Quality of Life for Obese Women and Men in Turkey

Fulden Saraç, MD, Sebnem Parıldar, MD, Erdal Duman, MD, Fusun Saygılı, MD, Mehmet Tüzün, MD, Candeger Yılmaz, MD

Introduction

Obesity is a complex, multifaceted disease that is widespread and growing in the developing world. People who are obese experience health-related quality-of-life impairments. Impairment in an obese individual's capacity to live as fully and actively as he or she desires may be as serious a consequence of obesity as its adverse effects on morbidity and mortality (1). Both physical and psychosocial functioning have been shown to be negatively affected by excess weight; greater impairments have been associated with greater degrees of obesity (2).

In 1947, the World Health Organization defined health as both the absence of disease and infirmity and the presence of physical, mental, and social well-being (3). Health-related quality of life refers to well-being in the physical, psychological, and social domains; well-being in each domain can be assessed by measuring an individual’s objective functioning and subjective perceptions of health. Quality-of-life assessments can be used to measure and compare the effectiveness of different treatments and to evaluate the impact of a treatment on how patients feel and function in their everyday lives (4).

Results

Differences in scores between obese women and normal-weight women were statistically significant in seven of eight SF-36 domains; differences in scores between obese men and normal-weight men were statistically significant in six of eight domains. Obese women were significantly more impaired than obese men in four of eight domains. Among obese women, 45.0% experienced a reduced quality of life, compared with only 13.2% of normal-weight women. Similarly, 41.3% of obese men experienced a reduced quality of life, compared with only 9.3% of normal-weight men.

Conclusion

Obesity is associated with poor levels of health, particularly poor levels of physical and social well-being.

Abstract

Introduction

Obesity is a complex, multifaceted disease that is widespread and growing in the developing world. People who are obese experience health-related quality-of-life impairments. Impairment in an obese individual's capacity to live as fully and actively as he or she desires may be as serious a consequence of obesity as its adverse effects on morbidity and mortality (1). Both physical and psychosocial functioning have been shown to be negatively affected by excess weight; greater impairments have been associated with greater degrees of obesity (2).

In 1947, the World Health Organization defined health as both the absence of disease and infirmity and the presence of physical, mental, and social well-being (3). Health-related quality of life refers to well-being in the physical, psychological, and social domains; well-being in each domain can be assessed by measuring an individual’s objective functioning and subjective perceptions of health. Quality-of-life assessments can be used to measure and compare the effectiveness of different treatments and to evaluate the impact of a treatment on how patients feel and function in their everyday lives (4).

Until recently, there has been little standardization of quality-of-life measures among people who are obese; many researchers have simply developed their own set of nonvalidated questions. The field of quality-of-life research has grown, however, and standards for developing and validating quality-of-life instruments have been...
proposed (4-11). The SF-36 Health Survey (QualityMetric Inc, Lincoln, RI) has been used to study obesity because it is comprehensive, brief, psychometrically sound, and consistent with current guidelines for health-related quality-of-life instruments (4,11-15).

Our aim in this study was to compare the health-related quality of life of obese and normal-weight adults in Turkey. In addition, we sought to describe the conditions contributing to poor health-related quality of life among obese patients. We hypothesized that obesity negatively affects both physical and psychosocial functioning.

Methods

Study population

The study population consisted of two groups of adults aged 20 to 65: an obese group of 1752 (254 men and 1498 women) and a normal-weight group of 400 (150 men and 250 women). The obese participants were all patients at an obesity clinic operated by the Department of Endocrinology and Metabolism at Ege University in Izmir City, Turkey; patients with associated comorbidities such as hypertension, diabetes mellitus, or cardiovascular disease were excluded from the study. The group of normal-weight men and women were recruited from the general outpatient population of the Department of Endocrinology and Metabolism at Ege University.

Diagnosis of obesity was determined by measurement of body mass index (BMI [weight in kg/height in m²]). Those in the obese group had a BMI greater than or equal to 30.0; those in the normal-weight group had a BMI less than 25.0. All participants signed an informed consent form, and the Ege University Hospital ethics committee approved the study.

Study design

To assess participants’ health-related quality of life, we used the Medical Outcomes Study Short Form-36 Health Survey (SF-36) developed by Ware et al (12). We translated the questionnaire into the Turkish language. Responses were included in the analysis only if all domains of the questionnaire were answered in full. The questionnaire took an average of 20 minutes to complete (range, 15–45 min). The survey was conducted from November 2004 through December 2005.

The SF-36 questionnaire

The SF-36 questionnaire is a self-evaluation instrument consisting of 36 items, including 35 items in eight domains that provide a scaled assessment of respondents’ quality of life during the previous 4 weeks. Ten items address the domain of physical functioning, defined as limitations in physical activities such as bathing or dressing because of health problems; four items address the domain of role-physical limitations, defined as limitations in usual activities such as work or other daily activities because of physical health problems; two items address the domain of bodily pain; five items address the domain of general health; four items address the domain of vitality (energy and fatigue); two items address the domain of social functioning, defined as limitations in social activities because of physical or emotional problems; three items address the domain of role-emotional limitations, defined as limitations in usual activities such as work or other daily activities because of emotional problems; and five items address the domain of general mental health. The single unscaled item asks respondents about their general health compared with 1 year ago.

