

The Relationship Between Body Weight and Quality of Life in Older Adults with Medicare Supplement Insurance

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Objective

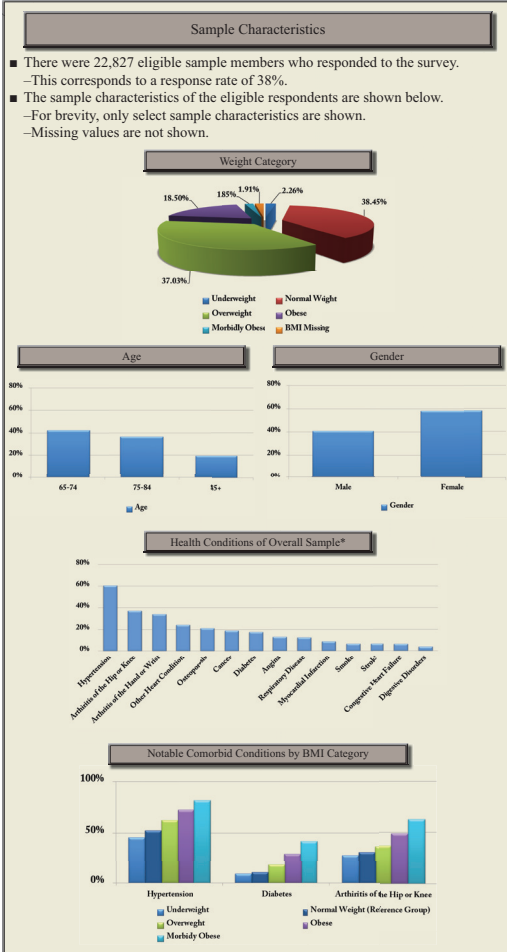
- Estimate the impact that Body Mass Index (BMI) has on quality of life.

Population Studied

- About 3.1 million people are covered by an AARP® Medicare Supplement Insurance plan provided by UnitedHealthcare Insurance Company (for New York residents, UnitedHealthcare Insurance Company of New York).
 - These plans are offered in all 50 states, Washington DC, and various US territories.
 - These plans are commonly referred to as Medigap plans.
- The Health Update Survey (HUS) was administered to a random sample of 60,000 Medigap insureds in 10 states from 2008-2011.
 - The HUS is a self-administered survey that includes all the questions on the Medicare Health Outcomes Survey (HOS).
 - The instrument includes several questions on demographics, chronic conditions, and health status, measured via the Veterans RAND 12 item survey (VR-12).
 - The VR-12 produces two quality of life summary scales, the mental component score (MCS) and physical component score (PCS), and is widely used and validated in other applications with older adults.

