Variables Associated With Obesity Among African-American Women in Omaha

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KEY WORDS
- African Americans
- age factors
- depression
- health status disparities
- obesity
- socioeconomic factors
- women

Obesity is a health disparity related to environmental, social, and physical health issues, including ethnicity, education, and gender. The purpose of this study was to examine the relationship among obesity, age, education, and socioeconomic status and the relationship between obesity and depression among African-American women living in Omaha, Nebraska. A convenience sample of 378 African-American women completed the African-American Female Health Survey, which included the Center for Epidemiologic Studies Depression scale. Body mass index (BMI) was used to measure obesity. Results indicated that 87% of the women were overweight; mean BMI was 32.78 with high cardiovascular disease risks. There was a statistically significant and positive relationship between depression and BMI ($r = .201$, $p < .01$). Occupational therapists may provide primary, secondary, and tertiary intervention through culturally relevant and meaningful health education programs.


In recent years, research has focused on obesity as one type of health disparity. The Trans-National Institutes of Health (NIH) Work Group on Health Disparities defined the term health disparity as the difference in the incidence, prevalence, morbidity, mortality, and burden of disease and other health conditions that exist among specific population groups (NIH, 2000, as cited in American Occupational Therapy Association [AOTA], 2006a). Moreover, “health disparities are believed to be the result of the complex interaction among biological factors, the environment, and specific health behaviors” (NIH, 2000, p. 2, as cited in AOTA, 2006a).

Despite continued advances in health care, for many African-Americans and other minority Americans compared with the majority population, there is a disparity in health status and quality of health care throughout United States (Guerra, 1998; Savage, 1987; U.S. Department of Health and Human Services [DHHS], 2001a, 2001b, 2001c, 2006a, 2006b, 2006c).

Obesity is a major health issue: A reported 65% of adults are overweight secondary to diet and sedentary lifestyle (DHHS, 2001c, 2006c). Obesity has a significant impact on quality of life. In addition to the physical impact, recent research has addressed mental health issues associated with obesity. Social stigmas associated with obesity perpetuate myths that obese people are lazy, less intelligent, failures, less articulate, and less successful. These social stigmas may result in fear of social interactions, social withdrawal, and being treated with less respect by peers, family members, teachers, and other professionals. Anger, depression, and feelings of hopelessness and helplessness foster low self-esteem, altered self-concept, and denigrated body image (Balters, 1998; Daus, 2001; Dixon, Dixon, & O’Brien, 2003). Obesity has been called the “last acceptable form of prejudice within society” (Chambliss, Finley, & Blair, 2004, p. 469).
Background Literature

Obesity is prevalent across the lifespan and is considered epidemic for all racial groups, but especially for minority populations. African-Americans, and particularly African-American women, have the highest rate of obesity across ethnic groups (Foti & Littrell, 2004) and experience more symptoms of depression that appear to be related to age, socioeconomic status, and educational level (NIH, 1999, 2004). For African-American women, obesity is the result of complex social, psychological, behavioral, cultural, environmental, physiological, gender, and genetic factors (AOTA, 2006b; NIH, 1999, 2004).

The NIH National Heart and Lung Institute (NHLI) Guidelines (NIH, 2002) and American College of Sports Medicine (2000) defined obesity as a body mass index (BMI) greater than 30 kg/m$^2$. African-American women consistently exceed this BMI, with an average BMI of 32.2 kg/m$^2$ for Omaha (located in Douglas County), Nebraska.

Obesity and African-American Women

Nationally, African-American women have the highest rate of obesity at 53%; rates for Hispanic and White women are 51% and 39%, respectively (Centers for Disease Control and Prevention [CDC], 2008a, 2008b). Nebraska health statistics are consistent with national statistics regarding prevalence of obesity in minority populations.

Of the 260 million Americans it is estimated that 30 million are African-American and 15 million are female above the age of 18 years old. Regardless of socioeconomic status African-American females are overrepresented among people who get the sickest and die the earliest. (Yates, 2000, p. 5)

This study attempts to describe the relationship between obesity and depression among African-American women in Omaha, Nebraska. This population was selected for study because of the high rate of comorbidities and death rates in the state of Nebraska.

