



## CLINICAL PROFILE OF YOUNG HYPERTENSIVES

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## ABSTRACT

**Introduction :** Systemic arterial hypertension or simply called hypertension, is a major medical and public health problem worldwide as it is an important risk factor for coronary heart disease, heart failure, cardiovascular disease and renal failure. Traditionally, hypertension is a disease that has been associated with older age groups but prevalence among younger individuals is increasing by studying them, this study aims to determine the prevalence of secondary hypertension and describe the risk factors of primary hypertension in this population. **Method :** This is a non randomized cross sectional study of 50 young hypertensive patients diagnosed between age 18-40 years. According to JNC - 8 attending medicine OPD or admitted in our tertiary care hospital of west Gujarat. Pretested proforma was used to collect data after taking informed consent. Investigations including blood pressure measured with a standard sphygmomanometer, renal artery doppler, fundus examination, electrocardiogram, chest X-ray, ultrasonography KUB, 2D echo were carried out. **Result :** 16% patients of our study population were diagnosed to have secondary hypertension. Our data shows most of them were diagnosed within less than one year duration, on routine check up or headache as a symptom, males more than females. Overall number of patients were more having sedentary life style. **Conclusion:** Among young hypertensive patients, non modifiable risk factors that were associated with hypertension were age, gender, socio-economic status and a family history of hypertension and the modifiable risk factors were obesity, low physical activity and added dietary salt.

**KEYWORDS :** Young hypertensive, Primary hypertension, Secondary hypertension

## INTRODUCTION

Systemic arterial hypertension, or simply called hypertension, is a major medical and public health problem worldwide as it is an important risk factor for coronary heart disease, heart failure, cerebrovascular disease and renal failure. The past century has seen hypertension grow to epidemic proportions across the world.

What is worrying, is that hypertension is usually asymptomatic resulting in some calling it the "the silent killer". Patients may be asymptomatic not only to hypertension, but also to the organ damage caused by it. Cardiovascular disease risk increases as the blood pressure increases starting at a blood pressure of 115/75 mm Hg.

Traditionally, hypertension is a disease that has been associated with older age groups.

Over time, the profile of hypertension has changed. Population studies have shown an increasing prevalence across populations. The prevalence among younger individuals is also increasing,

This study aims to study the profile of younger patients (18 – 40) years with hypertension, as they comprise a population of "young hypertensive" patients. Though there is no set definition of "young hypertension", individuals younger than 40 years of age have traditionally been considered to have young onset hypertension and evaluated for secondary causes of hypertension.

By studying this younger age group of hypertensive patients, the study aims to determine the prevalence of secondary hypertension and describe the risk factors of primary hypertension in this population.

## AIMS AND OBJECTIVES

This study was conducted to study and profile patients with young onset hypertension who present to the General Medicine Department during a period of 1 year to determine the prevalence of secondary hypertension and to identify the modifiable risk factors for essential hypertension.

## METHODS

This study was done at Guru Gobind Singh Govt. Hospital, Jamnagar, Gujarat from November 2020 to November 2021. It was non randomized cross sectional study enrolling total 50 outpatients and inpatient young hypertensive patients.

Patients presenting with hypertension, diagnosed between the age 18-40 years according to JNC8 attending the General Medicine outpatient and inpatient department. The cut-off for hypertension as per the JNC-8 guidelines is taken as BP of 140/90 mmHg. This is to be the average of two readings. Patients may already have been evaluated for a secondary cause or may be undergoing evaluation.

Pregnant women, seriously and terminally ill patients, children, elderly, handicapped and mentally challenged were excluded.

Approval for this study was taken in institutional ethical committee. All necessary confidentiality of participants were mentioned.

Detailed history, examination and investigations as per proforma were done for each participant.

Information of patients relating to epidemiological features (age, sex, socio-economic status), blood pressure levels, cardiovascular risk factors (diabetes, dyslipidemia, family history or early coronary heart disease, smoking, alcoholism) were noted.

Target organ damage such as left ventricular hypertrophy (electrocardiographic and / or echo cardiographic criteria), coronary heart disease (angina &/or myocardial infarction), heart failure (clinical and / or echocardiographic criteria), cerebrovascular disease (stroke and / or history of transient ischemic attack), hypertensive retinopathy (D-fundus examination), hypertensive nephropathy (ultrasonography, urine albumin), serum creatinine, were evaluated with the help of other department and standard laboratory test.

Therapeutics regimes were decided after all these evaluation and compliance with treatment were noted.