SF-36 scoring rules and statistical analysis

Each of the 36 items was scored on a scale from 0 to 100, with 100 representing the most favorable state of health. We then summarized the scores for each item and averaged the scores for items within each domain to produce domain scores. All scoring was performed by a psychiatrist using the scoring algorithm developed by Ware et al (12).

We used a two-tailed t test to compare domain scores of the obese and normal-weight groups and considered differences to be significant at α = .05. In addition, we defined a decrease in quality of life for an individual as an average score of less than 50 for the eight SF-36 domains. We calculated the percentage of individuals within each group who scored less than 50.

Results

All individuals surveyed completed the questionnaire in full. Table 1 shows the mean age and BMI by sex for each participant group.
Table 2 shows the mean scores by sex for obese participants and normal-weight participants in each of the eight SF-36 domains. Differences in scores between obese women and normal-weight women were statistically significant in seven of eight domains; the sole exception was for vitality. Differences in scores between obese men and normal-weight men were statistically significant in six of eight domains; the two exceptions were for role-emotional and vitality.

We found that obese women were significantly more impaired than obese men in four of eight domains: role-emotional ($P = .05$), vitality ($P = .03$), bodily pain ($P = .04$), and general health perception ($P = .001$).

Among obese women, 45.0% (674/1498) experienced a reduced quality of life, compared with only 13.2% (33/250) of normal-weight women. Similarly, 41.3% (105/254) of obese men experienced a reduced quality of life, compared with 9.3% (14/150) of normal-weight men.

Table 3 shows how each participant group responded to each SF-36 question.

**Discussion**

Obesity is a major public health problem associated with increased health risks (1,3,15-18). The results of our study showed that obesity was related to role-emotional limitations and physical problems. People with obesity uniformly perceive their general health as poorer than healthy-weight people perceive their health (3,18,19). Moreover, a continuum has been observed between mildly, moderately, and severely (morbidly) obese individuals and worsening perceived health status. Some studies found obesity to be associated with compromised quality of life and mental well-being (4,9,18,20,21). Obese people have also been shown to have poorer psychological profiles than other chronically ill people (16), and BMI levels have been found to be positively correlated with reports of self-harm and psychiatric illness (17,22). Investigators also found that higher waist-to-hip ratios are associated with lower socioeconomic status, work problems, unemployment, and increased sedentary behavior among men and women (4,23,24).

Fontaine et al administered the SF-36 questionnaire to 334 people seeking outpatient weight-loss treatment and found that they scored significantly worse than population norms in eight domains; they also found that a morbidly obese subgroup scored significantly worse in six of the eight scales (17). On the other hand, some studies found little difference between obese and nonobese groups in their scores on standard psychological tests (23-25).

Obesity is no doubt, however, associated with some loss of quality of life, particularly in physical well-being (22,26-29). In a population sample of 3443 men and women from the Netherlands, Seidell et al found that BMI was positively associated with the number of health complaints (20). Similarly, Richards et al compared the functional status of 345 sibling pairs, one classified as severely obese (BMI ≥35.0) and the other classified as normal weight (24). All SF-36 functional status and emotional well-being scores were significantly lower among the severely obese participants than among their normal-weight siblings. Furthermore, those who were severely obese perceived their general health to be poorer and more likely to get worse than did their normal-weight siblings (24).

Body-image dissatisfaction (19) and binge-eating disorder (18,30) are both more common among obese people than among normal-weight people (22). Although few obese patients have clinically significant problems with body image, binge-eating disorder is associated with high rates of psychopathology, particularly depression (25). Some obese people suffer from clinically significant psychopathology that requires treatment. Research is needed to examine factors that may increase the risk for psychopathology among the heterogeneous obese population. A recent study suggested that gender may modify the psychological risk of obesity. In a general population sample, excess weight among women was associated with an increased risk for major depression, suicidal thoughts, and suicide attempts (11,28), whereas excess weight among men was associated with a decreased risk for depression and suicidal behavior (28). Similarly, Sullivan et al found that the psychosocial consequences of obesity were greater among women with a BMI greater than 34.0 than among men with a BMI greater than 38.0 (29).

Mathias et al reported that obese patients scored worse than normal-weight individuals on ratings of overweight distress, physical appearance, and health-state preferences (31). Doll et al found a strong inverse relationship between BMI and quality of life (32). In our study, we found obesity to be associated with both poorer quality
of life and decreased mental well-being, compared with normal weight. For example, we found that 25.9% of obese women and 16.2% of obese men reported difficulty bathing or dressing themselves; only 7.8% of normal-weight women and no normal-weight men found difficulty with this task. This finding shows that obesity affects physical well-being and the ability to perform daily activities.

