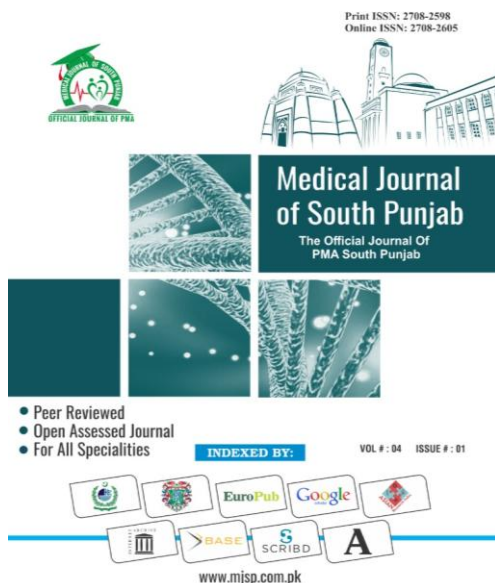


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## Factors Associated with Obesity in Young Adults of Ischemic Heart Disease

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Original Article



## Factors Associated with Obesity in Young Adults of Ischemic Heart Disease

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### ABSTRACT

**Objective:** The objective of studying the pattern of factors associated with obesity in young adults with ischemic heart disease is to identify the various factors that contribute to the development of obesity in young adults that leads to ischemic heart disease.

**Methods:** This Cross-sectional study was conducted in the outpatient department (OPD) of Ch. Pervaiz Elahi Institute of Cardiology Multan from 2<sup>nd</sup> July 2022 to 30<sup>th</sup> December 2022. A non-purposive sampling technique was used. We measured height, weight, body mass index, and BMI and collected data about their lifestyle, hypertension, diabetes, and smoking status.

**Results:** Out of 458 patients, after dichotomizing the BMI variable into >30 BMI as obese and <30 as non-obese, we studied the incidence of obese patients overall and the presence of different risk factors in the obese population. In the obese group, the significant risk factor in our sample population was either a sedentary lifestyle comprising 19.2% or Hypertension (19.6%).

**Conclusion:** It has been concluded from the study that a sedentary lifestyle is the most common risk factor for obesity among young adults. The incidence of hypertension in young adults is also significant.

**Keywords:** Obesity, Sedentary lifestyle, Hypertension, Diabetes, obesity risk factors.

## 1. INTRODUCTION

Obesity is caused by excessive fat accumulation. The most significant cause of chronic illness and a key risk factor for heart disease is obesity. The obesity pandemic is a global health issue. The study seeks to uncover young adult obesity's leading causes. Overweight patients are more likely to have comorbid illnesses such as cardiovascular disease, gastrointestinal disorders, type 2 diabetes, joint and muscle disorders, respiratory concerns, and psychiatric issues, affecting everyday life and death. Even little weight reduction can lessen the risk of cardiovascular disease, diabetes, OSA, and hypertension<sup>1</sup>.

World Health Organization data indicates that 2.5 billion people globally were obese in 2014. 75% of US and Australian women and 83% of men are expected to be overweight or obese by 2025<sup>2</sup>. American adults were a little over 36% obese between 2011 and 2014, according to the National Health and Nutrition Examination Survey. Women were more obese (38.3%) than men (34.3%). No gender

difference existed among the youth participants. Younger adults (32.3%) were more obese than older (37.0%) or middle-aged people (40.2%)<sup>3</sup>. Adults may foresee a rapid rise in non-communicable illnesses, including cardiovascular disease, hypertension, and diabetes, throughout South Asia, including Pakistan. Rural regions had 9% of adult males and 14% of women obese (BMI >25), whereas metropolitan areas had 22% and 37%<sup>5</sup>.

Genetics, environment, and chronic illnesses are major obesity risk factors. These underlying problems include dyslipidemia, metabolic dysfunction, hypertension, chronic low-grade inflammation, oxidative stress, insulin resistance, hyperglycemia, and renal failure<sup>6</sup>.

Obesity factors must be identified and addressed to reduce the risk and burden of myocardial infarction and anginal crises. Policymakers and public health practitioners may customize programs and policies to their community's needs and context and address the obesity epidemic's fundamental causes sustainably and equitably by

obtaining this information. It's also remarkable that urban and rural overweight rates were similar<sup>7</sup>.

The study seeks to discover young adult obesity factors specifically focused on presenting with ischemic heart disease.

## 2. METHODOLOGY

After ethical committee approval, this cross-sectional study was conducted at the OPD of CPEIC, Multan, in July-December 2022. (No 114, 15-05-2022). A total of 458 patients were included in the study after their consent. A non-purposive sampling technique was used.

