Addressing Obesity in Special Populations

Guest Editors: Rachel A. Annunziato, Rachel M. Calogero, and Robyn Sysko
Addressing Obesity in Special Populations
Addressing Obesity in Special Populations

Guest Editors: Rachel A. Annunziato, Rachel M. Calogero, and Robyn Sysko
Contents

Addressing Obesity in Special Populations, Rachel A. Annunziato, Rachel M. Calogero, and Robyn Sysko
Volume 2014, Article ID 171208, 2 pages

The Weight-Inclusive versus Weight-Normative Approach to Health: Evaluating the Evidence for Prioritizing Well-Being over Weight Loss, Tracy L. Tylka, Rachel A. Annunziato, Deb Burgard, Sigrún Danielsdóttir, Ellen Shuman, Chad Davis, and Rachel M. Calogero
Volume 2014, Article ID 983495, 18 pages

Sexual Orientation Disparities in BMI among US Adolescents and Young Adults in Three Race/Ethnicity Groups, Sabra L. Katz-Wise, Emily A. Blood, Carly E. Milliren, Jerel P. Calzo, Tracy K. Richmond, Holly C. Gooding, and S. Bryn Austin
Volume 2014, Article ID 537242, 8 pages

Achieving Cultural Congruency in Weight Loss Interventions: Can a Spirituality-Based Program Attract and Retain an Inner-City Community Sample?, Chad Davis, William Blake Dutton, Taryn Durant, Rachel A. Annunziato, and David Marcotte
Volume 2014, Article ID 641939, 7 pages

The Influence of Gender and Self-Efficacy on Healthy Eating in a Low-Income Urban Population Affected by Structural Changes to the Food Environment, Brenda Robles, Lisa V. Smith, Mirna Ponce, Jennifer Piron, and Tony Kuo
Volume 2014, Article ID 908391, 12 pages

The Contribution of Applied Social Sciences to Obesity Stigma-Related Public Health Approaches, Andrea E. Bombak
Volume 2014, Article ID 267286, 9 pages

Volume 2014, Article ID 492127, 3 pages
Addressing Obesity in Special Populations

Rachel A. Annunziato,1 Rachel M. Calogero,2 and Robyn Sysko3

1Department of Psychology, Fordham University, Bronx, NY 10458, USA
2Department of Psychology, University of Kent, Canterbury CT2 7NP, UK
3Department of Psychiatry, New York State Psychiatric Institute, College of Physicians and Surgeons, Columbia University, New York, NY 10032, USA

Correspondence should be addressed to Rachel A. Annunziato; annunziato@fordham.edu

Received 17 July 2014; Accepted 17 July 2014; Published 18 September 2014

Despite a substantial body of research, including the development of interventions to curb the alarming prevalence of obesity, little progress has been realized. With notable rates of overweight and obesity across the globe, a number of special populations have been identified among the larger population of obese individuals. As many of these special populations are understudied, the effectiveness of standard approaches for weight reduction is largely unknown, as is whether these strategies are congruent with the needs of diverse clients. Therefore, we are pleased to present six papers dedicated to this topic, four empirical pieces and two review articles.

The first review paper, by A. E. Bombak, offers a social sciences’ perspective on the problem of obesity, with a focus on the role of stigma in obesity. The framework and recommendations provided by this contribution echo the empirical pieces in this compilation. Our first empirical study, by P. Ferrada et al., examines surgical outcomes for obese patients and offers an important finding, namely, that weight alone was not a risk factor for mortality in the large sample investigated. Certainly, this manuscript suggests important, positive implications for the medical management of obese individuals.

In addition, this special issue contains complementary works focused on the considerations and needs of diverse populations who are far less represented in the obesity literature. S. L. Katz-Wise et al. present an analysis using the comprehensive National Longitudinal Study of Adolescent Health (Add Health) dataset on weight change over time among young adults and differences according to gender, race/ethnicity, and sexual orientation. The authors found interactions between these variables that were associated with different weight gain trajectories, findings that are suggestive of a need to consider all of these characteristics when addressing unhealthy weight gain among youth. And, as A. E. Bombak eloquently describes, the issue of stigma is likely very salient here as well.

B. Robles et al. conducted a study on health risks and healthy eating among a large sample of low income, predominantly Black and Latino adults in Los Angeles County. Using sophisticated statistical analyses, they determined that being female and having high self-efficacy were the strongest predictors of healthy eating. These findings have clear implications for identifying specific targets for interventions to improve the eating habits of underserved populations. A similar population is targeted in the manuscript by C. Davis et al., who present the development of a spirituality-based weight loss intervention and their subsequent recruitment and retention efforts within a largely Black and Latino community. Results showed that this approach was highly acceptable to this hard-to-reach population. Indeed, taken together these papers certainly offer culturally congruent approaches to improve health behaviors among diverse populations.

Finally, we have included a review piece by T. L. Tylka et al. that aims to critically evaluate two methods of working within patient care and public health: the weight-normative approach (emphasis on weight and weight loss when defining health and well-being) and the weight-inclusive approach (emphasis on viewing health and well-being as multifaceted...
while directing efforts toward improving health access and reducing weight stigma). This paper reviews the literature on both sides, uniquely with an ethical lens, and takes on a central question: why obesity interventions have not worked and what should be done going forward.

In general, overall, this special issue illuminates the importance of a multifaceted view on weight and the need to consider diverse perspectives, which encompass stigma, when considering research and practice. We hope that together this group of papers generates empirically based suggestions for advancing the field in regard to addressing obesity among those who have been less represented.

Rachel A. Annunziato
Rachel M. Calogero
Robyn Sysko
Using an ethical lens, this review evaluates two methods of working within patient care and public health: the weight-normative approach (emphasis on weight and weight loss when defining health and well-being) and the weight-inclusive approach (emphasis on viewing health and well-being as multifaceted while directing efforts toward improving health access and reducing weight stigma). Data reveal that the weight-normative approach is not effective for most people because of high rates of weight regain and cycling from weight loss interventions, which are linked to adverse health and well-being. Its predominant focus on weight may also foster stigma in healthcare and society, and data show that weight stigma is also linked to adverse health and well-being. In contrast, data support a weight-inclusive approach, which is included in models such as Health at Every Size for improving physical (e.g., blood pressure), behavioral (e.g., binge eating), and psychological (e.g., depression) indices, as well as acceptability of public health messages. Therefore, the weight-inclusive approach upholds nonmaleficence and beneficence, whereas the weight-normative approach does not. We offer a theoretical framework that organizes the research included in this review and discuss how it can guide research efforts and help health professionals intervene with their patients and community.

1. Introduction

Jasmine is waiting in the exam room and her chart shows that her weight today is up five pounds from her last visit two years ago, putting her BMI at 32. Her blood pressure was borderline high in contrast to the normal readings in previous visits. Although Jasmine’s labs were normal in past visits, they are out of date. When Dr. Johnson greets her today, Jasmine seems anxious and tells Dr. Johnson, “I almost did not come in today knowing my weight is up from the last time I was here and you suggested a diet. I feel like such a failure. However, I need help for my migraines, so here I am.” Dr. Johnson and Jasmine look at each other, there is a beat of silence, and they both sigh. Dr. Johnson thinks about all the moments like this one. Usually patients are coming in reluctantly, with medical issues that cannot wait any longer. There is a palpable sense of frustration about yet another problem related to high weight. There is a predictably tense discussion about what needs to happen. Promises are made, referrals are given, and patients drop out of sight until the next medical crisis that absolutely cannot be ignored. Dr. Johnson cannot help but think, “Could there be a better way?”

Weight management (i.e., weight loss and weight cycling) is a central component of health improvement and health care regimens in the United States and similarly westernized countries. Regardless of whether or not it is relevant to
the presenting concern, patients seeking medical evaluations or treatment are typically evaluated first on the basis of their weight [1–3]. For example, primary care guidelines recommend that higher-weight individuals with a BMI above 30 should be provided with weight loss interventions and nutritional advice automatically even if their presenting concerns are unrelated to body weight [4], whereas lower-weight individuals may not be given a blood sugar evaluation because they do not fit the “high-risk profile” of a person with type II diabetes [2]. A weight-centric emphasis in medical care may overshadow patients’ health concerns and needs, potentially leading to “false negatives” (i.e., failure to diagnose a true condition because a patient’s weight is classified as average) in addition to the “false positives” (i.e., misdiagnosing a healthy higher-weight patient as unhealthy, thus prescribing weight loss).

The vignette above underscores the fact that many practitioners and patients are frustrated and fatigued by this process of pursuing weight loss and weight cycling [5–8], increased patient shame [9–11], and intensified weight bias from the health care provider [12–18]. Health professionals are responsible for adhering to ethical principles in the care of their patients, such as beneficience (i.e., the obligation to benefit and contribute to optimum health for patients and communities) and nonmaleficence (i.e., the obligation to avoid harming patients and communities). Yet, the dominant focus on weight loss and weight management may move health care professionals away from these principles, creating a dilemma in the delivery of ethical care and public health promotion. This dilemma occurs because a weight-normative approach to health emphasizes the pursuit of weight loss, despite extensive evidence demonstrating that weight loss is not sustainable long-term for most people [19–21] and weight cycling (commonly associated with weight loss efforts) is linked to adverse health [6–8].

In this paper, we review evidence that challenges the weight-normative approach for health promotion and offer evidence to support a weight-inclusive approach for health promotion. Instead of imagining that well-being is only possible at a specific weight, a weight-inclusive approach considers empirically supported practices that enhance people’s health in patient care and public health settings regardless of where they fall on the weight spectrum [1, 2, 22]. These approaches differ in the emphasis each one places on weight. While health care professionals using either approach may share some commonalities (e.g., recommending similar self-care practices), they contrast in the relative importance they place on body weight in the context of health and medical treatment, their perceptions of the malleability of weight, and how they respond to patients based on their weight.

Far from being radical, we view adopting a weight-inclusive approach as more conservative than a weight-normative approach for facilitating health because it does not recommend a treatment option that shows more documented risks to patients than benefits. Prescribing weight loss carries the risk of adverse outcomes for adherents and lacks evidence for sustainability over time, potentially setting many patients on a path of weight cycling [23, 24]. The weight-inclusive approach acknowledges the scientific (albeit unpopular) evidence that people have little choice about what they weigh due to the interplay between involuntary genetic and environmental factors (e.g., lacking access to nutrient-dense foods priced outside of the family food budget) [25–31]. A weight-inclusive approach attempts to improve patient access to health care by recommending that health care providers recognize weight-normative biases (e.g., stereotypes that higher-weight patients must have, and lower-weight patients do not have, diseases often associated with obesity) and practices (e.g., prescribing weight-loss diets to higher-weight patients regardless of their physical health) within health care settings and challenge them in their own interactions with patients [1, 2, 32–39]. Emerging over the last four decades, this shift away from a weight-normative approach among many health care professionals acknowledges the failure of weight loss and weight management goals for improving health and recognizes the many factors that do support human health and well-being.

The issue of whether to adopt a weight-normative or weight-inclusive approach to health is not simply a philosophical matter. Large-scale interventions designed to affect masses of people are being implemented on the basis of the weight-normative approach. A recent scopic review of papers on the unintended harm caused by public health interventions found that over a third of the papers covered the possible harmful effects of obesity-related public health efforts [40]. Obesity-related public health efforts were identified as potentially harmful because they (a) have been based on limited or poor quality evidence, (b) focus on preventing one extreme outcome at the expense of another extreme outcome (boomerang effects), (c) lack community engagement, and (d) ignore the root cause of the problems. If pursuit of the most ethical and effective pathways to health and well-being is the priority, and health care professionals intend to uphold the principle of doing no harm, we argue an alternative to the weight-normative approach is required. In the following sections, we review the problems and limitations of the weight-normative approach to health and then highlight the weight-inclusive approach as an alternative model for health care and health improvement.

2. The Weight-Normative Approach

We refer to the many principles and practices of health care and health improvement that prioritize weight as a main determinant of health as the weight-normative approach. This approach rests on the assumption that weight and disease are related in a linear fashion, with disease and weight increasing in tandem. Under the weight-normative approach, personal responsibility for “healthy lifestyle choices” and the maintenance of “healthy weights” are emphasized. On the basis of these beliefs, the weight-normative approach focuses on weight loss and weight management to prevent and treat a myriad of health problems. Despite the ubiquitous and pervasive nature of the weight-normative approach, we argue that a critical examination of the evidence does not support
such a focus on weight and weight loss to improve health or prevent obesity.

First, despite the widely held belief within the medical community and general population that a higher body mass index (BMI) causes poor health, data do not (and cannot) support this link. The risk for mortality is highest for people with BMIs < 18.5 (underweight) and BMIs > 35 (obese II), but lowest for people with BMIs 25 to <30 (overweight), and the risk of those with BMIs 18.5 to <25 (average weight) and BMIs 30 to 35 (obese I) is comparable to and falls between the other groups [41–43]. Indeed, BMI is a corollary of certain conditions such as osteoarthritis, sleep apnea, hypertension, and coronary heart disease [44–47]. However, the data available cannot confirm that BMI causes these diseases, as causality can only be inferred via experimental designs. Other factors often partially or fully explain the links between BMI and health, such as exercise, nutrition, insulin resistance, and weight stigma [45–53].

Second, the weight-normative approach bestows negative judgments onto higher-weight individuals by promoting the view that (a) higher-weight individuals are unhealthy and thus a burden on society and (b) weight can be controlled through will power and thus if a person is fat, then it is due to poor lifestyle habits [2, 32, 54]. Given these underlying judgments, it is unsurprising that weight bias has been documented in professionals from a wide range of disciplines including physicians, nurses, psychologists, and dieticians [55]. Yet, genetic and involuntary environmental contributions to body weight outweigh voluntary lifestyle choices [25, 56–58]. Body weight is defended by a powerful biological system that reacts to a negative energy balance by lowering metabolism and increasing hunger, food preoccupation, and hedonic responses to food [26, 27]. Longitudinal research has found that children whose parents used restrictive feeding have a higher likelihood of eating in the absence of hunger and an elevated BMI later in childhood [58–60]. Lower-income families and communities may find it impossible to purchase high-quality nutrient-dense foods such as fresh fruits and vegetables given their limited budget and/or access to such foods [28–30, 61, 62]. Instead, refined grains and added sugars, fats, and preservatives are generally inexpensive and readily available in lower-income communities [28–30]. Furthermore, lower-income neighborhoods have fewer physical activity resources, such as parks, green spaces, bike paths, and recreational facilities when compared to higher income neighborhoods [63, 64]. Crime, traffic, and unsafe playground equipment are also barriers to physical activity in lower-income communities [65, 66]. Thus, there are important limitations placed on the degree to which body weight can be altered through voluntary action, making public health messages to “maintain a healthy weight” appear both uninformed and unfair.

Third, the promotion of “healthy weight” as the key to health and well-being may instill a sense of learned helplessness in the majority of people who will be unable to attain these weight-based goals [1, 2, 5, 36]. If attempts to reach and maintain a “healthy” weight continually fail or are seen as impossible given available resources, the practice of healthy behaviors may be seen as futile. Overall, there is considerable evidence that the focus on weight and weight loss is linked to diminished health. In the following sections we review a number of failures and aggravating circumstances of the weight-normative approach to elucidate why change is needed.

2.1. The Data behind the Failure of Weight Loss Interventions. Rising weight trends in western societies have created an intense focus on weight loss initiatives, but none have generated long-term results for the majority of participants. As stated by Jeffery and colleagues, despite a plethora of interventions that result in initial weight loss, participants “almost always fail to maintain the behavior changes that brought them these positive results” [20]. For example, it has been estimated that no more than 20% of participants who complete weight-based lifestyle interventions maintain weight loss one year later [21], and the percentage of people maintaining weight loss continues to drop by the second year [19]. A meta-analysis of 29 studies on structured weight loss programs conducted in the United States found that participants regained 77% of their initial weight loss, on average, after five years [67]. As it stands, these outcomes are disheartening and not encouraging, but if we actually critically evaluate these studies, it is likely that the statistics for maintenance of weight loss are even worse. That is, most of these statistics are taken from published studies and therefore may represent the most “promising” findings in terms of weight maintenance and omit data from the people who drop out and are more likely to have regained weight. Also, these studies tend to be based on rigorous trials of weight loss programs at the exclusion of more commonly employed strategies and have rigid exclusion criteria (e.g., comorbidities such as mood disorders or binge eating disorder).

