Clinical Nutrition 32 (2013) 679–685

Contents lists available at SciVerse ScienceDirect

Clinical Nutrition

journal homepage: http://www.elsevier.com/locate/clnu

Review

Obesity and nursing home: A review and an update

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ARTICLE INFO

Article history:
Received 8 November 2012
Accepted 14 May 2013

Keywords:
Obesity
Nursing home
Elderly
Disability

SUMMARY

Background & aims: The prevalence of obese in nursing home resident is increasing, causing an important change in patient's management and health assistance. Although evidence suggests that obesity is associated with comorbidity, disability, and mortality in older persons, such relationship has rarely been explored in the nursing home population and research is still mainly conducted in community-dwelling people.
Methods: A review of the literature identified 11 suitable papers that discuss current knowledge about the management of obesity in nursing home.
Results: The specificity of the obese nursing home residents is often to be disabled survivors of previous complications related to obesity with short life expectancy. Whether nutritional treatment and physical activity can improve clinical condition and quality of life in the obese remains an open question. Strengths and weaknesses of current methodologies in the assessment of adiposity are needed to be carefully considered, especially in a clinical setting with limited resources.
Conclusions: More investigations are required to understand obesity as a risk factor for institutionalization and a criterion of non-admission in nursing home at the same time. Although difficulties to implement these approaches are present, effective and feasible treatments for obesity should be tested.

1. Introduction

Obesity represents a growing medical issue at all ages, including older persons. In fact, the prevalence of overweight and obesity is increasing in developed countries, independently of age, gender, race, and education,[1] causing a consequent change in health assistance. It has been estimated that the number of nursing home (NH) residents is going to increase by approximately 10%–25% in the next decade.[2] Consistently, the number of obese older NH residents will also parallely grows. Therefore, NHs should start getting prepared and adapting their care organization in order to face the special requirements of obese patients.

Research on obesity in older adults has predominantly been conducted in community-dwelling populations. Although some studies have recently been focused on the increase of obesity in NH residents,[2,3] little is still known about how NHs deal in terms of assistance and treatments of obese residents.

In this narrative review, we discuss current knowledge about obesity in NH residents, focusing on five main aspects related to this condition: epidemiology, morbidity, mortality, and care- and staff-related factors. We will also describe possible assessment of body composition in NH and interventions proposed to promote weight loss in obese older NH residents.

1.1. Measures of adiposity

We screened articles that used the classification of obesity based on body mass index (BMI), defined as body weight (kg) divided by the square of height (m^2). BMI individuates four categories: underweight (BMI <18.5 kg/m^2), normal-weight (BMI 18.5–25 kg/m^2), overweight (BMI 25–29.9 kg/m^2) and obesity (BMI >30-kg/m^2).

This classification is the simplest and the most used in literature to individuate obesity, but the body composition modifications occurring with aging may have serious implications for correctly interpreting such anthropometric data from older persons. In fact, the amount of lean body mass decreases with age,[4]

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0261-5614/$ – see front matter
http://dx.doi.org/10.1016/j.clnu.2013.05.008

Table 1
Anthropometric and non-anthropometric techniques to assess obesity in nursing home.

Technique	Presence of standardized diagnostic cut-points	Strengths	Weaknesses	Feasibility in NH
Body mass index (BMI)	Yes	Simple Inexpensive Non invasive Standardized assessment Good screening for obesity	Potentially misleading when assessing older persons No information about body composition	+++
Waist circumference	Yes	Simple Inexpensive Non invasive Standardized assessment Waist-hip ratio can differentiate abdominal and peripheral obesity	Operator-dependent No information about body composition	+++
Measure of skinfold (tricipital, bicipital, sub-scapular and suprailiac)	No	Inexpensive Simple High reproducibility Non invasive	Operator-dependent No information about body composition Potentially misleading when assessing older persons	+++
Hydrostatic weighing	No	High capability measuring total body mass	Long execution times Subject discomfort Inaccessibility for elderly, disabled, and chronically ill Not available in NH	−−
Dual energy X-ray absorptiometry (DXA)	No	Very high capability measuring total body fat Ability to measure fat distribution and identify f body fat district	High costs of equipment Radiation exposure Not available in NH	−
Bioelectrical impedance (BIA)	No	Moderate capability measuring total body fat Simple High reproducibility Relatively non expensive Non invasive	Limitations for fluid accumulation (e.g. congestive heart failure, cirrhosis, renal failure) and in patients with metal prothesis and devices	+
Computed tomography (TC)	No	Moderate capability measuring total body fat Ability to differentiate visceral adipose tissue and subcutaneous adipose tissue Ability do differentiate muscular and parenchymal fat infiltration	Radiation exposure High costs of equipment Analysis of specific body region Lack of cut-points for obesity	−−
Magnetic resonance (RM)	No	High capability measuring total body fat High ability to differentiate visceral adipose tissue and subcutaneous adipose tissue Ability do differentiate muscular and parenchymal fat infiltration	High costs of equipment Long execution times Not available for patients with metal prothesis and devices Lack of cut-points for obesity Analysis of specific body region Not available in NH	−−−

with a concomitant increase of body fat amount.[5] Data from the Rosetta Study showed that older adults have, on average, more fat than younger adults at any given BMI.[6] Consequently, predictive equations estimating body composition from BMI generally underestimate the amount of body fat in the elderly. Also, at the same time, skinfold thickness, used as a measure of overweight and obesity, represents a higher percentage of body fatness in older persons than in younger. Finally, the distribution of body fat also changes with age because relatively more fat accumulates in the abdomen and less fat at the extremities.[7] In this context, waist circumference has been suggested as an indicator of overall body fatness in older persons[8] and the waist-hip ratio it has been shown to be similarly correlated with the amount of visceral fat in older persons.[9]

To estimate the amount of body fat, non-anthropometric methods are also available, such as the dual energy X-ray absorptiometry (DXA), the bioelectrical impedance (BIA), and more sophisticated imaging techniques (i.e., magnetic resonance imaging – MRI – and computed tomography – CT). However, almost only anthropometric data are considered in NH setting as measure of body composition, due to the difficult access and excessive costs of other techniques. The only BIA, a simple and relatively inexpensive method, may be considered in NH, although it presents several limitations. Characteristic of the main techniques used to assess obesity and their availability in NH are illustrated in Table 1.

2. Results

2.1. Epidemiology

Older persons represent a large part of populations in developed countries, accounting for about 15% of the population in Western Europe and United States, and this proportion is even projected to increase to 26% by 2025.[10] At the same time, the prevalence of obesity is also growing among older persons. In the National Health and Nutrition Examination Survey III (NHANES III), it was reported that the age-adjusted prevalence of obesity (independently of gender) increased from 22.9% in the period 1988–1994 to 30.5% in the period between 1999 and 2000.[1]

Between 2% and 5% of older persons currently resides in NHs in developed countries. Such subpopulation, similarly to what happening in community-dwelling elders, is experiencing a significant increase of obesity prevalence. Few years ago, Lapane and Resnik estimated trends of obesity prevalence in US NHs.[3] The body mass index (BMI) was calculated for 847,601 newly admitted NH residents during a 10-year period. Between 1992 and 2002 the percentage of obese and overweight NH residents increased from 15% to more than 25%. The incremental coding of year in a logistic regression model revealed a monotonic increasing trend, confirmed even after adjustment for age, ethnicity, gender, and state (odds ratio, OR 2.13, 95% confidence interval, 95%CI 2.02–2.25). Similar trends were also