Title: Waist to Height ratio as a measure of Obesity for risk stratification- Two year Amritsar Longitudinal study of 2276 adult patients with Type 2 Diabetes Mellitus

Category: Prevention

Abstract

Objective: Waist-to-height ratio (WHtR), is a measure of the distribution of body fat and is a marker of risk of obesity related cardiovascular diseases. Recent studies have questioned the accuracy of BMI as a measure of obesity and as a predictor for incident cardiovascular events and mortality.

Methods: We evaluated the Amritsar cohort of diabetic population, attending a tertiary care practice setting, representing a muti-ethnic population of 2600 T2DM patients over two years. They were analyzed as gender-based tertiles classified and distributed based on WHtR as Healthy (H), Over Weight (OW), Very Over Weight (VOW) and Morbidly Obese (MO). We excluded 309 patients because of missing anthropometric data and did not include 15 patients who were T2DM with age less than 18 years. Mann Whitney test was utilized for statistical analysis.

Results: 2276 (1274 males and 1002 females, mean age 54. 45 ± 10. 68, maximum 89 years, minimum 19 years) adult T2DM were evaluated for WHtR. The mean WHtR was 0. 58 ± 0. 09, 95% CI 0. 58 to 0. 59 (OV) category. None of the patients was under the extremely slim category (WHtR ≤ 0. 34). The difference in the WHtR in the males and the females was statistically significant (p=0. 0075), reflecting higher grade of obesity in females (Males (OW) mean 0. 59 ± 0. 09, Females (VOW) mean 0. 58 ± ± 0. 09). The distribution of the patients defined by the WHtR tertiles were as, H (M n=285, 0. 43-0. 52, F n= 152, 0. 42-0. 48), OW (M n=193, 0. 53-0. 57, F n=177, 0. 49-0. 53), VOW (M n=353, 0. 58-0. 62, F n=185, 0. 54-0. 57) and MO (M n=338, 0. 63+, F n=483, 0. 58+) . The distribution in the VOW and MO tertile was highly statistically significant. It is of epidemiological concern that the mean WHtR reflects that majority of T2DM patients are of VOW category. The preponderance of the women being relatively more obese is an evidence for a need for gender specific action. Policy frame work to address the preventive strategies for diabetes and a structured advocacy of lifestyle is urgently needed to prevent the complications of diabetes. It would be prudent to utilize the anti-hyperglycemic agents to target weight loss in these patients.

Conclusion: Our study strengthens the evidence favoring WHtR as the preferred, precise and an easy tool to define the grade of obesity in Indian population, that should help guideline directed, customized preventive and therapeutic approaches in the tertiles of T2DM patients.