

Obesity in Pakistan – A new epidemic

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Objective: To assess nationwide prevalence of obesity across Pakistan.

Methodology: A multi-center study was conducted across 11 cities of Pakistan from 11th October 2018 to 11th June 2019. Individuals of age ≥ 15 years were included. Body mass index (BMI) and individual perception about obesity and bodyweight were recorded. Data were analyzed using SPSS 21.

Results: About 73% perceived themselves to be obese. On Asia-Pacific BMI classification, 166 (6.7%) were overweight and 2,202 (88.2%) were obese. Overweight and obesity were significantly

associated with middle age ($p < 0.01$), hypertension ($p = 0.04$), lack of exercise ($p < 0.01$), sedentary professions ($p < 0.01$), and eating habits ($p = 0.01$).

Conclusion: Obesity is highly prevalent in Pakistan. General population underestimates their bodyweight. Focus should be maintained on identifying the risk factors from the early age and taking necessary steps like life style modification to prevent them. (Rawal Med J 202;46:446-449).

Keywords: BMI Classification, obesity, prevalence.

INTRODUCTION

Globally, more than two billion people are obese or overweight and the numbers are constantly on a rising trend. More than three million deaths are due to obesity or overweight annually, making it the fifth leading cause of global deaths.¹ Obesity has no longer remained the disease of high-income countries as it is being continuously reported from low-to-middle-income countries (LMICs) too. It is assumed that changes in global dietary patterns and emerging sedentary lifestyle are significantly contributing to this epidemic. In LMICs, female gender, urban residents, and older individuals are more prone to obesity.²

More than half of all obese individuals reside in ten countries; eight of these are LMICs including Pakistan.² Pakistani pattern and frequency of obesity has been studied in different population subsets.³⁻⁷ WHO in 2016 reported that 21% of Pakistanis are overweight and 5% as obese.⁸ Figures reported in local literature are alarmingly high; with 9–29% overweight and 7.5–64% obese individuals.³⁻⁷ A person's self-perception of bodyweight has been compared with their actual weight and the results have consistently shown that overweight and obese individuals do not perceive themselves so.⁸

Data from Pakistan is largely discrepant since most

studies have been done in one or more cities and the sample had been small. This makes the real picture of obesity in Pakistan deficient. Therefore, a nationwide study was conducted to assess the frequency of obesity in Pakistan.

METHODOLOGY

A multi-center, observational, cross-sectional study was conducted in 11 Pakistani cities across 3 provinces namely Sindh, Punjab, and Khyber Pakhtunkhwa, from 11th October 2018 till 11th June 2019, in accordance with World Obesity Day 2018. Heterogeneous data was gathered from healthy attendants visiting healthcare clinics with their patients and from general public in camps held at various hospitals, universities, corporate offices, and healthcare conferences. Non-probability purposive sampling technique was utilized. Individuals of age ≥ 15 years, of both genders were included.

The questionnaire included socio-demographic characteristics, co-morbidity status (hypertension (HTN) and diabetes mellitus (DM)) and clinical characteristics – body weight, height, waist circumference, body fat%, visceral fat %, and blood pressure, and serum low-density lipoprotein (LDL). For body fat % and visceral fat %, Omron Full Body Sensor Body Composition Monitor was used. It

estimates body fat % by bioelectrical impedance method. It sends a weak electrical current (50 kHz; <500 μ A) through the body to determine water content in each tissue. It takes measurements from both hands and feet to reduce the influence of water movement on body composition.

HTN was classified according to American Heart Association as elevated (systolic: 120-129mmHg and diastolic: <80mmHg); stage I (systolic: 130-139mmHg and diastolic: 80-89mmHg); and stage 2 (systolic: \geq 140mmHg and diastolic: \geq 90mmHg).⁹ Serum LDL levels from last one year were recorded. BMI was calculated using weight and height as follows: BMI= weight (kilograms)/height (meters squared). BMIs were classified according WHO BMI classification¹⁰ and Asia-Pacific BMI Classification.¹¹

Statistical Analysis: Statistical analysis was performed using SPSS version 21. $p < 0.05$ was considered significant.

RESULTS

In this survey, 2,496 individuals participated with 66% females and 34% males. Their mean age was 41.1 ± 11.8 years. Only 20% ($n=509$) were physically active. There were 689 (27.7%) known hypertensive, 532 (21.4%) diabetic and 757 (30.4%) had their LDL levels checked in the last year (Table 1). We found that 89% considered obesity as a disease, 73% considered themselves obese, 34% had checked their BMI at least once in their life. Obesity limited everyday activities in 63% and social life in 64%. (Mean BMI was 29.9 ± 5.0 kg/m². According to Asia-Pacific classification, 166 (6.7%) were overweight and 2,202 (88.2%) were obese. According to WHO classification, 1,057 (42.3%) were overweight and 1,145 (45.9%) were obese. Kappa analysis showed 12.7% significant agreement between two classifications ($p < 0.01$) (Table 2).

As per Asia-Pacific classification, in Abbottabad, 89.7% were obese; 3.9% overweight. In Islamabad, 95.1% were obese; 4.9% overweight. In Karachi, 83.6% were obese; 8.4% overweight. In Khanpur, 72% were obese; 8% overweight. In Lahore, 90.1% were obese; 5.8% overweight. In Mirpur and Sukkur, all 100% were obese. In Quetta, 83.2% were obese; 16.8% overweight. In RahimyarKhan, 78%

were obese; 10.9% overweight. In Rawalpindi, 97.5% were obese; 0.08% overweight. In Sargodha, 97.5% were obese; 0.8% overweight. In Sialkot, 97.1% were obese; 2.9% overweight.

