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PREVALENCE AND CORELLATES OF PREHYPERTENSION AND HYPERTENSION AMONG ADULTS ATTENDING OUTPATIENT DEPARTMENT IN TERTIARY CARE HOSPITAL

Community Medicine

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ABSTRACT

Introduction: India and many other developing countries are facing a problem of epidemiological transition from communicable diseases to non-communicable diseases. Globalization brought the life style and behavioural modifications and in turn increased the prevalence of life style disorders such as hypertension and diabetes mellitus etc. **Aim and objectives:** to know the prevalence of pre hypertension in age group of 19 to 45 years .to know the prevalence of hypertension in age group of 19 to 45 years to know association of various risk factors with pre hypertension and hypertension in adult age group. Methodology-a hospital based observational pilot study conducted among 770 adults between age groups of 19 to 45 years of age in government general hospital outpatient department, which is a tertiary care hospital that caters needs of entire NTR District, A.P. **Results:** it was observed that the prevalence of hypertension and pre hypertension was 24.7 % and 23.6% among study subjects. Uncontrolled hypertension was observed in 7.7% of study subjects. Various study factors like age, gender, presence of chronic illness, presence of alcohol consumption, presence of sedentary life style and absence of physical activity, junk food consumption, presence of high BMI contributed significantly as possible risk factors for hypertension and prehypertension and showed statistically significant association in this study.

KEYWORDS

hypertension, prehypertension, risk factors

INTRODUCTION

India and many other developing countries are facing a problem of epidemiological transition from communicable diseases to non-communicable diseases. Successful implementation of various controlling, preventing and eradication programs gradually decreased the burden of communicable diseases. At the same time globalization brought the life style and behavioural modifications and in turn increased the prevalence of life style disorders such as hypertension and diabetes mellitus etc. (1)

According to the joint national committee 8 (jnc8), normal blood pressure is a systolic bp < 120 mm Hg and diastolic bp < 80 mm Hg. Hypertension is defined as systolic bp level of ≥140 mm Hg and/or diastolic bp level ≥ 90 mm Hg. The grey area falling between 120–139 mm Hg systolic bp and 80–89 mm Hg diastolic bp is defined as "prehypertension".

Although prehypertension is not a medical condition in itself, pre-hypertensive subjects are at more risk of developing hypertension. It is a silent killer as very rarely any symptom can be seen in its early stages until a severe medical crisis takes place like heart attack, stroke or chronic kidney disease. (2)

Hypertension or elevated blood pressure is a serious medical condition that significantly increases the risk of heart, brain, kidney and other diseases. An estimated 1.28 billion adults aged 30-79 years worldwide have hypertension, most (two-thirds) living in low and Middle-income countries.

An estimated 46% of adults with hypertension are unaware that they have the condition. Less than half of adults (42%) with hypertension are diagnosed and treated. Approximately 1 in 5 adults (21%) with hypertension have it under control. Hypertension is a major cause of premature deaths worldwide.

One of the global targets for non-communicable diseases is to reduce the prevalence of hypertension by 33% between 2010 and 2030. The number of adults with hypertension increased from 594 million in 1975 to 1.13 billion in 2015, with the increase seen largely in low- and middle-income countries. This increase is mainly due to a rise in hypertension risk factors in those populations. (3)

In this back ground this study was undertaken as pilot project to know the prevalence and correlates of prehypertension and hypertension among adult population attending out-patient department in tertiary care hospital care that caters population of entire NTR District, A.P.

Aim and objectives

A. To know the prevalence of pre hypertension in age group of 19 to 45 years
B. To know the prevalence of hypertension in age group of 19 to 45 years
C. To know association of various risk factors with pre hypertension and hypertension in adult age group.

METHODOLOGY

Study Design:- a hospital based observational pilot study conducted in government general hospital outpatient department, which is a tertiary care hospital that caters needs of entire NTR District, A.P.
Study Population:- adults between age groups of 19 to 45 years of age.
Sampling Method:- adults who meet the inclusion criteria will be selected randomly from outpatient departments till desired sample is reached.
Study Setting:- out patient department in government general hospital.

Procedures, Techniques And Definitions: -

Height was measured in centimetres by marking the height of individual against the wall and measured by non-stretchable tape. It was measured with individual standing on firm levelled surface without wearing any foot wear with both feet together with heels, calves, buttocks, dorsal spine and head in same plane. (4)

Weight was recorded for study purpose. It was recorded with the help of standardized adult weighing machine. Weight was measured with individual standing without wearing any foot wear and with feet together. Before taking weight was adjusted properly to zero. (4)

Cigarette smokers were defined as having smoked at least one cigarette per day for 6 months or more.

Alcohol use was defined as drinking alcohol at least one time per week

during the previous year.

