

WEIGHT GAIN IN OVERWEIGHT AND OBESE COMMUNITY DWELLING OLD-OLD

B.L. CALLEN, G. PEMBERTON

University of Tennessee, College of Nursing, 1200 Volunteer Blvd, Knoxville, Tennessee 37996-4180. Contact information: Bonnie Callen, Assistant Professor, Office Phone (865) 974-7597, bcallen@utk.edu

Abstract: *Objectives:* The purpose of this study was to 1) investigate lifetime weight changes in community dwelling old-old, those age 80 or older; 2) explore reasons for weight changes from their personal perspective and 3) examine ways the old-old feel they can successfully lose weight. A cross sectional design was used for this qualitative study. *Setting:* One county of a southeastern U.S. state. *Participants:* Nine community dwelling old-old. *Measurement:* Content analysis of transcripts was used to examine the interviews. *Results:* All of the old-old interviewed had reached their maximum weight after the age of 65. Average lifetime weight gain was 73 pounds. All wanted to lose weight and found ways to incorporate small changes in their everyday lives. *Conclusion:* With increasing life expectancy among older adults, health promotion targeting weight control needs to include the old-old.

Key words: Obesity, old-old, weight gain.

The purpose of this study was to explore obesity from the personal perspective of community dwelling old-old, those age 80 or older, specifically a history of weight changes, causes, and possible interventions. The prevalence of obesity in the United States has increased dramatically in recent years across the lifespan. While this trend has long-term lifetime implications for children and young adults in terms of future health, for the old-old increasing obesity may have short-term impact on the multiple comorbidities prevalent among older adults such as stroke, arthritis, hypertension, diabetes or cardiovascular disease (1). Therefore, the increasing incidence of obesity among the old-old will have more immediate impact on quality of life, health outcomes, health care utilization and costs in a population that are already high users of health care dollars.

Little is known about obesity among elders over 80. Nutritional surveys in the United States such as Nutritional Health and Nutrition Examination Surveys (NHANES) collected information prior to 1988 only on persons younger than 75 years of age (2). Thus, for those old-old who are currently overweight or obese it is not known whether this is a recent trend or whether those currently obese have been steadily gaining weight over their lifespan. Reasons for this growing incidence of obesity are hypothesized but remain unclear in the literature.

This exploratory study sought to examine obesity in the old-old from their personal perspective. The aims of this study were to:

1. Investigate lifetime weight changes in community dwelling old-old.
2. Explore reasons for weight changes.
3. Examine ways the old-old feel they could successfully change their weight.

Background

Prevalence of Overweight and Obesity

A widely used non-invasive measure of nutritional status is the Body Mass Index (BMI), which combines weight and height with the formula $Wt (kg) / Ht (m)^2$ into a single number for easier comparisons. While there is a common definition of obesity as a BMI ≥ 30 , there are different definitions of overweight. The Centers for Disease Control (CDC) and the World Health Organization use a BMI of 25- 29.9 to categorize overweight in adults (2, 3). Recognizing that older adults are different from the general adult population, the Nutrition Screening Initiative (NSI), an interdisciplinary group of health professionals interested in the nutrition of older adults, uses a BMI of 27 as the cutoff for overweight among older adults (4).

While earlier data from NHANES showed greater obesity in women than men, (5, 6) data from the 2003-2004 collection period shows an increase in obesity among men, but not among women (7). Race may also be related to obesity. There is a relatively high BMI status among older minority group members, especially among non-Hispanic black and Mexican American women (5, 7). Among the old-old, the prevalence of obesity from NHANES III data collected in 1988 - 1994 was 8% in men and 15% in women (8). This prevalence increased to 34.3% in non-Hispanic white men and 33.3% in non-Hispanic white women by 2000 (6).