2.2. The Data behind the Dangers of Weight Cycling. Often diet failure is accompanied by weight cycling or “yo-yo dieting”—repeated periods of weight loss and weight gain [23]. Twenty years ago, Brownell and Rodin published a foundational paper reviewing adverse medical, metabolic, and psychological health outcomes linked to weight cycling [23, 24]. Indeed, a large body of literature has connected weight cycling directly to compromised health, including higher mortality, higher risk of osteoporotic fractures and gallstone attacks, loss of muscle tissue [6–8], hypertension [51], chronic inflammation [52], and some forms of cancer such as renal cell carcinoma, endometrial cancer, and non-Hodgkin’s lymphoma [50]. Here, we highlight two seminal contributions to our understanding of this link between weight cycling and compromised health. The landmark Framingham Heart Study was perhaps one of the most jarring indictments of weight cycling [6]. Using a sophisticated definition of weight cycling (capturing frequency and magnitude of fluctuations), mortality and morbidity were examined in more than 5000 individuals over a 32-year period. Results indicated that weight cycling was strongly linked to overall mortality, as well as mortality and morbidity related to coronary heart disease for both men and women. Similar results were found in the EFFORT cohort study conducted in Germany [7],
which only included men, a generally underrepresented population in the weight cycling literature. In this study, 505 middle-aged men were grouped into the weight categories of stable nonobese, stable obese, weight loss, weight gain, and weight fluctuations. Among these groupings, only the weight fluctuations category was associated with mortality over the 15-year follow-up period. Of greatest interest, the stable obese category was not linked to higher risk of death relative to the stable nonobese category.

Weight cycling also has been shown to be connected to compromised physical health and psychological well-being. In an experimental study, Leibel et al. revealed that prospective weight loss led to reductions in metabolic energy expenditure [68]. The authors suggested that this reduction would make it difficult for their participants to maintain their newly suppressed weight. Research has shown that in order to maintain current BMI, formerly overweight dieters must eat less than their same-BMI counterparts who were never overweight [69]. As an illustration, a formerly obese woman with a BMI of 24 might be restricted to 1500 kcal/day, whereas a woman with a BMI of 24 who was never obese might be able to eat as much as 2000 kcal/day. The formerly obese woman would therefore have to employ more rigid dietary habits in order to make sure that her calories do not exceed 1500 kcal/day. Further evidence for a metabolic disruption was demonstrated in a study of 109 Korean women who participated in a community-based weight loss program [53]. Those with a history of weight cycling (43% of the sample) lost more lean muscle mass but not more body fat and lagged behind in positive changes to body composition and cholesterol, compared to their nonweight cycling counterparts, despite having lost a similar amount of weight overall.

Greater emotional distress was found to be connected to weight cycling among men and women, especially those who expected to have more personal and social success when thin (e.g., “I will be more successful, loved, desired, and healthy once I am thin/lean”), a mindset that the weight-normative approach cultivates [70]. Similarly, based on participants from the large Nurses’ Health Study II, Field and colleagues found that women with a weight cycling history (39% of the sample) lost more lean muscle mass but not more body fat and lagged behind in positive changes to body composition and cholesterol, compared to their nonweight cycling counterparts, despite having lost a similar amount of weight overall.

It stands to reason, then, that weight suppression and food restriction should not be goals of treatment. Since dieting has been associated with the onset and maintenance of eating disorders, and the cessation of dieting is a crucial step in the treatment of eating disorders, encouraging higher-weight patients to enter a weight-suppressed state by dieting is likely physically harmful and hence violates professional codes of ethics [80–84].

2.4. Heightened Weight Stigma under the Weight-Normative Approach. The emphasis on achieving a “healthy” weight implies that there is a healthy or normal weight that each of us should be striving to attain and maintain. Moreover, the medical endorsement of normative weights gives credibility to cultural messages prizing thinness (for women), leanness (for men), and weight loss. Internalization of socially prescribed body ideals is related to body shame, body dissatisfaction, eating disorders for women [74, 85–88], and potentially harmful muscle-enhancing and disordered eating behaviors for men [89]. The medical and cultural emphasis on “good weights” and “bad weights” produces the opportunity for weight stigma.

Weight stigma refers to negative weight-related attitudes and beliefs that manifest as stereotypes, rejection, prejudice, and discrimination towards individuals of higher weights [90]. There are many forms of weight stigma [91], including repeated weight-related teasing, bullying, harassment, violence, hostility, ostracism, pressures to lose weight/be thin, negative appearance commentary, and weight-related...
microaggressions. Microaggressions are intentional or unintentional verbal, behavioral, or environmental indignities that communicate hostility or negativity toward people who hold less power in society [92]. For example, suggesting a diet to a patient when the patient came in for a concern unrelated to weight would be a weight-related microaggression. Complimentary weightism, or appearance-related compliments (e.g., “Telling a patient, “You’ve lost weight...looking good!”), is also stigmatizing because although seemingly positive on the surface, it still marks people as good or bad based on their weight [93].

Weight stigma occurs across a range of life domains, including school settings (higher-weight children are often stigmatized by peers, classmates, teachers, and school administrators) [94–98], health care environments (higher-weight patients are stigmatized by healthcare professionals and insurance companies) [12–15], public health initiatives [37, 99, 100], workplace settings (higher-weight employees are judged negatively by coworkers, supervisors, and employers) [101, 102], and interpersonally by loved ones (intimate partners, friends, and parents) [90, 103]. Some obstetricians and gynecologists in southern Florida have refused to perform medical services for women over 200 lbs [104]. In a large sample of women who were classified as overweight or obese, 69% experienced weight bias by a physician (with over half reporting bias on multiple occasions), 46% from nurses, 37% from dietitians, and 21% from health professionals [105]. Psychologists have been found to ascribe more pathology, greater severity of symptoms, and worse prognosis to obese patients [106]. Weight stigma is also manifested in sociostructural barriers to accessing medical care (e.g., insurance companies that will not cover higher-weight individuals), and within the medical setting, barriers to appropriately sized equipment [3, 107]. Health care professionals’ ignorance about the medical needs of higher-weight individuals, such as appropriate surgical procedures or proper dosages of medicine and chemotherapy for higher-weight individuals, is also a form of weight stigma [107].

Ironically, many professionals who treat obesity [16] and eating disorders [18] exhibit weight bias towards their patients. Health professionals who specialize in the field of obesity and weight-loss treatment demonstrate varying degrees of antifat bias, attributing negative stereotypes such as lazy, stupid, and worthless to higher-weight people [17]. Among professionals treating eating disorders, 56% observed other professionals in their field making negative comments about obese patients, 42% believed that practitioners who treat eating disorders often hold negative stereotypes about obese patients, and 35% indicated that practitioners feel uncomfortable caring for those who are obese [18]. Eating disorder professionals with stronger weight stigma were more likely to attribute obesity to behavioral causes and perceived poorer treatment outcomes for these patients. When health providers attribute weight-related stereotypes to their patients, it affects the quality of care that patients along the weight spectrum receive. Experiencing weight bias in health care settings may discourage higher-weight patients from making prohealth lifestyle changes and seeking routine or preventative care and encourage lower psychological well-being [55, 100, 105].

Due to the focus on weight evaluation and privileging thinness, even lower-weight individuals could experience weight-related stigma and microaggressions. For example, lower-weight individuals may be told that they are “hated” because they can “eat anything and still be thin,” harming their interpersonal relationships. Health care professionals may ignore lower-weight individuals’ symptoms suggestive of sleep apnea and type II diabetes because they do not fit the “weight profile” tied to these conditions. Even patients who are not “flagged” for their weight may be engaging in disordered eating behaviors that are detrimental to their health (e.g., the BMI of those who have bulimia is usually in the average range [108]).

Using national survey data with a 10-year follow-up, Schafer and Ferraro found that societal weight stigma is linked to internalized weight stigma [109]. Internalized weight stigma refers to the degree to which individuals personally adopt negative weight-based societal stereotypes and judge themselves and others based on these stereotypes [10, 110, 111]. This self-judgment may foster body blame and body shame (e.g., “If only I wasn’t so large, I would not be teased—I am therefore ashamed of my body”) and appearance monitoring (e.g., vigilant about wearing slimming clothing to prevent others’ from stigmatizing her body). Internalized weight bias is not related to BMI; thus, a person of any weight can experience and internalize weight bias and discrimination [112].

It is important to understand the associations between weight stigma and diminished health and well-being. Although research has challenged the assumption that high BMI causes disease, these variables do covary. One explanation for why they might covary is the experience of weight stigma [48]. Weight stigma is associated with increased caloric consumption, a pattern which challenges the common wisdom that pressures to lose weight will motivate overweight individuals to lose weight [49]. Across a 4-year longitudinal study of a large, nationally representative study of community adults, those who experienced weight stigma were 2.5 times more likely than those who were not stigmatized to become obese [113]. Priming overweight women to think about weight-related stereotypes (i.e., inducing weight stigma) led them to report significantly diminished exercise and dietary health intentions [114]. Further, Schafer and Ferraro found that weight stigma was related to increased health risks that are typically attributed to being obese, such as functional disability and decreased self-rated health, over a 10-year period [109]. The evidence further indicates that weight stigma is related to elevated ambulatory blood pressure [115], unhealthy weight control and binge eating behaviors [116–120], bulimic symptoms [121], negative body image [121–124], low self-esteem [121, 122], and depression [122, 125, 126] among children, adolescents, and adults.
3. The Weight-Inclusive Approach

As an alternative to the weight-normative paradigm, the weight-inclusive approach rests on the assumption that everybody is capable of achieving health and well-being independent of weight, given access to nonstigmatizing health care. This approach challenges the belief that a particular BMI reflects a particular set of health practices, health status, or moral character. Under this paradigm, weight is not a focal point for medical treatment or intervention. Weight is not viewed as a behavior, but eating nutritious food when hungry, ceasing to eat when full, and engaging in pleasurable (and thus more sustainable) exercise are self-care behaviors that can be made more accessible for people. In these ways, this approach also tries to minimize weight stigma and thus may help patients feel comfortable in the health care setting, more able to discuss their health concerns, and less likely to experience the health care encounter as stigmatizing by health care providers [3]. The weight-inclusive approach adheres to an ethical principle held by health care professions [80–84]: “above all, do no harm.” Accordingly, then, there are no set health-related interventions that prioritize BMI reduction as a goal, given that a predominant focus on BMI reduction is linked to weight stigma and internalized weight stigma, which have detrimental connections to physical health and well-being [90, 91, 100, 105, 109].

A weight-inclusive approach seeks to (a) eradicate weight-based iatrogenic practices within health care and other health-related industries and (b) end the stigmatization of health problems (i.e., healthism), thereby facilitating access to health care for all individuals [1, 2, 32–39]. In taking this approach, the blame for the failure to lose weight is placed on the deleterious process of weight loss rather than on the individual, which may help minimize internalized weight stigma [32]. The weight-inclusive approach follows some general a priori principles for health professionals [1, 2, 32–39]. These principles combine in various ways and in various applications in terms of policy making, the provision of health care within practice and the community, and the patient’s personal decision-making about her or his own well-being [2, 32, 39].

(1) Do no harm.

(2) Appreciate that bodies naturally come in a variety of shapes and sizes, and ensure optimal health and well-being is provided to everyone, regardless of their weight.

(3) Given that health is multidimensional, maintain a holistic focus (i.e., examine a number of behavioral and modifiable health indices rather than a predominant focus on weight/weight loss).

(4) Encourage a process-focus (rather than end-goals) for day-to-day quality of life. For example, people can notice what makes their bodies rested and energetic today and incorporate that into future behavior, but also notice if it changes; they realize that well-being is dynamic rather than fixed. They keep adjusting what they know about their changing bodies.

(5) Critically evaluate the empirical evidence for weight loss treatments and incorporate sustainable, empirically supported practices into prevention and treatment efforts, calling for more research where the evidence is weak or absent.

(6) Create healthful, individualized practices and environments that are sustainable (e.g., regular pleasurable exercise, regular intake of foods high in nutrients, adequate sleep and rest, adequate hydration). Where possible, work with families, schools, and communities to provide safe physical activity resources and ways to improve access to nutrient-dense foods.

(7) Where possible, work to increase health access, autonomy, and social justice for all individuals along the entire weight spectrum. Trust that people move toward greater health when given access to stigma-free health care and opportunities (e.g., gyms with equipment for people of all sizes; trainers who focus on increments in strength, flexibility, V02 Max, and pleasure rather than weight and weight loss).

There are many models which include a weight-inclusive emphasis, some more fragmented, some more comprehensive, some more focused on research evidence, some more reliant on clinical experience (while proponents lobby for new research conceptualizations and trials), and some more focused on policy and social justice while others target individual health behaviors. Such models include Health at Every Size (HAES) [1, 19, 32, 54, 127], Health in Every Respect [35], and Physical Activity at Every Size [37]. For the purposes of this paper, we explore one version in more depth, the Health at Every Size (HAES) model, as trademarked and defined by the Association for Size Diversity and Health (ASDAH) [54].

3.1. Health at Every Size. The HAES model comes out of discussions among healthcare workers, consumers, and activists who reject the use of weight, size, or BMI as a proxy for health and reject the myth that weight is a result of personal choices independent of uncontrollable or involuntary genetic and environmental factors [1, 19, 32, 33, 54, 127]. The HAES model addresses the broad forces that support health, such as safe and affordable access to care. It also helps people find sustainable practices that support individual and community well-being. Grounding itself in a social justice framework, the HAES model honors the healing power of social connections and evolves in response to the experiences and needs of a diverse community.

The HAES model (see Figure 1) rests on the evidence that while there are links between extremes of weight and health problems, evidence for the role of factors other than weight in people’s health is stronger [25–31]. HAES further affirms a holistic definition of health, which cannot be characterized as simply the absence of physical or mental illness, limitation, or disease, but also the presence of quality of life (e.g., life satisfaction), which is needed for physical health and psychological well-being [1, 32, 54]. Health should be conceived as a resource or capacity
Definition
A model to support the health of people across the weight spectrum that challenges the current cultural oppression of higher-weight people. Specifically, the model seeks to end (1) the stigmatizing of health problems (healthism) and (2) weight-based discrimination, bias, and iatrogenic practices within health care and other health-related industries, as well as other areas of life. The model acknowledges that weight is not a behavior or personal choice and that normal human bodies come in a wide range of weights and seeks alternatives to the overwhelmingly futile and harmful practice of pursuing weight loss.

Principles
(1) Do no harm
(2) Create practices and environments that are sustainable
(3) Keep a process focus rather than end-goals, day-to-day quality of life
(4) Incorporate evidence in designing interventions where there is evidence
(5) Include all bodies and lived experiences, a norm of diversity
(6) Increase access, opportunity, freedom, and social justice
(7) Given that health is multidimensional, maintain a holistic focus
(8) Trust that people (and bodies!) move toward greater health given access and opportunity

Applied to policy
Provide environments that give access to all the things that support the well-being of human bodies of all sizes

Within health care
Provide health interventions that give benefit to people at any size, without discrimination or bias

In personal life
Provide yourself with the features of life you find sustainable, within the context of your life, that support your well-being

Examples
- Recess for all ages, abilities and sizes
- Living wages to provide time for self-care
- Nourishing, affordable, and accessible food
- An end to weight discrimination in schools, insurance, workplaces, housing and so forth
- Regulation of weight loss advertising
- Support for communities and social networks
- Community involvement in making policy
- Medical research and education in health needs of higher-weight people
- Redress of structural racism and inequality

Medical education on “best practices” for providing health care to higher-weight people
- Assist patients in developing long-term health practices rather than pursuing weight loss
- End BMI-based treatment decisions
- Require >5 yrs of maintenance/outcomes for all participants in weight-change interventions and benefits for the majority before use
- Base practice on the lived experiences of patients: listen and learn
- Defend the therapeutic relationship

Reconnect with your body’s cues to make decisions about what you need now
- Find playful and/or purposeful motives for moving that are not tied to weight loss goals
- When hurt, direct your anger to the person who hurt you rather than blaming your body
- Look for direct ways to improve life and health that do not require a thinner body
- Find others who are opting out of weight cycling and developing sustainable practices
- Know your worth is not based on health

Figure 1: Health at Every Size (HAES): a model using a weight-inclusive approach.

available to all regardless of health condition, ability level, or social class, and not as an outcome or objective of living. Pursuing health is neither a moral imperative nor an individual obligation, and health status should never be used to judge, oppress, or determine the value of an individual. Thereby HAES upholds the ethical principles of beneficience and nonmaleficence by focusing on eradicating weight stigma, honoring human differences (size diversity), and pursuing empirically supported interventions that promote physical health and psychological well-being (see
Consistent with a weight-inclusive emphasis, HAES offers concrete suggestions for how to manage decisions about food and exercise in the aftermath (or absence) of a dieting mindset. HAES advocates for intuitive eating, based on evidence that demonstrates greater well-being for people who attend and respond to physiological hunger and satiety cues to determine when and how much to eat, and who pay attention to how certain foods affect the body (e.g., in terms of energy level, stamina, and medical issues such as diabetes and food allergies) [34, 128–130]. Because such individuals eat according to their internal cues the majority of the time, intuitive eating may be able to buffer situational and/or dissociative eating within environments that contain many opportunities to eat less nutritiously (e.g., fast-food restaurants, bakeries, convenience marts, etc.) [131]. Nevertheless, lack of sleep may disrupt hunger and satiety cues as it interferes with the body’s leptin and ghrelin levels [132], so helping patients ensure they get adequate rest may be a goal for intervention. Years of dieting and/or the experience of clinical eating disorders may also disrupt patients’ awareness of and trust in their hunger and satiety cues, and thus interventions may be needed to help patients recognize and rely on these cues [34]. HAES also argues for pleasurable movement based on evidence that exercising for pleasure in lieu of weight loss is linked to well-being and positive body image [133]. These two particular recommendations are given because people have been educated to diet and exercise for weight loss and sometimes they need concrete suggestions about how to proceed toward adaptive eating and exercise. Being compliant or rebellious about pursuing weight loss is replaced by a return to a process that honors the body’s physiological signals of hunger, satiety, and need for movement.

