International Journal of Advanced Scientific Research
ISSN: 2456-0421
Impact Factor: RJIF 5.32
www.allscientificjournal.com
Volume 3; Issue 3; May 2018; Page No. 47-49

BMI and Hypertension

Katari Kantha[1], Arumugam Indira[2]
[1] Associate Professor, Department of Community Health Nursing, Narayana College of Nursing, Nellore, Andhra Pradesh, India
[2] Principal, Narayana College of Nursing, Nellore, Andhra Pradesh, India

Abstract
Background: 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 assess the correlation between BMI and hypertension.
Setting and Design: The study was conducted in rural areas of Nellore by using a descriptive design.
Materials and Methods: A total of 134 samples were included in this study. All these samples belongs to rural areas of Nellore. Samples were selected by using convenience sampling technique.
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: Out of 134 samples, with regard to the category of the blood pressure 37(27.61%) had stage-I hypertension, 16(11.90%) had stage-II hypertension, 10(7.46%) had stage-III hypertension, 17(12.68%) had grade-I isolated systolic hypertension, and 3(2.23%) had grade-II isolated systolic hypertension, known hypertensive cases are 60(44.77%), newly diagnosed cases are 23(17.16%). with regard to BMI, among 134 samples 36(14.4%) were overweight and 13(5.2%) were obese. The correlation coefficient value is 0.19 which states that there is a positive correlation between BMI and hypertension.
Conclusion: The results show a positive correlation between BMI and Hypertension.

Keywords: BMI, hypertension, obesity, adults, correlation

Introduction

Background of the study

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 relevance 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.

Research Design: Descriptive design.

Research Setting: The study was conducted in rural areas of Nellore by using a descriptive design.

Sampling Technique: Convenience sampling technique
Sample Size

A Total of 134 participants 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 included if they were free of diabetes, hypertension and any other diseases and 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 134 participants were evaluated, all are rural adults. 62/134 were males and 72/134 were females.

Table 1: Frequency and percentage distribution of blood pressure N=134

HTN Blood Pressure	Frequency	Percentage
Optimal	16	11.90%
Normal	11	8.20%
High Normal	24	17.91%
Stage-I	37	27.61%
Stage-II	16	11.90%
Stage-III	10	7.46%
Grade-I	17	12.68%
Grade-II	3	2.23%

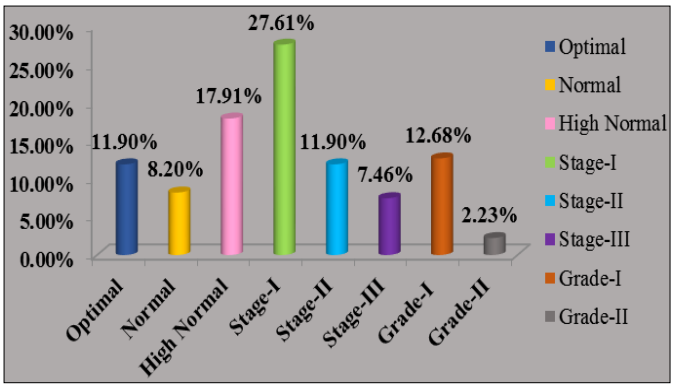

Fig 1: Percentage distribution of Blood Pressure

The table shows that, 16 (11.90%) were having optimal blood pressure, 11(8.20%) were having normal, 24 (17.91%) were having high normal, 37 (27.61%) were having Stage-I, 16 (11.90%) were having Stage- II, 10 (7.46%) were having Stage- III, 17 (12.68%) were having Grade-I, 3 (2.23%) were having Grade-II hypertension.