A recent study of nutritional health in 68 community dwelling old-old found that while overall, mean BMI declined with age, 19.1% were overweight and 25% were obese (9). This study further substantiated that while there is a trend towards lower BMI in advanced old age, the number of obese elders over 80 is growing. There is a J or U-shaped association between overweight or obesity and mortality (10). Obesity that exists throughout the lifespan may have more negative

WEIGHT GAIN IN OVERWEIGHT AND OBESE COMMUNITY DWELLING OLD-OLD

consequences than obesity occurring later in life (8). Thus, an important question is "Among currently overweight or obese old-old, when were the greatest weight changes?"

Impact

Obesity impacts both morbidity and mortality. Studies have shown that both overweight and obesity are significantly associated with diabetes, high blood pressure, high cholesterol, asthma, arthritis and fair or poor health status (11, 12). Obesity has been associated with depression in women, (13) cancer at several organ sites, (14) increased death rates for all cancers combined, (15, 16) and clusters of coronary risk factors resulting in an increased risk of heart failure and myocardial infarction (17, 18, 19). Disability is also associated with obesity (20, 21). Studies have shown that a BMI ≥ 35 is associated with an approximately twofold increase in total mortality and a several-fold increase in morbidity (22).

Causes

Causes for the trend of growing obesity in the old-old have been hypothesized, although little is actually known. Increasing dietary intake, partly through increased availability of energy dense high-fat foods, and lower levels of exercise have been suggested as causes (23). Obesity includes a complex interaction between many factors including genetic, biological, psychological, cultural, economic and social factors. Changes in lifestyle, trends toward eating out, fear of crime and multiple other factors may also contribute to obesity in old age (24). Are the causes for the old-old the same as for younger persons? An exploratory study from the perspective of the old-old themselves may guide future research and shed light on what interventions or programs may successfully reduce obesity in old age. With the rapid growth of the old-old population, the potential health benefits from reduction of overweight and obesity are of considerable importance.

Design, Setting, and Sample

This qualitative study used an exploratory cross sectional descriptive design. The setting was one southeastern U.S. county. Inclusion Criteria were: 1) age 80 or older; 2) community-dwelling; 3) cognitively intact or mild intellectual impairment; 4) English-speaking; 5) overweight (BMI 27-29.9) or obese (BMI ≥ 30), the weight categories used by the NSI; 6) able to stand for height and weight.

Gender and Ethnicity: According to the U.S. census, in this county females comprise 70% of the 80+ population and 30% are males. Census data also show that in the 80+ group, 93% are White, while 6% are Black (25).

Methods/Procedure

Following IRB approval, subjects were recruited through local churches and the Office on Aging. Initial networking included phone calls to key community persons followed by visits by the researcher to explain the study and to ask for permission to post flyers. Those volunteering to participate

called the researcher, the study was explained, and subjects were screened for self-reported height and weight to determine eligibility. A place and time was arranged for the interview. At the time of the interview each person was given an Information Sheet explaining the study and any questions were answered.

Cognitive status was screened at the beginning of the interview to ensure that the subjects had adequate recall. To be included in the study, subjects needed to be either cognitively intact, or have only mild intellectual impairment (4 or fewer errors) as measured by the Short Portable Mental Status Questionnaire (SPRSQ), a well-established instrument consisting of ten questions. One point is received for each error. Scores of 0-2 errors indicate intact cognitive status. Scores of 3-4 errors indicate mild intellectual impairment (26).

Personal interviews were conducted in the homes of participants, in community centers or churches according to the preference of the subjects. Interviews, lasting between half an hour and one hour, were audiotaped for later transcription. In consideration of their time, \$10.00 was paid to each participant at the interview.

Data was collected in the following categories: 1) demographic data (age, gender, education, marital status, living arrangement and income); 2) descriptive data (comorbidities, prescription medications, perceived health status in the categories excellent, very good, good, fair or poor, four variables that have been shown to be valid measures of physical and mental health trends in the U.S. population; (27) and perceived nutritional health status in the same categories as overall health); 3) height and weight. In order to obtain BMI, the researcher measured height and weight using a portable scale brought by the researcher and used for all subjects. Subjects were in street clothes without shoes. The scale used for all subjects was specifically manufactured for portability and accuracy in home health use.