The Nebraska Minority Behavioral Risk Factor Survey (MBRFS; Nebraska Department of Health, 1996), a comprehensive state survey of the health status of racial and ethnic minorities in Nebraska, indicated that obesity, high blood pressure, and high blood cholesterol contribute to the risk of developing coronary artery disease, stroke, cancer, gallbladder disease, diabetes, and metabolic syndrome in African-American women. In addition, obesity adversely affects pulmonary function and may result in fatigue, sleep apnea, and increased fluid volume or anasarca, which may cause lymphedema and congestive heart failure (Balters, 1998; Dionne, 2002; Nebraska Department of Health, 1994, 1996; Nebraska Department of Health and Human Services [NDHHS], 2000, 2001, 2003).

In Omaha, the death rate associated with heart disease, stroke, diabetes, and breast cancer is higher among African-American than among White women. “Even being slightly overweight increases the risk of hypertension by 71% for African-American women” (British United Provident Association, 2002, p. 2).

Obesity appears to be the leading modifiable risk factor responsible for the decline of health in African-American women. The Nebraska MBRFS survey found that 43% of African-American women were overweight compared with 32% of White women of the same ages (NDHHS, 2001). African-American women living in Omaha had higher BMIs (<25 kg/m$^2$ [34.1%], 25–29 kg/m$^2$ [33.7%], and >30 kg/m$^2$ [32.2%]) than White women living in Douglas County (<25 kg/m$^2$ [56.6%], 25–29 kg/m$^2$ [26.5%], and >30 kg/m$^2$ [16.9%]; NDHHS, 2001; Stevens et al., 1992).

Weight Gain in African-American Women

Several factors differentiate obesity in African-American women from other ethnic groups (Kumanyika, Obarzanek, Stevens, Herbert, & Whelton, 1991). First, compared with other groups in weight management programs, African-American women are less likely to lose weight or maintain weight loss. Research suggests repeated exposure to stress and ineffective stress management may result in altered synthesis of the stress hormone cortisol, leading to weight gain (Maass-Robinson, 2001; Walcott-McQuigg, 2000). Wortsman (2000) indicated that therapeutic levels of vitamin D, which promotes weight loss in obese people, may be lacking in African-American women. Lactose intolerance leads to low consumption of dairy products that are high in calcium; low levels of calcium and vitamin D synthesis (from lack of time spent in the sun) may account for the lower resting energy expenditure and rate of weight loss in this population. Second, the lifestyles of many African-American women predispose them to excessive weight gain. Some obesity may be attributed to an increase in the number of meals consumed outside the home, increased consumption of fast and convenience foods, and lack of physical activity (Ferguson, 2001). A final factor is body weight perception. Research studies examining body weight perceptions indicate that African-American women are more accepting of being overweight; generally perceive themselves as healthy and beautiful despite being overweight; experience less social pressure to diet and exercise; are less physically fit; and do not view weight as an issue for participating in sex, exercise, or sports (Gore, 1999; Kumanyika, Wilson, & Guilford-Davenport, 1993; Stevens et al., 1992; Walcott-McQuigg, 1995).
Longitudinal studies on weight gain in relation to race, gender, and age show that weight gain is greater in African-American women compared with White women, and racial differences in weight gain for African-American women remain after adjustment for age, educational level, and BMI (Yancey, McCarthy, & Leslie, 1998). African-American women are 50% more likely than White women to experience a major weight gain in 10 years and 60% more likely to become obese. Educated White women have greater lean body mass and significantly higher activity participation, use weight reduction diets more often, and view obesity as unhealthy (Burke et al., 1996).

African-American women are 3 times more likely than White women to have at least one child. Childbirth and caring for children at an earlier age may alter lifestyle, physical activity, and socioeconomic status, leading to obesity later in life (Burke et al., 1992; Kahn, Williamson, & Stevens, 1991; Kuczmarski, Flegal, Campbell, & Johnson, 1994; Williamson, Kahn, & Byers, 1991; Wing, Adams-Campbell, Marcus, & Janney, 1993).

