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A CROSS SECTIONAL STUDY ON RELATIONSHIP OF OBESITY WITH HYPERTENSION

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Abstract:
The basic aim of the study is to find relationship of obesity with hypertension among local population of Pakistan. This cross sectional study was conducted at Jinnah Hospital, Lahore during January 2019 to August 2019. In this study we selected 100 patients who was suffering from obesity and hypertension. For this purpose we select the patients from both genders. We design an analysis survey for the collection of data. Data on demographic, socioeconomic and health-related variables were collected with a questionnaire validated in local languages. Dietary data were collected with a food-frequency questionnaire. The mean and median ages of the study participants were 35 and 32 years old respectively (Table 01). Regarding the self or family history of any chronic disease; 50 (10.3%), and 16 (3.3%) of the total study participants were known hypertensive, and diabetes mellitus (DM) patients respectively, while 82 (16.8%) and 64 (13.1%) have family history of hypertension and DM respectively. It is concluded that there is an alarming situation of obesity among local population of Pakistan which leads to many health issues like hypertension and CVD.

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INTRODUCTION:

Developing countries are increasingly vulnerable to the worldwide epidemic of obesity, which affects all segments of the population, including men, women and now children. Compared with populations in industrialized countries, those in the developing world appear to be at greater risk of the diseases associated with overweight, and cardiovascular disease has become the leading cause of disability and death in many developing countries [1]. The Framingham Study also demonstrated that both men and women had an increase in blood pressure with increased overweight. Persons in the highest body mass index quartile had a 16 mmHg higher systolic blood pressure and a 9 mmHg higher diastolic blood pressure than persons in the lowest body mass index quartile. In this study, the systolic blood pressure increased 4 mmHg for each 4.5 kg of increased weight. Insurance industry data have also shown a positive relationship between overweight or obesity with hypertension. Hypertension with a prevalence of 30% throughout the world is considered a major concern.1 Hypertension has a direct relationship with many diseases and can cause damage to the heart, kidneys, brain, lungs, and is associated with end organ failure. A study conducted on the adult population in 2000 showed that an estimated 26.4% (972 million) adults suffered from hypertension. The number was predicted to increase by approximately 60% in the year 2025 to a total of 29.3% (1.56 billion) [2].

Hypertension is a major public health problem due to its high prevalence all around the globe. Around 7.5 million deaths or 12.8% of the total of all annual deaths worldwide occur due to high blood pressure. It is predicted to be increased to 1.56 billion adults with hypertension in 2025. Raised blood pressure is a major risk factor for chronic heart disease, stroke, and coronary heart disease [3]. Elevated BP is positively correlated to the risk of stroke and coronary heart disease. Other than coronary heart disease and stroke, its complications include heart failure, peripheral vascular disease, renal impairment, retinal hemorrhage, and visual impairment [4].

Developing countries are increasingly vulnerable to the worldwide epidemic of obesity, which affects all segments of the population, including men, women and now children.[1,2] Compared with populations in industrialized countries, those in the developing world appear to be at greater risk of the diseases associated with overweight, and cardiovascular disease has become the leading cause of disability and death in many developing countries [5]. Estimates of the prevalence of overweight in Indo-Asian countries (India, Pakistan, Bangladesh and Sri Lanka) based on

these cutoff values have not been reported. Further, it is not known whether the revised definition of overweight would be valid at a population level in terms of being better associated with the consequences of obesity [6].

Objectives of the study

The basic aim of the study is to find relationship of obesity with hypertension among local population of Pakistan.

METHODOLOGY OF THE STUDY:

This cross sectional study was conducted at Jinnah Hospital, Lahore during January 2019 to August 2019. In this study we selected 100 patients who was suffering from obesity and hypertension. For this purpose we select the patients from both genders. We design an analysis survey for the collection of data. Data on demographic, socioeconomic and health-related variables were collected with a questionnaire validated in local languages. Dietary data were collected with a food-frequency questionnaire. All women aged 40 years or under were asked whether they were currently pregnant. Physicians at mobile examination centres performed a standardized physical examination that included 2 blood pressure readings obtained at least 20 minutes apart from the right arm by means of a mercury sphygmomanometer with the subject sitting. Trained technicians performed anthropometric examinations. Weight and height were recorded while the subject was in light clothing and without shoes. BMI was calculated as weight (in kilograms) divided by height squared. Blood samples were obtained at least 1 hour after the subject arrived at the examination centre; fasting was not required.

Statistical analysis

The data of respiratory function were compared between the smoker and non-smoker groups using the independent t-test for normally distributed data or the Mann-Whitney U test for other distributions. Differences were considered statistically significant at $p<0.05$.