The patients between 12-40 years of both genders and individuals willing to participate in the study were included. Pregnant females, physically disabled, and patients with a family history of obesity were excluded from the study.

Data was collected in the form of a predesigned Performa. After getting the demographic details, height (cm) and weight (Kg) were measured on the same scale and weight machine. BMI was calculated as per the formula:  $\text{weight(kg)} / [\text{height(m)}]^2$ . Patients were obese, having  $>30$

BMI, and non-obese  $\leq 29.9$  BMI according to WHO classification. Patients were labeled as hypertensive either based on history, taking antihypertensive for  $> 1$  year, or having presentation BP  $>140/90$  at the time of data collection. People with diabetes were those either having a history of diabetes or taking any oral hypoglycemic drug or insulin regimen for at least one year. Individuals smoking at least one pack of cigarettes for at least one year were labeled smokers. Patients not engaging in sports, walking 1km daily, or having more than  $>5000$  steps were considered sedentary.

Data was analyzed using SPSS v.26. Qualitative variables like gender, smoking, sedentary life, diabetes, and hypertension were presented as frequency and percentages. In contrast, quantitative variables like age and BMI were presented as mean. Data were stratified based on different age groups. First, the proportion of risk factors in other age groups was calculated. Then, the incidence of obesity and the balance of risk factors like diabetes, hypertension, smoking, and sedentary lifestyle in obese

patients was estimated. In the end, a chi-square test was run to find the p-value between risk factors and obesity, and a value  $<0.05$  was considered significant.

### 3. RESULTS

Of 458 individuals, 269 (58.7%) were males, while 189 (41.3%) were females. The mean age of the whole sample was 30.2 ( $\pm 7.2$ ). 57% were hypertensive, 29% were diabetics, and 261 (57%) were living sedentary lifestyles, as shown in Table 1. While calculating the BMI, the mean height was 160.1 cm, the average weight was 68.94 kg, and the mean BMI was 27.19, which depicts our sample size falling in the overweight category as per WHO classification.

Then, we stratified our data into different age groups. In the ages of 11-20, 21-30, and 31-40, 11.4, 41.3, and 47.4 %, respectively. Initially, we studied the presence of risk factors among the different age groups. In the 11-20 age group, 60 (13.1%) had risk factors, of which 6.3% had a sedentary lifestyle, while 4% had hypertension.

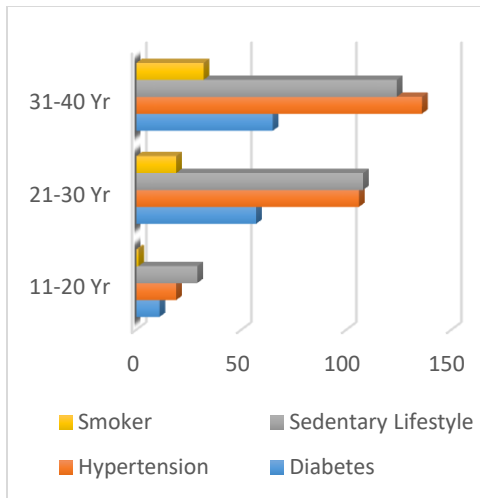
While in 21-30 years, 290 (63.32%) were associated with risk factors, in which 23% had a sedentary life, hypertension, and 12.44% diabetes. In the 31-40 years' age group, 357 (78%) people were connected to the risk factor,

where more than 26% of people had a sedentary life and hypertension, as shown in Figure 2.

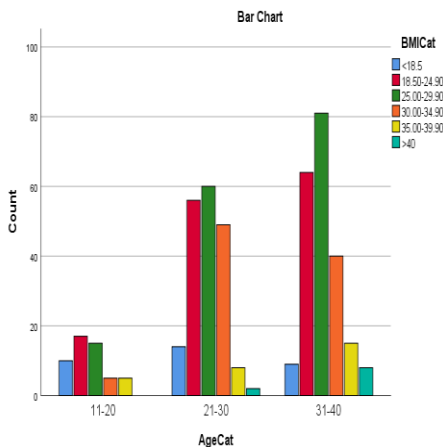
Characteristics	Number	Percentage
Males	269	58.7
Females	189	41.3
Diabetics	133	29.0
Non-Diabetics	325	71.0
Hypertensive	261	57.0
Non-hypertensive	197	43.0
Smoker	52	88.6
Non-Smokers	406	90.9
Sedentary Lifestyle	261	57.0