3.2. The Data behind the Weight-Inclusive Approach. In addition to the data that speak against a weight-normative approach to health, there are also data in support of a weight-inclusive approach. Most of this research has focused on the HAES model and tested it against models which emphasize the weight-normative approach. Bacon and Aphramor reviewed the six existing randomized controlled trials of this research [36]. The inclusion criteria for the studies included publication in a peer-reviewed journal and an explicit focus on self-acceptance within the HAES intervention. The HAES model resulted in both statistically and clinically significant improvements for the participants on physiological measures (e.g., blood pressure), health practices (e.g., increased physical activity), and psychological measures (e.g., self-esteem and disordered eating). HAES achieved these health improvements more successfully than models that emphasize dieting. The participants within the HAES groups also demonstrated increased adherence (reduced dropout rates) and no adverse outcomes [36].

To take one illustrative example, a HAES-based program that emphasized intuitive eating and size acceptance was evaluated against a dieting-based weight-loss program with a sample of 30- to 45-year-old women classified as overweight or obese [19, 127]. Participants within each program received six months of weekly group interventions followed by six months of monthly aftercare group support. Findings yielded more positive results for the HAES-based program over the 1-year [127] and 2-year [19] follow-ups. Specifically, the HAES group decreased total cholesterol, low-density lipoprotein (LDL cholesterol), triglycerides, and systolic blood pressure at the 2-year follow-up and sustained improvements from the 1-year to 2-year follow-ups. Whereas the dieting group lost weight and showed initial improvements on many variables at the 1-year follow up, they had regained weight and did not sustain improvement at the 2-year follow-up [19]. The HAES group decreased eating restraint, physical hunger rating, disinhibited eating, drive for thinness, bulimic symptomatology, body dissatisfaction, poor interoceptive awareness, depression, and body image avoidance and increased self-esteem at both 1-year and 2-year follow-up. Correspondingly, participants in the dieting-based program only reduced disinhibited eating but reported decreased self-esteem [19]. Furthermore, attrition was higher in the diet group (41%) compared to the HAES group (8%) [19, 127]. These findings suggest that HAES-based interventions demonstrate better adherence to practices that promote physical health and psychological well-being than dieting-based interventions, and these effects can be sustained over time.

The focus on weight loss in the weight-normative approach could be understood by patients as promoting thinness as a goal, whereas the idealization of thinness (i.e., thin-ideal internalization) and pursuit of thinness are challenged within the weight-inclusive approach. Research on secondary eating disorder prevention efforts has also provided evidence in support of the weight-inclusive approach. For example, in their program of research on the Body Project, Stice and Presnell examined whether reducing participants’ thin-ideal internalization and focus on weight loss would reduce their dysfunctional eating attitudes and behaviors [134]. In this program, participants engaged in a series of verbal, written, and behavioral exercises in which they actively critiqued the thin ideal. These exercises were intended to produce cognitive dissonance, such that their original attitudes (e.g., “I want to be thin,” “only if I am thin will I be beautiful”) would conflict with their recent behavior (e.g., role playing where they convince other girls that many body types are beautiful). To decrease their cognitive dissonance, participants changed their original prothinness and proweight loss attitudes to make them fit with their recent behavior of rejecting the thin ideal. Overall, the Body Project has been effective in helping early-to-late adolescent girls reduce their pursuit of the thin ideal, accept their bodies, improve mood, decrease eating disorder symptoms (e.g., binge eating and use of unhealthy weight control behaviors), and lower the risk for developing future symptoms [135].

3.3. Reducing Weight Stigma under the Weight-Inclusive Approach: A Model and Strategies. Health care professionals need to work to reduce cultural and interpersonal weight stigma within health care and their patients’ environments
in order to facilitate the processes that bolster physical health and psychological well-being. On the basis of the evidence for the links between weight stigma and adverse health and well-being reviewed previously [109, 113–121], and the intervening variables that could help explain these links, we devised a theoretical model (see Figure 2) that organizes these variables and the associations between them. This model can be used to help health care professionals identify points of intervention to reduce weight stigma and the other model variables that may maintain lower physical health and well-being.

Similar to other theoretical models that positioned socio-cultural influences as the source for negative body image and dysfunctional self-care behaviors [136–138], we positioned weight stigma as the starting point for negative health. In light of weight stigma’s associations with internalized weight stigma [109], lower physical health [109, 113–115], lower psychological well-being [116–121], body blame and shame [121–124], and appearance monitoring [130, 139], proponents of the weight-inclusive approach challenge health care providers to examine their own biases around weight. These biases are part of a wider cultural climate of weight stigma that pervades health care education and everyday life. It is possible that much of the healing power of the health care relationship is social—in the quality of the connection between health care providers and their patients and their mutual trust and regard [140]. This connection is threatened for patients by the experience of being stereotyped and reduced to a BMI category. Quality of care for higher-weight patients can be optimized by adopting effective and sensitive strategies to communicate with all patients along the weight continuum [55, 100]. Given the enormous social pressures to focus on weight loss and to connect weight loss to health, we know that providers, even those with the best of intentions, may unintentionally give the impression that they are biased against higher-weight patients, leaving their patients feeling unwelcome, invisible, and shamed.

One way health care professionals could engage with higher-weight patients is to view their office environment through a weight-inclusive lens. Does the office set-up communicate to all patients that their healthcare needs will be met there without shame or discrimination? Or is the office stigmatizing from the moment they arrive? For example, do waiting and exam rooms have furniture that fits higher-weight individuals? Do office staff automatically weigh in every patient, on a scale in a public hallway, even if the patient is coming in for an issue totally unrelated to weight, for example, a wart removal? How do nurses respond when a patient says, “no thank you” to being weighed? What is the office culture around weight? Has weight bias ever been addressed by the entire staff, such as through continuing education or sensitivity training? Are gowns and medical equipment (e.g., blood pressure cuffs) stocked to fit higher-weight patients?

By being a source of support and “grounding” against the stigma higher-weight patients regularly face, the weight-inclusive approach may facilitate patient adherence to health promoting practices and the guidance of their health care providers. Health care professionals can offer this support through the provider-patient bond and by connecting individuals via support groups (in person or online) that follow the weight-inclusive approach. For example, HAES has a website that could be useful to recommend for patients (http://www.haescommunity.org/). Table 1 provides a list of weight-inclusive principles and examples of how health care providers can implement them in practice. We recognize that various health care professionals need to work as a team to fully implement these principles, with each professional implementing the principles within her or his boundaries of expertise.

In addition to the above strategies, a weight-inclusive approach includes a focus on intrapersonal variables that sustain poor physical health and well-being (see Figure 2). For instance, health care professionals can become educated about the links between internalized weight stigma and poor self-care that maintain adverse physical health and negative psychological well-being [9, 110–112, 121, 127], for example, and share this knowledge with their patients. Health care professionals can also inform patients of the rich literature that explicates the bidirectional influences between physical health and well-being [141–145]. That is, if patients begin self-care practices that enhance physical health, they likely feel better psychologically as well, and these psychological gains are then linked to further increases in self-care practices that enhance health.

**Figure 2: Theoretical model of weight stigma and its associated variables.**
Table 1: Translating weight-inclusive principles into weight-inclusive practice.

<table>
<thead>
<tr>
<th>Weight-inclusive principle</th>
<th>Weight-inclusive practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Eradicate weight stigma</td>
<td>Conduct trainings to inform other health care professionals about the weight-inclusive approach. Ensure medical offices have medical supplies and accommodations for all patients across the weight spectrum. Talk with patients’ families, friends, and partners about the types of comments that are stigmatizing and negatively impacting the health of their loved ones. Promote the weight-inclusive approach and strategies for following it. * All health care professionals.</td>
</tr>
<tr>
<td>(2) Target internalized weight stigma</td>
<td>Help patients reduce placing blame on their bodies (and others’ bodies). Challenge adoption of societal appearance ideals. Consider conducting cognitive dissonance interventions (e.g., [134]) to lessen adherence to unrealistic appearance ideals. * Mental health professionals</td>
</tr>
<tr>
<td>(3) Target body shame</td>
<td>Help lessen patients’ embarrassment, hatred, and dissatisfaction toward their bodies by helping them define “beauty” more broadly and to appreciate their bodies. Cognitive dissonance interventions may help increase body appreciation. * Mental health professionals</td>
</tr>
<tr>
<td>(4) Redirect focus from external critique of weight and size to a “partnership” with the body</td>
<td>Direct attention to what is happening within their bodies rather than “picking apart” their appearance (e.g., lumps, appearance of moles, lack of energy, shortness of breath, etc.). This partnership with their bodies may help detect and prevent the progression of disease. * Physicians</td>
</tr>
<tr>
<td>(5) Look for signs of diminished well-being</td>
<td>Present options to alleviate distress and heighten life satisfaction; options should not be limited to medication. Know mental health professionals who follow a weight-inclusive approach in the community and refer patients as needed. * Physicians</td>
</tr>
<tr>
<td>(6) Look for signs of disordered, emotional, and/or binge eating</td>
<td>Rather than BMI, explore each patient’s weight trajectory across time to detect unusual gains and losses that could be reflective of disordered eating. Do not praise weight loss. Do not immediately address weight gain with weight loss recommendations. * Physicians</td>
</tr>
<tr>
<td>(7) Respond to requests for weight loss advice with a holistic approach</td>
<td>Respond (when asked by patients for advice or help with weight loss) with a holistic approach to health via encompassing and encouraging emotional, physical, nutritional, social, and spiritual health, rather than a weight-focus. * Physicians, nutritionists</td>
</tr>
<tr>
<td>(8) Sustain health promoting practices</td>
<td>Identify and facilitate access to healthy sustainable behaviors for patients. * All health care professionals</td>
</tr>
<tr>
<td>(9) Reconnect with food and internal cues</td>
<td>Help patients (a) abandon dichotomous thinking about foods as “good” and “bad” and the morality surrounding food restriction, (b) relearn how to recognize and respond to their hunger and satiety cues, and (c) determine how certain foods affect their bodies. * Nutritionists</td>
</tr>
</tbody>
</table>

* Health care professionals who may want to take the lead in implementing this principle within their practice. We encourage a team approach whereby physicians, mental health professionals, and nutritionists work together to ensure that a weight-inclusive approach is followed.

Health care professionals can also target internalized weight stigma’s links with body shame and appearance monitoring (see Figure 2). In particular, patients often blame and shame their bodies for how they look and feel, but body blame and shame are often responses to the wider cultural stigma around weight and their personal experiences of weight discrimination over their lifetimes [121–124]. Body blame and shame can be reframed for patients to communicate that the source is likely internalized societal weight stigma [112, 146] from being stigmatized for their weight [109], and not their bodies’ actual weight or size [147]. Health care professionals can also help patients mentally shift from habitual appearance monitoring, which is associated with lower self-care and ignoring physical health [85, 148, 149], to attending to their bodies in more positive ways that emphasize self-care. There are some interventions (e.g., self-compassion) that can enhance patients’ well-being in tandem with improvements in body shame [150]. The key is for both health care professionals and patients to appreciate the extent to which body loathing and shame is associated with reduced engagement in self-care [85, 120]. There is a cultural belief that people have to be dissatisfied with their weight (or any aspect of their appearance) in order to be motivated to improve it. This belief has not found general support in the literature; in
fact, the reverse is supported: people are more likely to take care of their bodies when they appreciate and hold positive feelings toward their bodies [133, 147, 151].

In order to encourage self-care behaviors, patients also need to reconnect with their bodies, that is, focus on internal body awareness rather than engage in external appearance monitoring [85, 147, 148, 151] (see Figure 2). Internal body awareness is required to be able to know when something is "not right" with their bodies as well as attend to their bodies' physical and psychological needs [147]. For example, awareness of hunger and satiety cues is needed to determine when and how much to eat in order to prevent under- or overeating [148, 151]. Raising internal bodily awareness could be facilitated by offering unconditional acceptance of people's bodies and bodily experience in lieu of weight stigmatization. Indeed, women who received body acceptance by others (in contrast to weight stigma) reported higher body appreciation and less habitual appearance monitoring [148, 151]; thus, they are more connected to the functionality of their bodies and less shameful of their bodies. Moreover, body acceptance by others fully accounted for the link between women's BMI and their body appreciation [151]. This finding underscores the need to eradicate all health care interventions that foster weight stigma to improve patients' perceptions that the health care environment and health care professionals accept their bodies. Greater internal awareness and appreciating the body are related to higher eating based on physiological hunger and satiety cues and less situational and emotional eating [148, 151]—additional reasons for health care professionals to encourage clients to appreciate their bodies and listen to their bodies' internal cues.

3.4. A Weight-Inclusive Approach to Public Health. The current public health model operates through the identification of risk factors and population-based efforts to reduce such risks in order to prevent disease and promote health [99]. The reduction of risk factors occurs through various forms of public action, including regulatory efforts (e.g., taxing and legislation), community-based universal programs (e.g., Health Promoting Schools), and public health messaging to raise awareness of the risks and benefits associated with certain behaviors (e.g., “5-a-day”). However, this model has been criticized for focusing too heavily on factors that are perceived to be under personal control while neglecting the larger sociocultural and economic conditions that dictate much of people's lived experiences, choices, and opportunities [37, 99].

Syme pointed out that the conditions often referred to as “lifestyle diseases,” under which overweight and obesity are named, have been associated with a variety of genetic and environmental factors that occur well outside personal control [99]. This lack of control is especially true for populations that face most health challenges. Populations with the worst health outcomes tend to also be populations living under the most socioeconomic constraints and have the least amount of personal control over their lives [31]. Marmot has written extensively about the contributions of social and economic inequalities to public health issues and the critical importance of considering these issues in public health policy [152]. Disregard for the environment within which people live offers “a rather decontextualized” approach to public health that is unlikely to be effective and may even be unethical due to the potential for harm [37].

An approach to public health that incorporates a weight-inclusive approach may not only circumvent the adverse health and well-being consequences linked to the weight-normative approach but also may enhance population health. Longitudinal studies have repeatedly shown that, irrespective of actual weight, body satisfaction and freedom from weight-based teasing and stigma are linked to reduced risk for unhealthy dieting practices, sedentary behaviors, eating disturbances, and weight gain among young people [95, 153, 154]. Public health messages that are free of weight focus also appear to be more acceptable to the public and more likely to encourage healthy behaviors than messages emphasizing weight control or obesity prevention. For example, a large nationally representative U.S. survey revealed that participants responded most favorably to public health messages that promoted healthy behaviors without any reference to weight or obesity at all [155]. The survey further showed that messages perceived as weight stigmatizing were negatively received and rated less likely to foster healthy behavior change. The findings have since replicated in randomized controlled settings [156].

Several scholars have proposed actions that may be taken at the policy level to prevent and reduce harm associated with a weight-focused sociocultural climate [35, 157, 158]. However, a serious, inbuilt resistance to change appears to be present within health systems. For instance, O’Reilly and Sixsmith have argued that an overreliance on the dominant position of powerful institutions, such as the World Health Organization, has resulted in a deadlock situation where public health authorities uncritically accept and maintain the weight-normative approach without scrutinizing its validity, effectiveness, or ethical implications [158]. Thus, the weight-normative approach becomes a self-perpetuated dogma. The indications of harm associated with this paradigm, however, demand that a closer look be taken and actions to reduce the focus on weight within public health be implemented. Certainly, during this implementation phase, data would be needed to evaluate the outcomes of moving away from a weight-normative toward a weight-inclusive approach.