**Obesity and Socioeconomic Status**

Access to and quality of preventive care, cultural beliefs, sexism and racism, and income below the poverty level contribute to the decline in health status of African-American women (Agency for Healthcare Research and Quality, 2005; Airhihenbuwa, 1995; Auslander & Haire-Joshu, 1992; Fingerhut, 1992; Guerra, 1996, 1998; Yates, 2000). African-Americans account for 34% of people living in poverty (Stolley & Fitzsgibbon, 1997). In general, minority women who are obese are 10 times more likely to be poor and have a household income nearly $7,000 less than the household income for White women. African-American women who are obese are perceived as being in a lower socioeconomic status because of their weight; those in lower socioeconomic levels experience an added disadvantage in society because of their weight, ethnicity, and gender; financial status; limited community resources; employment opportunities; and lower salaries (Solovay, 2000). It is important to understand the relationship between obesity and socioeconomic status, especially in African-American women.

Because many low-income African-American women live in urban areas, there appear to be several socioeconomic facilitators for obesity in women living in this environment. First, poverty is a factor that may make African-American women more vulnerable to obesity. "Poverty and racism may cause higher levels of stress" (Blocker & Frazier, 2001, p. 61). According to Brunner and Marmot (2000), "Long-term exposure to adverse circumstances may contribute to a metabolic syndrome that alters the body's ability to clear glucose, resulting in increased obesity" (p. 17). In addition, prolonged exposure to poverty and racism may result in social withdrawal, increased feelings of depression, reduced participation in physical activity, and the use of food to achieve some level of emotional comfort (Blocker & Freudenberg, 2001; Brunner & Marmot, 2000; Karlsen & Nazroo, 2002; Tull et al., 1999). Second, low-income African-American women may alter their diets and nutrition because of available financial resources and food costs. This action may result in the consumption of a higher percentage of calories from less-expensive fatty meat, fewer fruits and vegetables, less dietary fiber, and fewer dairy products, resulting in increased risk for disease (Kaul & Nidiry, 2000; Kayrooz, Moy, Yanek, & Becker, 1998). Third, access to and availability of grocery stores may also determine the type and selection of food for African-Americans living in urban communities. Healthier food choices may be limited in low-income communities. Because the larger grocery stores may be charged more for rent and insurance because of high crime rates, they are often located further away from African-American communities. Therefore, small neighborhood stores may charge more for lower quality food items and have limited selection, low sales volume, and higher consumer cost (Blocker & Freudenberg, 2001). Because of the increased cost of fresh produce, African-Americans buy convenience foods that are higher in fat, salt, and sugar; are lower in fiber; and have fewer vitamins and minerals (Kaul & Nidiry, 2000).

Finally, economic trends may affect food consumption. With the increase of single-parent homes in the African-American community, disparities in income, and growth in lower paying jobs, low-income women may be spending more time away from home. According to Lin, Guthrie, and Frazao (1999) and Nestle and Jacobson (2000), the proportion of meals eaten outside the home continues to increase; between 1977 and 1995, the number of meals consumed outside of home increased from 16% to 27%. Foods consumed outside the home often have a higher fat content, less fiber, and more calories and do not meet the daily dietary recommendations for calcium, iron, sodium, and fat. For African-American women, these fast and convenient, low-cost, and high-calorie and fat meals are a way of life (Blocker & Frazier, 2001; Kumanyika et al., 1993; Kuczmarski et al., 1994).

Sobal (1991) identified three socioeconomic components that may facilitate obesity: (1) education and income, (2) occupation, and (3) family background.

