Brief Communication

The relationship of abdominal girth with blood pressure, blood sugar and lipid profile among cardiac patients

Sasmita Das, PhD [a], Nikee Minz, MSc [a] and Mahesh C. Sahu, PhD [b],*

[a] SUM Nursing College, Siksha O Anusandhan University, K-8, Kalinga Nagar, Bhubaneswar, Odisha, India
[b] Directorate of Medical Research, Institute of Medical Science and SUM Hospital, Siksha O Anusandhan University, Bhubaneswar, India

Abstract

Objectives: This study aimed to characterize and identify the relationship of abdominal girth with blood pressure, blood sugar and lipid profile among cardiac patients.

Methods: A total of 100 patients with diagnosed cardiac problems were recruited from the outpatient clinic of a multi-speciality hospital. For data collection, a self-administered questionnaire was used to gather information about patients' demographics and socio-economic status. In addition, an assessment tool on the Physical and Laboratory Characteristics was employed. The data were analysed using t tests, Pearson correlations and chi squared tests.

Results: The findings of the study showed that there was a significant positive correlation of abdominal girth with blood pressure, blood sugar and lipid profile, as the R-values were reported to be 0.32, 0.28, 0.02, 0.32, 0.32, 0.28 and 0.18. There was no significant association of the selected demographic variables with abdominal girth, blood pressure, blood sugar or lipid profile among the selected cohort of patients.

Conclusion: Lifestyle factors contribute significant risk in the development of abdominal obesity, metabolic syndrome and cardiovascular diseases. This study recommends a careful monitoring of risk factors at an early age, which would go a long way towards reducing the burden of abdominal obesity and obesity related cardio metabolic risk.

Keywords: Abdominal girth; Blood pressure; Blood sugar; Cardiac patients; Lipid profile

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* Corresponding address: Institute of Medical Science and SUM Hospital, Siksha O Anusandhan University, K-8, Kalinga Nagar, Bhubaneswar 751003, Odisha, India.
E-mail: mchsahu@gmail.com (M.C. Sahu)
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Introduction

In today's society, people aim for a modern lifestyle, one that requires more time spent on economic growth and leaves less time for self-health care. Abdominal obesity is an increasingly important health problem worldwide, including in developing countries, such as India. Abdominal obesity is becoming increasingly prevalent among urban Indians. The prevalence of abdominal obesity is growing in Western populations, possibly due to a combination of low physical activity and high-calorie diets, as well as in developing countries, where it is associated with the urbanization of populations. Regional fat distribution, particularly abdominal obesity, is considered to be important for the development of insulin resistance, metabolic syndrome and coronary heart disease.[1] High levels of abdominal fat are linked with diabetes and heart disease.[2] The prevalence of abdominal obesity and the dysmetabolic state is higher in urban Asian Indians in north India and requires an immediate public health intervention.[3]

Fat around the midsection is a good indicator of increased risk for metabolic syndrome, high blood pressure, heart disease and diabetes, and abdominal obesity is a greater risk factor than general obesity.[4] Abdominal obesity is an important public health problem worldwide, and its prevalence is increasing in both developed and developing nations along with changes in dietary habits and physical activity levels. Individuals who are overweight are at higher risk for a variety of disabling and life-threatening chronic conditions. Abdominal obesity is considered to be an independent predictor of cardiovascular risk factors, morbidity, and mortality.[5] Routine measurement of waist circumference is considered to be a convenient and inexpensive measure in primary care to provide a clinical marker for risk of cardiovascular disease and diabetes in all regions of the world, including in patients of "normal" weight.[6] Recent changes in the diet and physical activity of people residing in Odisha have also added to the problem of adnominal obesity. It is the consequence of increased urbanization and mechanization. Rising abdominal obesity has increased the risk of cardiovascular disease in Odisha.[7]

Abdominal obesity poses a major and increasing challenge to health worldwide. Reliable estimates of the worldwide prevalence of abdominal obesity are needed to quantify the associated health risk. Therefore, the present study aimed to determine the relationship of abdominal girth with blood pressure, blood sugar and lipid profile among patients attending a cardiac clinic. A proper standard protocol is to be established in the health care setting for routine measurement and risk assessment of the general population.

Materials and Methods

Study design

This is a descriptive correlative study conducted with a questionnaire and assessment tool regarding the Physical and Laboratory Characteristics to assess the relationship of abdominal girth with blood pressure, blood sugar and lipid profile.

Samples and data collection

This study includes the data of patients attending the outpatient department of a national university hospital from April 2015 to May 2015 for the treatment of cardiac problems. The selection criteria were as follows: cardiac patients aged 20 years or older who had been advised to undergo laboratory investigation based on their blood sugar and lipid profile and those who were aware of the purpose of the research and agreed to participate. We excluded clients who had any of the following conditions: pregnancy, ascites, abdominal distension and mental disease (e.g., schizophrenia or depressive disorder).

A total of 120 people participated in the study; however, 100 were chosen and others were excluded due to inadequate responses. To verify the statistical power of our sample size, the formula $N = (Z^2 \times P \times P)/e^2$ was used. By using the above formula, the sample size was $N = 86.6$ and the Z value was 1.96. In this study, out of every 15 patients admitted with cardiac problems, one patient was associated with an angiography procedure. Therefore, the 'p' value is 1/15, or 0.06, and 'e' is tolerable error, which was 0.05. However, for uniformity and availability, we used a sample size of 100. Based on these results, our sample size seemed appropriate. To conduct this study, the objectives, methodology, participant rights, questionnaire on socio-demographic variables and assessment tool on the Physical and Laboratory Characteristics were reviewed and approved by the Institutional Review Board. To maintain consistency in the research method among researchers, a research director provided instructions on the survey before data collection. Researchers first confirmed patients who met the criteria for this study. The objectives and process of the study were explained to the target patients verbally and in writing. If they agreed to participate in the study, they were asked to provide written informed consent. Data collection took approximately 15 min. Data were collected anonymously to protect the participants' rights and privacy. It was agreed that the data would not be used for other purposes. They were also informed that they could quit at any time during data collection.

Description of tools

1) TOOL A: Self-structured interview questionnaire

Tool A consists of 2 sections:

SECTION − I: Contains socio-demographic information of patients attending a cardiac OPD in the form of a self-structured interview questionnaire. The tool was prepared as closed-ended questions containing 14 items.
SECTION − II: Contains the Modified Kuppuswamy's Socio-economic Status Scale, which encompasses education, occupation and income.

2) TOOL B: Contains assessment data from the physical and laboratory characteristics of the study population. It contains 5 items that are recorded from the sample profile.

Data analysis

The collected data were analysed using SPSS version 20.0. The demographic, physical and laboratory characteristics of the target patients were analysed using the frequency, percentage and mean. Correlation coefficients were used to assess the relationship with and within abdominal girth, lipid profile, blood sugar and blood pressure. Chi-square tests and analyses of variance were used to determine whether there was any association between the selected socio-demographic variables with abdominal girth, lipid profile, blood sugar and blood pressure.

Results

The distribution of subjects according to demographic variables

The distribution of subjects according to the demographic variables were as follows: 31% of people were within the age group of 41−50 yrs and 51−60 yrs; 63% were female; 90% were married; 58% were a part of a nuclear family; 54% lived