%) were normal weight, 79 (85.87%) were overweight and 9 (9.78%) were obese. Hypertension was most prevalent in overweight group in both the sexes. Similar results were observed in other studies[15],[16].

In our study diabetes was observed in 41 (31.30%) male and 23 (25.00%) female. 14 (10.96%) male and 6 (6.52%) of female had myocardial infarction and in 3 (2.29%) male and 1(1.09%) female had history of renal failure. These co morbid conditions again increase the risk of hypertension and associated complications.

Lifestyle changes which includesproper diet, increased physical activity and weight control

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lower blood pressure and may reduce the need for antihypertensive drugs, thus facilitating drug step down or withdrawal in patients with well-controlled hypertension[17]. Similar results were observed in our study before start of our study 142 (63.68%) had controlled blood pressure, 74 (33.18%) had uncontrolled BP, Hypertensive crisis was seen in 5 (2.24%) patients and Resistant hypertension was seen in 2 (0.90%) cases. After study period 163 (73.09%) had controlled blood pressure, 57 (25.56%) had uncontrolled BP, Hypertensive crisis was seen in 2 (0.90%) patients and Resistant hypertension was seen in 1 (0.45%) case.so there was reduction in the hypertension was seen. Most of the patients in our study had also conformed than change in the lifestyle had positive impact on the reduction of Hypertension.

CONCLUSION

There was a high prevalence of chronic uncontrolled high blood pressure which can be reduced by proper management, counselling and lifestyle modification. Prevalence of hypertension in males was slightly higher than female counterparts. Control of hypertension was more in female patients. Also patient assessment should be improved in order to increase the identification and management of hypertension and its related complications and comorbid conditions.

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