Evidence of a negative correlation between obesity and psychological quality of life is equivocal, and it is much weaker than evidence of a negative correlation between obesity and physical quality of life. Earlier studies found few or no differences between obese and normal-weight people in psychological functioning (1,2). Similarly, recent population-based studies demonstrated marked differences between obese and nonobese people in their physical quality of life but few differences between them in their psychological or social quality of life. Nevertheless, there is some good evidence that obesity does negatively affect psychological quality of life (4,32,33).

Studies of self-reported health status show that women are more likely than men to report impaired health (28,30,31,33,34). Similarly, women are more likely than men to report impaired body image or body satisfaction, and obese women are more likely than obese men to report impaired health-related quality of life (35). In our study, we found that obese women were significantly more impaired than obese men in four of the eight quality-of-life domains. The results of our study add to the substantial body of evidence that obesity is associated with poor levels of health status, particularly with poor levels of physical and social well-being.

Author Information

Corresponding Author: Fulden Saraç, MD, Department of Endocrinology and Metabolism, 5th Floor, Ege University Hospital, Bornova, Izmir, 35100 Turkey. Telephone: 90 (232) 373-7701. E-mail: fuldensarac@yahoo.com.

Author Affiliations: Sebnem Paryıldar, Department of Psychiatry, Ege University, Izmir, Turkey; Erdal Duman, Fusun Saygılý, Mehmet Tüzün, Candeger Yílmaz, Department of Endocrinology and Metabolism, Ege University Hospital, Izmir, Turkey.

References

1. Fontaine KR, Bartlett SJ. Estimating health-related quality of life in obese individuals. Dis Manage Health Outcomes 1998;3:61-70.
2. Higgs ML, Wade T, Cescato M, Atchison M, Slvotínek A, Higgins B. Differences between treatment seekers in an obese population: medical intervention vs. dietary restriction. J Behav Med 1997;20(4):391-405.
3. Constitution of the World Health Organization. Geneva (CH): World Health Organization; 1947.
4. Kolotkin R, Meter K, Williams GR. Quality of life and obesity. Obes Rev 2001;2(4):219-29.
5. Le Pen C, Levy E, Loos F, Banzet MN, Basdevant A. “Specific” scale compared with “generic” scale: a double measurement of the quality of life in a French community sample of obese subjects. J Epidemiol Community Health 1998;52(7):445-50.
6. Lean ME, Han TS, Seidell JC. Impairment of health and quality of life using new US federal guidelines for the identification of obesity. Arch Intern Med 1999;159(8):837-43.
7. McHorney CA, Ware JE Jr, Raczek AE. The MOS 36-Item Short-Form Health Survey (SF-36): II. Psychometric and clinical tests of validity in measuring physical and mental health constructs. Med Care 1993;31(3):247-63.
8. Aydemir O, Ozdemir C, Koroglu E. The impact of co-morbid conditions on the SF-36: a primary-care-based study among hypertensives. Arch Med Res 2005;36(2):136-41.
9. Masheb RM, Grilo CM. Quality of life in patients with binge eating disorder. Eat Weight Disord 2004;9(3):194-9.
10. Guyatt GH, Feeny DH, Patrick DL. Measuring health-related quality of life. Ann Intern Med 1993;118(8):622-9.
11. Kolotkin RL, Crosby RD, Kosloski KD, Williams GR. Development of a brief measure to assess quality of life in obesity. Obes Res 2001;9(2):102-11.
12. Ware JE, Snow KK, Kosinski M, Gandek B. SF-36 Health Survey: manual and interpretation guide. Boston (MA): The Health Institute of New England Medical Center; 1993.
13. Kushner RF, Foster GD. Obesity and quality of life. Nutrition 2000;16 (10):947-52.
14. Han TS, Tijhuis MA, Lean ME, Seidell JC. Quality of life in relation to overweight and body fat distribution.
Am J Public Health 1998;88(12):1814-20.
15. Katz DA, McHorney CA, Atkinson RL. Impact of obesity on health-related quality of life in patients with chronic illness. J Gen Intern Med 2000;15(11):789-96.
16. Sarlio-Lahteenkorva S, Stunkard A, Rissanen A. Psychosocial factors and quality of life in obesity. Int J Obes Relat Metab Disord 1995;19 Suppl 6:S1-5.
17. Fontaine KR, Cheskin LJ, Barofsky I. Health-related quality of life in obese persons seeking treatment. J Fam Pract 1996;43(3):265-70.
18. Riener R, Schindler K, Ludvik B. Psychosocial variables, eating behavior, depression, and binge eating in morbidly obese subjects. Eat Behav 2006;7(4):309-14.
19. Padgett J, Biro FM. Different shapes in different cultures: body dissatisfaction, overweight, and obesity in African-American and Caucasian females. J Pediatr Adolesc Gynecol 2003;16(6):349-54.
20. Seidell JC, Visscher TL. Body weight and weight change and their health implications for the elderly. Eur J Clin Nutr 2000;54 Suppl 3:S33-9.
21. Ware JE Jr, Sherbourne CD. The MOS 36-item short-form health survey (SF-36). I. Conceptual framework and item selection. Medical Care 1992;30(6):473-83.
22. Rosmond R, Bjorntorp P. Psychiatric ill-health of women and its relationship to obesity and body fat distribution. Obes Res 1998;6(5):338-45.
23. Testa MA, Simonson DC. Assessment of quality-of-life outcomes. N Engl J Med 1996;334(13):835-40.
24. Richards MM, Adams TD, Hunt SC. Functional status and emotional well-being, dietary intake, and physical activity of severely obese subjects. J Am Diet Assoc 2000;100(1):67-75.
25. Roberts RE, Kaplan GA, Shema SJ, Strawbridge WJ. Are the obese at greater risk for depression? Am J Epidemiol 2000;152(2):163-70.
26. Kaukua J, Pekkarinen T, Sane T, Mustajoki P. Health-related quality of life in obese outpatients losing weight with very-low-energy diet and behaviour modification: a 2-y follow-up study. Int J Obes Relat Metab Disord 2003;27(9):1072-80.
27. Devlin MJ, Zhu AJ. mSJAMA: body image in the balance. JAMA 2001;286(17):2159.
28. Carpenter KM, Hasin DS, Allison DB, Faith MS. Relationships between obesity and DSM-IV major depressive disorder, suicide ideation, and suicide attempts: results from a general population study. Am J Public Health 2000;90(2):251-7.
29. Sullivan M, Karlsson J, Sjostrom L, Backman L, Bengtsson C, Bouchard C, et al. Swedish obese subjects (SOS) — an intervention study of obesity. Baseline evaluation of health and psychosocial functioning in the first 1743 subjects examined. Int J Obes Relat Metab Disord 1993;17(9):503-12.
30. Spitzer RL, Devlin M, Walsh BT, Hasin D, Wing RR, Marcus MD, et al. Binge eating disorder: a multisite field trial of the diagnostic criteria. Int J Eat Disord 1994;11:191-203.
31. Mathias SD, Williamson CL, Colwell HH, Cisternas MG, Pasta DJ, Stolshek BS, et al. Assessing health-related quality-of-life and health state preference in persons with obesity: a validation study. Qual Life Res 1997;6(4):311-22.
32. Doll HA, Petersen SE, Stewart-Brown SL. Obesity and physical and emotional well-being: associations between body mass index, chronic illness, and the physical and mental components of the SF-36 questionnaire. Obes Res 2000;8(2):160-70.
33. Moreira P, Padrao P. Educational, economic and dietary determinants of obesity in Portuguese adults: a cross-sectional study. Eat Behav 2006;7(3):220-8.
34. Kaukua J, Pekkarinen T, Sane T, Mustajoki P. Health-related quality of life in obese outpatients losing weight with very-low-energy diet and behaviour modification: a 2-y follow-up study. Int J Obes Relat Metab Disord 2003;27(9):1072-80.
35. Friedman MA, Brownell KD. Psychological correlates of obesity: moving to the next research generation. Psychol Bull 1995;117(1):3-20.

