OBESITY IN ELDERLY HEMODIALYSIS PATIENTS: LOW SENSITIVITY AND SPECIFICITY OF BODY MASS INDEX

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Introduction and Aim

- Body mass index (BMI) is the main adiposity marker applied to diagnose obesity.
- The thresholds proposed by the World Health Organization (WHO: overweight ≥ 25 kg/m² and obesity ≥ 30 kg/m²) and by the Nutrition Screening Initiative (NSI: overweight/obesity > 27 kg/m²; directed to the elderly) are the most used thresholds to diagnose obesity by BMI.
- The accuracy of WHO-BMI and NSI-BMI thresholds to diagnose obesity in elderly patients is however not known.
- Therefore, we **aimed** to analyze the performance of BMI thresholds proposed by WHO and NSI to diagnose obesity in elderly on HD, by assessing their specificity and sensitivity against body fat percentage (BF%) evaluated by skinfold thicknesses.

Methods

- Observational cross-sectional study in 169 elderly (≥ 60 years) maintenance HD patients (> 3 months), 108 (63.9%) men, mean age of 70 ±7 years, HD for 3 years (1.2; 5.7; median and interquartile ranges).
- Diabetes was observed in 64 patients (37.9%), urea Kt/V was 1.4 ±0.38, serum creatinine 8.7 ±2.8 mg/dL and albumin 3.9 ±0.4 mg/dL.
- Body fat percentage (BF%) was obtained by the sum of skinfold thickness.
- The cutoff of BF% ≥ 32.3% in men and ≥ 44.1% in women was used as reference to diagnose obesity. These cutoffs were defined according to the study of Heo *et al.* 2012 from NHANES for non-Hispanic white individuals aged 50 years and older with BMI > 30 kg/m².

Results

- BMI was 25.5 ±4.5 kg/m². BF% was 27.4 ±7.0% for men and 37.9 ±5.4% for women. Adiposity according to BMI and BF% is shown in **Fig. 1** and diagnostic performance of BMI in detecting obesity is shown in **Table 1**.

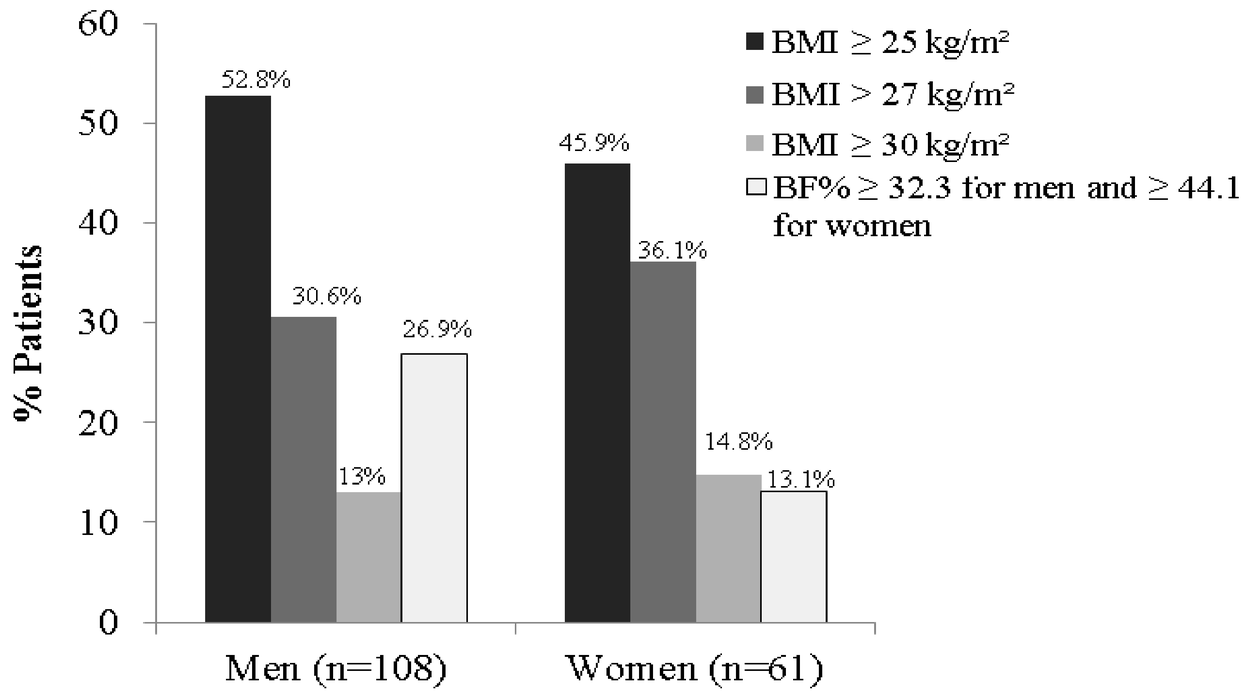

Figure 1. Prevalence of overweight and obesity according to body mass index (BMI) and obesity by body fat percentage (BF%) in elderly HD patients segregated by sex (n= 169)

Table 1: Diagnostic performance of BMI in detecting obesity with the suggested thresholds by WHO and NSI in men and women.

	Men (n=108)		
BMI Categories	**Non-Obese (BF%<32.3) (n=79)**	**Obese (BF%≥32.3) (n=29)**	**Kappa Test**
< 25 kg/m²	**48 (60.8%)**	3 (10.3%)	
≥ 25 kg/m²	31 (39.2%)	**26 (89.7%)**	0.39
≤ 27 kg/m²	**65 (82.3%)**	10 (34.5%)	
> 27 kg/m²	14 (17.7%)	**19 (65.5%)**	0.46
< 30 kg/m²	**74 (93.7%)**	20 (69.0%)	
≥ 30 kg/m²	5 (6.3%)	**9 (31.0%)**	0.30
	Women (n=61)		
BMI Categories	**Non-Obese (BF%<44.1) (n=53)**	**Obese (BF%≥44.1) (n=8)**	**Kappa Test**
< 25 kg/m²	**33 (62.3%)**	0 (0%)	
≥ 25 kg/m²	20 (37.7%)	**8 (100%)**	0.30
≤ 27 kg/m²	**39 (73.6%)**	0 (0%)	
> 27 kg/m²	14 (26.4%)	**8 (100%)**	0.42
< 30 kg/m²	**51 (96.2%)**	1 (12.5%)	
≥ 30 kg/m²	2 (3.8%)	**7 (87.5%)**	0.80

Conclusion

In elderly HD patients, BMI is less reliable as a diagnostic marker of obesity and its use can lead to misclassification of obesity in this population. The obesity cutoffs that showed best agreement with BF% was for men the NSI threshold (>27 kg/m²) and for women the WHO threshold (≥ 30 kg/m²).

References

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