RESULTS:

The mean and median ages of the study participants were 35 and 32 years old respectively (Table 01). Regarding the self or family history of any chronic disease; 50 (10.3%), and 16 (3.3%) of the total study participants were known hypertensive, and diabetes mellitus (DM) patients respectively, while 82 (16.8%) and 64 (13.1%) have family history of hypertension and DM respectively. On the other hand, 182 (37.4%) and 131 (26.9%) of the total respondents were Chat chewer and smoker respectively

Table 1: Socio-demographic characteristics of study participants

Variables	Frequency	Percent
Sex		
Male	2381	48.9
Female	249	51.1
Age (years) [Mean = 35]		
25–34	285	58.5
35–44	125	25.7
45–54	48	9.9
55–65	29	6.0
Marital status		
Single	176	36.1
Married	254	52.2
Others	57	11.7
Highest level of education		
Illiterate	9	1.8
Literate but no formal education	34	7.0
Primary school (1–8)	104	21.4
Secondary school (9–12)	133	27.3
Certificate or higher	207	42.5
Income (birr)		
Low level	139	33.3
Medium level	157	37.6
High level	121	29.1

Table 02 shows the mean values of systolic and diastolic BP according to age and gender. In men, the highest mean systolic BP and mean diastolic BP were among the eldest age group and preceding eldest age group.

Table 2: Analysis of relationship of obesity and hypertension

Has your doctor told that you have hypertension?		
Yes	62	96.9%
No	2	3.1%
How often do you see your doctor for blood pressure checkups?		
Monthly	6	9.37%
Weekly	2	3.12%
Daily	16	25%
When needed	40	62.5%
Do you take blood pressure at home?		
Yes	23	35.9%
No	41	64.06%
Does high blood pressure affect the ability to perform daily activities?		
Yes	43	67.2%
No	15	23.4%
Don't know	6	9.4%
Have you ever been in emergency for high blood pressure?		
Yes	31	48.4%
No	33	51.6%
Do you take any medication to control your blood pressure?		
Yes	59	92.2%
No	5	7.8%
Do you have blood relatives with the history of hypertension?		
Yes	27	42.2%
No	15	23.4%
Don't know	22	34.4%
Do you have diabetes? If yes, which type?		
No	41	64.1%
Diabetes type 1	7	10.9%
Diabetes type 2	16	25%
What are your health goals and interest?		
Eating better	7	10.9%
Exercising	3	4.7%
Losing weight	4	6.2%
Reducing stress	10	15.6%
No interest	40	62.5%

DISCUSSION:

Discussions around the global epidemic of obesity have often used the future tense for the developing world. We have shown that current rates of overweight and obesity are already unacceptably high among youths. This is of considerable concern for a number of reasons. Obesity tends to track within individuals and populations: obese children become obese adults. This tendency, combined with the continued trend toward urbanization, will serve to seriously escalate adult levels of obesity: we observed a 2.5 times greater prevalence of obesity among urban residents than

among rural residents. In addition, there are indications that obesity in youth coupled with low birth weight is the worst possible combination for adult cardiovascular disease and diabetes, conditions to which Indo-Asian populations are already particularly susceptible [7].

Clinical diagnosis of hypertension requires persistent elevation of blood pressure on repeated visits. However, the mean of multiple readings on the same day (2 readings in the National Health Survey of Pakistan) is considered acceptable for epidemiologic studies and has been used to diagnose hypertension in other surveys. In the National Health Survey of Pakistan, blood was drawn without a requirement of fasting [8]. Diabetes was defined as a blood glucose concentration of 140 mg/dL (7.8 mmol/L) or greater or a history of diabetes. This definition diverges from the standard criterion of a fasting blood glucose concentration of more than 126 mg/dL (7.0 mmol/L). However, our main findings were unchanged when we performed a sensitivity analysis using the older blood glucose criterion of 200 mg/dL or greater [9]. Thus, we believe that these findings are robust. We acknowledge that some dimensions of socioeconomic status may not have been adequately captured, the food-frequency questionnaire was not validated, and information on physical activity was not collected. In addition, our associations between obesity and health conditions were cross-sectional. However, there have been few high-quality cohort studies in the developing world that have assessed associations between obesity and incident disease, and we believe that reverse causality is not a major problem for conditions that are largely asymptomatic [10].

CONCLUSION:
It is concluded that there is an alarming situation of obesity among local population of Pakistan which leads to many health issues like hypertension and CVD. Immediate efforts are needed at a national level to control this problem in Pakistan and possibly the neighbouring developing countries.

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