## RESULT

This study conducted in a tertiary care hospital in West Gujarat, enrolled 50 young hypertensive patients.

Present study showed that 16% were diagnosed to have secondary hypertension and 84% were diagnosed to have primary hypertension.

The duration of hypertension was less than a year in approximately half the study groups, 30% patients were in group of duration diabetes 2-5 years and only 20% patients had a duration of hypertension that was more than 5 years.

Overall, headache (20%) was the most common presenting complaint followed by chest pain (12%). 22% were diagnosed with hypertension on routine check-up. 30% presented with hypertensive emergencies and end organ damage, out of which MI was 14%, CVA was 10% and left ventricular failure was 6%.

On evaluation for secondary hypertension symptoms of renal disease were present in 6 patients and that of obstructive sleep apnea were present in 1 patient. Signs of acanthosis nigricans in 1 patient, signs of hypothyroidism in 1 patient and renal bruit were present in 4 patients.

In those with primary hypertension maximum number of patients, that is 34% of patients were in age group of 31-35 years, 8% were in age group of 18-20 years, 26% were in age group of 21-25 years. 10% were in age group of 26-30 years, 22% were in age group of 36-40 years.

The age of onset of hypertension less than thirty years in 52.3% of subjects and over the age of thirty in 47.7%.

The table shows that 59.5% patients were male, 40.5% were female.

Table suggests that among the 84% subjects of primary hypertension, maximum number of patients, that is 38.33% were in lower middle class, 28.5% were in upper middle class, 14.3% in upper lower class, 11.9% in lower class and 11.9% in upper class.

**Table - 1**

Sr. No.	Variables	Case %
1	Distribution	
	Primary Hypertension	84%
	Secondary Hypertension	16%
2	Duration of hypertension (years)	
	< 1 year	50%
	2-5 years	30%
	> 5 years	20%
3	Age group (years)	
	18-20	8%
	21-25	26%
	26-30	10%
	31-35	34%
4	Age of onset of Hypertension	
	< 30	52.3%
	30	47.7%
5	Sex	
	Male	59.5%
6	Socio-economic status	
	Upper	11.9%
	Upper middle	28.5%
	Lower middle	33.33%
	Upper lower	14.3%
	Lower	11.9%

Table suggests that sedentary life style was found in 66.66% and working life style was found in 33.33%.

Out of 66.66% patients having co-morbidities, chronic kidney disease was the most common co-morbidity (46.4%) followed by ischemic heart disease (32%).

In males, ischemic heart disease was the most common (42.85%) followed by chronic kidney disease (38%). Whereas in females, chronic kidney disease was the most common (71.4%) followed by diabetes mellitus (28.5%).

Table suggest that there was a positive family history of hypertension in 19% of the subjects with primary hypertension as compared to 81% who did not.

The number of obese subjects was 52.3% among those with primary hypertension, alcohol use was reported in 16.7% of the subjects with primary hypertension. Of those with primary hypertension, tobacco use was documented in 19%. Among those with primary hypertension, high stress was perceived in 47.6% and low stress in 52.4%.

Of the primary hypertensive patients who underwent a physical activity evaluation, 29% had low levels of activity, 45% had medium level of activity and 26% had high levels of activity.

Of the primary hypertensive patients, who underwent a dietary evaluation, 45.23% added salt to their food and 54.76% did not, also 55% consumed less than 3 servings of fruit and vegetables per day as compare to 45% who consumed more than 3 servings per day.

**Table - 2**

Sr. No.	Risk factors	Case %
1	Life style	
	Sedentary	66.66%
	Working	33.33%
2	Family history	
	Present	19%
	Absent	81%
3	Stress	
	High	47.6%
	Low	52.4%
4	Physical activity	
	High	26%
	Medium	45%
	Low	29%
5	Added Salt	
	Yes	45.23%
	No	54.76%
6	Alcohol use	
	Yes	16.7%
	No	83.3%
7	Tobacco use	
	Yes	19%
	No	81%

Table suggest overall, 64% patients had systolic BP in a range of 140 - 180 mmHg. In males, 37% out of total males had higher SBP in a range of 140-160 mmHg and 160-180 mmHg equally whereas in females 43% out of total females had SBP in range of 140-160 mmHg and 24% in a range of 160-180 mmHg. So, females had comparatively lower initial BP than males.

Table suggests that in this study, 60% patients had normal DBP which suggests these patients had isolated systolic HTN whereas 40% had both higher SBP and DBP.

