ANALYSIS OF CORRELATION OF BMI AND WAIST TO HIP RATIO WITH RANDOM BLOOD SUGAR LEVELS AMONG LOCAL POPULATION OF PAKISTAN

Dr.Iqra Javed, Dr.Ayesha Ishaq, Dr.Sidra Azmat
Health Department Punjab.

Abstract:
Introduction: The diabetes mellitus (DM) and cardiovascular disease are more common in over weight and obese populations in developing countries.
Aims and objectives: The main objective of the study was to calculate the correlation of BMI and waist to hip ratio with BSR.
Material and methods: This cross-sectional study was conducted in Health department Punjab during December 2018 to May 2019. Diabetic patients were included in the study. The exclusion criteria include all patients with cardiac disease history or those on long-term antibiotic or steroid therapy and all the pregnant women whereas all persons that are not taking any anti diabetic drugs were included in this study.
Results: We enrolled a total of 100 individuals for this study. The average age of all the participants was 40 ± 14.9 with range 17-80. 39 (35.45%) of the patient were in the age category of 17 to 30. 33 (30%) belong to 31-45 and 41(37.27%) were above 45 years of age. 81 (73.63%) of the patients were female whereas 29(26.37%) were males. 46(41.8%) were with normal BMI more on the person's characteristics were given in table 1.
Conclusions: It is concluded that there is positive significant correlation between BMI and waist to hips ratio with BSR in our population. The earlier mentioned risk factors are known to be the obesity predictors as well.

Corresponding author:
Dr. Iqra Javed,
Health Department Punjab.

QR code

INTRODUCTION:

The diabetes mellitus (DM) and cardiovascular disease are more common in over weight and obese populations in developing countries. The probable reason maybe the less physical activity. The prevalence has rapidly increased in sub content and is closely linked with lifestyle of people and change in diet [1]. The urban populations are greatly effected with diabetes or high blood sugar range or ratio (BSR) than the rural populations. Although in recent decades the diabetes has increased two to three times in many areas in Pakistan [2]. This elevated prevalence of DM, insulin sensitivity and glucose intolerance among under developed countries has been well explained by the central obesity and insulin resistance syndrome which occur due to the genetic disposition [3]. A good measure to the general adiposity is body mass index (BMI) [4]. BMI classified as underweight if the value is less than 18.5, 18.5 to 22.9 classified as normal, an over weight range is 25-29.9 and above than equal to 30 named as obese [5]. Elevated BMI is an established risk factor for majority of fetal diseases. Another important indicator to the obesity diagnosis is Waist Hip ratio (WHR) because of the inclusion of abdominal fat deposition in the Syndrome X [6].

AIMS AND OBJECTIVES:

The main objective of the study was to calculate the correlation of BMI and waist to hip ratio with BSR.

MATERIAL AND METHODS:

This cross sectional study was conducted in Health department Punjab during December 2018 to May 2019. Diabetic patients were included in the study. The exclusion criteria include all patients with cardiac disease history or those on long-term antibiotic or steroid therapy and all the pregnant women whereas all persons that are not taking any anti diabetic drugs were included in this study. The demographic information with necessary diagnostic history was collected for all the subjects after the attendant or person signed the consent form.For all diagnostic values, the standard operating procedures were strictly followed in hospital laboratory. The blood sugar was measured after the 6-8 hour fast. A sugar level above 130 mg/dl labeled as pre-diabetic and above 200 mg/dl were considered as diabetic. The height was observed in standing position of the person with a tape meter by removing his/her shoes and with normal shoulders. 0.5 cm was measured as nearest for height. Similarly the weight was measured with weight scale and later the BMI was calculated. With the help of flexible tape meter we measured the hip and waist sizes and their ratio was calculated electronically.

STATISTICAL ANALYSIS:

The information collected from patients were entered electronically, stored and analyzed later by using SPSS version 20.

RESULTS:

We enrolled a total of 100 individuals for this study. The average age of all the participants was 40 $\pm$ 14.9 with range 17-80. 39 (35.45%) of the patient were in the age category of 17 to 30. 33 (30%) belong to 31-45 and 41(37.27%) were above 45 years of age. 81 (73.63%) of the patients were female whereas 29(26.37%) were males. 46(41.8%) were with normal BMI more on the person's characteristics were given in table 1.