Table 1. Mean (SD) Age and Body Mass Index (BMI) of Participants in Study of Quality of Life Among Obese and Normal-Weight Men and Women, Turkey, 2005

| Category          | No. Participants | Age, y  | BMI     |
|-------------------|------------------|---------|---------|
| Obese (BMI ≥30.0) |                  |         |         |
| Men               | 254              | 40.3 (3.9) | 33.7 (3.4) |
| Women             | 1498             | 43.3 (4.4) | 36.3 (9.4) |
| Normal weight (BMI < 25.0) |              |         |         |
| Men               | 150              | 44.6 (6.0) | 23.3 (4.4) |
| Women             | 250              | 41.1 (8.0) | 22.1 (3.8) |
Table 2. Mean Scores (SD) of Obese and Normal-Weight Men and Women on the Eight Quality-of-Life Domains Measured by the SF-36 Survey, Turkey, 2005

| Domain                     | Women                              |       | Men                              |       |
|----------------------------|------------------------------------|-------|----------------------------------|-------|
|                            | Obese (n = 1498)                  | Normal Weight (n = 250) | p<sup>b</sup> | Obese (n = 254)                  | Normal Weight (n = 150) | p<sup>b</sup> |
| Physical functioning       | 63.7 (10.5)                       | 85.4 (13.3) | .03                               | 69.9 (8.5)                       | 90.3 (13.7) | .004 |
| Role–physical              | 44.4 (5.4)                        | 90.5 (13.8) | .003                              | 45.3 (8.4)                        | 89.4 (14.6) | <.001 |
| Social functioning         | 64.3 (7.3)                        | 85.8 (14.4) | .03                               | 64.4 (13.7)                       | 86.8 (8.3) | .003 |
| Role–emotional             | 43.9 (4.6)                        | 87.3 (10.9) | .007                              | 76.8 (14.5)                       | 88.3 (10.9) | .73  |
| Mental health              | 54.7 (8.4)                        | 70.5 (14.6) | .04                               | 59.6 (9.3)                        | 74.4 (13.4) | .04  |
| Vitality                   | 53.8 (14.4)                       | 60.3 (5.8)  | .54                               | 65.3 (10.3)                       | 70.3 (10.7) | .09  |
| Bodily pain                | 50.3 (14.3)                       | 84.3 (13.4) | .03                               | 69.3 (11.4)                       | 80.3 (9.4) | .004 |
| General health perception  | 43.0 (9.7)                        | 75.9 (16.4) | .004                              | 64.3 (13.3)                       | 79.3 (8.3) | .004 |

<sup>a</sup>Obese is defined as a body mass index (BMI) ≥30.0; normal weight, as a BMI <25.0.