In this study, maximum (48%) patients had normal ECG on initial workup. Most common abnormal ECG finding was LVH

(with or without strain) about 14% and 14% patients presented with MI.

On initial workup, 70% patients had no albuminuria detected. 30% patients had macroalbuminuria detected by urine dipstick method suggested of microvascular complication of hypertension in form of nephropathy.

On initial workup, 64% patients had no hypertensive retinopathy detected. 10% patients had grade I HTR while 14% patients had grade II HTR.

Males (41.37%) had higher incidence than females (33.33%) of retinopathy.

In echocardiographic findings, 64% of overall patients had normal 2D Echo study males (48.2%) and females (86%). Most common abnormal findings was concentric LVH followed by generalized LV hypokinesia and inferior wall hypokinesia.

Following the guidelines, ACE I were used in max patients (94%) as a single antihypertensive medication out of patients started on just single medication. ACEI was also the commonest drug in a combination therapy with other drugs. In combination therapy 34.2% patients were started on dual antihypertensives while 29.4% patients were started on triple therapy and 26.4% were started on quadruple therapy.

In dual therapy, ACE I plus BB was the most common combination (57.14%) followed by ACE I plus CCB (21.42%). In triple therapy, ACE I plus BB plus diuretics was the most common combination. In quadruple therapy BB plus CCB (50%) plus diuretics plus alpha agonist was the most common combination listed in CKD patients.

On follow up, overall 76% patients, HTN was controlled with single or combination therapy. 14% males and 10% female BP were not controlled even with combination therapy.

Table - 3

Sr.	Study findings	Case %
1	Systolic Blood Pressure (mmHg)	
	130-140	10%
	140-160	36%
	160-180	28%
	180-200	20%
	>200	6%
2	Diastolic Blood Pressure (mmHg)	
	80-90	60%
	90-100	28%
	100-110	10%
	>110	2%
3	Urine Albumin	
	Absent	70%
	Plus 1	10%
	Plus 2	8%
	Plus 3	12%
4	Hypertensive retinopathy	
	No HTR	64%
	Grade I HTR	10%
	Grade II HTR	14%
	Grade III HTR	8%
	Grade IV HTR	4%
5	Echocardiography	
	2D Echo	
	Normal	64%
	AS	0%
	Conc. LVH	10%
	Gen LV hypokinesia	8%
	Inf. wall hypokinesia	8%

	Ischemic DCM	4%
	Rheumatic heart disease	6%
6	Follow up	
	Controlled	76%
	Uncontrolled	24%

DISCUSSION

Table – 1 Showing Presenting Symptoms, Age, Sex, Family History, Addiction, Ecg Findings, Hypertensive Retinopathy And 2d Echocardiography In Young Hypertensives

	Kejriwal A, Vasoya S. MGM MEDICAL COLLEGE AND HOSPITAL Maharashtra, October 2015	Present study
<b>SYMPTOMS</b>		
Headache	72%	66%
Weakness in one/two or all four limbs	6%	10%
Breathlessness	50%	40%
Pedal edema	54%	42%
Palpitation	44%	38%
Sweating	22%	16%
Bleeding at any site	38%	26%
Chest pain	0%	12%
Unconsciousness	0%	2%
Routine check up	0%	22%
Blurring of vision	0%	2%
Giddiness	0%	12%
Decreased urine output	0%	10%
<b>AGE (Years)</b>		
18 - 20	12%	8%
21 - 25	10%	26%
26 - 30	18%	10%
31 - 35	34%	34%
36 - 40	26%	22%
Total	100%	100%
<b>SEX</b>		
Male	64%	59.5%
Female	36%	40.5%
<b>FAMILY HISTORY</b>		
Present	12%	19%
Absent	88%	81%
<b>ADDICTION</b>		
Alcohol use	24%	16.7%
Smoking	20%	19%
None	56%	64.3%
<b>ECG CHANGES</b>		
Sinus bradycardia	6%	0%
Sinus tachycardia	0%	4%
IHD	4%	14%
LVH	28%	14%
Normal	62%	48%
PPRW	0%	2%
T inv II, III, avf	0%	2%
T inv I, αVL, V5, V6	0%	10%
Tall T V2 -V6	0%	2%
VPC's	0%	4%
Grand Total	100%	100%
<b>FUNDUS CHANGES</b>		
No Htr	68%	64%
Grade I Htr	2%	10%
Grade II Htr	14%	14%
Grade III Htr	12%	10%
Grade IV Htr	4%	4%
<b>2D ECHO</b>		
Normal	66%	64%
Aortic Ancursym	2%	0%
IHD	4%	16%

