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RESEARCH ARTICLE

Morbidity profile of obese females in the age group above 18 years in block Hazratbal: A cross sectional study

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Abstract

Studies on obesity among females and its comorbidities had not been conducted in block Hazratbal so far. Thus this study was conducted with the objective to assess the magnitude of obesity and obesity related morbidities in the women of more than 18 years of age. The community based cross sectional study was carried out in block Hazratbal from July 2010 – March 2011. 10% of the villages were selected randomly from each zone. All the house hold of selected villages were surveyed. All the non pregnant females older than 18 years were included in the study. The sample size came out to be 2267. All the females were subjected to height and weight measurements using standardized equipments and interviewed after taking informed consent. The subjects who had a BMI ≥ 30 Kg/m² were evaluated for comorbidities by clinical examination, biochemical investigations and Ultrasonography. Categorical data was summarized in the form of percentages and continuous data was summarized in the form of mean and standard deviation. Chi square test was used for evaluating statistical significance. P value of <0.05 was considered as significant.

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INTRODUCTION

Obesity is a condition with excess fat deposition which impairs health. Obesity causes serious medical complications that impair quality of life and lead to increased morbidity and premature death.⁹ The numerous medical complications associated with obesity extend to nearly every organ system and significantly increase the risk of serious disease and death. Both cross-sectional^{16, 17} and prospective studies^{18, 19} have linked obesity to hypertension. A lot of studies have found that the risk for developing Diabetes increases exponentially in both men and women with increase in BMI^{33, 26, 31, 34}. The risk of symptomatic Gall Stones increases linearly with BMI^{22, 23}. Morbid obesity has reached epidemic proportions in India in 21st century, affecting 5% of country's population³⁶. Jammu & Kashmir is not lagging behind and the prevalence of the overweight/obesity according to the Third National Family Health Survey, among females only has been reported to be around 11.1%³⁷. Since studies on obesity among females and its comorbidities had not been conducted in block Hazratbal so far. This study was conducted with the objective to assess the magnitude of obesity and obesity related morbidities in the women of more than 18 years of age.

Methodology

The community based cross sectional descriptive study was carried out in block Hazratbal over a period of one year from July 2010 – March 2011. From the four zones of block Hazratbal, 10% of the villages were selected randomly. All the house hold of selected villages were surveyed. All the non pregnant females older than 18 years, i.e., a total of 2267 were included in the study. Questionnaire was used to record their demographic characteristics. All the females

were subjected to height and weight measurements using standardized equipments after taking informed consent. The BMI classification was done as per “WHO” classification and the subjects who had a BMI ≥ 30 Kg/m² were evaluated for the co morbidities by clinical examination, biochemical investigations and Ultrasonography. Blood pressure was recorded with a standard Mercury. Systolic blood pressure (SBP) and diastolic blood pressure (DBP) were determined with the first and fifth Korotkoff sounds. SBP ≥ 140 mmHg/or DBP ≥ 90 mmHg and/or treatment with antihypertensive medication was labeled as hypertensive as per JNC 7⁽⁸¹⁾. Fasting blood (venous) sample was taken to determine blood glucose, Triglycerides and HDL. The subjects were strictly advised not to eat or drink anything other than water for at least 8 hours before the blood samples were taken. As per ADA (American Diabetes Association) classification, a fasting sugar equal to or more than 126 mg/dl was flagged as diabetic⁽⁸²⁾. For Triglycerides result of more than 150 mg/dl and for HDL a result of less than 50 mg/dl were considered as predictors for metabolic syndrome. Metabolic syndrome was diagnosed on the basis of “The new International Diabetes Federation (IDF) definition”⁽⁸³⁾. Blood samples were processed by God-Pod biochemical analyzer (Tecno-168). Samples were collected in tube clotting activators and were brought to the laboratory in a cold box with a maintained cold chain within half an hour of collection.

Ultrasonography was done by an experienced sonologist to detect Gall Stones. Subjects were asked to have a fat free meal in the evening and also avoid eating anything for eight to twelve hours before ultrasonography.

Categorical data was summarized in the form of percentages and continuous data was summarized in the form of mean and standard deviation. Chi square test was used for evaluating statistical significance. P value of <0.05 was considered significant.

Results:-

Majority (36.9%) of the study population belonged to age group of ≤ 30 years and most (70.6%) of them were married. Overall, there was a preponderance of illiterate females (72.7%). The majority of the females were housewives (76.0%). Approximately 57% of females were living in joint families. Almost half (50.8%) of the population were from rural area. According to modified B.J Prasad’s scale for 2010⁽⁸⁴⁾ majority of the studied population belonged to socioeconomic class IV (28%), only 7.2% belonged to class I.

Out of 2267 females, 212 (9.4%) were obese (BMI ≥ 30 Kg/m²). The mean height was 1.6m and the mean weight was 58.4. Mean BMI was 24.2. Obesity was observed more in urban population (11.3%) as compared to rural population (7.5%) and the difference was significant (p value <0.05). Prevalence of obesity increased with advancing age upto the age group of 51-60 years; thereafter it decreased. Age was found to be significantly related to obesity (p <0.001). It was observed highest in widows (13.3%) and lowest in unmarried females (3.0%). Prevalence of obesity was highest in joint families (11.2%) as compared to nuclear families (8.0%). There was no significant association between obesity and educational status of females. Prevalence of obesity was observed more in retired females (25.0%), and less in unmarried household workers (2.1%). It was found to be highest in females belonging to Class I (15.2%). The study revealed an overall prevalence of 9.4%.

