

## Assesment Of Risk Factors For Cardiovascular Diseases At Tertiary Care Hospital

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**Abstracts:** Background: Hypertension is the commonest cardiovascular disorder posing a major public health challenge, a chronic condition of concern due to its role in causation of coronary heart disease, stroke and other vascular complications. Aim and Objectives: To assess the Cardiovascular Risk Factors in apparently healthy individuals of B.J. Medical College and Civil Hospital, Ahmedabad and to raise awareness among them. Materials and Methods : The present study was carried out on 422 (179 females, 243 males) apparently healthy individuals aged 18 to 72 years at B. J. Medical College canteen and affiliated hospital O.P.D. for a period of one month and their height, weight, BMI(Body mass index) and blood pressure were measured. Results: Number of subjects with above normal systolic blood pressure were 88, out of which 68.2% were males with p value<0.05. 38.86% persons found to be overweight (with BMI >24.99) out of which 49.39% were females and 50.61% were males. 20.85% persons had Above Normal BP (Systolic BP >139) out of which 79.5% were persons >40 yrs of age and 59.1 % were overweight (with BMI >24.99). Conclusion: Screening for the cardiovascular risk factors could be useful in detection of modifiable risk factors of cardiovascular diseases especially hypertension and obesity. [Sonani R et al NJIRM 2012; 3(5) : 1-3]

**Key words:** Blood pressure, Obesity, Risk factors, Awareness

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**Introduction:** Hypertension is the commonest cardiovascular disorder posing a major public health challenge, a chronic condition of concern due to its role in causation of coronary heart disease, stroke and other vascular complications.<sup>1</sup> The most widely accepted definition of hypertension is given by US Sixth Joint National Committee on Detection, Evaluation and Treatment of Hypertension (JNC-VI) is as follows: SBP  $\geq$  140 mm Hg, and/or a DBP  $\geq$  90 mmHg, and/or treatment with antihypertensive medication but still it remains a matter of debate.<sup>2</sup>

Hypertension is already a highly prevalent cardiovascular risk factor worldwide because of increasing longevity and prevalence of contributing factors such as obesity, physical inactivity and unhealthy diet.<sup>3</sup> Obesity is perhaps the most prevalent form of malnutrition prevalent in both developed and developing countries. Obesity generally refers to an abnormal and excessive growth of the adipose tissue due to hypertrophy or hyperplasia of fat cells or a combination of both.<sup>4</sup> The overall prevalence of overweight (BMI  $\geq$  25 kg/m<sup>2</sup>) has been reported to be 15.4% in males and 20.3% in females in Gujarat.<sup>5</sup>

Physical inactivity by increasing body weight may have an indirect effect on blood pressure, obesity

and diabetes mellitus. Unhealthy diet consisting of saturated fat and lacking dietary fiber increases the risk also.<sup>6</sup>

The present study carried out on apparently healthy individuals aged 18 to 72 years in B. J. Medical College canteen and affiliated hospital O.P.D., was to screen for the cardiovascular risk factors and to make the people more mindful about their health.

**Materials & Methods:** The total 422 apparently healthy individuals in this study were from two different sources: 1) 222 subjects were B.J. Medical College canteen visitors. This sample constituted visitors of the canteen which included medical students, professors, administrative staff, nurses, doctors, other staff. 2) 200 subjects were healthy relatives of patients attending the O.P.D. at Civil Hospital Ahmedabad.

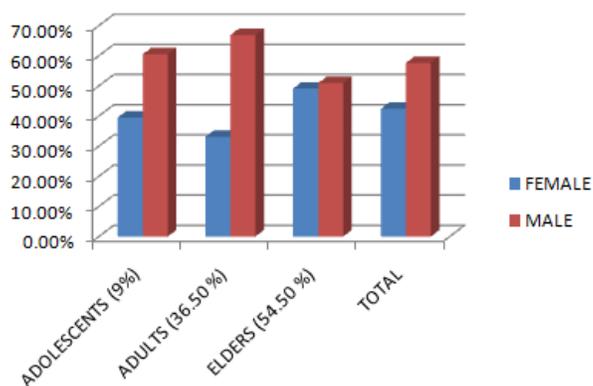
All parameters like height, weight, BMI and blood pressure were recorded. The height was measured to the nearest 1 cm using a portable standardized scale. Weight was measured to the nearest 0.5 kg using standardized portable weighing machine. BMI was calculated as weight (in kgs) divided by height (in meters) squared. The subjects were shown their respective BMI values on BMI chart

and guided accordingly. The blood pressure measurement was taken by mercury column sphygmomanometer using standardized technique.<sup>7</sup>

Epidemiological data of all the subjects were noted and by using pre-tested & pre-designed objective type of questions, information about cardiovascular diseases risk factors as governed by World Heart Federation was obtained. We have included practically feasible risk factors in our study and excluded the others like serum cholesterol levels. It must be mentioned that only apparently healthy individuals were screened.