LVH	22%	10%
PE	4%	0%
Takayasu arteritis	2%	0%
Ischemic DCM	0%	4%
Rheumatic Heart Disease	0%	6%

**Table – 2 Percentage Of Socio-economic Class Distribution**

Socio-economic class	Lavanya K.M. et al	Present study
Upper	0%	11.9%
Upper middle	24%	28.5%
Lower middle	37.5%	33.33%
Upper lower	21%	14.3%
Lower	17.7%	11.9%

**Table – 3 Life Style And Hypertension**

Life style	Study by C. P. MISHRA AND SANJEEV KUMAR RISK FACTOR OF HYPERTENSION IN RURAL AREA OF VARANASI	Present study
Sedentary	72.04%	66.66%
Working	27.96%	33.34%
Total	100%	100 %

**Table – 4 Obesity, Physical Activity And Salt Intake And Hypertension**

	Umegbola El et al study in Enugu state, South east, Nigeria	Present study
Under weight	2.12%	2.38%
Normal	63.81%	45.2%
Over-weight obesity	34%	52.32%
Level of activity		
High + Medium	81%	71%
Low	19%	29%
Added salt		
Yes	32%	45.23%
No	68%	54.76%

**Table – 5 Obstructive Sleep Apnoea And Hypertension**

Obstructive sleep Apnoea	Pensu Kasan et al study	Present study
Yes	4.5%	2%

**CONCLUSION**

1. This study found the prevalence of secondary causes of hypertension in the age group of 18 – 40, in this tertiary care hospital to be 16% and the prevalence of hypertension was more in 31-40 years age group than in 18-30 years.
2. Non- modifiable risk factors that were associated with hypertension were Age, gender, socio-economic status and a family history of hypertension and the modifiable risk factors were Obesity, low physical activity and added dietary salt.
3. The prevalence of young hypertensives was greater in males than in females and affected females had more sedentary life-style as compared to males. A majority of subjects were incidentally detected to have hypertension.
4. A positive family history of hypertension was higher among those from in lower middle socioeconomic class as compared to lower socioeconomic class.
5. Most common presenting complaint was headache overall followed by chest pain.
6. Roughly half the subjects had high levels of perceived stress. Cases who have addiction of tobacco and alcohol consumption are at higher risk of hypertension.
7. Hypertensive emergencies were also major presenting feature accounting for 30% which included 14% acute MI, 10% cerebro-vascular accident and 6% acute left ventricular failure. On presentation, 30% patients had macroalbuminuria on urine dip stick test, 36% had retinopathy.

8. Antihypertensive therapy was given in 36% patients as monotherapy, 26% patients as dual therapy and 20% patients as triple therapy, 18% patients as quadruple therapy.
9. Out of all patients, 14% males and 10% females were having resistant hypertension as their BP was not controlled even with triple therapy including diuretics.
10. The outcome of the study showed an in hospital mortality of 4% (2) patients among these patients. Both of them were females presented with neurological deficit and acute LVF and were known case of hypertension on irregular treatment.

**REFERENCES**

1. Harrison's Textbook of Internal Medicine, 20th Edition.
2. API Text book of Medicine, 11th Edition.
3. The Eighth report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure, JAMA 2003;289:2560-2572.
4. Harvard Global Economic Burden Non Communicable Diseases 2011.
5. WHO A global brief on Hypertension.
6. Franklin SS, Larson MG, Khan SA, Wong ND, Leip EP, Kannel WB, et al. Does the Relation of Blood Pressure to Coronary Heart Disease Risk Change With Aging? The Framingham Heart Study. Circulation. 2001 Mar 6;103(9):1245-9.
7. Prashanth HL, Chandrashekar SV, Madhusudhana MV. Hypertension in Young Adults - an Urban and Rural Comparative Study. Indian J Public Health Res Dev. 2013;4(4):168-72.
8. Wang N, Young J, Meoni LA, Ford DE, Erlinger TP, Klag MJ. Blood pressure change and risk of hypertension associated with parental hypertension: The Johns Hopkins precursors study. Arch Intern Med. 2008 Mar 24;168(6):643-8.
9. Gupta R, Yusuf S. Towards better hypertension management in India. Indian J Med Res. 2014 May;139(5):657-60.
10. Gupta R. Hypertension in India—definition, prevalence and evaluation. J Indian Med Assoc. 1999 Mar;97(3):74-80.