

# Perception of "Healthy" Body Weight by Patients With Diabetes

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Although weight management is important to diabetes treatment (1–3), obesity remains common among adults with diabetes (4). This may reflect the difficulty of promoting weight loss (5) or inattention to obesity management during routine clinical practice (6). Since self-management is a major tenet of diabetes care (4), patient understanding of weight-related health risk may be an important step toward setting healthy lifestyle goals and effective weight management. We sought to understand how well patients with diabetes who receive care in primary care practices could identify healthy body weight.

## RESEARCH DESIGN AND METHODS

During a diabetes education initiative, a survey was mailed to 2,607 patients with diabetes from three university-based general medicine practices in a single urban area. It included questions on knowledge (diabetes knowledge test, general knowledge subscale [7]) and behaviors related to diabetes. Patients were also asked to report their current height and weight, and "the healthiest weight for your height."

To ensure privacy, patients with diabetes were identified anonymously from the practices' electronic medical records. Participant responses were anonymous; to avoid undue burden on nonresponders uninterested in participating, the University's Institutional Review Board precluded multiple mailings.

Each participant's current BMI (weight in kilograms divided by the square of height in meters [ $\text{kg}/\text{m}^2$ ]) was calculated. Likewise, perceived healthiest

BMI was calculated from reported current height and "healthiest" weight. If the current BMI was higher than the perceived healthiest BMI, participants were considered to perceive their weight as higher than ideal for health (perceived overweight). BMI measures were categorized by standard clinical definitions (5). Responses of zero to queries of age or weight were converted to missing values.

We examined whether sex, current BMI, race, and number of years since diabetes diagnosis were related to identifying weights in the normal-BMI range as "healthiest" using  $\chi^2$  and *t* tests. We used multivariate logistic regression to identify factors related to specifying a weight in the normal-BMI range as "healthiest" while adjusting for possible confounders.

**RESULTS**— The survey could not be delivered to 5.6% of potential participants due to address changes (5.3%) or death (0.3%). Of the remaining 2,461 people, 573 responded (23.3%); 94–100% answered each question examined here. The sample was primarily female and white (Table 1). Average current BMI was 31.8  $\text{kg}/\text{m}^2$  among women and 29.6  $\text{kg}/\text{m}^2$  among men, and half were obese.

Most overweight (95%) or obese (99%) respondents reported perceived overweight, as did 63% of those with normal current BMI. Among respondents, 41% reported a "healthiest body weight for [their] height" corresponding with an overweight BMI, and 6% reported a "healthiest" weight that was obese (Table 1). One participant selected a weight in the underweight range as "healthiest."

Men (35%) were less likely than women (65%) to specify a normal-BMI weight as "healthiest" ( $P < 0.001$ ). People with higher degrees of excess weight were generally less likely to specify weights in the normal-BMI range as "healthiest" ( $P < 0.001$ ). For example, 66% of obese participants, 41% of overweight participants, and 4% of those with normal BMI identified overweight or obese measurements as ideal for health. Patients who specified a normal-BMI weight as "healthiest" demonstrated higher general diabetes knowledge (70.9 vs. 64.8% correct;  $P = 0.01$ ). Time since diabetes diagnosis showed a borderline-significant relationship ( $P = 0.05$ ) with specifying a normal-BMI weight as "healthiest." Most patients with a recent (e.g., within 1 year; 60%) or remote (e.g., >10 years ago; 59%) diabetes diagnosis selected a normal-BMI weight; accurate identification of a "healthiest" BMI was 50, 49, and 43% for those diagnosed 1 to <2 years ago, 2 to <5 years ago, and 5 to <10 years ago, respectively. The specification of a normal-BMI weight as "healthiest" did not differ between black and white participants (50 vs. 54%,  $P = 0.44$ ).

Logistic regression analyses showed that female sex (odds ratio 6.66 [95% CI 4.02–11.03]) was associated with a higher odds of specifying a normal-BMI weight as "healthiest," while reporting current overweight (0.08 [0.03–0.22]) or obesity (0.15 [0.01–0.04]) was associated with lower odds of accurately identifying a healthy weight. Age, race/ethnicity, diabetes knowledge, years since diagnosis, and physician practice were not significant predictors.