Table 1: Baseline characteristic for all the participants.

Characteristics	n(%)
Number of patients	110
Age (mean$\pm$ SD)	40 $\pm$ 14.9
Average weight	66 $\pm$ 12.5 kg
Average height	159$\pm$13.5 cm
BMI	
Under weight	5(4.5%)
Normal	46(41.8%)
Over weight	35(31.8%)
Obese	24(21.8%)
Average Waist - hip ratio	0.90 $\pm$ 0.85
Average blood sugar level	175 $\pm$ 109.4

DISCUSSION:

This study was planned to estimate the correlation of BSR with BMI and hip to waist ratio, moreover we aim was draw an attention to the increasing diabetes disease in the population. Many epidemiological studies has proved that the people in developing countries like Pakistan and India were more susceptible to diabetic and cardiac disease risks as of the unhealthy lifestyle and less physical activities [6]. Comparatively, majority of the participants in our study population were at high weight as compared to other developing countries published populations [7].

We observed in our study that BMI is significantly correlated to the SBR, recent published report by world health organization revealed that more the Asian has high association among BMI and BSR as compared to the Western or European populations [8]. The diabetes risk has rapidly increased in last decade. More the diabetes found in urban areas than the rural, some of the similar populations like in India have shown the prevalence of diabetes above 8 percent whereas it was above 2% in rural areas.

We reported in our study the higher BMI has positive significant association to BSR. Similar findings were observed in published studies [9].With the present study results, it is more likely to observe very less margin of safety among abnormal and normal BMI values. This is very much comparable to population in developed countries. On another aspect the body weight is said to be closely linked with the diabetes prevention. The less or reduced weight is also associated with low BMI and waist to hip ratio [10].

CONCLUSIONS:

It is concluded that there is positive significant correlation between BMI and waist to hips ratio with BSR in our population. The earlier mentioned risk factors are known to be the obesity predictors as well.

REFERENCES:

1. Ramachandran A, Snehalatha C, Dharmaraj D, Vishwanathan M. Prevalence of glucose intolerance in Asian Indians: Urban-Rural Difference and significance of upper body adiposity. Diab Care 1992;15:1348-55.
2. Ram BS, Shanti SR, Paturi VR, Sidharth D, Madhu V, Ashok KD, et al. Diet and lifestyle guidelines and desirable levels of risk factors for the prevention of diabetes and its vascular complications in Indians: a scientific statement of The International College of Nutrition. J Cardiovasc Risk 1997;4:201-8.
3. McKeigue PM, Adelstein AM, Shipley MJ, Riemersma RA, Marmot MG, Hunt SP, et al. Diet and risk factors for coronary artery disease in Asians in North-West London. Lancet 1985;2:1086-90.
4. Singh RB, Niaz MA. Coronary risk factors in Indians. Lancet 1995;346: 778-9.
5. Scholfield DJ, Behall KM, Bhathena SJ, Kelsay J, Reiser S, Revett KR. A study on Asian Indian and American vegetarians: Indications of a racial predisposition to glucose intolerance. Am. J. Hyderabad. Clin Nutr 1987;46: 955-61.
6. Cruickshank JK, Cooper J, Burnett M, MacDuff J, Drubra U. Ethnic differences in plasma C Peptide and insulin in relation to glucose intolerance and blood pressure Lancet 1991;338: 842-7.
7. McKeigue PM, Shah B, Marmot MG. Relation of central obesity and insulin resistance with high diabetes prevalence and cardiovascular risk in South Asians. Lancet 1991;337:382-6.
8. Enas E, Garg A, Davidson M, Nair V, Huet B, Yusuf S. Coronary heart disease and its risk factors in the first-generation immigrant Asian Indians to the United States of America. Indian Heart J 1996;48:343-53.
9. Hughes K. Trends in mortality from ischemic heart disease in Singapore, 1959 to 1983. Int J Epidemiol 1986;15:44-50.
10. Bhatnagar D, Anand IS, Durrington PN, Patel DJ, Wander GS, Mackness ML, et al. Coronary risk factors in people from the Indian subcontinent living in West London and their siblings in India. Lancet 1995;345:405-9.