Education is related to obesity because persons with higher education are more aware of health resources and have better access to health care. Persons with less education may have access to fewer resources. Persons with higher personal and family income have more
opportunity to purchase a variety of quality foods in abundance. Abundance of food may lead to increased calorie consumption resulting in obesity. In comparison, low income leads to inability to buy quality food and may also result in increased calorie intake causing obesity. (Sobal, 1991, p. 233)

African-American women who are obese, regardless of their income or educational status, may be perceived by the majority as being in a lower socioeconomic status (Sobal, 1991). Family environment may also be responsible for behaviors leading to obesity. Sobal (1991) contended that behavioral patterns that lead to obesity are often observed in families with low socioeconomic status. The lack of knowledge and health literacy about physical activity, diet and nutrition, and health and disease risk may inadvertently result in weight gain behaviors across the lifespan for African-American women regardless of socioeconomic status.

**Obesity and Depression**

African-American women do not readily seek treatment for depression or acknowledge that they may be depressed or have symptoms of depression because of cultural shame, lack of trust, fear of being referred to as “crazy,” and lack of access to health insurance (Barbee, 1992; Eaton & Kessler, 1981; Jones-Warren, 1995a; Maass-Robinson, 2001; National Mental Health Association, 2002a, 2002b, 2002c; Rouse, 2001; Siegel, Hyg, Yancey, & McCarthy, 2000; Walcott-McQuigg, 2000; Wesley, 2002). Jones-Warren (1994) suggested that the increased risk for depression in African-American women may be hereditary—linked to the effects of stressful events or social pressures or oppression in the form of physical or sexual abuse, harassment, or discrimination; it may also be associated with physiological changes (such as fluctuation in hormone levels) during the menstrual cycle. “African-American women may be more at risk for depression because of their double jeopardy minority status of being Black and female in a society where they are devalued and experience multiple role stressors” (Jones-Warren, 1995c, p. 3).

Research findings by Walcott-McQuigg (1995) and Jones-Warren (1995b, 1995c) suggested that African-American women in higher socioeconomic groups are beginning to experience weight gain patterns similar to African-American women in lower socioeconomic groups and have more symptoms of depression than previously recognized. Barbee (1992) and Poussaint (1990) stressed that the symptoms of depression present in African-American women must be addressed in the context of unexpressed feelings and how these feelings compel them to seek food as a medication. For African-American women, the health disparities of obesity and depression alter quality of life and lead to early mortality.

**Aims of the Study**

The aims of this study were to address the following two questions related to obesity in African-American women:

1. Is there a relationship among age, education, and socioeconomic status and obesity among African-American women living in Omaha?
2. Is there a relationship between depression and obesity among African-American women living in Omaha?

**Method**

**Data Collection**

Institutional Review Board approval for this research study was obtained before data collection. Participants were recruited from the Salem Baptist Church, Sonja’s for Hair, United Hair Stylists, Urban League of Nebraska, and the Omaha Opportunity Industrialization Center. The only church involved was Salem Baptist Church because it has a primarily African-American membership that exceeds 4,000, and 80% of the members are female. Data were collected from 401 women during three scheduled health fairs and other weekly events at the church, high customer times at each of the hair salons, and after weekly classes at the community social services centers. Because of the African-American community’s cultural sensitivity to mental health issues, participants were informed of the depression scale component of the health survey before beginning the survey. Each questionnaire was numbered before distribution to maintain confidentiality. Data were collected face to face using the African-American Female Health Survey (Blanchard, 2002). After the participants’ completion of the questionnaire, I measured the participant’s height, weight, and waist size in a private room; BMI was calculated (NIH, 2002). A total of 378 African-American women met the inclusion criteria, which were (1) ages 19–85 years; (2) ability to speak, read, and understand English (self-reported); and (3) ability to stand with both feet flat on the floor to be weighed.

**Instruments and Measurements**

Participants completed the African-American Female Health Survey, a 77-item questionnaire I developed. A comprehensive literature review was used to identify constructs for the African-American Female Health Survey. The literature suggested an association between health risk factors (e.g., obesity) and psychosocial issues (e.g., symptoms of depression) and socioeconomic status. Focus groups were conducted, themes were organized into questions regarding African-American female health, and the survey was piloted and
revised. Content validity was established by having questions reviewed by African-American women in the community with varying degrees of professional expertise. Face validity (feedback from three academicians, an educational psychologist, a counseling psychologist who is also a sociologist, an English professor, a dietitian, and community volunteers) resulted in the expansion of the number of open-ended questions. After factorial analysis, one item in the “cues to eat” scale was dropped because it had a low correlation with the total scale. After removing the item, the reliability was .8796.