O’Reilly and Sixsmith analyzed policy options that could be used to shift the weight-normative approach to a more weight-inclusive approach in public health [158]. They conducted interviews with key stakeholders who were asked to rank proposed policy changes in terms of estimated effectiveness in challenging the weight-normative approach, likelihood of promoting equity and reducing weight bias, political and public acceptability, and the practicalities of implementation. The policy change that received the most favorable rating was adopting language that did not mention weight in public health messages. This was seen as a very low cost action with a high level of public acceptability and political feasibility. The shift from a weight-normative to a weight-inclusive approach also emerged as a public preference in a recent Canadian report where members of the community
were engaged in a discussion, in person and online, about feasible action to promote healthy weight in children. The most popular idea expressed online was to turn away from a weight-normative approach in health promoting efforts as many participants expressed concern with the language on weight and instead preferred a focus on healthy living [159]. As this is a policy change that can be implemented with relative ease, OReilly and Sixsmith highlighted it as a viable and recommended action for governments to reduce harm caused by weight stigma and weight preoccupation [158].

Other promising policy options in OReilly and Sixsmith’s analysis were implementing antiweight bias training for health professionals and establishing research guidelines that ensure the inclusion of measures of possible third-factor contributions to obesity research, such as socioeconomic status, physical activity, and dietary factors [158]. Several interventions to reduce weight bias among preservice and practicing health professionals have already been reported in the scientific literature with promising results [157, 160, 161]. In one study, over three hundred public health promoters were offered a single-day workshop on weight bias and related issues which led to significant decreases in antifat prejudice, decreased internalization of media stereotypes on weight and shape, and increased self-efficacy for addressing weight bias after intervention [157].

4. Summary of the Competing Approaches

The research demonstrates that a focus on weight is associated with adverse physical health and psychological well-being for patients and community members. Dieting is inextricably linked to significant physiological barriers to overall physical health that likely could have been prevented. The strain of unsuccessful weight loss attempts on physical health is not consistent with a beneficent and nonmaleficent approach to clinical practice and public health. Moreover, the weight-normative approach blames the individual rather than the process when weight loss attempts fail, which is then tied to body blame, body shame, internalized weight stigma, and decreased psychological well-being. Under the weight-normative approach, weight stigma likely filters into health care professionals’ relationships with their patients, even if it is unintentional.

The weight-inclusive approach supports the health of people across the weight continuum and challenges weight stigma. Data from randomized controlled trials have upheld the efficacy of programs with a weight-inclusive emphasis, such as HAES. Specifically, participants following the HAES model achieved statistically and clinically significant improvements in physiological measures (e.g., blood pressure), behavioral practices (e.g., increased physical activity, decreased binge eating), and psychological measures (e.g., increased self-esteem, decreased depressive symptoms) and did not demonstrate any adverse outcomes, despite the fact that weight remained relatively unchanged. Other research has supported the weight-inclusive approach, such that living in a body-accepting environment (i.e., one without weight stigma) is associated with higher body appreciation and lower habitual appearance monitoring, independent of BMI. The weight-inclusive approach, then, upholds the ethical principles of beneficence and nonmaleficence and can be used as a springboard for generating additional clinical and public health interventions. Points of intervention, based on targeting the variables that are connected to reduced physical health and well-being (see Figure 2), as well as the mechanisms of action between the variables, are offered for health professionals who work with patients or within public health settings.

Returning to the vignette in the Introduction, we now frame the health care encounter between the doctor and patient through the lens of weight-inclusion and well-being instead of the pursuit of weight loss, taking into account how little time doctors get to spend with patients during a typical office visit.

Jasmine is waiting in the exam room and her chart shows that her weight today is up five pounds from her last visit two years ago, putting her BMI at 32. Her blood pressure was borderline high in contrast to the normal readings in previous visits. Although Jasmine’s labs were normal in past visits, they are out of date. When Dr. Johnson greets her today, Jasmine seems anxious and tells Dr. Johnson, “I almost did not come in today knowing my weight is up from the last time I was here and you suggested a diet. I feel like such a failure. However, I need help for my migraines, so here I am.” Dr. Johnson and Jasmine look at each other, there is a beat of silence, and they both sigh.

Dr. Johnson says, “You know, Jasmine, I have been reading the research on weight loss interventions and weight-cycling and I’m realizing that if the same thing happens to almost everyone, it probably is not the fault of the person, it is probably more about the process itself. So, instead of focusing on weight loss, I’m encouraging my patients to think about what makes them feel better in their everyday lives; emotionally and physically. For example, do you feel better when you eat more fruits and vegetables, drink more water, take a walk with a friend, meditate to relieve stress, and get enough sleep? There's good evidence that those behaviors are going to make you healthier and feel better even if your weight does not change.”

Jasmine is a bit surprised by Dr. Johnson’s shift and says, “Well, typically, when my weight loss slows down or stops completely, I stop doing any of those things you mentioned that would help me feel better and be healthier.” Dr. Johnson says, “I understand, but we’re going to turn the focus from your weight to your health. Because those behaviors are linked to health, why not do them anyway?”

Jasmine smiles at Dr. Johnson and says, “It sure would be easier to come back and see you the next time I’m supposed to if I did not have to lose weight first.”

Dr. Johnson replies, “I do not want anything to stand in the way of you getting your medical care, including worrying that I might scold you. Now that we have a better plan, I am going to have the nurse retake your blood pressure.” Jasmine and Dr. Johnson then discuss treatment options for Jasmine’s migraines.

Right before Dr. Johnson leaves the room, Jasmine shares one more quick concern, “I like the shift from weight to
5. Directions for Future Research

More research on the weight-inclusive versus weight-normative approach is sorely needed as many important questions remain unanswered. Research into the variety of expressions of weight stigma can reveal nuanced associations that advance scholars’ understanding of its influence and expression. For example, weight stigma could be operationalized as weight-related teasing, bullying, discrimination, commentary, and objectification, and the source could also be operationalized (e.g., partners, health care system, family, friends, etc.). Similarly, decreased physical health and psychological well-being can be defined in many different ways and these operationalizations may reveal different relationships with weight and body-based variables.

Another alternative conceptualization would be to explore what happens in the absence of weight stigma, which would directly examine weight-inclusive approach. Those who do not experience weight stigma (whether because of their weight or their environment/community/culture) may demonstrate body appreciation and superior health and well-being. Although some research into positive body-accepting environments has begun [148, 151], these studies are in their infancy and would benefit from additional research. In addition, it would be useful to know whether individuals who transition out of weight-stigmatizing environments (e.g., away from stigmatizing partners or family members) receive health and well-being related benefits (and the extent of these benefits) or whether memories of being stigmatized continue to influence their health and well-being at a similar level. In the latter instance, perhaps mental health providers could work individually with patients to buffer internalized weight stigma and promote individual empowerment. In particular, interventions that emphasize self-compassion [161] may be useful for these therapeutic endeavors, as empirical evidence suggests that self-compassion is an adaptive mindset to cultivate in the context of improving body image and eating behavior [162–167]. Indeed, a 3-week online self-compassion intervention reduced body shame and improved body appreciation in community women; these women maintained these outcomes at a 3-month follow-up relative to a wait-list control group [150]. Among women high in dietary restraint, those who were induced to think self-compassionately after eating a doughnut as part of the experimental task (i.e., they were told that all people eat unhealthy foods at times and asked to not to be hard on themselves because “this little amount of food does not matter anyway”) were able to reduce their distress and disinhibited eating relative to a control group who did not receive the self-compassion induction [167].

Those working in patient settings and public health should investigate the impact of moving from a weight-normative approach to a weight-inclusive approach on their patients and communities. Researchers could explore the effects on patients’ compliance and willingness to address health issues proactively when weight loss is removed from the equation. Qualitative designs could be used to garner rich data on the challenges and benefits of this change to health care, treatment adherence (e.g., more likely go to follow-up appointments for medical concerns), and overall health improvement. In addition, more research is needed to examine which particular components of the weight-inclusive approach, individually or in conjunction with other components, have the strongest connection to health improvement and promotion.

6. Conclusion

The weight-normative approach is not improving health for the majority of individuals across the entire weight continuum. Weight is overemphasized for higher-weight individuals (i.e., assumptions are made that they are unhealthy) and underemphasized for lower- or “average-” weight individuals (i.e., assumptions are made that they are healthy). Furthermore, we know that weight loss through dieting is not sustainable over time for the vast majority of higher-weight individuals and is linked to harmful consequences. Therefore, we argue that it is unethical to continue to prescribe weight loss to patients and communities as a pathway to health, knowing the associated outcomes—weight regain (if weight is even lost) and weight cycling—are connected to further stigmatization, poor health, and well-being. The data suggest that a different approach is needed to foster physical health and well-being within our patients and communities.

Advocates of a weight-inclusive approach assert that we are acting on behalf of our patients’ and communities’ interests when we centralize health for people at all points along the weight continuum and work to eradicate weight stigma in all settings, including health care and public health. This paper has reviewed the data in support of a weight-inclusive approach to foster physical and psychological well-being. We encourage both scholars and practitioners to study and document what happens when health professionals and their target populations shift their focus to developing sustainable healthy behaviors for every body.
Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

References


[97] K. W. Bauer, Y. W. Yang, and S. B. Austin, “How can we stay healthy when you’re throwing all of this in front of us?” Findings from focus groups and interviews in middle schools on environmental influences on nutrition and physical activity,” *Health Education and Behavior*, vol. 31, no. 1, pp. 34–46, 2004.


Research Article

Sexual Orientation Disparities in BMI among US Adolescents and Young Adults in Three Race/Ethnicity Groups

Sabra L. Katz-Wise,1,2 Emily A. Blood,3 Carly E. Milliren,1 Jerel P. Calzo,1,2 Tracy K. Richmond,1,2 Holly C. Gooding,1,2 and S. Bryn Austin1,2,4

1 Division of Adolescent and Young Adult Medicine, Boston Children's Hospital, Boston, MA, USA
2 Department of Pediatrics, Harvard Medical School, Boston, MA, USA
3 Geisel School of Medicine, Dartmouth College, Hanover, NH, USA
4 Department of Social and Behavioral Sciences, Harvard School of Public Health, Boston, MA, USA

CorrespondenceshouldbeaddressedtoSabraL.Katz-Wise;sabra.katz-wise@childrens.harvard.edu

Received 16 December 2013; Revised 28 February 2014; Accepted 27 March 2014; Published 29 April 2014

Copyright © 2014 Sabra L. Katz-Wise et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Obesity is a key public health issue for US youth. Previous research with primarily white samples of youth has indicated that sexual minority females have higher body mass index (BMI) and sexual minority males have lower BMI than their same-gender heterosexual counterparts, with sexual orientation differences in males increasing across adolescence. This research explored whether gender and sexual orientation differences in BMI exist in nonwhite racial/ethnic groups. Using data from Waves I–IV (1995–2009) of the US National Longitudinal Study of Adolescent Health (N = 13,306, ages 11–34 years), we examined associations between sexual orientation and BMI (kg/m^2) over time, using longitudinal linear regression models, stratified by gender and race/ethnicity. Data were analyzed in 2013. Among males, heterosexual individuals showed greater one-year BMI gains than gay males across all race/ethnicity groups. Among females, white and Latina bisexual individuals had higher BMI than same-race/ethnicity heterosexual individuals regardless of age; there were no sexual orientation differences in black/African Americans. Sexual orientation disparities in BMI are a public health concern across race/ethnicity groups. Interventions addressing unhealthy weight gain in youth must be relevant for all sexual orientations and race/ethnicities.

1. Introduction

Obesity is a key public health issue for US youth, particularly among specific sociodemographic groups, including some racial/ethnic and sexual orientation groups [1, 2]. Obesity is operationalized as having a body mass index (BMI) equal to or greater than the 95th percentile among individuals younger than age 18 years or a BMI of 30 or greater for individuals age 18 years or older [3]. Previous research in a primarily white cohort of youth and young adults, age 12–23 years, found that sexual minority (nonheterosexually identified) females had higher BMI than heterosexual females throughout adolescence [4], similar to patterns seen in adult females [5]. Among males in this cohort, gay males had higher BMI in early adolescence compared to heterosexual males, but by late adolescence BMI among gay males was lower than their heterosexual peers [4], similar to patterns seen in adult males [6]. However, little is known about the intersection of race/ethnicity and sexual orientation and its impact on youth weight status.

A small number of studies have investigated sexual orientation patterns in BMI among multiethnic samples of adults [7, 8]. One such study found that among females, white and African American sexual minorities were at increased risk of being overweight compared to same-race/ethnicity heterosexual individuals, whereas among adult males, gay males were less likely than heterosexuals to be overweight among white, African American, Asian, and Latino men [7]. We are aware of only one study with a representative sample of adolescents examining sexual orientation disparities in BMI in a multiethnic sample, which found that bisexual female and male youth were at elevated risk for obesity compared to
suggests that experiences of prejudice and discrimination explained primarily using the minority stress model, which youth. However, no research has explored whether an age-by-orientation interaction effect exists in racial/ethnic minority groups [9]. However, no research has explored whether an age-by-orientation interaction effect exists in racial/ethnic minority youth.

Disparities in BMI among sexual minorities have been explained primarily using the minority stress model, which suggests that experiences of prejudice and discrimination based on minority status negatively affect health [10]. Sexual minorities who are also racial/ethnic minorities may be at greater risk for negative health outcomes due to experiences of minority stress based on being a member of multiple minority groups [11,12]. Individuals may cope with minority stress by engaging in unhealthy weight-related behaviors. Indeed, research on sexual orientation, body image, and eating disorders in primarily white samples of adults has suggested that compared with heterosexuals, gay males indicated greater body dissatisfaction and eating disorder symptomatology [13,14].

An alternative explanation is that sexual orientation disparities in BMI are related to sociocultural ideals regarding body appearance. For instance, sexual minority male youth reported greater desire for muscularity, but fewer attempts to gain weight, compared to heterosexual male youth [15]. Among adult females, lesbian and bisexual individuals indicated lower internalization of sociocultural appearance ideals for a thin body type compared to heterosexual females [14]. These findings may help to explain why sexual minority females have higher BMI and sexual minority males have lower BMI, compared to their same-gender heterosexual counterparts. However, similar to research on sexual orientation-by-gender disparities in obesity, this research was conducted with primarily white samples. More research is needed to first identify whether sexual orientation-by-gender disparities in obesity exist in nonwhite racial/ethnic groups and then to examine whether explanations for these disparities apply across racial/ethnic groups.

Previous obesity prevention and intervention efforts have been only marginally successful, in part because they tend not to be appropriately tailored and instead use a one size fits all approach. In a recent review of school-based Internet obesity prevention programs for adolescents, a number of programs targeted racial/ethnic minorities who are at greater risk for obesity and the majority of programs included content on nutrition and physical activity [16]. However, none of the programs reviewed seemed to address issues related to sexual orientation and obesity, such as body image or sociocultural ideals of thinness and muscularity. More research is needed to identify subgroups most at risk for obesity by determining whether sexual orientation-by-gender disparities exist across race/ethnicity groups, such that intervention and prevention efforts can be more effectively tailored for these groups.

The transition from adolescence to young adulthood is a critical period for weight gain and the development of obesity, with long-term negative health implications for excessive weight gain during young adulthood [17,18]. In addition, previous research has indicated that associations between sexual orientation and BMI change across adolescence and into young adulthood [4]. Longitudinal research with nationally representative samples of adolescents is needed to address whether age-by-sexual orientation effects exist among non-white youth. To address this question and to inform obesity prevention and weight-loss intervention efforts, the current study used longitudinal data from Waves I–IV of the National Longitudinal Study of Adolescent Health (Add Health) to examine sexual orientation disparities in BMI over time within female and male race/ethnicity groups. Specific sexual minority subgroups were compared separately to heterosexual individuals because previous research has found BMI and obesity prevalence to differ among these subgroups, with bisexual individuals at particularly high risk for elevated BMI and obesity [9,19]. We hypothesized that female sexual minorities, particularly bisexual individuals, would have consistently higher BMI over time than heterosexual females. We further hypothesized that heterosexual males would experience greater one-year increases in BMI compared to gay males. Finally, we hypothesized that these patterns would be similar across all three racial/ethnic groups.