**Results:** Number of subjects with above normal systolic blood pressure were 88, out of which 68.2% were males with p value<0.05. Thereby it means that male sex is a risk factor for high blood pressure. 79.5% of the subjects with the above normal blood pressure from the age group of more than 40 years which signifies age as an important risk factor for high blood pressure.

**Fig.1 Age and Sex wise distribution of study subjects**



**Table 1: Sex-wise measurement of Systolic blood pressure**

Blood Pressure	FEMALE	MALE	TOTAL
<140 mm Hg	151 (45%)	183 (55%)	334 (100%)
>=140 mm Hg	28 (31.8%)	60 (68.2%)	88 (100%)
TOTAL	179 (42.41 %)	243 (57.59 %)	422 (100 %)

p value = 0.025496

**Table 2: Age-wise distribution of Systolic blood pressure**

Blood Pressure	ADOLESCENTS (11-20 Yrs.)	ADULTS (21-40 Yrs.)	ELDERS (41-100 Yrs.)	TOTAL
<140 mm Hg	2 (2.3%)	16 (18.2%)	70 (79.5%)	88 (100%)
>=140 mm Hg	37 (11.07%)	137 (41.01%)	160 (47.92%)	334 (100%)
TOTAL	39 (9.25 %)	153 (36.25 %)	230 (54.50)	422 (100 %)

**Table 3: BMI-wise distribution of Systolic blood pressure**

Blood Pressure	UNDERWEIGHT (BMI <18.5)	NORMAL (BMI 18.5-24.99)	OVERWEIGHT (BMI >=25.00)	TOTAL
<140 mm Hg	24 (7.19%)	197 (58.98%)	113 (33.83%)	334 (100%)
>=140 mm Hg	2 (2.3%)	34 (38.6%)	52 (59.1%)	88 (100%)
TOTAL	26 (6.16 %)	231 (54.73 %)	165 (39.11 %)	422 (100 %)

Subjects with higher BMI are more likely to have systolic blood pressure above normal values. 22 (78.6 %) out of total 28 already diagnosed cases of HT and 13 (76.5 %) out of total 17 cases of DM & HT had BMI>=25. 176 subjects had history of regular exercise and out of which 139 (79 %) had normal BP. Out of total 165 overweight and/or

obese, 93 (56.4 %) had history of not doing exercise. 93 (22.03 %) subjects were found to be abusing tobacco in the form of either smoking or tobacco chewing or both. Among the total 334 persons with blood pressure within normal range (Systolic BP <140 mm Hg), 268 (80.23 %) had no history of tobacco abuse.

**Table 6: BMI distribution among already diagnosed cases of HT and/or DM**

	<b>UNDERWEIGHT (BMI &lt;18.5)</b>	<b>NORMAL (BMI 18.5-24.99)</b>	<b>OVERWEIGHT (BMI &gt;=25.0)</b>	<b>TOTAL</b>
<b>DM (0.9 %)</b>	0	2 (50 %)	2 (50 %)	4 (100 %)
<b>HT (6.63 %)</b>	1 (3.6 %)	5 (17.9 %)	22 (78.6 %)	28 (100 %)
<b>HT &amp; DM (4.02 %)</b>	0	4 (23.5 %)	13 (76.5 %)	17 (100 %)
<b>NO HISTORY</b>	25 (6.7%)	220 (58.9 %)	128 (34.4 %)	373 (100 %)
<b>TOTAL</b>	26 (6.16 %)	231 (54.73 %)	165 (39.11 %)	422 (100 %)

**Discussion:** In the present study, prevalence of overweight and/or obesity (BMI  $\geq 25$  kg/m<sup>2</sup>) was found to be 39.09% which included 73.9% pre-obese (BMI=25.0-29.99 kg/m<sup>2</sup>), 20.7% obesity grade 1 (BMI=30.0-34.99 kg/m<sup>2</sup>), 4.2% obesity grade 2 (BMI=35.0-39.99 kg/m<sup>2</sup>), 1.2% obesity grade 3 (BMI  $\geq 40$  kg/m<sup>2</sup>).

These results are much higher as compared to National Family Health Survey (NFHS-3), 2005-2006 fact sheet of Gujarat. This finding may be attributed to the fact that the majority of the study subjects were from the urban area. Subjects older than 40 years are prone to development of hypertension and other cardiovascular diseases because of accumulation of various environmental factors and the effects of genetically programmed senescence in body system.<sup>6</sup> Such a population is more likely to have benefits from such screening procedures. Systolic blood pressure measurements differed significantly between males and females in our study being more common in males ( $p < 0.05$ ).

**Conclusion:** The data support the assumption that screening for the cardiovascular risk factors could be useful in detection of modifiable risk factors of cardiovascular diseases especially hypertension and obesity. Primary prevention to manipulate the modifiable risk factors for heart diseases such as tobacco abuse, diet, physical inactivity etc. should also be boosted to prevent long-term mortality and morbidity. The present study shows that age group of more than 40 years has much higher prevalence of overweight and other risk factors and many of them are unaware of modifiable risk factors. Due emphasis must, therefore, be laid upon the screening for them on periodic basis.

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