The result of Cronbach’s alpha for the African-American Female Health Survey was .89, which suggests the instrument to be reliable (the items in the questionnaire had a high correlation to each other). The African-American Female Health Survey included the 20-item Center for Epidemiologic Studies Depression scale (CES–D). The CES–D has been used for research purposes in which the focus of the investigation is to assess levels of symptoms of depression or distress in a nonpsychiatric population (Roberts & Vernon, 1983). When correlated with the Beck Depression Inventory and Hamilton (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961; Hamilton, 1960), reliability was reported to be in the low to moderate range ($r = .45, r = .53$; Radloff, 1977).

BMI was the primary measure for degree of obesity in this study. It was developed by the Nutrition/Metabolism Laboratory, Cancer Research Institute in Boston and is an international standard used to determine degree of obesity relative to height (Blackburn & Kanders, 1987). This index is minimally correlated with height ($r = -.03$) and highly correlated with absolute fat mass in women ($r = .82$ to $-.91$; Spiegelman, Israel, Bouchard, & Willett, 1992). Radloff (1977; Radloff & Rae, 1981) reported high correlation among test items with resulting coefficient alphas of .84, .85, .90, and .89 for multiple field trials of the CES–D. For the current study, coefficient alpha for the African-American Female Health Survey, including the CES–D, was .89, suggesting a correlation consistent with those found by Radloff.

The BMI combined with waist circumference is used to describe degree of obesity and level of disease risk. A BMI <24.9 kg/m² with a waist measurement of 35 in. is considered normal and with minimal disease risk, whereas a BMI >25 kg/m² with a waist measurement greater than 35 in. is considered overweight with increased risk for disease (CDC, 2008a; Nies, Buffington, Cowan, & Hepworth, 1998; Nonas & Albu, 2001; ROBARD, 2006; Sharma & Grassi, 2001). BMI was calculated from actual measured height and weight of the respondents without shoes and measured to the nearest pound. Each individual’s measurements for height and weight were calculated by using the NHLI Guidelines Web site (NIH, 2002).

Data Analysis

Data for this study were analyzed by using SPSS Version 10.0 (SPSS, Inc., Chicago, IL). The dependent measures were obesity and depression. Spearman’s rho, a nonparametric statistical procedure, was used to analyze nominal and ordinal data. Pearson correlation, a parametric statistic, was used to analyze the positive or negative magnitude of the relationship between interval- and ratio-level data (depression and obesity). Multiple regression analyses were used to predict the relationship between obesity and depression (Portney & Watkins, 2000). All hypotheses were analyzed at a .05 alpha level to determine statistical significance.