<sup>b</sup>P values were determined by two-tailed t test.

Table 3. SF-36 Survey Results (%) Among Participants in Study of Quality of Life Among Obese and Normal-Weight Men and Women, Turkey, 2005

| Survey Item                                           | Obese Women (n = 1498) | Obese Men (n = 254) | Normal Weight Women (n = 250) | Normal Weight Men (n = 150) |
|-------------------------------------------------------|------------------------|---------------------|-------------------------------|----------------------------|
| In general, health                                    |                        |                     |                               |                            |
| Excellent                                             | 9.0                    | 10.3                | 25.4                          | 29.8                       |
| Very good                                             | 11.1                   | 18.6                | 30.1                          | 34.1                       |
| Good                                                  | 25.7                   | 15.1                | 28.7                          | 20.1                       |
| Fair                                                  | 20.7                   | 29.9                | 10.1                          | 13.6                       |
| Poor                                                  | 33.5                   | 26.1                | 5.7                           | 2.4                        |
| General health compared with 1 year ago               |                        |                     |                               |                            |
| Much better                                           | 2.4                    | 4.9                 | 10.7                          | 15.3                       |
| Somewhat better                                       | 9.2                    | 8.7                 | 18.6                          | 17.3                       |
| About the same                                        | 30.7                   | 26.1                | 37.8                          | 39.1                       |
| Somewhat worse                                        | 34.9                   | 39.8                | 20.9                          | 15.9                       |
| Much worse                                            | 22.8                   | 20.6                | 12.0                          | 12.4                       |
| Vigorous activities, such as running, lifting heavy objects, participating in strenuous sports |                        |                     |                               |                            |
| Yes, limited a lot                                     | 54.9                   | 49.1                | 43.9                          | 45.7                       |
| Yes, limited a little                                  | 34.3                   | 42.7                | 47.1                          | 43.0                       |
| No, not limited at all                                 | 10.8                   | 8.2                 | 9.0                           | 11.3                       |

Some categories do not add to 100% because of rounding.

<sup>a</sup>Obese is defined as a body mass index (BMI) ≥30.0; normal weight, as a BMI <25.0.
Table 3. (continued) SF-36 Survey Results (%) Among Participants in Study of Quality of Life Among Obese and Normal-Weight Men and Women, Turkey, 2005

| Survey Item                                      | Obese                      | Normal Weight               |
|-------------------------------------------------|----------------------------|-----------------------------|
|                                                 | Women (n = 1498)           | Men (n = 254)               | Women (n = 250) | Men (n = 150) |
| Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf |                           |                             |                |              |
| Yes, limited a lot                              | 44.9                       | 41.3                        | 35.9            | 30.3          |
| Yes, limited a little                           | 46.3                       | 40.5                        | 47.1            | 51.0          |
| No, not limited at all                          | 8.7                        | 18.2                        | 17.0            | 18.7          |
| Climbing several flights of stairs              |                            |                             |                |              |
| Yes, limited a lot                              | 27.7                       | 13.1                        | 2.9             | 4.0           |
| Yes, limited a little                           | 38.4                       | 18.1                        | 7.1             | 3.0           |
| No, not limited at all                          | 33.9                       | 68.8                        | 90.0            | 93.0          |
| Climbing one flight of stairs                   |                            |                             |                |              |
| Yes, limited a lot                              | 20.6                       | 19.8                        | 19.1            | 15.3          |
| Yes, limited a little                           | 35.1                       | 34.1                        | 32.3            | 27.6          |
| No, not limited at all                          | 44.3                       | 46.1                        | 47.6            | 57.1          |
| Walking several blocks                          |                            |                             |                |              |
| Yes, limited a lot                              | 35.1                       | 33.9                        | 29.7            | 21.0          |
| Yes, limited a little                           | 38.4                       | 48.4                        | 51.9            | 51.1          |
| No, not limited at all                          | 26.6                       | 17.7                        | 18.4            | 27.8          |
| Walking one block                               |                            |                             |                |              |
| Yes, limited a lot                              | 28.6                       | 30.6                        | 30.7            | 31.0          |
| Yes, limited a little                           | 45.1                       | 51.7                        | 43.5            | 51.1          |
| No, not limited at all                          | 26.3                       | 17.7                        | 26.8            | 17.8          |
| Walking more than a mile                        |                            |                             |                |              |
| Yes, limited a lot                              | 40.7                       | 33.1                        | 28.3            | 27.5          |
| Yes, limited a little                           | 25.1                       | 45.9                        | 40.0            | 46.9          |
| No, not limited at all                          | 34.2                       | 22.0                        | 31.7            | 26.6          |
| Lifting or carrying groceries                   |                            |                             |                |              |
| Yes, limited a lot                              | 21.1                       | 9.9                         | 4.4             | 2.0           |
| Yes, limited a little                           | 33.9                       | 13.8                        | 10.8            | 8.0           |
| No, not limited at all                          | 45.0                       | 76.3                        | 84.8            | 90.0          |
| Bending, kneeling, or stooping                  |                            |                             |                |              |
| Yes, limited a lot                              | 20.2                       | 20.0                        | 3.0             | 2.0           |
| Yes, limited a little                           | 30.0                       | 20.0                        | 2.6             | 1.1           |
| No, not limited at all                          | 49.8                       | 60.0                        | 94.4            | 96.9          |
| Bathing or dressing                             |                            |                             |                |              |
| Yes, limited a lot                              | 10.6                       | 4.1                         | 3.7             | 0             |
| Yes, limited a little                           | 15.3                       | 12.1                        | 4.1             | 0             |
| No, not limited at all                          | 74.1                       | 83.8                        | 92.2            | 100.0         |