Table 2: Frequency and Percentage distribution of BMI N=134

CRITERIA	Frequency	Percentage
Under weight (BMI = <18)	2	1.49%
Normal (BMI = 18.0-22.9 Kg/ m^2)	75	55.98%
Over weight (BMI = 23.0-24.9 Kg/ m^2)	27	20.14%
Obese (BMI = 25 & above Kg/ m^2)	30	22.39%

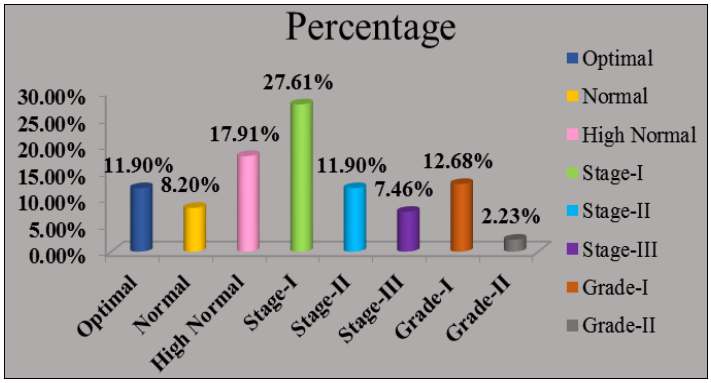

Fig 2: Percentage distribution of BMI

Among 134 samples, 2 (1.49%) were under weight, 75 (55.98%) were normal, 27(20.14%) were overweight and 30 (22.39%) were Obese.

Table 3: Correlation between BMI and hypertension (N=294)

BMI criteria			Blood pressure criteria			Pearson correlation
Category	F	%	Category	F	%	
Under weight (BMI = <18)	2	1.49%	Optimal	16	11.90%	0.19
			Normal	11	8.20%	
Normal (BMI = 18.0-22.9 Kg/ m^2)	75	55.98%	High Normal	24	17.91%	
			Stage-I	37	27.61%	
Over weight (BMI = 23.0-24.9 Kg/ m^2)	27	20.14%	Stage-II	16	11.90%	
			Stage-III	10	7.46%	
Obese (BMI = 25 & above Kg/ m^2)	30	22.39%	Grade-I	17	12.68%	
			Grade-II	3	2.23%	

The above table shows the correlation between age at menarche and BMI. The correlation coefficient value is 0.19 which states that there is a positive correlation between BMI and hypertension.

As we are knowing the complications of obesity and hypertension dietary modifications like inclusion of spirulina [8], good physical activity, reducing the stress helps to reduce the complications.

The present study results are supported with the findings of the previous studies conducted in Nellore region [9-11].

Conclusion

The results show 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.

References

1. Kearney PM, Whelton M, Reynolds K, Muntner P, Whelton PK, He J. Global burden of hypertension: analysis of worldwide data. Lancet. 2005; 365:217-223.
2. Krause RM, Winston M, Fletcher BJ, Grundy SM. Obesity. Impact on cardiovascular disease. Circulation. 1998; 98:1472-1476.
3. Haslam DW, James WP. Obesity. Lancet. 2005; 366:1197-1209.
4. Arumugam Indira, Katari Kantha. Nutritional status of antenatal and postnatal mothers in selected rural areas at Nellore. International Journal of Recent Scientific Research. View Article Google Scholar. 2015; 6(2):2796-2800.
5. Katari Kantha, *et al.* Knowledge of the Expectant Fathers Regarding safe Motherhood in Narayana Medical College Hospital, Nellore. International Journal of Recent Scientific Research. View Article Google Scholar. 2015; 6(4):3423-3427.
6. Katari Kantha, Usha Rani M, Alfia Parameswaran, Arumugam Indira. The knowledge regarding eating disorders among adolescent girls International Journal of Applied Research. View Article Google Scholar. 2016; 2(5):864 866.
7. Kantha Katari. Knowledge regarding complementary and alternative therapy among staff nurses. www.scopemed. org/mno=229182 Access: View Article Google Scholar, 2016.
8. Kantha Katari. Spirulina the best food for future.www.scopemed.org/ mno=228758 Access: View Article Google Scholar, 2016.
9. Kantha Katari. Human milk banking. www.scopemed. org/ mno=229095 Access: View Article Google Scholar, 2016.
10. Arumugam Indira, Katari Kantha. Correlation of Body Mass Index Levels With Age at Menarche in Women In, Selected Rural Areas of Nellore: A Cross Sectional Study. Int J Recent Sci Res. DOI: http://dx.doi.org/10. 24327/ijrsr.2017.0804.0122. View Article Google Scholar. 2017; 8(4):16297-16299.
11. Katari K. Arumugam Indira Prevalence of hypertension among the adults in Indukurpet Vs Vidavalur, Nellore.www.scopemed.org/?mno=233525 [Access: August 30, 2016].