Results

Of the 378 African-American women included in the investigation, the majority of the women were ages 36–45 (27.9%) and 46–55 (23.6%); 42.4% attended or completed at least 1–3 years of college and 31.5% had a bachelor’s degree or graduate degree (Table 1). Thirty-nine percent were married (Table 1), and 96% had children ($M$ Table 1. Demographic Characteristics of African-American Women ($N = 378$)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19–25</td>
<td>36</td>
<td>9.5</td>
</tr>
<tr>
<td>26–35</td>
<td>65</td>
<td>17.2</td>
</tr>
<tr>
<td>36–45</td>
<td>105</td>
<td>27.9</td>
</tr>
<tr>
<td>46–55</td>
<td>89</td>
<td>23.6</td>
</tr>
<tr>
<td>56–65</td>
<td>51</td>
<td>13.5</td>
</tr>
<tr>
<td>66–75</td>
<td>26</td>
<td>6.9</td>
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<td>76–85</td>
<td>5</td>
<td>1.3</td>
</tr>
<tr>
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<td>0.1</td>
</tr>
<tr>
<td>Total</td>
<td>378</td>
<td>100</td>
</tr>
<tr>
<td>Education level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elementary (Grades 1–8)</td>
<td>1</td>
<td>0.3</td>
</tr>
<tr>
<td>Some high school</td>
<td>16</td>
<td>4.2</td>
</tr>
<tr>
<td>Grade 12 or GED</td>
<td>72</td>
<td>19.1</td>
</tr>
<tr>
<td>1–3 years of college</td>
<td>160</td>
<td>42.4</td>
</tr>
<tr>
<td>College graduate</td>
<td>77</td>
<td>20.4</td>
</tr>
<tr>
<td>Graduate degree</td>
<td>42</td>
<td>11.1</td>
</tr>
<tr>
<td>Other</td>
<td>9</td>
<td>2.4</td>
</tr>
<tr>
<td>missing data</td>
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<td>0.1</td>
</tr>
<tr>
<td>Total</td>
<td>378</td>
<td>100</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>147</td>
<td>39.1</td>
</tr>
<tr>
<td>Never married</td>
<td>95</td>
<td>25.3</td>
</tr>
<tr>
<td>Divorced</td>
<td>88</td>
<td>23.4</td>
</tr>
<tr>
<td>Widowed</td>
<td>23</td>
<td>6.1</td>
</tr>
<tr>
<td>Separated</td>
<td>15</td>
<td>4.0</td>
</tr>
<tr>
<td>Member unmarried couple</td>
<td>8</td>
<td>2.1</td>
</tr>
<tr>
<td>Total*</td>
<td>376</td>
<td>100</td>
</tr>
</tbody>
</table>

Note. GED = graduate equivalent degree.

* Total does not sum to $N$ because of missing data.
under the age of 18 living at home. Sixty-three percent were employed full-time, and 11.7% part-time; 7.7% were students, and 8% were retired; 262, or 70.4%, made less than $40,000. The mean height for the sample of 378 was 5 ft 3 in.; weight ranged from 93–398 pounds (M weight = 191 pounds); overweight ranged from 39 to 319 pounds; mean waist size was 37.0 in. with increased risk of disease; mean BMI was 32.78 with a high risk for cardiovascular disease; 86.8% were overweight with Class I to Class III obesity (Table 2).

**Question 1**

Is there a relationship among age, education, and socioeconomic status (income) and obesity among African-American women living in Omaha? Spearman’s rho analysis was used to determine the relationship of age, education, and socioeconomic status (income) and BMI. As age, income, and education increased, BMI increased. Age was positively correlated with income (rs = .218, p = .000) and education. Education and income were positively correlated (rs = .397, p = .000). BMI was positively correlated with age (r = .162, p = .002) and income (r = .140, p = .007). Of these three variables, age made the largest individual contribution to the multiple regression model (β = .100), followed by socioeconomic status (income); education contributed the least to the model (β = –.002). The model was not statistically significant (F[3,367] = 2.438, p = .064, R2 = .02).

None of the variables met the criteria for being a significant predictor of obesity.

**Question 2**

Is there a relationship between depression and obesity among African-American women living in Omaha? A total of 310 (82%) participants completed the CES–D Scale (Table 3). Scores on the depression scale ranged from 0 to 50, with a mean score of 19.10, which is consistent with mild depression. Seventy-three (23.5%) had mild symptoms of depression, 79 (25.4%) had moderate symptoms, and 29 (9.4%) had severe symptoms. A statistically significant and positive relationship between depression and BMI was found (r = .201, p < .01; Table 4). BMI contributed 22.7% of the variance in the model and was statistically significant (β = .476, p < .01). The model was statistically significant (F[2,307] = 9.017, p < .01, R2 = .055; Table 5).

Results of cross-tabulation indicated that women ages 36–45 had the highest education level (1–3 years of college) and highest level of obesity (91, or 28%), consistent with the findings of Walcott-McQuigg (1995, 2000). Women in the 66–75 and 76–85 age groups tended to have lower BMIs.

Of the African-American women in the sample who scored ≥16 and above on the CES–D, the highest percentage occurred in the 36–45 age group (49.7%), followed by the 26–35 age group.