Body mass index (BMI) is a person's weight in kilograms divided by the square of height in meters. BMI is an inexpensive and easy screening method for weight category- underweight, healthy weight, overweight, and obesity (5).

Sample Size- a study done by Raghupathy a et al titled hypertension in India; a systematic review and meta-analysis of prevalence, awareness and control of hypertension (7) showed overall prevalence of 29.8% (95% confidence interval 27 to 33%). A sample size of 777 (approx.) Was obtained with help of formula $4pq/l^2$
p=prevalence, q=1-p, l=11% of prevalence

Inclusion Criteria
Adults between 19 to 45 years, who are willing to give consent.
adults who are already diagnosed with hypertension.
Adults who do not have any cad, kidney problems, stroke in the past.

Exclusion Criteria
Age less than 19 and above 45 years.
Not willing to give consent.
Adults who already are known to have cad, stroke, renal problems.

Study Period: - 2 months
Instruments:- mercury type sphygmomanometer, structured questionnaires, adult weighing machine, stethoscope, measuring steel tape.

RESULTS

Prevalence of pre-hypertension and hypertension in age group of 19 to 45 years In present study

Htn	Frequency	Percent
Hypertensives	192	24.7
Prehypertensive	183	23.6
Normotensives	402	51.7
Total	777	100.0

Type of hypertension	Frequency	Percent
Grade 1 hypertension	61	7.9
Grade 2 hypertension	14	1.8
Grade 3 hypertension	5	0.6
Uncontrolled	60	7.7
Controlled	52	6.7
Prehypertension	183	23.6
Normotensive	402	51.7
Total	777	100.0

From the above tables, it was observed that the prevalence of hypertension and pre-hypertension was 24.7 % and 23.6% among study subjects. Uncontrolled hypertension was observed in 7.7% of study subjects

Table showing age wise distribution of study subjects

Age	Frequency	Percent
19-25	114	14.7
26-30	122	15.7
31-35	138	17.8
36-40	172	22.1
41-45	231	29.7
Total	777	100.0

Table showing gender wise distribution of study subjects

Gender	Frequency	Percent
Female	403	51.9
Male	373	48.0
Transgender	1	0.1
Total	777	100.0

Majority of the study participants were females in this study (51.9%).

To know association of various risk factors with pre-hypertension and hypertension in adult age group.

1. Association between age, hypertension and prehypertension

Age	Hypertensives		Prehypertensive		Normotensives	
	Count	%	Count	%	Count	%
19-25	5	4.4%	24	21.1%	85	74.6%
26-30	13	10.7%	31	25.4%	78	63.9%
31-35	24	17.4%	31	22.5%	83	60.1%
36-40	61	35.5%	34	19.8%	77	44.8%
41-45	89	38.5%	63	27.3%	79	34.2%
Total	192	24.7%	183	23.6%	402	51.7%
P<0.001						

2. Association between gender, hypertension and prehypertension

Gender	Hypertensives		Prehypertensive		Normotensives	
	Count	%	Count	%	Count	%
Female	100	24.8%	71	17.6%	232	57.6%
Male	92	24.7%	112	30.0%	169	45.3%
Transgender	0	0.0%	0	0.0%	1	100.0%
Total	192	24.7%	183	23.6%	402	51.7%
P=0.001						

3. Association between education, hypertension and prehypertension

Education	Hypertensives		Prehypertensive		Normotensives	
	Count	%	Count	%	Count	%
Illiterate	104	32.0%	68	20.9%	153	47.1%
7th class	19	24.1%	23	29.1%	37	46.8%
8th class	3	13.6%	6	27.3%	13	59.1%
9th class	3	14.3%	6	28.6%	12	57.1%
10th class	32	22.2%	32	22.2%	80	55.6%
Intermediate	10	14.1%	20	28.2%	41	57.7%
Degree	14	15.6%	23	25.6%	53	58.9%
Pg	7	28.0%	5	20.0%	13	52.0%
Total	192	24.7%	183	23.6%	402	51.7%
P=0.06						

4. Association between residence, hypertension and prehypertension

Rural/ urban	Hypertensives		Prehypertensive		Normotensives	
	Count	%	Count	%	Count	%
Rural	50	23.5%	47	22.1%	116	54.5%
Urban	142	25.2%	136	24.1%	286	50.7%
Total	192	24.7%	183	23.6%	402	51.7%
P=0.65						

5. Association between chronic illness, hypertension and prehypertension

Known history of chronic disease	Hypertensives		Prehypertensive		Normotensives	
	Count	%	Count	%	Count	%
No	95	17.5%	139	25.6%	308	56.8%
Yes	97	41.3%	44	18.7%	94	40.0%
Total	192	24.7%	183	23.6%	402	51.7%
P<0.001						