Some categories do not add to 100% because of rounding.

Obese is defined as a body mass index (BMI) ≥30.0; normal weight, as a BMI <25.0.
Table 3. (continued) SF-36 Survey Results (%) Among Participants in Study of Quality of Life Among Obese and Normal-Weight Men and Women, Turkey, 2005

| Survey Item                                                                 | Obese (n = 1498) | Obese (n = 254) | Normal Weight (n = 250) | Normal Weight (n = 150) |
|-----------------------------------------------------------------------------|------------------|-----------------|------------------------|------------------------|
| Difficulty performing work or other activities                              |                  |                 |                        |                        |
| Yes                                                                         | 65.9             | 60.9            | 59.8                   | 60.6                   |
| No                                                                          | 34.1             | 39.1            | 40.2                   | 38.4                   |
| Limited in the kind of work or other activities (as a result of physical problems) |                  |                 |                        |                        |
| Yes                                                                         | 65.6             | 50.1            | 54.9                   | 47.1                   |
| No                                                                          | 34.4             | 49.9            | 46.1                   | 52.9                   |
| Accomplished less than would like at work or other activities (as a result of physical problems) |                  |                 |                        |                        |
| Yes                                                                         | 39.6             | 40.3            | 20.3                   | 17.5                   |
| No                                                                          | 60.4             | 59.7            | 79.7                   | 82.5                   |
| Cut down on time spent on work or other activities (as a result of physical problems) |                  |                 |                        |                        |
| Yes                                                                         | 46.6             | 30.3            | 21.6                   | 17.9                   |
| No                                                                          | 53.4             | 69.7            | 78.4                   | 82.1                   |
| During the past 4 weeks, accomplished less than would like at work or other activities (as a result of emotional problems) |                  |                 |                        |                        |
| Yes                                                                         | 49.6             | 40.3            | 23.8                   | 19.8                   |
| No                                                                          | 50.4             | 59.7            | 76.2                   | 80.2                   |
| Didn’t do work or other activities as carefully as usual (as a result of emotional problems) |                  |                 |                        |                        |
| Yes                                                                         | 31.4             | 20.2            | 11.3                   | 6.1                    |
| No                                                                          | 68.6             | 79.8            | 88.7                   | 93.9                   |
| Cut down on time spent on work or other activities (as a result of emotional problems) |                  |                 |                        |                        |
| Yes                                                                         | 46.6             | 30.1            | 29.6                   | 18.5                   |
| No                                                                          | 53.4             | 69.9            | 70.4                   | 81.5                   |
| During the past 4 weeks, physical or emotional problems have interfered with social activities |                  |                 |                        |                        |
| Not at all                                                                  | 15.4             | 19.4            | 40.1                   | 43.7                   |
| Slightly                                                                    | 18.6             | 30.6            | 28.6                   | 30.2                   |
| Moderately                                                                  | 53.3             | 31.1            | 23.3                   | 13.3                   |
| Quite a bit                                                                 | 10.6             | 9.7             | 7.5                    | 12.0                   |
| Extremely                                                                   | 2.1              | 9.2             | 0.5                    | 0.8                    |
| How much bodily pain during the past 4 weeks?                               |                  |                 |                        |                        |
| None                                                                        | 16.1             | 20.8            | 32.0                   | 25.1                   |
| Very mild                                                                   | 28.1             | 25.6            | 33.6                   | 41.9                   |
| Mild                                                                        | 26.9             | 37.1            | 10.8                   | 17.1                   |
| Moderate                                                                    | 24.3             | 14.3            | 19.6                   | 15.5                   |
| Severe                                                                      | 4.6              | 2.1             | 4.0                    | 0.3                    |
| Pain interfered with normal work                                            |                  |                 |                        |                        |
| Not at all                                                                  | 10.1             | 24.6            | 40.2                   | 50.1                   |
| A little bit                                                                | 15.0             | 43.8            | 30.0                   | 25.3                   |

Some categories do not add to 100% because of rounding.