**CONCLUSIONS**— Although most overweight or obese patients in this group accurately perceived their weight as higher than ideal for health, many overestimated the weight that would be healthiest for their height.

Men and those with more severe excess weight were particularly unlikely to report weights in the normal-BMI range as "healthiest." Possibly, some participants may have confused the standard 10% initial weight loss goal (5) with a

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A table elsewhere in this issue shows conventional and Système International (SI) units and conversion factors for many substances.

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Table 1—Descriptive features of the sample

|   | Men         | Women       |
|---|-------------|-------------|
| Percent                                     | 39          | 61          |
| Age (years)                                 | 61.2 ± 12.2 | 58.7 ± 14.8 |
| Diabetes knowledge*                         | 68.6 ± 27.0 | 66.7 ± 29.5 |
| Race/ethnicity (%)                          |             |             |
| Asian                                       | 1.4         | 0.9         |
| Black                                       | 11.9        | 23.8        |
| White                                       | 78.0        | 67.0        |
| Native American                             | 6.0         | 4.9         |
| Hispanic                                    | 0.5         | 1.2         |
| Other                                       | 2.3         | 2.3         |
| Clinical status of current weight (%)†      |             |             |
| Underweight                                 | 0.0         | 0.3         |
| Normal                                      | 17.3        | 20.0        |
| Overweight                                  | 40.2        | 24.4        |
| Obese: class 1                              | 30.4        | 25.3        |
| Obese: class 2                              | 7.5         | 17.1        |
| Obese: extreme                              | 4.7         | 12.9        |
| Clinical status of “healthiest” weight (%)‡ |             |             |
| Underweight                                 | 0.0         | 0.3         |
| Normal                                      | 34.8        | 64.6        |
| Overweight                                  | 57.1        | 30.2        |
| Obese: class 1                              | 7.6         | 4.0         |
| Obese: class 2                              | 0.0         | 0.6         |
| Obese: extreme                              | 0.5         | 0.3         |

The current clinical weight status reflects BMI calculated from current self-reported height and weight, while “healthiest” clinical weight status reflects BMI calculated from current self-reported height and “the healthiest weight for [the respondent’s] height.” \*The score reflects the percentage of correct answers on the diabetes knowledge test, general knowledge subscale; skipped questions were coded as incorrect answers (7). †Clinical weight categories are defined by BMI (kg/m<sup>2</sup>): normal 18.5–24.9, overweight 25–29.9, and obesity ≥30, with three subclasses: class 1 30–34.9, class 2 35–39.9, and extreme ≥40.

long-term health ideal. However, healthy-weight misclassification was widespread, with 65% of those reporting normal-BMI measurements having perceived overweight. These findings elicit cause for concern given the importance of body weight in managing diabetes.

The generalizability of these data are limited by the low response rate. However, because those who responded were more likely to have been motivated about the management of their diabetes, our results may overestimate patients’ ability to identify a healthy weight. Self-reported weight and height may underestimate the current overweight and obesity prevalence in this group and may explain part of the perceived overweight among those reporting normal body sizes. Knowledge about diabetes-related topics may reflect region-specific insurance policies regarding diabetes coverage.

Unlike some prior reports (8), our findings do not support larger body size preference in African Americans. Perhaps this reflects our questions’ emphasis on health rather than attractiveness. Alternatively,

it may reflect secular change, following major public health initiatives regarding obesity’s health risks and contribution to racial disparities in cardiovascular disease (9). Conversely, in the overall population, where 65% are overweight or obese and obesity prevalence is escalating, excess body weight may be increasingly viewed as “normal.” Indeed, as obesity prevalence increased from 1994 to 2000, the proportion of obese people reporting prior primary care provider advice to lose weight dropped (10).

As neither diabetes knowledge nor time since diagnosis influenced the accuracy of healthy weight identification in this sample, current educational initiatives may be inadequately addressing excess body weight. The point is sobering, as primary care providers are particularly likely to address obesity among patients with diabetes (11), and diabetes is one of the few diagnoses for which health insurance plans often cover lifestyle referrals. Counseling regarding excess body size deserves more attention in the routine care of patients with diabetes.

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