Semi-structured interviews included the following questions: 1) Tell me about how your weight has changed over your lifetime; 2) Are you satisfied with your current weight? 3) What do you believe are the main reasons for your weight changes? 4) Talk to me about whether you want to change your weight and if you do, how you believe you could successfully do so." Probing follow-up questions further explored these areas.

Forms used for data collection were coded by number only to protect anonymity, transcripts were stored in a locked file cabinet in a locked office available only to the researchers. Graduate students were used for data analysis. All students were trained by the Principle Investigator.

Analysis

BMI was calculated to determine whether subjects were in the overweight or obese categories. Interviews were transcribed for content analysis. A systematic, objective method of counting message units in the transcripts was conducted according to the method of Neuendorf (28). The message units

THE JOURNAL OF NUTRITION, HEALTH & AGING®

were determined a priori. For this analysis, the message unit for the question about reasons for weight gain was determined to be any reason cited as a cause of gaining weight. For the question on ways to lose weight, the message unit was any method cited which had helped or might help the subject lose weight or control weight gain. An index card was used for each message unit. Two researchers independently read and coded the transcripts, then met to compare the units to determine inter-rater reliability. An agreement rate of 0.8 was set as a minimum agreement rate. Researcher agreement rate was 100%.

Results

Nine community dwelling old-old were interviewed in their homes or in a quiet place of their choosing such as a room at a senior citizens center or a church. The sample consisted of six males and three females aged 80 to 85 years old (mean age 82). All were Caucasian. Education ranged from 8th grade to one minister with 19 years of education. Five were married, three were widowed and one was divorced. Not all the married subjects lived with their spouses. One man's spouse was in a nursing home where he goes every day to feed her. Two (33%) had incomes that put them below the poverty level. This was a healthy group with 56% perceiving their health status to be good, 33% rated their health status as very good and one person believed their health to be excellent. The average number of health problems was two, with hypertension the most frequently cited (56%) health problem. Other leading health problems were cancer and diabetes. The average number of daily prescription medications was three (range 0 to 7). All the subjects interviewed were cognitively intact. One person missed two questions on the SPMSQ; however, 67% answered all the questions correctly.

Lifetime Weight Changes

One third of the sample was overweight. Two thirds of the sample were obese with BMIs of 30 or greater. Average BMI was 30.17. This study was conducted in a state where the obesity prevalence of adults from the Behavior Risk Factor Surveillance System is reported as 22.6% for the year 2001 (12).

When asked about their lifetime weight history, all were able to recall what they weighed at about the time they completed high school, or at age 18 for the subjects who did not complete high school. One subject was overweight when graduating from high school and continued to be overweight his entire life. At age 81 he weighed three pounds less than he did when completing high school. This subject had gained weight several times moving into the obese category with a maximum BMI of 31. He had most recently reached his maximum weight one year prior to the interview, conducted when he was age 80. The first time he had gained that much weight was at the age of 67 following retirement.

Average lifetime weight gain from high school to their current weight was 67 pounds (61 pounds for males and 59 pounds for females). Four of the nine old-old interviewed were at their lifetime maximum weight and unhappy about this. For those who had previously reached their maximum weight, all had peaked after the retirement age of 65. Two had peaked five years prior to the interview and one had reached a maximum weight at age 66, fourteen years prior to the interview. For this man, his daughter had moved back in with her parents and brought home lots of restaurant foods and sweets. As a result, both parents gained weight. This subject gained 60 pounds in three years.

The entire sample reached their lifetime maximum weight after the age of 65. Average weight gain from high school to maximum weight was 60 pounds (60 pounds for men and 59 pounds for women). For most of this sample, weight gain was gradual over the lifetime of these old-old, but retirement was the precipitating event that caused the most weight gain in these old-old.