**Table 1: Descriptive Statistics of Sample**

**Fig-I: Risk Factors in Different Age Groups**



**Fig-2: Figure 1: BMI Categories in Different Age Groups**



Moving further in evaluating the incidence of obesity (classified BMI as per WHO categories) in different age groups, in patients aged 11-20, 3.7% were normal

and overweight, and 2.1% fell in the underweight category. In 21-30 years, most patients were in the average weight and overweight category (approx. 13%), while 10.6% were obese class I and 2.1% were obese class II and III. A significant proportion contained the age group 31-40 years, where 34% were overweight, 29.9% were average weight, and 28.8% were having obesity (sum of all obese classes). After dichotomizing the BMI variable into >30 BMI as obese and <30 as non-obese, we studied the incidence of obese patients and the presence of different risk factors in the obese population. Of 458 individuals, 132 (28.8%) were obese, having (69) 15% proportion of females and (63) 13.8% of males. In the obese group, the significant risk factor in our sample population was either a sedentary lifestyle comprising 19.2% or Hypertension (19.6%). In comparison, 12% had diabetes, and only 3.2% were smokers, as shown in Table 2. At the very end, we analyzed the association of a sedentary lifestyle, diabetes, hypertension, and smoking with the obese group.

**Table 2: Proportion of Risk factors in the obese group and their association**

			<b>Hypertension</b>	90 (19.6)	0.000
			<b>Sedentary Lifestyle</b>	87 (19.0)	0.002
<b>Variable</b>	<b>Frequency of Obese (%)</b>	<b>P-value</b>	<b>Smoking</b>	15 (3.2)	0.997
<b>Diabetes</b>	55 (12)	0.014			

#### 4. DISCUSSION

Obesity has been an emerging epidemic in Pakistan, especially in the young population<sup>8</sup>. A literature study of South Asia shows that the prevalence of overweight among teenagers/adolescents ranged from 11.0% (Sri Lanka) to 19.0% (India). While the prevalence of obesity ranged from 2.4% (Sri Lanka) to 11.0%. (Pakistan). This depicts that obesity is at its peak in Pakistan compared to other countries in South Asia. Our study shows comparable results and even worse status than a few years before. So, it's a need of the hour to study the prevalence and risk factors<sup>9</sup>.

Physical inactivity is the fourth leading cause of death worldwide, according to the World Health Organization (WHO), and around 70% of people worldwide lead sedentary lifestyles. A cross-sectional

survey of Peshawar University's undergraduate students revealed that 13.70% of individuals were physically inactive, and 27.76% showed low physical activity.<sup>(8)</sup> a sedentary life is an emerging cause of obesity and dangerous health hazards. A study done on the evaluation of risk factor of obesity in adolescents show that 13% of respondents show physically inactive status among the obese group. In contrast, our study shows that 17% of individuals have a sedentary lifestyle in the obese population<sup>11</sup>.

Around 22% of persons over the age of 18 had hypertension throughout the world in 2014. The prevalence of hypertension in Pakistan was 19.1% in the first National Health Survey<sup>12</sup>. National health survey data of 2016-17 shows the prevalence of hypertension in the obese population is about 14.3%<sup>13</sup>. Our study shows it's

rising to approximately 19%, an alarming rise of 5% in just five years.

It has been said that the worldwide diabetes epidemic is a "tsunami," having the potential to put unrelenting and unsustainable pressure on healthcare spending<sup>14</sup>. Despite many shortcomings in data, the prevalence of diabetes in Pakistan is about 9.8%, per the 2016 South Asia survey. While determining the risk factor, the same survey depicts approx. 4.6% of people with diabetes are obese<sup>15</sup> which is much less than the prevalence in our study. It motivates us to do more studies regarding its prevalence and stricter control measures.

Obesity and smoking are different health risk factors. Due to the effects of nicotine, smokers generally have a lower BMI and body weight than non-smokers when compared by gender and age<sup>16</sup>. The study, conducted in the UK with 499,504 people, examined the relationship between smoking and obesity. Overall, smokers now had a lower risk of becoming overweight than non-smokers (adjusted OR 0.83 and 95% CI 0.81-0.86). However, the

youngest subgroup (<40 years old) showed no statistically significant connection, which correlates to our study. Particularly nowadays, obesity and overweight and their interactions with conventional and unconventional risk factors have a substantial role in developing cardiovascular disease or myocardial ischemia<sup>17</sup>. The obesity pandemic is a new hazard to health in today's culture<sup>18</sup>. Cardiovascular disease is the leading cause of mortality globally, and obesity is the leading risk factor for coronary heart disease<sup>19</sup>. It is thought that the rising shift in the worldwide epidemiological trend might be explained mainly by the global expansion of bad lifestyle variables such as smoking, obesity, inactivity, and type 2 diabetes<sup>20</sup>.

## 5. CONCLUSION

Results of this study concluded from the current study that a sedentary lifestyle is the most common risk factor for obesity among young adults with IHD. Hypertension is the 2<sup>nd</sup> most common risk factor among young adults.



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