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Body composition using the deuterium oxide technique in older people from Uruguay

Introduction: In the last few decades, Latin American and Caribbean region has been experiencing a series of demographic, epidemiological and nutritional transformations, which in the nutritional field have led to the double burden of malnutrition(DBM). This phenomenon is characterized by the coexistence of overweight, obesity and malnutrition. This problem is more serious in vulnerable groups, such as older adults. Uruguay has the oldest population in Latin America(14%) and no previous body composition studies have been done.
Objective: determine the nutritional status and body composition using the deuterium oxide method in older adults.
Methods: A cross-sectional study was done in 81 community-dwelling, non-disabled older subjects(63 women, 18 men), aged 65-89 years from the Departamento de Geriatría y Gerontología, after signing an informed consent approved by the Ethics Committee. Weight and height were measured and body mass index (BMI=kg/m^2) was calculated to assess their nutritional status. Obesity(O) was defined as BMI≥32, overweight(OW) BMI=28-31.9, normal(NW) BMI=23.1-27.9 and underweight(UW)BMI≤23. Total body water(TBW) was assessed using the deuterium(^{2}H) dilution technique. Before consumption of a dose of the isotope, a sample of saliva was collected to determine the basal ^{2}H concentration in the body. A second saliva sample was collected 3 hours later. The enrichment of deuterium in saliva samples was measured in the Laboratorio Tecnológico de Pando. Fat-free mass(FFM) was calculated by dividing the TBW(kg) by the hydration coefficient(73.2%).
Results: With reference to age, 58% were 65-74 years and 42% 75-89 years. 45.7% of the older adults were NW, while 38.3% were OW/O and 16.1% UW. There are differences between sexes in anthropometric and body composition parameters. Women had lower values of height, weight, TBW(kg), FFM(kg), Fat-free mass index (FFMI) and higher Fat-mass (FM(kg)), FM% and Fat-mass index (FMI) than men($p<0.05$).
Older men and women (75-89 years) had lower mean values of BMI, weight, TBW(kg), FFM(kg) and FM(kg) than younger men and women (65-74 years) ($p<0.05$).
However, in both sexes older people had higher average %FFM than younger elderly people (men 75.29±3.6SDvs.69.65±5.6SD p=0.02; and women 62.97±6.5SDvs. 59.35±4.4SD p=0.01). The average %FM decreases at greater age in men and women (men 30.45±5.6SDvs.24.70±3.6SD p=0.02 and women 40.66±4.4SDvs.37.02±6.5SD p =0.01). In both sexes, as the BMI increases, the average values of the body composition variables also increases. Only the %FFM decreases.
Conclusions: Obesity and malnutrition were found in this study. There were statistically significant differences in body composition according to sex. With increasing age, %FFM increases in men and women and %FM decreases.

Country

Uruguay

Institution

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