2. Materials and Methods

2.1. Study Sample. After exclusion criteria were applied (described below), the current sample included 7,140 females and 6,166 males, who contributed data to at least one of the four waves of Add Health, a US nationally representative longitudinal cohort [20]. Participants were age 11–21 years at Wave I (1995) and age 24–34 years at Wave IV (2008-2009). Analyses were restricted to participants who provided a report of sexual orientation identity at Wave III and self-identified as non-Latino white (59%), non-Latino black/African American (23%), and Latino (18%) at Wave I. Other race/ethnicity groups were excluded due to a small sample size within some sexual orientation groups. Descriptive statistics for age and BMI by race/ethnicity, gender, and sexual orientation are reported in Table 1. This study was approved by the Boston Children's Hospital Institutional Review Board.

2.2. Measures. Sexual orientation identity was assessed at Wave III with one item asking participants to choose the description that best fits how they think about themselves, with the following response options: 100% heterosexual (straight); mostly heterosexual (straight), but somewhat attracted to people of your own sex; bisexual, that is, attracted to men and women equally; mostly homosexual (gay), but somewhat attracted to people of the opposite sex; 100% homosexual (gay); not sexually attracted to either males or females. Gender was assessed at Wave I as female or male. Race and ethnicity were assessed separately at Wave I but recoded and combined into the following groups for analysis: non-Latino white, non-Latino black/African American, and Latina/o. Age in years and age-specific BMI (kg/m²) calculated from self-reported height and weight were assessed at each wave. Self-reported height and weight were used because measured height and weight were not available at all four waves.
2.3. Statistical Analysis. To test the hypotheses, we conducted longitudinal unweighted linear generalized estimating equation analyses in SAS (version 9.3; Cary, NC). Data were analyzed in 2013. Analyses were stratified by gender and race/ethnicity, with heterosexual as the reference group. For the current study, participants who responded that they were not sexually attracted to either gender were excluded from the analyses, and mostly homosexual and 100% homosexual were combined into lesbian/gay due to small sample sizes, yielding the following sexual orientation identity groups: heterosexual, mostly heterosexual, bisexual, and lesbian/gay. To address the nonlinearity of BMI across development [21–23], age was modeled both linearly and quadratically and sexual orientation-by-age was used to model repeated measures of continuous BMI across ages 11–34 years, with age and BMI updated at each wave.

Weights are typically used in analysis of data from Add Health to allow for population estimates. We conducted unweighted analyses because the complexity of the models in examining BMI trajectories across waves and accounting for clustering by schools did not allow for the incorporation of weights. In addition, a model-based analysis is reasonable if design effects are taken into account [24], which the current analysis did by adjusting for gender, race/ethnicity, and age.

3. Results

Sexual orientation and race/ethnicity group differences in mean age at each wave were found. Among females, bisexuals and mostly heterosexual individuals were significantly younger (bisexual range: 0.33 to 0.43 years; mostly heterosexual range: 0.25 to 0.30 years) than completely heterosexual individuals at all waves, \( P < 0.02 \) to \( P < 0.0001 \). No significant sexual orientation group differences were found among males for mean age at each wave. Among both females and males, Latinos were significantly older (female range: 0.43 to 0.49 years; male range: 0.36 to 0.44 years) than same-gender non-Latinos at all waves, \( P < 0.0001 \). In addition, non-Latina black/African American females were significantly older (0.15 years) than non-Latino white females at Wave II only, \( P < 0.01 \).

Descriptively, among both females and males across sexual orientation and race/ethnicity groups, age-specific BMI increased substantially across time from age 11 to 34 years (Table 1, Figure 1). Among females, the association between sexual orientation and BMI did not differ significantly by age, so sexual orientation-by-age interaction terms were not included in the final models. Non-Latina white and Latina bisexual individuals had higher BMI compared to their heterosexual female counterparts, while no sexual orientation differences were observed among non-Latina black/African American females (see Table 2, Figure 1).

Among males, the association between sexual orientation and BMI differed significantly by age within each of the three race/ethnicity groups. Gay males had higher BMI than heterosexual males in early adolescence. However, heterosexual males showed greater one-year BMI gains over time surpassing gay males by approximately age 17 years, with disparities widening further as participants aged into adulthood (see Table 2, Figure 1). Bisexual individuals showed a different pattern, with bisexual males showing greater one-year BMI gains over time compared to heterosexual males, but only among non-Latino white participants.

4. Discussion

Previous research with a predominantly white cohort of youth found that age modified sexual orientation disparities in BMI in males. The current research extended these findings to non-Latino black/African American and Latino young men. During adolescence and young adulthood, heterosexual males demonstrated greater yearly increases in BMI compared to gay males, putting them at excess risk for obesity. It is not clear why these patterns are emerging, but reporting bias could be one factor. A prior Add Health analysis found that gay males underreport their BMI by an estimated 0.37 BMI units more than heterosexual males [25]; nevertheless, bias of this magnitude would not be sufficiently large to explain the differences observed in the current study. Another potential explanation for smaller increases in BMI among gay males may be that compared to heterosexual males, gay males are at greater risk for body dissatisfaction and eating disorder symptomatology, which may result in lower BMI over time [13, 14]. Other research has suggested that sexual minority male adolescents and young adults are less likely to attempt to gain weight compared to completely heterosexual male youth [15], which may represent a protective factor against the development of obesity among sexual minority male youth.

This study also found higher BMI among bisexual non-Latina white and Latina females compared to same-race/ethnicity heterosexual females, but not in other sexual minority female subgroups. It is possible that bisexual females may be responding to sexual minority stressors (e.g., increased rates of victimization) [26] by engaging in obesogenic behaviors (e.g., stress-induced binge eating) [27], more so than other sexual minority females or gay males. Higher BMI among bisexual females may also be attributable to comorbidity of obesogenic behaviors with other health risk behaviors and negative health outcomes. For instance, other research has indicated that bisexual females are at greater risk for psychological distress [28] and health risk behaviors, including substance use [29] and self-injurious behavior [30], compared to other sexual orientation groups. A recent study found that compared to lesbians, bisexual women are more likely to use maladaptive coping strategies, which may explain more adverse mental and physical health outcomes in bisexual females compared to lesbian females [28]. Results from the current study highlight the need for research on health outcomes within sexual minority subgroups, in addition to comparing sexual minorities with completely heterosexual individuals. In addition, more research is needed to understand why bisexual females and males and heterosexual males have greater risk for increased BMI and whether membership in other sexual orientation groups may confer specific protective factors against weight gain and development of obesity.
Table 1: Descriptive statistics\(^a\) for age\(^b\) and BMI\(^c\) by race/ethnicity, gender, and sexual orientation among 7,140 female and 6,166 male adolescents and young adults in the US National Longitudinal Study of Adolescent Health, Waves I–IV (1995–2009).

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>Girls (n=12,500)</th>
<th>Mostly heterosexual (n=2,815)</th>
<th>Bisexual (n=256)</th>
<th>Lesbian (n=13,143)</th>
<th>Mostly heterosexual (n=574)</th>
<th>Bisexual (n=98)</th>
<th>Gay (n=325)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Age (Wave I)</td>
<td>BMI (Wave I)</td>
<td>BMI (Wave II)</td>
<td>BMI (Wave III)</td>
<td>BMI (Wave IV)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Latino white</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heterosexual</td>
<td>15.97 (1.72)</td>
<td>15.74 (1.70)</td>
<td>15.57 (1.55)</td>
<td>15.87 (22.73)</td>
<td>16.15 (1.70)</td>
<td>15.91 (1.73)</td>
<td>16.05 (1.48)</td>
</tr>
<tr>
<td>Mostly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>heterosexual</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bisexual</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lesbian</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heterosexual</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mostly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>heterosexual</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bisexual</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lesbian</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Latino black/African American</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heterosexual</td>
<td>16.02 (1.70)</td>
<td>15.84 (1.70)</td>
<td>15.34 (1.75)</td>
<td>15.62 (1.88)</td>
<td>16.08 (1.74)</td>
<td>16.13 (1.80)</td>
<td>15.29 (1.79)</td>
</tr>
<tr>
<td>Mostly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>heterosexual</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bisexual</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lesbian</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heterosexual</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mostly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>heterosexual</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bisexual</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lesbian</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latina/o</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heterosexual</td>
<td>16.44 (1.63)</td>
<td>16.00 (1.58)</td>
<td>16.07 (2.09)</td>
<td>15.83 (1.82)</td>
<td>16.47 (1.69)</td>
<td>16.22 (1.75)</td>
<td>16.25 (2.21)</td>
</tr>
<tr>
<td>Mostly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>heterosexual</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bisexual</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lesbian</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^a\)Means are reported with standard deviations in parentheses.

\(^b\)Age is in years.

\(^c\)BMI was measured as kg/m\(^2\).
<table>
<thead>
<tr>
<th>Measure</th>
<th>Non-Latino white</th>
<th>Non-Latino black/African American</th>
<th>Latina/o</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td></td>
<td>( \beta ) (95% CI)</td>
<td>( \beta ) (95% CI)</td>
<td>( \beta ) (95% CI)</td>
</tr>
<tr>
<td>Sexual orientation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heterosexual</td>
<td>(ref)</td>
<td>(ref)</td>
<td>(ref)</td>
</tr>
<tr>
<td>Mostly heterosexual</td>
<td>(-0.05 (-0.43, 0.32), 2815)</td>
<td>(-0.13 (-10.06, 0.81), 574)</td>
<td>0.86 (-0.003, 1.72), 704</td>
</tr>
<tr>
<td>Bisexual</td>
<td>2.32 (0.97, 3.68), 354</td>
<td>0.52 (-1.13, 2.17), 98</td>
<td>0.92 (-0.95, 2.78), 154</td>
</tr>
<tr>
<td>Lesbian/gay</td>
<td>1.06 (-0.23, 2.35), 256</td>
<td>(-0.94 (-1.82, -0.07), 325)</td>
<td>1.68 (-0.15, 3.51), 153</td>
</tr>
<tr>
<td>Age(^c)</td>
<td>0.45 (0.44, 0.47)</td>
<td>0.46 (0.45, 0.48)</td>
<td>0.57 (0.55, 0.60)</td>
</tr>
<tr>
<td>Age(^c) \times \text{Sexual orientation}</td>
<td>(-0.01 (-0.01, -0.01))</td>
<td>(-0.01 (-0.02, -0.01))</td>
<td>(-0.01 (-0.02, -0.01))</td>
</tr>
</tbody>
</table>
| \(^a\)BMI was measured as kg/m\(^2\).

\(^b\)Significant effects are bolded.

\(^c\)Age and age \(^c\) were centered on the mean age in the sample: 20.5 years.

Table 2: Sexual orientation differences in BMI\(^a\) in 7,140 female and 6,166 male adolescents and young adults in the US National Longitudinal Study of Adolescent Health, Waves I–IV (1995–2009).
Figure 1: BMI trajectories by sexual orientation across race/ethnicity groups of adolescents and young adults in the US National Longitudinal Study of Adolescent Health, Waves I–IV (1995–2009).
5. Conclusions

Findings from this study demonstrated that sexual orientation and gender differences in BMI are not limited to non-Latino white youth and young adults. Among males, heterosexual males showed greater one-year BMI gains than gay males across all race/ethnicity groups. Among females, non-Latino white and Latina bisexual individuals had higher BMI than same-race/ethnicity heterosexual individuals regardless of age; there were no sexual orientation differences in non-Latina black/African Americans. It is clear from these results that sexual orientation disparities in BMI are a public health concern across race/ethnicity groups. Obesity prevention and intervention efforts should target healthy body image and weight-management methods for all youth, but additional resources may be needed for sexual minority youth. In particular, interventions should be designed in such a way as to not exacerbate risk of unhealthy weight control behaviors and eating disorders. In summary, obesity prevention initiatives and treatment interventions addressing unhealthy weight gain in adolescence and young adulthood must be relevant for all sexual orientations and race/ethnicities.

Conflict of Interests

The authors declare that there are no conflict of interests regarding the publication of this paper.

Acknowledgments

Dr. Katz-Wise and Dr. Austin were supported by NIH R01 HD066963 and Leadership Education in Adolescent Health Project, Maternal and Child Health Bureau HRSA, Grant 6T71-MC00009. Dr. Calzo was supported by K01DA034753 from the National Institute on Drug Abuse (NIDA). This research uses data from Add Health, a program project directed by Kathleen Mullan Harris and designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris, at the University of North Carolina at Chapel Hill, and funded by Grant P01-HD31921 from the Eunice Kennedy Shriver National Institute of Child Health and Human Development, with cooperative funding from 23 other federal agencies and foundations. Special acknowledgment is due to Ronald R. Rindfuss and Barbara Entwisle for their assistance in the original design. Information on how to obtain the Add Health data files is available on the Add Health website (http://www.cpc.unc.edu/addhealth). No direct support was received from Grant P01-HD31921 for this analysis.

References


Research Article

Achieving Cultural Congruency in Weight Loss Interventions: Can a Spirituality-Based Program Attract and Retain an Inner-City Community Sample?

Chad Davis, William Blake Dutton, Taryn Durant, Rachel A. Annunziato, and David Marcotte

Department of Psychology, Fordham University, 441 E. Fordham Road, Bronx, NY 10458, USA

Correspondence should be addressed to Chad Davis; cdavis50@fordham.edu

Received 7 January 2014; Revised 5 March 2014; Accepted 14 March 2014; Published 7 April 2014

Academic Editor: Robyn Sysko

Copyright © 2014 Chad Davis et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Ethnic minorities continue to be disproportionately affected by obesity and are less likely to access healthcare than Caucasians. It is therefore imperative that researchers develop novel methods that will attract these difficult-to-reach groups. The purpose of the present study is to describe characteristics of an urban community sample attracted to a spiritually based, weight loss intervention.

Methods. Thirteen participants enrolled in a pilot version of Spiritual Self-Schema Therapy (3S) applied to disordered eating behavior and obesity. Treatment consisted of 12 one-hour sessions in a group therapy format. At baseline, participants were measured for height and weight and completed a battery of self-report measures.

Results. The sample was predominantly African-American and Hispanic and a large percentage of the sample was male. Mean baseline scores of the EDE-Q, YFAS, and the CES-D revealed clinically meaningful levels of eating disordered pathology and depression, respectively. The overall attrition rate was quite low for interventions targeting obesity. Discussion. This application of a spiritually centered intervention seemed to attract and retain a predominantly African-American and Hispanic sample. By incorporating a culturally congruent focus, this approach may have been acceptable to individuals who are traditionally more difficult to reach.

1. Introduction

Obesity has vast, extensively reviewed health consequences [1] such as diabetes, hypertension, dyslipidemia, retinopathy, neuropathy, and cardiovascular disease [2]. The obesity epidemic has spawned thousands of research initiatives over the years but few have resulted in long-term weight loss [3, 4]. When compared to Caucasians, ethnic minorities in this country continue to disproportionately suffer from obesity. Among adults, roughly 41% of African-Americans and over 38% of Hispanic-Americans are considered obese, compared to less than 33% of non-Hispanic White Americans [5]. Researchers are therefore charged with developing and testing novel weight loss interventions that will both attract and retain Hispanic-American and African-American participants.

Compared to Caucasians, Hispanic-Americans and African-Americans are less likely to access health care services [6–9], which may make it more difficult to enroll ethnically diverse samples from clinical settings. African-Americans are also less likely to seek professional assistance for weight loss [10], as well as to trust and feel respect from healthcare providers [11]. As a result, African-American women, in particular, have expressed a preference for managing medical and mental health issues “on their own” [12], which suggests that a community-based approach to weight control may be more acceptable to this population and potentially more effective than hospital-based programs.

2. Spirituality and Therapy

Using religion as a coping mechanism has been shown to be a protective factor against stressful life events while weekly religious attendance has been associated with improvements in depressive symptoms [13]. According to the Gallup Poll [14],
Table 1: Spiritual Self-Schema Therapy (3S): outline of weekly sessions.

<table>
<thead>
<tr>
<th>Session</th>
<th>Topic</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction to 3S</td>
<td>The “Spiritual Self” and the Noble Eightfold Path</td>
</tr>
<tr>
<td>2</td>
<td>Training in Mastery of the Mind</td>
<td>1: Becoming Aware and Changing Habit Patterns of the Mind</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>2: Managing “Addict Self” Intrusions</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>3: Mindful Action versus Automatic Reaction</td>
</tr>
<tr>
<td>5</td>
<td>Training in Morality</td>
<td>1: Mindfulness of Basic Needs</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>2: Everyday Ethics</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>3: Preventing Harm to Self and Others</td>
</tr>
<tr>
<td>8</td>
<td>Training in Wisdom</td>
<td>1: Filling the Mind with the “Spiritual Self”</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>2: Coping with Stigma</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>3: Renouncing the “Addict Self” Identity and Fully Assuming the “Spiritual Self” Identity</td>
</tr>
<tr>
<td>11</td>
<td></td>
<td>4: Serenity and Insight</td>
</tr>
<tr>
<td>12</td>
<td>Termination and Transition</td>
<td>Maintaining the Spiritual Path</td>
</tr>
</tbody>
</table>

most Americans surveyed believe in God and associate with a religion. Thus, it is not surprising that many patients talk about their spiritual or religious beliefs in medical and mental health settings [15]. The American Association of Pastoral Counselors and The Samaritan Institute [16] surveyed one thousand Americans and found that 83% of the participants believed that their spiritual beliefs were tied to their mental health and 75% preferred therapists who integrated spirituality into treatment. Stanley et al. [15] surveyed 66 adults over the age of 55 who had received therapy for depression and anxiety with a comorbid medical illness. The researchers found that over 77% of the participants wanted their spiritual beliefs to be incorporated into treatment. In addition, the authors proposed that the integration of spirituality into therapy would help to attract inner-city minorities and people in rural settings who usually seek help from their religious leaders. Many adults turn to religious leaders for counseling; however, issues that require psychotherapy are often not adequately addressed within faith-based organizations [17].