Satisfaction with Current Weight

This group wanted to lose weight. "I'm serious about trying to lose weight." While seven of those interviewed were clear that they were not satisfied with their weight, two said yes they were satisfied, and then they immediately added that they wanted to lose weight. For example, in reply to "are you satisfied with your current weight", one person replied "Yeah, but I want to lose ten more pounds. That's where I ought to be." Therefore, all these old-old expressed a desire to lose weight.

Reasons for Weight Changes

When asked to talk about the reasons for their weight gains, most of the reasons cited (64%) were dietary. Examples of the reasons cited were: "You stay at home and you might snack. Food is more available." Another person said "I'll eat too much for supper usually." Eating out more was a reason for weight gain. "We eat out much more than we did when I was working." After the death of his wife, one man began eating out more. "It's difficult when you eat out because if you eat out regular, you don't eat at the best restaurants every day. You eat at fast food places and neighborhood cafes." Eating sweets was a favorite reason for gaining weight. The oldest person interviewed summed it up with one word: "Chocolate."

Physical reasons cited for weight gain were health problems, particularly knee pain. One lady stated "I used to walk before I had problems with my knees." Reduced physical activity was mentioned by most of those interviewed. "I probably don't get as much exercise as I ought and the right kind" was a typical response. One lady summed it up by saying a reason for weight gain was "Doin' nothin'."

Ways to Successfully Lose Weight

When asked about successful ways to lose weight for those over 80, again, most of the ways these elders used or thought

WEIGHT GAIN IN OVERWEIGHT AND OBESE COMMUNITY DWELLING OLD-OLD

would work (73%) were about diet. The most often cited way to lose weight was changing the content of their diet to include more fruits, vegetables or low fat foods. Strategies included eating out of the garden, eating more fish or cutting down on red meat. "I cut out the meat and all that stuff." "I'm big on vegetables." Portion control was the second most common way they felt they could lose weight. "Not eating quite as big as I used to." One gentleman advised "Pass up the biscuits and gravy." A third method frequently mentioned was staying away from sweets. "Staying off a lot of the sweets. I love sweets." Other ways to lose weight were to eat balanced meals, eat a good breakfast and reduce snacking. Only one person had tried dieting "a little bit but never in a big way."

All of the subjects incorporated exercise in their lives in ways such as walking a dog or going to a facility for a formal program of water aerobics. One lady took the city bus to get to her exercise class despite knee pain. Most incorporated exercise in ways that fit in easily to their everyday lives such as yard work or doing "a little marching through the house." One person exercised daily to a television program. Two people discussed the importance of combining exercise with diet. "I've realized that diet and exercise go together." Two subjects talked about self discipline. "You have to be strong" or "It's just going to take discipline." Finally, one person spoke of the importance of attitude in any attempt to lose weight.

Discussion

Retirement and the subsequent changes in lifestyle was a common cause of weight gain for those interviewed for this qualitative exploratory study of overweight and obese community dwelling old-old. A number of reasons for weight gain were cited including staying at home where food was more accessible. Many ate out more often after retirement with a change in the nutritional content of their diets. While these seniors were aware of the need to cut calories, the temptation of sweets or snacking was hard to resist. Another reason discussed for weight gain was a slowing down of activity levels, sometimes as a result of joint pain.

While this group was relatively healthy, with the entire sample rating their health as good to excellent, all had health problems, a common occurrence in the obese. One study found that 9% of obese women and 12.8% of obese men had no comorbidities while 62% of obese women and 45% of obese men had two or more risk factors for other diseases (17).

Among younger adults, weight change is mirrored by changes in risk factor sum. A 5-lb reduction in weight lowered the sum of associated risk factors 43% in men and 40% in women (17). Avoiding disability in later life is a strong motivator for weight loss.

McGuire and colleagues found that those successful in long term weight loss maintain behavior changes such as higher physical activity and controlling fat intake (29). These are behaviors used by this sample of old-old. Encouragement to

continue and even increase these behaviors was welcomed. Since pain is an important mediator of the effects of BMI on Health Related Quality of Life (HRQOL), (30) effective pain management should be included in any weight loss or weight control program.