Obese is defined as a body mass index (BMI) ≥30.0; normal weight, as a BMI <25.0.
Table 3. (continued) SF-36 Survey Results (%) Among Participants in Study of Quality of Life Among Obese and Normal-Weight Men and Women, Turkey, 2005

| Survey Item                  | Obese          | Normal Weight |          |
|------------------------------|----------------|---------------|----------|
|                              | Women (n = 1498) | Men (n = 254) | Women (n = 250) | Men (n = 150) |
| Moderately                   | 66.3           | 20.3          | 20.3     | 10.9         |
| Quite a bit                  | 8.0            | 11.0          | 9.0      | 13.0         |
| Extremely                    | 0.7            | 0.3           | 0.5      | 0.7          |
| Felt full of pep             |                |               |          |              |
| All of the time              | 6.1            | 7.6           | 10.1     | 8.9          |
| Most of the time             | 15.0           | 13.5          | 20.9     | 10.8         |
| A good bit of the time       | 24.3           | 25.3          | 31.3     | 20.8         |
| Some of the time             | 9.3            | 13.8          | 26.2     | 30.7         |
| A little of the time         | 45.0           | 30.0          | 10.6     | 15.9         |
| None of the time             | 0.3            | 9.8           | 0.9      | 12.9         |
| Have been a happy person     |                |               |          |              |
| All of the time              | 7.6            | 14.6          | 30.1     | 24.1         |
| Most of the time             | 15.0           | 23.8          | 20.0     | 28.6         |
| A good bit of the time       | 16.1           | 25.3          | 21.3     | 15.8         |
| Some of the time             | 50.3           | 33.8          | 27.0     | 27.0         |
| A little of the time         | 8.9            | 2.0           | 1.6      | 4.0          |
| None of the time             | 2.1            | 0.5           | 0.5      | 0.5          |
| Have felt tired              |                |               |          |              |
| All of the time              | 5.1            | 4.9           | 4.9      | 3.1          |
| Most of the time             | 4.9            | 6.9           | 5.0      | 7.1          |
| A good bit of the time       | 20.5           | 30.1          | 22.9     | 12.0         |
| Some of the time             | 44.3           | 29.7          | 14.5     | 15.6         |
| A little of the time         | 25.1           | 28.4          | 17.1     | 21.9         |
| None of the time             | 0              | 0             | 35.6     | 40.3         |
| Have been a very nervous person |            |               |          |              |
| All of the time              | 4.1            | 7.8           | 2.9      | 3.9          |
| Most of the time             | 5.5            | 9.7           | 6.6      | 9.0          |
| A good bit of the time       | 10.4           | 20.1          | 11.3     | 22.0         |
| Some of the time             | 34.3           | 39.3          | 14.5     | 12.9         |
| A little of the time         | 25.0           | 13.1          | 37.1     | 32.5         |
| None of the time             | 20.7           | 10.0          | 27.6     | 19.7         |
| Have felt calm and peaceful |                |               |          |              |
| All of the time              | 24.5           | 27.9          | 32.9     | 30.1         |
| Most of the time             | 25.5           | 19.1          | 26.6     | 29.0         |
| A good bit of the time       | 10.3           | 17.9          | 11.8     | 12.5         |
| Some of the time             | 20.8           | 19.3          | 8.1      | 9.7          |

Some categories do not add to 100% because of rounding.

aObese is defined as a body mass index (BMI) ≥30.0; normal weight, as a BMI <25.0.