**Discussion**

Socioeconomic status is related to obesity; as income increased, BMI increased. In contrast to previous research that suggested that African-American women in lower socioeconomic groups were more obese than women in higher socioeconomic groups, this study found that women in higher socioeconomic groups were more obese. Women with a lower income in Omaha may not have access to a car and thus walk to the bus, thereby inadvertently participating in more physical activity.

**Table 2. Risk Factor Characteristics of African-American Women (N = 378)**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Disease Risk</th>
<th>Frequency</th>
<th>%</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight classifications</td>
<td>BMI</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Underweight</td>
<td>&lt;18.5</td>
<td>2</td>
<td>0.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal</td>
<td>18.5–24.9</td>
<td>48</td>
<td>12.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overweight</td>
<td>25.0–29.9 Increased</td>
<td>96</td>
<td>25.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obesity Class I</td>
<td>30.0–34.9 High</td>
<td>102</td>
<td>27.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obesity Class II</td>
<td>35.0–39.9 Very high</td>
<td>73</td>
<td>19.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obesity Class III</td>
<td>&gt;40 Extremely high</td>
<td>57</td>
<td>15.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>378</td>
<td>100</td>
<td>4.0</td>
<td>4.0</td>
<td></td>
</tr>
<tr>
<td>Waist size</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;35 in.</td>
<td>Minimal</td>
<td>159</td>
<td>42.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;35 in.</td>
<td>Increased</td>
<td>219</td>
<td>58.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>378</td>
<td>100</td>
<td>37.0</td>
<td>6.3</td>
<td></td>
</tr>
</tbody>
</table>

**Table 3. Center for Epidemiologic Studies Depression Scale Scores of African-American Women (N = 310)**

<table>
<thead>
<tr>
<th>Symptoms of Depression</th>
<th>Score</th>
<th>Frequency</th>
<th>%</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>No symptoms</td>
<td>≤15</td>
<td>109</td>
<td>35.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No symptoms</td>
<td>16</td>
<td>20</td>
<td>6.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mild symptoms</td>
<td>17–20</td>
<td>73</td>
<td>23.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate symptoms</td>
<td>21–30.5</td>
<td>79</td>
<td>25.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Severe symptoms</td>
<td>31</td>
<td>29</td>
<td>9.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>310</td>
<td>100</td>
<td>19.0</td>
<td>7.82</td>
<td></td>
</tr>
</tbody>
</table>

**Table 4. Pearson Correlation for Depression and Obesity of African-American Women (N = 328)**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Depression</th>
<th>Obesity (BMI)</th>
<th>Actual measured weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>.201*</td>
<td>.160**</td>
<td></td>
</tr>
<tr>
<td>Obesity (BMI)</td>
<td>.940***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actual measured weight</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note.** BMI = body mass index.

*Significant as p < .01.
The results support the hypothesis that African-American women in Omaha have a higher rate of obesity (BMI) and that the higher rate of obesity is significantly correlated with symptoms of depression. The symptoms of depression occurred in the same age groups who had higher BMIs. These findings are consistent with previous studies by Siegel et al. (2000) and Wesley (2002), who reported that the obesity and depression relationship was stronger in African-American women with higher levels of education.

Women in the study were typically mid-career, often employed in a middle management position, had children in the home, may have been caring for parents or another family member, and may have perceived that they did not have time to exercise. Combined stressors may be increasing environmental cues to eat.

As age and income increased, BMI increased. This finding supports the hypothesis that African-American women typically reach Class I obesity by age 39 (McTigue, Garrett, & Popkin, 2002). Older African-American women become aware of disease processes later in life. Thus, the onset and diagnosis of comorbidities such as hypertension, diabetes, stroke, and heart disease may lead to a change in health behaviors as they attempt to comply with dietary or other health restrictions, leading to a lower BMI at ages 75–85. In addition, women in this age range are retired and may experience reduced stress and therefore fewer emotional cues to eat.