New growth of life expectancy in old age means that more attention needs to be paid to the impact of the recent trend for obesity even among the old-old. Life expectancy at the age of 65 has increased from 16.1 years in 1980 to 18.2 years in 2002 (2). While studies have shown the impact of years of life lost to obesity impacts more on younger adults than older adults, (10) older adults want optimal quality of life as they age. An examination between BMI and HRQOL has shown a J-shaped association mediated by joint pain and comorbidities (30). Intentional reduction in weight may improve some of the disabilities of old age and lead to a longer (31) and fuller life.

This study has several limitations. First is the small sample size. Few responded to posted flyers. One possible reason is a reluctance to admit to obesity. Those who are over 80 are no different than younger adults in being somewhat self-conscious about being heavier than they want to be. Second is the cross sectional design which does not allow causal inferences. Lack of ethnic representation is another limitation of this study. A final limitation is the self report of prior weight which may be subject to inaccuracies.

Conclusions

Understanding the behaviors and other factors that enable long term prevention of weight gain and long term maintenance of weight loss is critical to the development of effective interventions. Knowledge gained from this study may point to interventions targeted specifically at the needs of the old-old, the most rapidly growing portion of the U.S. population. These subjects were motivated to change their weight and were eager to discuss successful strategies. They were knowledgeable about the need to increase energy expenditure through exercise, cutting down on calories, and avoiding fatty foods. Health promotion is often targeted at the young instead of elders who may be considered too late in life for health promotion to be cost effective. Discussions with elders about small behavioral strategies to gradually lose weight may be effective in this population. Encouragement for small changes by health care professionals should be included whenever possible.

Acknowledgement: This research was funded by a Professional Development grant from the University of Tennessee and by the Sigma Theta Tau International.

References

1. Pi-Sunyer FX. Comorbidities of overweight and obesity: current evidence and research issues. *Med Sci Sports Exerc.* Nov 1999;31(11 Suppl):S602-608.
2. CDC. National Health and Nutrition Survey data. July 25, 2006.
3. World Health Organization. Physical status: the use and interpretation of anthropometry. Report of a WHO Expert Committee. *World Health Organ Tech Rep Ser.* 1995;854:1-452.