(Continued on next page)
| Survey Item                           | Obese (n = 1498) | Obese (n = 254) | Normal Weight (n = 250) | Normal Weight (n = 150) |
|---------------------------------------|------------------|-----------------|-------------------------|-------------------------|
| A little of the time                  | 9.0              | 12.1            | 15.3                    | 5.8                     |
| None of the time                      | 9.9              | 3.7             | 5.3                     | 12.9                    |
| **Have felt downhearted and blue**    |                  |                 |                         |                         |
| All of the time                       | 14.1             | 19.5            | 12.3                    | 19.5                    |
| Most of the time                      | 19.4             | 19.1            | 17.7                    | 15.8                    |
| A good bit of the time                | 20.9             | 23.4            | 19.6                    | 31.2                    |
| Some of the time                      | 22.0             | 15.9            | 11.1                    | 18.4                    |
| A little of the time                  | 15.7             | 12.1            | 18.8                    | 8.2                     |
| None of the time                      | 7.9              | 10.0            | 20.5                    | 6.9                     |
| **Have felt down in the dumps**       |                  |                 |                         |                         |
| All of the time                       | 10.5             | 9.8             | 10.9                    | 9.4                     |
| Most of the time                      | 15.5             | 19.1            | 13.6                    | 8.0                     |
| A good bit of the time                | 10.1             | 15.6            | 14.8                    | 22.8                    |
| Some of the time                      | 24.3             | 29.3            | 15.9                    | 17.9                    |
| A little of the time                  | 25.0             | 13.0            | 16.9                    | 12.5                    |
| None of the time                      | 14.6             | 13.2            | 27.9                    | 29.4                    |
| **Have a lot of energy**              |                  |                 |                         |                         |
| All of the time                       | 5.5              | 3.8             | 18.9                    | 15.1                    |
| Most of the time                      | 8.5              | 17.6            | 13.6                    | 23.9                    |
| A good bit of the time                | 20.1             | 17.1            | 17.8                    | 27.1                    |
| Some of the time                      | 34.3             | 29.3            | 30.9                    | 21.5                    |
| A little of the time                  | 28.3             | 23.0            | 14.8                    | 10.0                    |
| None of the time                      | 3.3              | 9.2             | 4.0                     | 2.4                     |
| **Have felt worn out**                |                  |                 |                         |                         |
| All of the time                       | 7.1              | 8.9             | 9.9                     | 10.1                    |
| Most of the time                      | 14.9             | 10.6            | 9.6                     | 12.9                    |
| A good bit of the time                | 21.8             | 19.4            | 11.8                    | 29.1                    |
| Some of the time                      | 25.9             | 32.8            | 40.9                    | 16.0                    |
| A little of the time                  | 19.1             | 20.6            | 24.8                    | 30.8                    |
| None of the time                      | 11.2             | 7.7             | 3.0                     | 1.1                     |
| **During the past 4 weeks, how much of the time has physical health or emotional problems interfered with social activities?** |                  |                 |                         |                         |
| All of the time                       | 13.6             | 11.5            | 7.1                     | 3.6                     |
| Most of the time                      | 18.1             | 17.4            | 14.1                    | 5.9                     |
| A good bit of the time                | 18.5             | 20.3            | 18.1                    | 19.7                    |
| Some of the time                      | 23.1             | 25.2            | 21.9                    | 22.9                    |
| A little of the time                  | 17.2             | 19.9            | 24.8                    | 31.8                    |

Some categories do not add to 100% because of rounding.

Obese is defined as a body mass index (BMI) ≥30.0; normal weight, as a BMI <25.0.
Table 3. (continued) SF-36 Survey Results (%) Among Participants in Study of Quality of Life Among Obese and Normal-Weight Men and Women, Turkey, 2005

| Survey Item                                      | Obese                  | Normal Weight          |
|-------------------------------------------------|------------------------|------------------------|
|                                                 | Women (n = 1498)       | Men (n = 254)          |
| None of the time                                 | 9.5                    | 5.7                    | 14.0                  | 16.1                  |
| **Health to get worse**                          |                        |                        |
| Definitely true                                  | 7.5                    | 6.9                    | 5.1                   | 2.1                   |
| Mostly true                                      | 32.1                   | 30.1                   | 12.6                  | 6.0                   |
| Don’t know                                       | 22.8                   | 29.9                   | 31.3                  | 42.5                  |
| Mostly false                                     | 28.7                   | 25.3                   | 38.1                  | 39.4                  |
| Definitely false                                 | 8.9                    | 7.8                    | 12.9                  | 10.0                  |
| **Get sick a little easier than other people**   |                        |                        |
| Definitely true                                  | 15.3                   | 1.5                    | 7.0                   | 8.0                   |
| Mostly true                                      | 28.9                   | 23.1                   | 10.7                  | 11.0                  |
| Don’t know                                       | 35.8                   | 39.9                   | 21.3                  | 15.5                  |
| Mostly false                                     | 12.9                   | 26.4                   | 38.6                  | 39.4                  |
| Definitely false                                 | 7.1                    | 9.1                    | 22.4                  | 26.1                  |
| **As healthy as anybody I know**                 |                        |                        |
| Definitely true                                  | 31.2                   | 40.1                   | 21.7                  | 18.4                  |
| Mostly true                                      | 20.6                   | 20.5                   | 15.4                  | 12.0                  |
| Don’t know                                       | 21.8                   | 18.4                   | 25.1                  | 23.1                  |
| Mostly false                                     | 12.3                   | 11.3                   | 18.3                  | 22.5                  |
| Definitely false                                 | 14.1                   | 9.7                    | 19.5                  | 24.0                  |
| **Health is excellent**                          |                        |                        |
| Definitely true                                  | 10.4                   | 10.6                   | 21.8                  | 28.9                  |
| Mostly true                                      | 33.4                   | 21.8                   | 25.3                  | 23.8                  |
| Don’t know                                       | 30.1                   | 28.7                   | 21.3                  | 23.9                  |
| Mostly false                                     | 11.4                   | 27.4                   | 15.4                  | 11.3                  |
| Definitely false                                 | 14.7                   | 11.5                   | 16.2                  | 12.1                  |

Some categories do not add to 100% because of rounding.

Obese is defined as a body mass index (BMI) ≥30.0; normal weight, as a BMI <25.0.