Religious commitment has been found to be associated with higher rates of obesity [18]. In a study that examined obesity rates across religious denominations, Conservative Protestant men were found to be heavier than men who did not affiliate with a religion [19]. Interestingly, Dodor [20] found that African-Americans who prayed often and deemed their religion to be important to them had poor dieting habits. Theories that have attempted to explain causal relationships between religious commitment and obesity have not yet been uniformly supported but one thing seems clear: obesity is prevalent in religious communities and developing weight loss interventions that will attract spiritually minded individuals seems to be a logical next step in addressing the obesity epidemic, perhaps especially among ethnic minorities.

4. Methods

4.1. Approach. Spiritual Self-Schema Therapy (3S) is a manual-guided, empirically validated treatment originally designed to increase motivation for drug abstinence in HIV positive, injection drug abusers [21]. It uses a nontheistic approach to increase accessibility, cognitive-behavioral techniques, Buddhist psychology, and the individual’s personal spirituality to increase motivation for treatment. The program is constructed to engage the emotional and motivational processes of change [21]. This feature of the intervention reflects its potential for addressing maladaptive behavior in multiple domains, including eating pathology. The intervention teaches specific behavioral skills to increase mindfulness and reduce harmful behavior in 12 one-hour group sessions (see Table 1 for an outline of topics covered in each weekly session). Brief assessments were given before and after the intervention. Treatment sessions were delivered by a doctoral-level clinical psychologist and the study was approved by the Institutional Review Board at Fordham University.

4.2. Intervention Development. The senior author was one of the original developers of Spiritual Self-Schema Therapy (3S) [22] and hypothesized that it might be useful if applied to populations who engaged in overeating. In collaboration with the other investigators, he subsequently reviewed the extant obesity literature and consulted with experts in the obesity field. The Food Addiction (FA) model was considered because of its strong consistency with the 3S framework. However, we acknowledge that support for the FA model is equivocal. To our knowledge, there are no published studies that have tailored weight loss interventions directly to the sample, and show that this type of study was successful in retaining a difficult-to-reach population. We hypothesized that ethnic minorities from the community would enroll in a spiritually focused intervention and complete the majority of the group therapy sessions.
the construct of food addiction so it is unclear if such an attempt would be superior or inferior to other types of interventions in reducing weight and eating disordered behaviors.

Culturally sensitive treatments for other types of addiction have been implemented in a variety of settings, including community sites, and have demonstrated effectiveness in helping African-Americans abstain from smoking [23] and the abuse of illegal substances [24]. It is unclear at this time if ethnic minorities identify with the construct of food addiction and are likely to enroll in a study that frames eating pathology in this way but an intervention that incorporates spirituality may draw in such participants. Given these considerations, the investigators decided to go forward with a pilot of 35 to see if the original manual could be applied to an obese population without any modifications (except for replacing references to “drugs” with “addictive eating behaviors”).

4.3. Recruitment. Two online advertisements describing a spirituality-focused weight loss program were broadcast within one week of each other. There were 112 responses to the advertisements. Study staff responded to all emails, informing interested parties that the first twenty participants to confirm availability would be invited to attend a free, one-hour orientation session that described the treatment. Twenty participants ($N=20$) attended the orientation and thirteen ($N=13$) participants returned the following week to give informed consent, complete the preassessment battery, and participate in the first session of the therapy. All participants were compensated with $10 in cash for each group therapy session attended. All sessions were held in a conference room located in the Center for Community Engaged Research (CCER) at Fordham University.

4.4. Measures. The Yale Food Addiction Scale (YFAS) has its roots in addictive behavior modification. It is a 27-item, self-report measure that uses Likert and “Yes/No” questions to detect the presence of food addiction, as conceptualized by the original authors of the scale. The scale’s questions were originally inspired by Substance Dependence criteria outlined in the DSM-IV-TR [25]. The scale has been shown to have adequate validity and reliability [25]. A continuous mean score, ranging from endorsement of 0 to 7 symptoms, can be calculated.

The Eating Disorder Examination-Self-Report Questionnaire (EDE-Q) is a gold-standard instrument used to detect eating disordered behaviors across a wide variety of samples [26]. The EDE-Q can also be used as a proxy for diagnosing eating disorders (Anorexia Nervosa, Bulimia Nervosa, Binge Eating Disorder, and ED-NOS). The EDE-Q consists of 41 items based on questions from the Eating Disorder Examination, a structured clinical interview used in research settings [27]. The EDE-Q produces an overall Global score and consists of four subscales: Restraint, Weight Concern, Shape Concern, and Eating Concern. The EDE-Q and its subscales have been found to have adequate validity and internal consistency [28].

In a recent study conducted by Aardoom et al. [29] new EDE-Q norms were generated comparing healthy controls, obese participants, and participants with eating disorders. Healthy volunteers had a mean EDE-Q Global score of 0.93 ($SD = 0.86$), participants with eating disorders had a mean score of 4.02 ($SD = 1.28$), and obese participants had a mean score of 2.75 ($SD = 0.97$).

The Center for Epidemiological Studies Depression Scale (CES-D) is a widely used self-report instrument purported to measure depressive symptoms [30]. The CES-D has been shown to have acceptable validity, test-retest reliability, and high internal consistency [30]. The CES-D gives scores between 0 and 60, with higher scores being indicative of distress. Participants who score greater than 16 on the CES-D may be experiencing clinically significant psychological distress.

The Brief Multidimensional Measure of Religiousness/Spirituality (BMMRS) is a 40-item self-report scale, specifically developed for health researchers to examine different aspects of spirituality as they relate to mental and physical health outcomes [31]. The present study focused on two of the scale’s dimensions: Daily Spiritual Experiences and Religious/Spiritual Coping. Daily Spiritual Experiences is a 6-item domain that intends to measure how spirituality impacts the individual’s day-to-day life (e.g., a sense of connection with God). Using a 6-point Likert scale, participants rate the extent to which they perceive a daily relationship with a greater power (with “1” being low and “6” being high). Religious/Spiritual Coping is a 7-item subscale that intends to measure how an individual uses spirituality to cope with stressors and answer life’s big questions. Using a 4-point Likert scale, participants rate the extent to which spiritual practices are employed in their lives (with “1” being low and “4” being high). Because the subscale includes both positive and negative aspects of religious coping, we reverse-scored the negative factors in our analysis, as recommended. The BMMRS and its domains have demonstrated adequate validity and reliability [31, 32].

Self-report questionnaires were given to assess gender, racial identification, income level, employment status, and marital status. A hospital scale was used to measure participants’ weight and height at baseline and body mass index (BMI) was calculated from these data.

4.5. Statistical Plan. Data were analyzed using SPSS version 19.0 (SPSS Inc., Chicago, IL, USA) for Windows. Descriptive statistics were generated to analyze characteristics of the sample at baseline.

5. Results

5.1. Community-Based Recruitment. Initial recruitment efforts employed a Community-Based Participatory Research (CBPR) design that attempted to establish partnerships with religious organizations in Harlem and The Bronx, NY. However, a year of petitioning was unsuccessful in generating interest from religious groups. No religious leaders responded to inquiries from the study staff so it was impossible to learn
the reasons behind the unresponsiveness. Past literature has identified challenges to getting community-based projects off the ground. Difficulties include lack of community interest in the funded topic, discrepancies between academic and community approaches to conducting research, the time, organizational structure and funding required, and mistrust of researchers by members of the community [33, 34]. It is possible that this last issue, mistrust in researchers, may be particularly germane to the initial, unsuccessful recruitment efforts of the current study. African-Americans have historically been taken advantage of in research [35] and invitations from unfamiliar academics may have been understandable dismissed.

Initial recruitment efforts for a preintervention focus group on “weight loss” were also unsuccessful. After posting 2 online advertisements, only 3 people attended the focus group. Conversely, an online advertisement that read “Join a Spiritually-Focused Weight-Loss Study” resulted in an overwhelming response (\(N = 112\)).

### 5.2. Characteristics of the Sample

The mean age for the total sample (\(N = 13\)) was 42.46 years (SD = 9.54). Males made up 38.5% (\(N = 5\)) of our participants. In the baseline sample, 38.5% were identified as African-American (\(N = 5\)), 15.4% Caucasian (\(N = 2\)), 15.4% Multiracial (\(N = 2\)), and 30.8% Hispanic (\(N = 4\)). Fifty-four percent (\(N = 7\)) of the sample were identified as single and 23.1% (\(N = 3\)) had a high-school education or less. Sixty-one percent (\(N = 8\)) reported making less than $30,000 a year. Only 15.4% (\(N = 2\)) had full-time employment at the beginning of the study. A summary of sample characteristics can be found in Table 2.

The mean BMI was 36.2 (SD = 4.75). All participants had a BMI > 30, which places them all in the obese range. Participants reported a mean YFAS score of 4.00 (SD = 2.31) indicating that they endorsed an average of 4 out of 7 symptoms. The mean EDE-Q Global score was 3.27 (SD = 1.53). Compared to the norms outlined in past literature [29, 36], it appears that the eating pathology of this sample is more severe than the average obese person and substantially more severe than the general population.

The mean score on the CES-D was 23.85 (SD = 10.67), indicating clinically significant levels of depression. Furthermore, 61.5% of the sample had scores greater than 16, which suggests that the vast majority was suffering from clinically significant psychological distress at baseline.

The mean score on the BMMRS Daily Spiritual Experiences Domain was 4.71 (SD = 1.16) and the mean score on the BMMRS Religious Coping Domain was 3.19 (SD = 0.57). Given that the Daily Experience Domain uses a 6-point Likert scale and the Religious Coping Domain uses a 4-point scale, the means and standard deviations suggest that the majority of our participants often pray, use faith, or meditate to help them cope with life’s stressors and have relationships with a higher power or experience the presence of spiritual entities in their daily lives.

### 5.3. Retention and Attendance

Participants who completed 10 of the 12 group therapy sessions were defined as “completers.” Past psychotherapy studies have used similar attendance criteria when defining completers [37, 38]. Interestingly, the only 2 participants who were identified as Caucasian dropped out. One participant stopped coming after attending session 4 and the other after attending session 6. One of these participants mentioned from the outset that she frequently worked late but was trying to adjust her schedule so she could attend the sessions. It is unknown why the other participant dropped out. In total, 11 participants, all of whom were ethnic minorities, attended 94.5% of all sessions, on average, and 8 of those participants completed all the 12 sessions. Several of the participants asked if they could bring a friend or family member and nearly all stated that they would recommend the treatment program to a friend.

### 6. Discussion

Although limited by modest recruitment goals, a hard-to-reach sample was successfully recruited and retained in a 12-session treatment that utilized personal spirituality as a component of the intervention. A balanced group of male and female, obese minorities from inner-city communities in Harlem and The Bronx responded enthusiastically to internet-based recruitment efforts and participated eagerly in all group sessions.

Advertising a weight loss intervention that incorporated spirituality attracted a predominantly Hispanic-American and African-American sample with strong spiritual/religious beliefs. Boltri et al. [39] conducted a focus group to identify barriers to engagement with a church-based diabetes mellitus prevention program for African-Americans. Qualitative analyses revealed that spirituality was an integral part of how participants conceptualized their own health and related behaviors and prayer was integral to how several participants coped with the challenges of illness [39]. These findings may suggest at least one reason why the use of spirituality in the current study was highly attractive to a predominantly African-American sample. Simply, spirituality matters and motivation for spirituality-related goals is high in this group. At the least, this suggests that incorporating spiritual dimensions into treatment for obesity may increase adherence in cohorts that are traditionally difficult to engage. It is however unknown if a spiritually centered intervention such as ours will result in meaningful changes in weight and reductions in eating disordered symptoms.
Although the idea of “food addiction” is relatively new and largely untested with obese populations, this sample readily accepted the proposal that their weight problems could be related to addictive eating behaviors and agreed without objection that being “addicted to eating” accurately reflected their own experience. Relating obesity to addictive behavior may provide a way to conceptualize and treat traditionally resistant patterns by focusing on discrete eating behaviors that can be identified and changed one at a time. Recognizing an aspect of addictive behavior in their eating patterns can also help individuals to identify cognitive and affective precursors that may be propitious points of intervention. Qualitative data may illuminate whether and how individuals identify with food addiction as a part of their illness.

Albeit small, this sample was almost 40% male. This is unusual in obesity studies where men tend to be largely underrepresented [40]. Since weight loss is traditionally associated with the attainment of the more female-centered thin ideal [41] and weight-gain tends to be associated with the attainment of the more male-centered muscular ideal [42], it is possible that men might view weight loss interventions as discordant with their health and fitness goals. This might be one of the reasons why male participants are substantially underrepresented in the literature on weight loss [43] and eating behaviors [44]. It might therefore seem appropriate to employ other strategies to attract men into studies that tackle obesity and eating pathology. Perhaps the use of a more “gender-neutral” emphasis like spirituality helped attract a more gender-balanced sample for this study.

High levels of depression were not surprising as it is often comorbid with obesity [45, 46] and eating disordered behavior [47, 48]. Previous studies also have found that high scores on the YFAS are associated with higher levels of depression [49, 50]. Being an ethnic minority having a lower income, and having a lower education are all risk factors for depression [51] and were relevant to our sample. Because this population is less likely to seek medical and mental health services, it is imperative that culturally congruent interventions continue to be developed which may attract individuals who would benefit not only from addressing weight-related issues but also form a gateway into the mental health care system. In our case, we believe that the emphasis on spirituality was the hook that brought them into a study that incorporated mental health treatment.

No specific issues that might suggest participant dissatisfaction arose during the course of the study. Despite elevated depression scores, none of the participants expressed distress that would have warranted higher levels of care, in our clinical estimation. Because of the reluctance of this population to seek out healthcare, we chose to house the intervention outside of a medical center. Distrust in health care professionals might be prevalent in this population, as mentioned earlier, but it is possible that the abundance of spiritual terminology inherent in the 3S protocol made the study team seem less like other health care professionals previously encountered.

The attrition rate in our study was low compared to other eating and weight interventions. Attrition this low (roughly 15.4%) is unusual in weight loss studies, even during the weight loss phase [52]. A meta-analysis examining weight loss initiatives specifically targeting African-American women reported that the attrition rate for most of those studies ranged from 23% to 47%, on average [53]. Attrition rates in weight loss studies tend to be higher among ethnic minorities [38, 54]. Discouragement over slow weight loss, dissatisfaction with prior weight loss efforts, and transportation issues have been cited as barriers to retaining African-Americans once enrolled in a study [55]. Participants in the current study were weighed at baseline and at study completion so it is possible that not focusing on weekly changes in body weight protected participants from an experience of shame, embarrassment, or dissatisfaction with weight loss and this, in turn, could have contributed to the higher levels of adherence.

Because the intervention was conducted in a predominantly African-American and Hispanic neighborhood, we expected to draw primarily ethnic minorities, even though there were no race- or ethnicity-based inclusion/exclusion criteria. Only two Caucasian participants were enrolled but they dropped out after sessions 4 and 6, respectively.

As described earlier, many participants expressed enthusiasm about getting others to enroll in the pilot study. This might therefore be an ideal project that can eventually be snowballed into a large-scale CBPR effort in which former participants can be elevated to investigators and help disseminate replications. We had a lot of difficulty garnering interest from community organizations but now that personal relationships have been developed with participants, they might be best suited to help broaden our relationships with the community.

Since this is a pilot study, our small sample size makes it difficult to draw conclusions about the population. However, our aim was to pilot-test this approach among a small sample in order to examine feasibility and acceptability. Another limitation of the study has to do with the compensation. It is unclear if participants would sign up for a weight loss study without monetary compensation. However, university-based weight loss programs typically do offer compensation [56] and they still do not tend to recruit minorities and men very easily [44, 57].