Table 1. Demographic characteristics (N=2,496).

Characteristics		Frequency (%)
Gender	Male	860 (34.2%)
	Female	1651 (65.8%)
Age group	15-25 years	162 (6.5%)
	26-35 years	737 (29.6%)
	36-45 years	822 (33.0%)
	46-55 years	477 (19.2%)
	56-65 years	211 (8.5%)
	>65 years	80 (3.2%)
	Mean \pm SD	41.1 \pm 11.8
Education level	No education	578 (23.9%)
	Matriculation	724 (29.9%)
	Intermediate	524 (21.7%)
	Higher education	594 (24.5%)
Physical activity	Yes	509 (20.5%)
	No	1971 (79.5%)
Profession	Office work	419 (17.0%)
	Shop keeper	264 (10.7%)
	Labor	133 (5.4%)
	Working woman	301 (12.2%)
	House wife	1102 (44.7%)
	Other	246 (10.0%)
Clinical characteristics		Mean \pm SD
Weight, kilograms		80.8 \pm 14.3
Height, centimeters	Male	172.2 \pm 8.72
	Female	160.8 \pm 8.46
Waist, centimeters		35 \pm 3
Body Fat, %		37.0 \pm 9.1
Visceral Fat, %		10 \pm 3
Hypertension, n (%)		689 (27.7%)
Diabetes mellitus, n (%)		532 (21.4%)
Blood Cholesterol checked in the last one year		757 (30.4%)
LDL cholesterol, mg/dL		229 \pm 50
Systolic BP, mmHg		156 \pm 24
Diastolic BP, mmHg		100 \pm 18
Body mass index, kg/m ²		29.9 \pm 5.0

Table 2. Body mass index distribution (N=2,496).

Criteria of body mass index classification		Frequency (%)
Asia-Pacific classification	Underweight (<18.5)	6 (0.2%)
	Normal (18.5-22.9)	122 (4.9%)
	Overweight (23-24.9)	166 (6.7%)
	Obese (≥25)	2,202 (88.2%)
World Health Organization classification	Underweight (<18.5)	6 (0.2%)
	Normal (18.5-24.9)	288 (11.5%)
	Overweight (25-29.9)	1,057 (42.3%)
	Obese (≥30)	1,145 (45.9%)

BMI was significantly associated with age group ($p<0.01$), hypertension ($p=0.04$), sedentary profession ($p<0.01$), sedentary lifestyle ($p<0.01$), inappropriate eating habits ($p=0.01$), and lack of exercise ($p<0.01$) (table 3). Alarming, among known hypertensive participants (taking medications) only 1.4% of patients have adequate BP control.

DISCUSSION

This study showed alarming results with only 5% individuals with normal BMI, 7% overweight and an overwhelming rate of 88% obesity. Two-third (73%) participants perceived themselves to be obese. Most overweight and obese participants were older, hypertensive, had sedentary jobs/home-based, and practiced inappropriate eating habits. Obesity and overweight was almost twice in females.

In a study from Gilgit, 64% females were obese as

compared to 37% males.³ Females were significantly more obese ($p=0.03$) in one study from Karachi⁴ while another study from Karachi reported 62% men and 55% women as obese.⁷ In a study with Saudi university-going females, 48% were overweight and obese and the risk factors included marriage, familial obesity, and increased intake of aerated beverages.¹² This knowledge of gender disparity in incidence of obesity puts forward the notion that gender differences are driven by sociocultural factors – in some cultures bigger female bodies are taken as a symbol of health, fertility, and prosperity.¹³

Food quality plays a crucial role in determining body type. In a meta-analysis of 11 studies conducted with South Asian school-going children, the most important risk factors of overweight and obesity were lack of physical activity, long hours of television/video games, and junk and high calorie food consumption.¹⁴ Consumption of ready-made food increased daily calories intake, hence the risk of central obesity and fat deposition.¹⁵ Poor breakfast habits predicted central obesity.¹⁶

In a Pakistani survey, 28% women overestimated and 10% underestimated their weight.¹⁷ In an Indian study, 9% of those who perceived themselves to be average weight were found to be overweight/obese and 34% of those who perceived themselves to be obese were actually overweight/obese ($p=0.001$).¹⁸ In our study, obesity was largely underestimated.

To the best of our knowledge, this is the first study conducted on such a large scale, spanning across 11 cities of Pakistan. It contributes in creating awareness of obesity as a public health emergency. Since the sample self-registered them to the study by visiting the camps and were not selected after any stringent inclusion criteria; the results may not be generalized due to inclusion bias. Metabolic comorbidities were taken into account but it wasn't established if these comorbidities were because of obesity. Participants with medical causes of obesity were not excluded. Furthermore, serum LDL reported in this study are self-reported, hence, may be subjected to recall bias.

CONCLUSION

Obesity as an epidemic is a serious public health

concern for Pakistan. General population underestimates their bodyweight. Focus should be maintained on identifying the risk factors from early age and taking necessary steps for prevention. Lifestyle modifications are indispensable. Public health specialists should ensure more people are transitioning towards an active lifestyle.

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