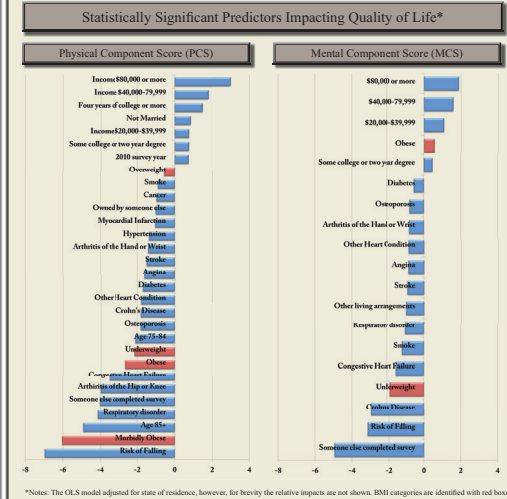
Methods

- Study respondents were categorized into one of the following six standard BMI categories, based on self-reported height and weight:
 - Underweight
 - Normal (Reference)
 - Overweight
 - Obese
 - Morbidly obese
 - Missing BMI information
- Missing BMI information is common in survey data as respondents are reluctant to disclose their weight, but that was not the case here.
 - Being underweight is often a result of other serious health conditions that may not be captured in our questionnaire.
- Two analyses were performed:
 - The first was designed to better understand the characteristics of the sample in terms of their demographics, socioeconomic, and clinical characteristics.
 - The first analysis also compared sample members in each BMI category with those in the normal weight group, using univariate techniques without adjusting for casemix differences.
 - Chi-square tests and Student t-tests were used to test for differences in categorical and continuous variables, respectively.
 - The second used ordinary least squares (OLS) regression techniques to estimate the impact of each BMI category on the PCS and MCS quality of life measures.
 - These analyses controlled for patient demographics, socioeconomic, and health status metrics.
 - The results of these regression analyses were used to identify which covariates (BMI category, patient demographics, socioeconomic and health status metrics) had a significant impact on quality of life, and the magnitude of those impacts.



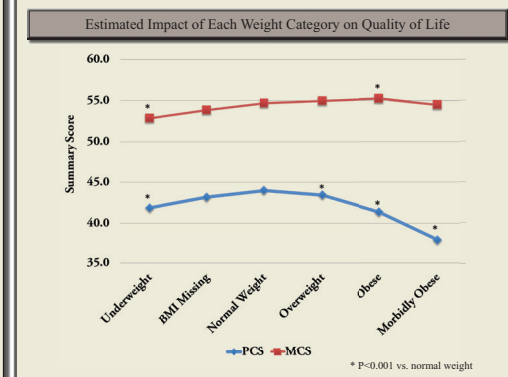
Results: Quality of Life

- The results of the OLS regression models showing the impact of each BMI category, demographics, socioeconomic, and clinical characteristics on quality of life are shown in the figures below.
 - The graph shows the marginal effects for all significant ($p < 0.001$) variables in the model. The marginal effect measures each variable's independent impact on quality of life, relative to the reference variable.
 - For example, those with an annual household income of \$80,000 or more had, on average, PCS scores 3.0 points higher than those with income below \$20,000.
- From a physical standpoint, relative to normal weight, all the BMI categories (underweight, overweight, obese, and morbidly obese) had a significant negative impact on quality of life, with scores ranging between -0.6 to -6.0 points for overweight and morbidly obese categories, respectively.
 - Of these weight categories, being morbidly obese had the largest impact on quality of life. In fact, being morbidly obese had the second largest negative impact on quality of life, behind risk of falling. Being obese or underweight were among the top ten variables negatively impacting quality of life.
- From a mental health standpoint, being overweight did not have a significant negative impact on quality of life, therefore, is not shown below.
 - Meanwhile, being obese had a significant positive impact on quality of life, however, the magnitude was relatively small (+0.6). This may be reflective of a more relaxed attitude toward body image and body weight.
 - However, relative to normal weight, being underweight had a significant negative impact on quality of life (-1.9).



Results: Quality of Life

- To illustrate the impact each BMI category had on overall quality of life, the marginal impact of each BMI category on PCS and MCS are shown below.
 - Values are adjusted for demographics, socioeconomic, and health status based on the OLS regression model, and centered on the unadjusted means of PCS and MCS in the total sample (i.e. 44.0 for PCS and 54.7 for MCS).



Conclusions

- 57.4% of those surveyed were overweight, obese, or morbidly obese.
- Of those, 20.3% were obese or morbidly obese.
- The greatest negative impacts of BMI were on physical aspects of quality of life.
 - From a physical standpoint, relative to normal weight, all the relevant BMI categories (underweight, overweight, obese, and morbidly obese) had a significant negative impact on quality of life.
 - The negative impacts of BMI on quality of life were greater than many common chronic conditions, such as cancer, diabetes, and hypertension.
- From a mental health standpoint, relative to normal weight, being underweight had a significant negative impact on quality of life. Conversely, being obese was a significant positive predictor of quality of life, albeit to a lesser extent.
 - No other BMI categories were significant predictors.
 - The greatest negative impacts on quality of life from a mental standpoint were someone else completed the survey (a proxy for dexterity due to declining health).
- Similar to the interconnectedness of weight and certain chronic diseases, weight and quality of life appear interrelated—each impact one another—with no clear cause and effect.
- This study further illustrates the importance of maintaining a healthy weight.