Table 1: Associated Co-morbidities

	n	%
Hypertension	98	46.2
Metabolic Syndrome	54	25.5
Blood Sugar (≥ 126)	19	9.0

Gall Stones	4	1.9
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The most common co-morbidity was hypertension (46.2%), followed by metabolic syndrome (25.5%), diabetes mellitus (9.0%) and gall stones (1.9%).

Table 2: Predictors for Metabolic Syndrome			
		N	%
Hypertension Status	Hypertensive	98	46.2
	Pre hypertensive	57	26.9
	Total	155	73.1
Triglycerides (>150)		192	90.6
HDL (<50)		205	96.7
Blood Sugar (> 100)		57	26.9
Metabolic Syndrome {BMI(≥ 30) + HTN(>130/85) + BGF(≥ 100)}		54	25.5

Table 3 : Associated Co-morbidities		
	n	%
Fatty Liver	110	49.7
Chronic LBA	149	67.4

Fatty liver was a common ultrasonographic finding present in almost half of the population (49.7%). Almost two-thirds of the study population reported chronic backache.

Discussion:

The study revealed a prevalence of 9.4% of individuals suffering from obesity in the study population. A similar study conducted by Grag C et al observed that a comparison of two major studies conducted by National Family Health Survey (NFHS -2) in 1998-1999 and NFHS-3 in 2005-2006 showed that the prevalence of obesity among Indian women has elevated from 10.6% to 12.6% (39).

Obesity leads to adverse metabolic effects on blood pressure, cholesterol, triglycerides and insulin resistance. Studies have shown that increase in BMI increases the risk of Blood pressure, Type 2 Diabetes, Metabolic syndrome, GB stones and many more.

In our study the prevalence of Diabetes has been found to be (9%) which is consistent with the study carried out by Gopinath N,et,al.⁸⁶In the urban population of Delhi, the prevalence of diabetes has been found to be in the range of 1.6 to 9% (being more common in obese subjects). Gupta R from Jaipur, through three epidemiological studies carried out during 199490, 200191 and 200392 demonstrated rising trend rates of diabetes (criteria: FBS>126mg/dl or history) 1%, 13%, and 18% respectively among males and 1%, 11% and 14% respectively among females.

Gupta R from Jaipur, through three serial epidemiological studies (Criteria $\geq 140/90$ mm of Hg) carried out during 1994-90, 2001-91 and 2003-92 demonstrated rising prevalence of hypertension 30%, 36%, and 51% respectively among males and 34%, 38%, and 51% among females. DJ Raina et al 41 Jan –march 2009, JK sciences observed increase in hypertension as BMI increases from 10.9% to 29.30% to 48.98% from normal BMI to overweight and obesity. Malhortra et al 96 1994-1995, journal of hypertension, observed similar findings. In our study 46.2% prevalence of hypertension was observed among the target group which is consistent with the above studies.

Ramachandran et al 89 (modified ATP III criteria) documented a higher prevalence of metabolic syndrome (41%) in 1995. Gupta et al 98 reported 25% prevalence (ATP III criteria) in Jaipur. The Sentinel surveillance project 93 in Indian Industrial population illustrated 27% prevalence (ATP III criteria) during 2001-03. Misra et al 58 carried out a study among the urban slum population in Delhi, reported 30% prevalence (own criteria) of metabolic syndrome. Prevalence of Metabolic syndrome in our study was 25.5% which is consistent with above studies.

Our study observed 1.9% prevalence of Gall stones in obese females. Studies conducted by James E, Everhart, MD, MPH in “Contributions of Obesity and Weight Loss to Gallstone Disease” (73) found that Obesity is an important risk factor for gallstone disease, more so for women than for men.

Conclusion:-

The overall prevalence of obesity was observed as 9.4%. Maximum prevalence of obesity was observed in 51-60 years of age group followed by 61-70, 41-50, 31-40, >70 , 30 and less. Number of obese females was more in urban 11.3% as compared to rural dwellings 7.5%. Maximum percentage of obesity was found among widows 13.3%, followed by currently married 10.9% and unmarried 3%. Retired group among occupation had preponderant obesity 25.%, followed by Government employees 15.9%, house wife 10.9%, students 5% and house hold 2.1%. Females in joint families were significantly obese 11.2% as compared to nuclear families 8%. Obesity was more in females belonging to socioeconomic class 1 (15.2) and class 2 (12.0). Hypertension was observed in 46.2%. Metabolic syndrome was present in 25.5%. Type 2 diabetes mellitus was present in 9% of the obese females. Gallstones were present in 1.9%. Fatty Liver was present in 49.7%. Chronic low back ache was present in 67.4% of obese females.

Recommendations

Increasing prevalence of obesity and its comorbidities particularly among females need immediate attention in terms of prevention and health education. Long term prevention in terms of physical activity, healthy eating and active living is necessary to achieve obesity free life. Life style modification like increase in physical activity, decrease in consumption of sugar sweetened beverages, increase breast feeding initiation and reduction of consumption of high energy dense foods, decrease television viewing should be started early in life and continued across the life span.

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