Correlation between BMI and hypertension in non coastal areas of Nellore

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Abstract: Obesity is a growing global health concern, with a rapid increase being observed in morbid obesity. Obesity is strongly associated with hypertension and cardiovascular disease. The present study attempted to assess the correlation between BMI and hypertension. **Aim:** To find the correlation between BMI and hypertension. **Materials and Methods:** A descriptive research design with total of 156 samples were included in this study. Samples were selected by using convenience sampling technique. The study was conducted in Non Coastal areas of Nellore. **Results:** Out of 156 samples, with regard to the category of the blood pressure 33(21.15%) had stage-I hypertension, 7(4.48%) had stage-II hypertension, 7(4.48%) had stage-III hypertension, 25(16.02%) had grade-I hypertension and 8(5.12%) had grade-II isolated systolic hypertension, known hypertensive cases are 62(39.74%), newly diagnosed cases are 56(35.89%). with regard to BMI, among 156 samples 19(12.17%) were overweight and 19(12.17%) were obese. The correlation coefficient value is 0.82 which states that there is a positive correlation between BMI and hypertension. **Conclusion:** The results showed that a positive correlation between BMI and Hypertension.
Keywords: BMI, Hypertension, Obesity, Adults, Correlation.

Introduction: Obesity is a growing global health concern, with a rapid increase being observed in morbid obesity. Obesity is associated with an increased cardiovascular risk and earlier onset of cardiovascular morbidity.

The prelevance of both hypertension and obesity, as important public health challenges, is increasing worldwide. Compared with the year 2000, the number of adults with hypertension is predicted to increase by 60% to a total of 1.56 billion by the year 2025 [1]. The growing prevalence of obesity is increasingly recognized as one of the most important risk factors for the development of hypertension. This epidemic of obesity and obesity-related hypertension is paralleled by an alarming increase in the incidence of diabetes mellitus and chronic kidney disease.

Obesity and in particular central obesity have been consistently associated with hypertension and increased cardiovascular risk. Based on population studies, risk estimates indicate that at least two-thirds of the prevalence of hypertension can be directly attributed to obesity [2]. Apart from hypertension, abdominal adiposity has also been implicated in the pathogenesis of coronary artery disease, sleep apnoea,

stroke and congestive heart failure [3]. The research of Dr. Indira. A *et al.* [4] and other studies [5-7] shows the high prevalence of hypertension and BMI among various categories of people of Nellore.

Since studies on BMI and its relation to hypertension are scanty from this region of Nellore (Andhra Pradesh - India) so, an attempt is being made to find out the relation between BMI and hypertension.

Materials and Methods:

ResearchDesign: Descriptivedesign.

Research approach: Quanditative research approach.

Setting: The study was conducted in Non Coastal areas of Nellore.

SamplingTechnique:

Conveniencesamplingtechnique.

Sample Size: A Total of 156 adults were evaluated.

Data collection procedure: This study was conducted by the advanced research team of Narayana College of Nursing which includes subject interview and clinical examination for one time to collect the following. Participants were free of diabetes, hypertension and any other diseases declared healthy based on clinician's judgment. Detailed interview was done and data collection forms were used to collect Demographic (area of living, age and gender), Height was measured using Stature meter. Weight with calibrated weighing machine. Body mass index (BMI) was calculated using formula weight (kg)/height (m2). BMI was categorized according to the international standards (Haslett *et al.*, 2000) into four groups, < 18.5 kg/m² (Underweight), 18.6 − 24.9 kg/m²(Normal), 25.0 − 29.9 (Overweight) and >30 kg/m² (obesity). Blood pressure was recorded by aneroid B.P apparatus. Blood pressure was categorized according Indian hypertension guidelines - III.

Statistical Analysis Used: The collected data was organized, tabulated, analysed and interpreted by using descriptive statistics like actual numbers and

percentages mean, standard deviation and inferential statistics like Chi-square test, Karl Pearson correlation coefficient was used appropriately. 'p' value less than 0.05 were considered statistically significant.

Results and Discussion: A Total of 156 participants were evaluated, all are urban adults. 67/156were males and 89/156 were females.

Table 1: Frequency and Percentage distribution of Blood Pressure   N=156

HTN Blood Pressure	Fre	Per
Optimal	16	10.25%
Normal	22	14.10%
High Normal	38	24.35%
Stage-I	33	21.15%
Stage-II	7	4.48%
Stage-III	7	4.48%
Grade-I	25	16.02%
Grade-II	8	5.12%

The table 1 showed that, 16(10.25%) were having optimal blood pressure, 22(14.10%) were having normal, 38(24.35%) were having high normal, 33(21.15%) were having Stage - I, 7(4.48%) were having Stage - II, 7 (4.48%) were having Stage - III, 25 (16.02%) were having Grade - I, 8 (5.12%) were having Grade - II hypertension.
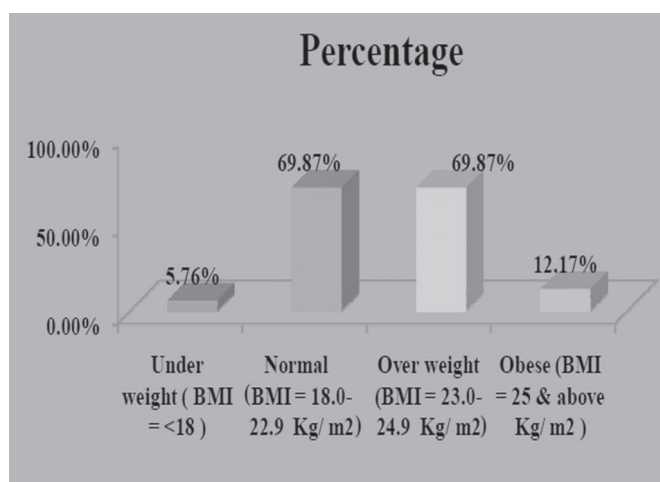
FIG 1: Percentage distribution of BMI

Table - 2: Correlation between BMI and hypertension (N=156)

BMI criteria			Blood pressure criteria			Pearson correlation
Category	F	%	Category	F	%	
Under weight (BMI= <18)	9	5.76%	Optimal	16	10.25%	0.82
Normal (BMI = 18.0-22.9 Kg/ m2)	109	69.87%	Normal	22	14.10%	
			High Normal	38	24.35%	
			Stage - I	33	21.15%	
Over weight (BMI =23.0-24.9 Kg/ m2)	19	12.17%	Stage - II	7	4.48%	
			Stage - III	7	4.48%	
Obese (BMI = 25 & above Kg/ m2)	19	12.17%	Grade - 1	25	16.02%	
			Grade - II	8	5.12%	

The above table showed the correlation between age at blood pressure and BMI. The correlation coefficient value is 0.82 which states that there is a positive correlation between BMI and hypertension.

Discussion: The main findings of this study were, that there was a positive correlation of BMI with blood pressure category. Based on the previous studies, It clearly informs that the adults who are having good physical activity will have normal or optimal blood pressure and the adults with good vegetable intake will also have control over the blood pressure [12&13].

Conclusion: The results showed that a positive correlation between BMI and Hypertension. Therefore, the habit of regular diets with content of plenty of fiber, ω-3, good vegetable and animal proteins, antioxidant, less fat and sugar, vitamins and regular exercise, are healthy practices allowing the body's nutritional signaling mechanisms to equilibrate to reference levels.

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