6. Association between smoking, hypertension and prehypertension

H/o smoking	Hypertensives		Prehypertensive		Normotensives	
	Count	%	Count	%	Count	%
No	166	25.0%	149	22.4%	350	52.6%
Yes	26	23.2%	34	30.4%	52	46.4%
Total	192	24.7%	183	23.6%	402	51.7%
P=0.18						

7. Association between alcohol consumption, hypertension and prehypertension

H/o alcohol consumption	Hypertensives		Prehypertensive		Normotensives	
	Count	%	Count	%	Count	%
No	137	23.5%	124	21.2%	323	55.3%
Yes	55	28.5%	59	30.6%	79	40.9%
Total	192	24.7%	183	23.6%	402	51.7%
P=0.002						

8. Association between regular physical activity, hypertension and prehypertension

H/o regular physical activity	Hypertensives		Prehypertensive		Normotensives	
	Count	%	Count	%	Count	%
No	152	23.1%	156	23.7%	350	53.2%
Present	40	33.6%	27	22.7%	52	43.7%
Total	192	24.7%	183	23.6%	402	51.7%
P=0.04						

9. Association between sedentary life style, hypertension and prehypertension

Lifestyle	Hypertensives		Prehypertensive		Normotensives	
	Count	%	Count	%	Count	%
Physically active	121	24.3%	132	26.6%	244	49.1%

Sedentary	71	25.4%	51	18.2%	158	56.4%
Total	192	24.7%	183	23.6%	402	51.7%
P=0.027						

10. Association between junk food consumption, hypertension and prehypertension

Junk food consumption	Hypertensives		Prehypertensive		Normotensives	
	Count	%	Count	%	Count	%
No	187	26.3%	158	22.3%	365	51.4%
Yes	5	7.5%	25	37.3%	37	55.2%
Total	192	24.7%	183	23.6%	402	51.7%
P=0.001						

11. Association between BMI, hypertension and prehypertension

Bmi	Hypertensives		Prehypertensive		Normotensives	
	Count	%	Count	%	Count	%
Lean	6	9.8%	7	11.5%	48	78.7%
Pre obese	80	32.5%	66	26.8%	100	40.7%
Obese	66	37.5%	44	25.0%	66	37.5%
Normal	40	13.6%	66	22.4%	188	63.9%
Total	192	24.7%	183	23.6%	402	51.7%
P<0.001						

DISCUSSION

The prevalence of hypertension and pre hypertension was 24.7% and 23.6% in this study. Similar results were found in various other studies done by satyanarayana p et al(28), tony et al(20), ravi mr et al(24), anand shukla et al(26), prasanna mr et al(27), yun hung et al(8), yang shen et a(9)l.

Regarding table 1 showing association of age with hypertension and prehypertension in this study, the results showed statistical significance with increasing age there is increase in developing hypertension and prehypertension. Various international studies and national studies conducted by yun huang et al (8), yang shen et al (9), chukwaka et al (10) choi koong et al (11), wu j et al (13)l, sumaria et al (14)l, satyanarayana p et al (28) arjun laxmanan et al (19), tripathy et al (21), ganesh kumar et al (23), anjali mahajan et al (25) showed similar results as in this study.

Table 2 shows association of gender with risk factors of hypertension and pre hypertension. In this study the association was found to be statistically significant. Similar findings were found in study done by bhavani et al (30).

Table 3 was regarding association of education with hypertension and pre hypertension. This study doesn't show any significant association. No significant association was observed in this study between place of residence and hypertension and prehypertension as shown in table 4.

Chronic illness like presence of diabetes mellitus showed significant association in this study and similar findings were observed in various other studies done by tripathy et al (21), majumdar et al (22), yang shen et al (9).

Presence of smoking did not show any significant association in this study as shown in table 6.

Presence of alcohol consumption showed significant association with hypertension and prehypertension in this study as shown in table 7. Similar findings were observed in studies done by ravi mr et al (24), udayar et al (31). Tripathy et al (21), yang shen et al (9), choi koong et al (11), wu j et al (13).

Tables 8 and 9 show association of regular physical activity and sedentary life. Both factors showed statistically significant association with hypertension and prehypertension. Similar associations were found in various other studies done by bhavani et al (30), satyanarayana et al (28), tripathy et al (21), ganesh kumar et al (23).

As shown in table 10 in the present study, junk food consumption showed statistically significant association with hypertension and prehypertension, similar observations were seen in studies done by arjun laxmanan et al (19).

Table 11 in part 2 of results and discussion section shows association of bmi with hypertension and pre hypertension. In this study it showed significant association statistically. Various other studies done by udayar et al (31). Bhavani et al (30), chalam et al. (29) satyanarayana et al. Al (28) arjun laxmanan et al (19). Anjali mahajan et al (25), prasanna mitra et al (27). Wu j et al. Bayray et al (16). Zekowes et al (17). Damaris et al (18) showed similar results.

DECLARATIONS

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