THE JOURNAL OF NUTRITION, HEALTH & AGING®

4. Nutrition Screening Initiative. Incorporating nutrition screening and intervention into medical practice. Washington, D.C.: Nutrition Screening Initiative; 1994.
5. Jenkins KR, Fultz NH, Fonda SJ, Wray LA. Patterns of body weight in middle-aged and older Americans, by gender and race, 1993-2000. *Soz Präventivmed.* 2003;48(4):257-268.
6. Flegal KM, Carroll MD, Ogden CL, Johnson CL. Prevalence and trends in obesity among US adults, 1999-2000. *JAMA.* Oct 9 2002;288(14):1723-1727.
7. Ogden CL, Carroll MD, Curtin LR, McDowell MA, Tabak CJ, Flegal KM. Prevalence of overweight and obesity in the United States, 1999-2004. *Jama.* Apr 5 2006;295(13):1549-1555.
8. Kotz CM, Billington CJ, Levine AS. Obesity and aging. *Clinics in Geriatric Medicine.* 1999 May 1999;15(2):391-412.
9. Callen BL, Wells TJ. Screening for nutritional risk in community-dwelling old-old. *Public Health Nursing.* 2005;22(2):138-146.
10. Fontaine KR, Redden DT, Wang C, Westfall AO, Allison DB. Years of life lost due to obesity. *Jama.* Jan 8 2003;289(2):187-193.
11. National Task Force on the Prevention and Treatment of Obesity. Overweight, obesity, and health risk. National Task Force on the Prevention and Treatment of Obesity. *Arch Intern Med.* Apr 10 2000;160(7):898-904.
12. Mokdad AH, Ford ES, Bowman BA, et al. Prevalence of obesity, diabetes, and obesity-related health risk factors, 2001. *Jama.* Jan 1 2003;289(1):76-79.
13. Onyike CU, Crum RM, Lee HB, Lyketsos CG, Eaton WW. Is obesity associated with major depression? Results from the Third National Health and Nutrition Examination Survey. *Am J Epidemiol.* Dec 15 2003;158(12):1139-1147.
14. Bianchini F, Kaaks R, Vainio H. Overweight, obesity, and cancer risk. *Lancet Oncol.* Sep 2002;3(9):565-574.
15. Calle EE, Rodriguez C, Walker-Thurmond K, Thun MJ. Overweight, obesity, and mortality from cancer in a prospectively studied cohort of U.S. adults. *N Engl J Med.* Apr 24 2003;348(17):1625-1638.
16. Calle EE, Thun MJ. Obesity and cancer. *Oncogene.* Aug 23 2004;23(38):6365-6378.
17. Kannel WB, Wilson PW, Nam BH, D'Agostino RB. Risk stratification of obesity as a coronary risk factor. *Am J Cardiol.* Oct 1 2002;90(7):697-701.
18. Kenchaiah S, Evans JC, Levy D, et al. Obesity and the risk of heart failure. *N Engl J Med.* Aug 1 2002;347(5):305-313.
19. Yusuf S, Hawken S, Ounpuu S, et al. Obesity and the risk of myocardial infarction in 27,000 participants from 52 countries: a case-control study. *Lancet.* Nov 5 2005;366(9497):1640-1649.
20. Okoro CA, Hootman JM, Strine TW, Balluz LS, Mokdad AH. Disability, arthritis, and body weight among adults 45 years and older. *Obes Res.* May 2004;12(5):854-861.
21. Liou TH, Pi-Sunyer FX, Laferrere B. Physical disability and obesity. *Nutr Rev.* Oct 2005;63(10):321-331.
22. Kushner RF. Body weight and mortality. *Nutrition Reviews.* 1993 May 1993;51(5):127-136.
23. Flegal KM, Carroll MD, Kuczmarski RJ, Johnson CL. Overweight and obesity in the United States: prevalence and trends, 1960-1994. *International Journal of Obesity & Related Metabolic Disorders.* 1998 Jan 1998;22(1):39-47.
24. Callen BL, Wells TJ. Views of community-dwelling, old-old people on barriers and aids to nutritional health. *Journal of Nursing Scholarship.* 2003;35(3):257-262.
25. CDC Wonder. Population Information 2004. Accessed June 5, 2006.
26. Pfeiffer E. A short portable mental status questionnaire for the assessment of organic brain deficit in elderly patients. *Journal of the American Geriatrics Society.* 1975 Oct 1975;23(10):433-441.
27. Hennessy CH, Moriarty DG, Zack MM, Scherr PA, Brackbill R. Measuring health-related quality of life for public health surveillance. *Public Health Rep.* Sep-Oct 1994;109(5):665-672.
28. Neuendorf KA. Content analysis guidebook. Thousand Oaks, CA: Sage Publications; 2002.
29. McGuire MT, Wing RR, Klem ML, Hill JO. Behavioral strategies of individuals who have maintained long-term weight losses. *Obes Res.* Jul 1999;7(4):334-341.
30. Heo M, Allison DB, Faith MS, Zhu S, Fontaine KR. Obesity and quality of life: mediating effects of pain and comorbidities. *Obes Res.* Feb 2003;11(2):209-216.
31. Gregg EW, Gerzoff RB, Thompson TJ, Williamson DF. Intentional weight loss and death in overweight and obese U.S. adults 35 years of age and older. *Ann Intern Med.* Mar 4 2003;138(5):383-389.

1st

Conference

Clinical Trials

on

Alzheimer's Disease

Call for abstracts
Deadline: April 30, 2008

On line instructions
<http://CTAD2008-nms.fr>



EADC
European Alzheimer's Disease Consortium

In collaboration with the EADC
and the French Federation of Memory Centres
for Research and Resource

Montpellier

School of Medicine

17- 18-19

september

2008