In conclusion, obese, inner-city minorities were attracted to an intervention that utilized their personal spirituality in conjunction with recognized techniques from cognitive therapy. Further studies of this dynamic are certainly warranted given the urgency of this health issue, lack of effective interventions, and needs of underserved minorities. There is a vital need to deliver effective, empirically based interventions to obese minorities [58, 59]. This pilot study showed feasibility in attracting a target population and was successful in retaining all of the participants who were identified as ethnic minorities. However, it is unclear if the current investigation will result in meaningful weight loss, especially as measured in the long-term. It is expected that continued development of spirituality-oriented interventions will readily engage participants that have historically been very difficult to reach and retain [15] despite demonstrated need for such services.
Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

References

[33] R. N. Bluthenthal, L. Jones, N. Nackler-Lowrie et al., “Witness for wellness: preliminary findings from a community-academic...
participatory research mental health initiative,” *Ethnicity and Disease*, vol. 16, supplement 1, p. S1, 2006.


Research Article

The Influence of Gender and Self-Efficacy on Healthy Eating in a Low-Income Urban Population Affected by Structural Changes to the Food Environment

Brenda Robles, 1 Lisa V. Smith, 2,3 Mirna Ponce, 1 Jennifer Piron, 2 and Tony Kuo 1,4

1 Division of Chronic Disease and Injury Prevention, Los Angeles County Department of Public Health, 3530 Wilshire Boulevard, 8th Floor, Los Angeles, CA 90010, USA
2 Office of Health Assessment and Epidemiology, Los Angeles County Department of Public Health, 313 North Figueroa Street, Room 127, Los Angeles, CA 90012, USA
3 Department of Epidemiology, UCLA Jonathon and Karin Fielding School of Public Health, Box 951772, 71-254 CHS, Los Angeles, CA 90095-1772, USA
4 Department of Family Medicine, David Geffen School of Medicine at UCLA, 10880 Wilshire Boulevard, Suite 1800, Los Angeles, CA 90024-4142, USA

Correspondence should be addressed to Tony Kuo; tkuo@ph.lacounty.gov

Received 11 November 2013; Accepted 9 January 2014; Published 27 March 2014

Academic Editor: Rachel Annunziato

Copyright © 2014 Brenda Robles et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Although US obesity prevention efforts have begun to implement a variety of system and environmental change strategies to address the underlying socioeconomic barriers to healthy eating, factors which can impede or facilitate community acceptance of such interventions are often poorly understood. This is due, in part, to the paucity of subpopulation health data that are available to help guide local planning and decision-making. We contribute to this gap in practice by examining area-specific health data for a population targeted by federally funded nutrition interventions in Los Angeles County. Using data from a local health assessment that collected information on sociodemographics, self-reported health behaviors, and objectively measured height, weight, and blood pressure for a subset of low-income adults (n = 720), we compared health risks and predictors of healthy eating across at-risk groups using multivariable modeling analyses. Our main findings indicate being a woman and having high self-efficacy in reading Nutrition Facts labels were strong predictors of healthy eating (P < 0.05). These findings suggest that intervening with women may help increase the reach of these nutrition interventions, and that improving self-efficacy in healthy eating through public education and/or by other means can help prime at-risk groups to accept and take advantage of these food environment changes.

1. Introduction

In Los Angeles County (~9.8 million residents), health disparities are striking among economically disadvantaged communities [1]. Obesity prevalence is highest among cities with the greatest indices of economic hardship (Table 1). East Compton, for example, has one of the highest rates in the county (39.9%, the city is economically ranked last out of 127 communities), while the city of San Marino has one of the lowest (8.4%, economically ranked first). These marked disparities are observed by race and ethnicity as well, with obesity being more pronounced among Latinos (29.4%) and African Americans (29.2%) [1, 2]. Collectively, this community snapshot paints a picture of significant health disparities in the region [3, 4].

In the literature, factors such as demographics, geography, culture, community resiliency, and access to affordable, healthy foods have been found to be important mediators of obesity risk [5, 6]. Emerging evidence suggests that, to reduce this risk, interdisciplinary interventions—especially in nutrition—should be implemented across multiple sectors (e.g., healthcare, public health, education, transportation, and food environments) [5–7]. In applying this evidence, federal and local health authorities have begun to take notable actions; that is, many recent federally funded obesity prevention efforts have employed an array of practice-based...
Table 1: Obesity prevalence among cities and communities in Los Angeles County, by economic hardship ranking, 2011.

<table>
<thead>
<tr>
<th>City/community</th>
<th>Obesity prevalence (%)</th>
<th>Rank, economic hardship (1–127)</th>
<th>City/community</th>
<th>Obesity prevalence (%)</th>
<th>Rank, economic hardship (1–127)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top 10 (most affluent)</td>
<td></td>
<td></td>
<td>Bottom 10 (lowest socioeconomic status)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>San Marino</td>
<td>8.4</td>
<td>1</td>
<td>East Compton</td>
<td>39.9</td>
<td>127</td>
</tr>
<tr>
<td>Marina Del Rey</td>
<td>9.9</td>
<td>2</td>
<td>Willowbrook</td>
<td>39.5</td>
<td>126</td>
</tr>
<tr>
<td>La Canada Flintridge</td>
<td>10.1</td>
<td>3</td>
<td>Compton</td>
<td>39.1</td>
<td>125</td>
</tr>
<tr>
<td>Beverly Hills</td>
<td>10.4</td>
<td>4</td>
<td>Florence-Graham</td>
<td>38.7</td>
<td>124</td>
</tr>
<tr>
<td>Malibu</td>
<td>10.4</td>
<td>4</td>
<td>Lynwood</td>
<td>37.8</td>
<td>123</td>
</tr>
<tr>
<td>Palos Verdes Estates</td>
<td>11.8</td>
<td>6</td>
<td>City of Los Angeles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rolling Hills Estates</td>
<td>11.9</td>
<td>7</td>
<td>Council District 9</td>
<td>36.7</td>
<td>122</td>
</tr>
<tr>
<td>Santa Monica</td>
<td>11.9</td>
<td>7</td>
<td>Paramount</td>
<td>35.5</td>
<td>121</td>
</tr>
<tr>
<td>South Pasadena</td>
<td>11.9</td>
<td>7</td>
<td>Westmont</td>
<td>35.4</td>
<td>120</td>
</tr>
<tr>
<td>Calabasas</td>
<td>12.3</td>
<td>10</td>
<td>City of Los Angeles</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Council District 8</td>
<td>35.1</td>
<td>119</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>West Athens</td>
<td>33.2</td>
<td>118</td>
</tr>
</tbody>
</table>

Average                      | 11.0                   | —                               | Average                 | 37.0                   | —                               |

The economic hardship index is scored by combining six indicators: crowded housing, percentage of persons living below the federal poverty level, percentage of persons over the age of 16 years who are unemployed, percentage of persons over the age of 25 years without a high school education, dependency, and per capita income.

Data source: Office of Health Assessment and Epidemiology, Los Angeles County Department of Public Health [1].

system and environmental (SE) change strategies to improve food environments across the United States [5, 7]. Between 2010 and 2012, for example, the Centers for Disease Control and Prevention (CDC) Communities Putting Prevention to Work (CPPW) program targeted health inequalities in several underserved communities in Los Angeles County. Through this funding, the Los Angeles County Department of Public Health implemented a number of nutrition interventions in the region. These interventions included (a) modifying food services and vending practices at food venues operated by county and city governments (e.g., incorporating healthy nutrition standards through the contracting process with food vendors or suppliers) [8]; (b) converting corner stores or other stores in low-income neighborhoods to food outlets which offer more fresh fruits and vegetables; and (c) utilizing outreach and health marketing to educate the public about the adverse effects of excess sugary drink consumption (Table 2) [9].

As in other communities, assuring community acceptance of SE modifications to the food environment requires in-depth knowledge and understanding of the key health behaviors and characteristics of targeted subpopulations [10]. To date, few ongoing public health strategies have tailored intervention programs to address these groups’ unique needs. Access to more granular, community-level health data could change this practice by helping to better inform and guide planning and program improvements in these communities.

Capitalizing on the results from a local health and nutrition examination survey, we contribute to this gap in public health practice by studying a population that was exposed to and may have been affected by these and other nutrition interventions implemented in urban Los Angeles County during 2010–2012. The study examined local health data including predictors of healthy eating among a subset of low-income adults who receive free/low-cost services from multipurpose, public health centers in the jurisdiction. Policy and practice implications are discussed within the context of program improvement and future obesity prevention planning for the region.

2. Methods

Data from the first round of a local health and nutrition examination survey in Los Angeles County was collected during the first 15 months of the CPPW obesity prevention program. The survey included a subset of adults residing in low-income neighborhoods (verified using residential zip codes). Information collected by the survey included (a) objectively measured height and weight; (b) objectively measured waist circumference and blood pressure; (c) self-reported smoking status; (d) self-reported dietary behaviors; (e) ratings of self-efficacy in healthy eating and exercise; and (f) sociodemographics.

2.1. Survey Catchment Area. Survey participants in the subset were recruited from five out of the 14 low-income, multipurpose public health centers operated by the Los Angeles County Department of Public Health (LACDPH). Although services such as immunizations and treatment for sexually transmitted diseases were standard across all public health centers, not all community programming and outreach activities were the same. The five sites that were selected, for example, were located in regions with the highest economic hardship indices and the highest prevalence of adult obesity (Figure 1). In addition, the clients of these sites were among the intended audiences of several local obesity
Table 2: Summary of nutrition-focused, system and environmental change strategies in Los Angeles County, 2010–2012.

<table>
<thead>
<tr>
<th>Type of strategy</th>
<th>Target setting</th>
<th>Strategy summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institutional policies or practices on healthy food procurement, for food and vending services.</td>
<td>Government</td>
<td>(i) County of Los Angeles Board motion mandating healthy nutrition standards and food procurement practices in 37+ county departments.</td>
</tr>
<tr>
<td></td>
<td>Cities</td>
<td>(ii) Adoption of healthy nutrition standards and food procurement practices in at least ten low-income cities with high obesity prevalence.</td>
</tr>
<tr>
<td>Breastfeeding promotion and accommodations in the workplace.</td>
<td>Government</td>
<td>(i) Institutional policy to provide lactation accommodations in the workplace for county departments and other employers in the region.</td>
</tr>
<tr>
<td></td>
<td>Private employers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hospitals</td>
<td>(ii) Attaining “Baby Friendly” hospital certifications to increase breastfeeding promotion at four to five large, safety-net hospitals in low-income areas of Los Angeles County.</td>
</tr>
<tr>
<td>Improving food quality in grocery stores, corner stores, and/or farmers markets.</td>
<td>Cities</td>
<td>Efforts to increase access to healthy foods through corner store conversions and farmers markets in at least two cities with low-income neighborhoods.</td>
</tr>
<tr>
<td>Public education through health marketing and other social media approaches.</td>
<td>County/city</td>
<td>Dissemination of multipronged public education campaigns (e.g., sodium and sugary drink reduction campaigns) designed to promote healthy eating in the community through social and traditional media channels.</td>
</tr>
<tr>
<td></td>
<td>general population</td>
<td></td>
</tr>
</tbody>
</table>

prevention efforts during 2010–2012. Figure 2 shows selected center locations in relation to the nutrition interventions that were implemented by the CPPW program and other state or locally funded efforts.

2.2. Survey Population and Participant Recruitment. Survey participants were recruited by trained LACDPH staff in the waiting rooms of the five public health centers described above. LACDPH staff utilized a set of multistage, systematic procedures to recruit and enroll eligible participants during prespecified days of the survey period. These procedures accounted for such operational factors (when feasible) as each center’s seasonal and daily clientele volume; time of day; types of services offered or programming provided; and clinic flow during the days of recruitment. All data collection activities took place between February and April, 2011.

2.3. Participant Eligibility and Informed Consent. To be eligible for the survey, participants had to: (1) be receiving services from the clinic during the recruitment period; (2) be at least 18 years of age; (3) be a resident of Los Angeles County; (4) not be pregnant; (5) speak English or Spanish; and (6) agree to complete a series of anthropometric and self-administered assessments on a specified scheduled weekend day in one of the designated health center locations. New and repeat center clients were equally recruited to participate. All prospective participants were asked for their names and dates of birth during eligibility screening; this information was monitored throughout the survey period to prevent individuals from participating more than once in the survey. As an incentive to participate, each participant was given a $50 gift card at the completion of the survey.

Informed consent was obtained from each participant prior to enrollment. Prior to fieldwork, all survey protocols and materials were reviewed and approved by the LACDPH Institutional Review Board.

2.4. Data Collection. Trained LACDPH staff including clinical personnel (e.g., public health nurses) measured heights and weights two to three times using a stadiometer (Seca 213) and a digital scale (Seca 876), respectively. Blood pressure (BP) measurements were measured using an automated sphygmomanometer and an appropriately sized cuff (Omron HEM-907XL). The final recorded height, weight, and BP measurements were the average of the repeated measurements. Each survey participant completed a standardized, self-administered questionnaire which included questions on sociodemographics, tobacco use, eating behaviors, and confidence about making changes to their diet and exercise routines. The seven-page paper questionnaire (available in both English and Spanish) was developed using previously validated questions from population health surveys in the literature, including the National Health and Nutrition Examination Survey (NHANES) [4] and the Los Angeles County Health Survey [2]. The diet questions, which asked about self-efficacy in healthy eating and exercise, were adapted from the validated Self-Efficacy for Diet and Exercise scale developed by Sallis and colleagues [12]. These questions (based on a 5-point Likert ranging from “I know I can” to “I know I cannot”) included “how sure are you that you can (a)…stick to low-fat foods when you feel depressed, bored, or tense; (b)…stick to low-fat foods when there is high fat food readily available at a party; (c)…stick to low-fat foods when dining with friends or co-workers; (d)…cut down on the amount of food you eat at each meal (to decrease portion size); and (e)…regularly read the serving size information listed on the Nutrition Facts label of packaged foods you eat.” The English version of the questionnaire was translated to Spanish using a standardized, forward-backward language translation protocol.

2.5. Statistical Analysis. Descriptive and univariate analyses were first performed to generate frequency distributions and standard statistics for each variable. Dependent and
independent variables were identified, reviewed, and converted or transformed (as needed) to align with the statistical requirements of the various analyses. To assess overweight and obesity, we converted measured height and weight to body mass index (BMI = weight [kg]/height squared [m^2]) using cut-off points for overweight and obese categories as defined by the CDC guidelines: BMI < 24.9, normal or nonobese; 25.0–29.9, overweight; ≥30.0, obese [13]. To assess prehypertension and hypertension ranges, diagnostic categories of blood pressure readings were created based on criteria recommended by the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure, Seventh Report [JNC 7] [14]: systolic blood pressure (SBP) < 120 and diastolic blood pressure (DBP) < 80 = normal; SBP 120–139 or DBP 80–89 = prehypertension; SBP 140–159 or DBP 90–99 = stage 1 hypertension; SBP > 160 or DBP > 100 = stage 2 hypertension. To facilitate comparisons of eating behaviors within the subset of low-income adults, key dependent variables including fruit and vegetable consumption (e.g., ≥4 servings per day versus ≤3 servings per day) were dichotomized as proxy indicators of healthy eating. The analysis of cut-offs for the number of servings consumed was based on research evidence suggesting worse cardiovascular health outcomes for adults who consumed 3 or less servings of fruits and vegetables per day as compared to adults who consumed 3 or more fruits and/or 5 or more vegetables per day; this is in recognition that the recommended daily intake for any individual is generally based on age, gender, and physical activity level [15–17].

Where appropriate, Mantel-Haenszel chi-square tests and logistic regression procedures were performed to explore the relationships between participant characteristics (e.g.,
age, gender, education, employment, BMI, blood pressure, and smoking status) and participant behaviors (e.g., self-reported eating behaviors and self-efficacy in various aspects of healthy eating). Logistic regression analyses, adjusted for age and gender, were conducted to compare key indicators by race/ethnicity. Using consumption of ≥4 servings of fruit and vegetable as a proxy dependent variable for healthy eating, a series of multivariable regression models, adjusting for a range of covariates that are known to affect consumption of these foods [5, 18, 19], were constructed. These covariates included race, age, gender, education, BMI, blood pressure, smoking, and self-efficacy ratings on reading Nutrition Facts labels on the back of food packages. Variable inclusion in the models was guided by a logic framework based on the socioecological perspective (Figure 3) [5]. Selection(s) of the “self-efficacy” variable(s) for inclusion in each of the models were also informed by the results of bivariate analyses. Model 1, for example, explored the predictive associations between sociodemographics and fruit and vegetable consumption. Model 2 explored the predictive associations between cardiovascular disease risk factors and fruit and vegetable consumption. And model 3 explored the predictive associations between self-efficacy in healthy eating and fruit and vegetable consumption. In all models, fit was assessed using the Hosmer-Lemeshow Goodness-of-Fit test ($P > 0.05$). The final model was a synthesis of this iterative model building process. All data analyses were carried out using the SAS version 9.2 statistical software (SAS Institute Inc., Cary, North Carolina).