Study Limitations
African-American women who volunteered to complete the survey may be different from the general population in that the majority of the sample women attend church and may have different cultural perceptions regarding obesity and depression. Women who attend church pray and may have a higher tolerance for stress and symptoms of depression than those who do not attend church. Because of traditional cultural stigmas toward mental health in the African-American community, women who were sensitive to this issue and who were overweight may not have provided honest answers regarding symptoms of depression for the past week. Thus, underreporting of symptoms of depression and a threat to internal validity may have occurred.

Threats to external validity included scheduled church events and the presence of other women (anthropometric measurements were completed in a private room). Participants may have perceived their responses to not be confidential because I was familiar with many churchgoers and hair salon clients. Participant bias could have occurred secondary to social desirability. The length and content of the questionnaire and varied education levels of the women may have resulted in lack of engagement toward the end of the questionnaire, resulting in underreporting of some data. Measurement error was reduced by using the face-to-face method to obtain actual height, weight, and waist size. Generalizability (external validity) of the results may be limited to African-American women who attend church and may not be representative of the entire population of African-American women who live in the Midwest.

Implications for Future Research
AOTA supports occupational therapy participation in the prevention of health disparities and therapeutic intervention for obesity, as evidenced by its Societal Statements on health disparities (AOTA, 2006a) and obesity (AOTA, 2006b).

Occupational therapy is well positioned to intervene with individuals and communities to limit the effects of health disparity on participation in meaningful occupation because of practitioner knowledge and skills in evaluating and intervening with persons who face physical, social, emotional, or cultural challenges in participation. (AOTA, 2006a, p. 679)

Unfortunately, research literature on occupational therapy as a therapeutic intervention for the health disparity of obesity is limited.

Occupational therapists are vital members of the interdisciplinary health care team and could provide primary, secondary, and tertiary prevention for the management of obesity (AOTA, 2006b). By raising awareness of behavioral factors contributing to obesity (e.g., sedentary lifestyle), occupational therapy practitioners may facilitate primary intervention or prevent the onset of weight gain through providing community-based health education and wellness programs. Secondary prevention combines health education with progressive and graded energy expenditure required to perform meaningful occupations (e.g., caloric expenditure during routine activities of daily living). Occupational therapists may incorporate the obese client’s nutrition plan into shopping for food and meal preparation but also consider the meaning of eating and rituals associated with mealtime. In many cultures, food is a symbol of health, wealth, or social acknowledgment and celebration. Understanding culturally based eating patterns and the context in which food is consumed provides an important oppor-
tunity for occupational therapists to design health education programs focused on altering emotional, behavioral, and environmental cues that may lead to overeating (Purnell & Paulanka, 1998). Tertiary prevention addresses the occupational needs of the client once the condition becomes chronic. Chronic obesity alters participation in performance areas of occupation (basic, instrumental, and mobility-related activities of daily living), performance skills, and activity demands. Client factors such as compromised skin integrity, joint pain, limited range of motion, strength, and physical deconditioning compromise cardiovascular health and ultimately lead to a more sedentary lifestyle (Scherer, 1999). Excess weight also aggravates symptoms of osteoarthritis including musculoskeletal changes, destruction of cartilage, nerve compression, and increased joint stiffness and weakness. The inability to fit into a standard size seat limits access to public transportation; hinders comfortable, safe, and independent driving; and may result in social isolation, limited educational pursuits and gainful employment, and limited access to housing and health care. Familiar roles, useful habits, and previously performed routines must be modified to allow maximal participation in performance areas of occupation (Balters, 1998; Daus, 2001; Forhan & Richmond, 2002; Foti & Littrell, 2004; Scherer, 1999).

Current occupational therapy literature is beginning to address the needs of bariatric clients in terms of assistive technology. However, there is limited research regarding obesity as a health disparity in the occupational therapy literature and the need for holistic treatment approaches to this population. This study provides important information regarding the socioeconomic status of African-American women and the relationship of obesity and depression among African-American women in Omaha, Nebraska.

Occupational therapists designing therapeutic interventions and health and wellness programs for obese African-American women need to be aware of the cultural, physical, and psychosocial implications for this population.

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References