3. Results

Of the 1,393 prospective survey participants approached, 983 met eligibility criteria and were scheduled appointments. Of
In the comparison analysis (see Table 4), Latinos were more likely than whites to be overweight and obese (adjusted odds ratio [AOR] = 3.9, 95% confidence interval [CI] = 2.2, 6.9). Similarly, blacks were more likely than whites to be overweight and obese (AOR = 2.1, 95% CI = 1.2, 3.5). Latinos were generally less likely to smoke, as compared to whites (AOR = 0.4, 95% CI = 0.2, 0.7). Based on objectively measured blood pressures, Latinos and blacks experienced a greater burden of elevated blood pressure readings than whites: 49% of Latinos (AOR = 1.2, 95% CI = 0.7, 2.0) and 55% of blacks (AOR = 1.4, 95% CI = 0.8, 2.4) had readings in the prehypertension and hypertension ranges.

In multivariable regression analyses (see Table 5), being a woman and having a high self-efficacy for regularly reading Nutrition Facts labels were strong predictors of high fruit and vegetable consumption. In the final model, women were 1.5
Table 3: Sociodemographic characteristics and cardiovascular risk profiles of participants from the local health and nutrition examination survey, Los Angeles County, 2011.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>n</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>720</td>
<td>(100)</td>
</tr>
<tr>
<td><strong>Sociodemographics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>408</td>
<td>(57)</td>
</tr>
<tr>
<td>Men</td>
<td>312</td>
<td>(43)</td>
</tr>
<tr>
<td>Age (years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18–24</td>
<td>150</td>
<td>(21)</td>
</tr>
<tr>
<td>25–44</td>
<td>346</td>
<td>(48)</td>
</tr>
<tr>
<td>45–64</td>
<td>203</td>
<td>(28)</td>
</tr>
<tr>
<td>65+</td>
<td>21</td>
<td>(3)</td>
</tr>
<tr>
<td>Race/ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>288</td>
<td>(40)</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>241</td>
<td>(33)</td>
</tr>
<tr>
<td>White</td>
<td>77</td>
<td>(11)</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>72</td>
<td>(10)</td>
</tr>
<tr>
<td>Other</td>
<td>40</td>
<td>(6)</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than high school</td>
<td>121</td>
<td>(17)</td>
</tr>
<tr>
<td>High school graduate</td>
<td>159</td>
<td>(22)</td>
</tr>
<tr>
<td>Some college or junior college</td>
<td>280</td>
<td>(39)</td>
</tr>
<tr>
<td>College graduate/postgraduate</td>
<td>155</td>
<td>(22)</td>
</tr>
<tr>
<td>Employment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed&lt;sup&gt;b&lt;/sup&gt;</td>
<td>231</td>
<td>(32)</td>
</tr>
<tr>
<td>Unemployed/underemployed&lt;sup&gt;c&lt;/sup&gt;</td>
<td>417</td>
<td>(58)</td>
</tr>
<tr>
<td>Retired/disabled</td>
<td>65</td>
<td>(9)</td>
</tr>
<tr>
<td><strong>Cardiovascular health</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body mass index or BMI (measured)&lt;sup&gt;d&lt;/sup&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Underweight</td>
<td>10</td>
<td>(1)</td>
</tr>
<tr>
<td>Normal</td>
<td>221</td>
<td>(31)</td>
</tr>
<tr>
<td>Overweight</td>
<td>229</td>
<td>(32)</td>
</tr>
<tr>
<td>Obese</td>
<td>259</td>
<td>(36)</td>
</tr>
<tr>
<td>Blood pressure, mm Hg (measured)&lt;sup&gt;e&lt;/sup&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal</td>
<td>342</td>
<td>(48)</td>
</tr>
<tr>
<td>Prehypertension</td>
<td>213</td>
<td>(30)</td>
</tr>
<tr>
<td>Hypertension&lt;sup&gt;f&lt;/sup&gt;</td>
<td>165</td>
<td>(23)</td>
</tr>
<tr>
<td>Diabetes (self-report)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diabetic&lt;sup&gt;g&lt;/sup&gt;</td>
<td>53</td>
<td>(7)</td>
</tr>
<tr>
<td>Smoking (self-report)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current smoker</td>
<td>199</td>
<td>(28)</td>
</tr>
<tr>
<td>Exposed to second-hand smoke in the past 7 days</td>
<td>343</td>
<td>(48)</td>
</tr>
</tbody>
</table>

<sup>a</sup>Data collection was carried out at five designated public health centers during the survey period, February–April 2011. Percentage and number of cases may not add up to 100% or to the total due to rounding and missing information.

<sup>b</sup>Employed: employed full-time or self-employed.

<sup>c</sup>Underemployed: employed part-time.

<sup>d</sup>Based on the Centers for Disease Control and Prevention (CDC) guidelines for body mass index (BMI) calculations: BMI = weight (kg)/height (m²); BMI classifications = BMI ≤ 24.9 (normal or nonobese), BMI 25.0–29.9 (overweight), and BMI ≥ 30.0 (obese).

<sup>e</sup>Based on classifications [11]; normal blood pressure (systolic < 120 mm Hg and diastolic < 80 mm Hg); prehypertension (systolic 120–139 mm Hg or diastolic 80–89 mm Hg); hypertension (stage 1, systolic 140–159 mm Hg or diastolic 90–99 mm Hg, and stage 2, systolic > 160 mm Hg or diastolic > 100 mm Hg).

<sup>f</sup>Included participants with controlled (on medication) and uncontrolled stage 1 or stage 2 hypertension. Example: participants who were on medication(s) but have readings in the normal or prehypertension range were classified as having “controlled” or “uncontrolled” hypertension.

<sup>g</sup>Diabetic: have been told by a doctor they have diabetes and/or were taking diabetes medication(s) as verified by the medication list collected during the survey.
Table 4: Health indicators and eating behaviors of survey participants by race/ethnicity, Los Angeles County, 2011.\textsuperscript{a}

<table>
<thead>
<tr>
<th>Health indicators</th>
<th>White (referent)</th>
<th>Latino</th>
<th>Black</th>
<th>American/PI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( n (%) )</td>
<td>( n (%) )</td>
<td>( n (%) )</td>
<td>( n (%) )</td>
</tr>
<tr>
<td></td>
<td>Crude odds ratio</td>
<td>Adjusted odds ratio</td>
<td>Crude odds ratio</td>
<td>Adjusted odds ratio</td>
</tr>
<tr>
<td></td>
<td>COR (95% CI)</td>
<td>AOR (95% CI)</td>
<td>COR (95% CI)</td>
<td>AOR (95% CI)</td>
</tr>
<tr>
<td>Total</td>
<td>77 (II)</td>
<td>241 (36)</td>
<td>287 (42)</td>
<td>72 (II)</td>
</tr>
<tr>
<td>Health indicators</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMI (measured)\textsuperscript{b}</td>
<td>40 (52)</td>
<td>190 (79)</td>
<td>197 (69)</td>
<td>36 (50)</td>
</tr>
<tr>
<td>Overweight and obese</td>
<td>3.45 (2.00,5.93)**</td>
<td>3.93 (2.24,6.91)**</td>
<td>2.03 (1.21,3.38)**</td>
<td>2.08 (1.22,3.54)**</td>
</tr>
<tr>
<td>Blood pressure, mm Hg (measured)\textsuperscript{c}</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal</td>
<td>41 (53)</td>
<td>122 (50)</td>
<td>129 (45)</td>
<td>159 (55)</td>
</tr>
<tr>
<td>Prehypertension or hypertension (stage 1 or 2)</td>
<td>36 (47)</td>
<td>119 (49)</td>
<td>1.17 (0.67,2.02)</td>
<td>27 (38)</td>
</tr>
<tr>
<td>Smoking (self-report)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current tobacco user</td>
<td>28 (36)</td>
<td>42 (17)</td>
<td>104 (36)</td>
<td>49 (75)</td>
</tr>
<tr>
<td>Exposed to second-hand smoke \textsuperscript{d}</td>
<td>54 (74)</td>
<td>138 (72)</td>
<td>205 (79)</td>
<td>159 (55)</td>
</tr>
<tr>
<td>Chronic diseases/conditions (self-report)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diagnosed with diabetes and/or were on diabetes medication(s)</td>
<td>5 (6)</td>
<td>17 (7)</td>
<td>23 (8)</td>
<td>6 (8)</td>
</tr>
<tr>
<td>Self-reported eating behaviors</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fruit and vegetable consumption</td>
<td>12 (16)</td>
<td>31 (13)</td>
<td>44 (15)</td>
<td>4 (6)</td>
</tr>
<tr>
<td>Consumed fruits and/or vegetables 4+ per day</td>
<td>1.15 (0.62,2.13)</td>
<td>1.10 (0.59,2.05)</td>
<td>1.29 (0.71,2.34)</td>
<td>1.19 (0.65,2.17)</td>
</tr>
<tr>
<td>Reported drinking the following two or more times per day</td>
<td>17 (22)</td>
<td>59 (25)</td>
<td>77 (27)</td>
<td>16 (22)</td>
</tr>
<tr>
<td>Carbonated beverages (regular soda)</td>
<td>12 (16)</td>
<td>31 (13)</td>
<td>44 (15)</td>
<td>4 (6)</td>
</tr>
<tr>
<td>100% fruit juice</td>
<td>15 (19)</td>
<td>52 (22)</td>
<td>82 (28)</td>
<td>11 (15)</td>
</tr>
<tr>
<td>Other sugar-sweetened beverages</td>
<td>15 (20)</td>
<td>29 (12)</td>
<td>39 (14)</td>
<td>8 (11)</td>
</tr>
<tr>
<td>Reported low confidence in sticking to low-fat foods when</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feeling depressed, bored, or tense</td>
<td>41 (54)</td>
<td>111 (47)</td>
<td>149 (52)</td>
<td>35 (49)</td>
</tr>
<tr>
<td>High-fat foods are readily available at a party</td>
<td>49 (64)</td>
<td>151 (63)</td>
<td>163 (57)</td>
<td>48 (68)</td>
</tr>
<tr>
<td>Portion size control—reported low confidence in</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cutting down the food eaten in each meal</td>
<td>40 (52)</td>
<td>131 (55)</td>
<td>146 (52)</td>
<td>46 (66)</td>
</tr>
<tr>
<td>Reading serving size information on labels</td>
<td>24 (31)</td>
<td>103 (43)</td>
<td>126 (44)</td>
<td>34 (47)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\( *P < 0.05, **P < 0.01, ***P < 0.001 \)

\( \textsuperscript{a} \)Data collection was carried out at five designated public health centers during the survey period, February–April 2011. Percentage and number of cases may not add up to 100% or to the total due to rounding and missing information. Models were stratified by race/ethnicity and adjusted for age and gender.

\( \textsuperscript{b} \)Based on the Centers for Disease Control and Prevention (CDC) guidelines for body mass index (BMI) calculations: BMI = weight (kg)/height (m\textsuperscript{2}); BMI classifications = BMI \leq 24.9 (normal or nonobese), BMI 25.0–29.9 (overweight), BMI \geq 30.0 (obese).

\( \textsuperscript{c} \)Based on classifications [11] normal blood pressure (systolic \leq 120 mm Hg and diastolic \leq 80 mm Hg); prehypertension (systolic 120–139 mm Hg or diastolic 80–89 mm Hg); hypertension (stage 1, systolic 140–159 mm Hg or diastolic 90–99 mm Hg, and stage 2, systolic >160 mm Hg or diastolic >100 mm Hg).

\( \textsuperscript{d} \)Exposed “within the past 7 days.”
Table 5: Predictors of high fruit and vegetable consumption (4+ servings per day) among survey participants, Los Angeles County, 2011.

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Model 1&lt;sup&gt;a&lt;/sup&gt; Adjusted odds ratio (95% CI)</th>
<th>Model 2&lt;sup&gt;b&lt;/sup&gt; Adjusted odds ratio (95% CI)</th>
<th>Model 3&lt;sup&gt;c&lt;/sup&gt; Adjusted odds ratio (95% CI)</th>
<th>Full model&lt;sup&gt;d&lt;/sup&gt; Adjusted odds ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sociodemographic</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender (women versus men)</td>
<td>1.65 (1.16, 2.34)</td>
<td>1.66 (1.16, 2.39)</td>
<td>1.46 (1.01, 2.13)</td>
<td>1.48 (1.02, 2.14)</td>
</tr>
<tr>
<td>Age (18–49 years versus 50+ years)</td>
<td>0.87 (0.59, 1.28)</td>
<td>0.88 (0.59, 1.33)</td>
<td>0.88 (0.58, 1.33)</td>
<td>0.87 (0.58, 1.32)</td>
</tr>
<tr>
<td>Race (black versus white)</td>
<td>1.16 (0.63, 2.15)</td>
<td>1.21 (0.65, 2.26)</td>
<td>1.28 (0.68, 2.44)</td>
<td>1.30 (0.70, 2.44)</td>
</tr>
<tr>
<td>Race (Latino versus white)</td>
<td>1.07 (0.56, 2.02)</td>
<td>1.10 (0.57, 2.12)</td>
<td>1.15 (0.59, 2.25)</td>
<td>1.18 (0.61, 2.30)</td>
</tr>
<tr>
<td>Education Level (greater than high school versus less than high school education)</td>
<td>0.87 (0.61, 1.26)</td>
<td>1.19 (0.82, 1.72)</td>
<td>1.32 (0.89, 1.94)</td>
<td>0.75 (0.52, 1.10)</td>
</tr>
<tr>
<td><strong>Cardiovascular health</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body mass index (BMI) (normal/nonobese versus overweight and obese)</td>
<td>—</td>
<td>1.42 (0.96, 2.10)</td>
<td>—</td>
<td>1.38 (0.93, 2.04)</td>
</tr>
<tr>
<td>Blood pressure status (normal versus prehypertension/hypertension)</td>
<td>—</td>
<td>0.80 (0.55, 1.67)</td>
<td>—</td>
<td>0.75 (0.51, 1.10)</td>
</tr>
<tr>
<td>Smoking status (nonsmoker versus smoker)</td>
<td>—</td>
<td>0.78 (0.52, 1.17)</td>
<td>—</td>
<td>0.82 (0.54, 1.25)</td>
</tr>
<tr>
<td><strong>Self-efficacy for engaging in healthy eating</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reading serving size information listed on Nutrition Facts label of packaged foods (high versus low confidence level)&lt;sup&gt;e&lt;/sup&gt;</td>
<td>—</td>
<td>—</td>
<td>2.15 (1.35, 3.41)</td>
<td>2.39 (1.67, 3.50)</td>
</tr>
<tr>
<td>Reducing portion sizes at each meal (high versus low confidence level)&lt;sup&gt;e&lt;/sup&gt;</td>
<td>—</td>
<td>—</td>
<td>1.04 (0.65, 1.69)</td>
<td>—</td>
</tr>
<tr>
<td>Sticking to low-fat foods when depressed, bored, or tense (high versus low confidence level)&lt;sup&gt;e&lt;/sup&gt;</td>
<td>—</td>
<td>—</td>
<td>1.19 (0.75, 1.88)</td>
<td>—</td>
</tr>
<tr>
<td>Sticking to low-fat foods when high-fat foods available at a party (high versus low confidence level)&lt;sup&gt;e&lt;/sup&gt;</td>
<td>—</td>
<td>—</td>
<td>1.22 (0.74, 2.03)</td>
<td>—</td>
</tr>
<tr>
<td>Sticking to low-fat foods when dining with friends or coworkers (high versus low confidence level)&lt;sup&gt;e&lt;/sup&gt;</td>
<td>—</td>
<td>—</td>
<td>1.23 (0.76, 2.00)</td>
<td>—</td>
</tr>
</tbody>
</table>

CI: confidence interval; χ²<sub>HL</sub>: Hosmer-Lemeshow chi-square test.

<sup>a</sup>Model 1 adjusted for gender, age, race, and education level; χ²<sub>HL</sub> = 4.37, P = 0.82.

<sup>b</sup>Model 2 adjusted for gender, age, race, BMI, blood pressure status, and smoking status; χ²<sub>HL</sub> = 6.31, P = 0.61.

<sup>c</sup>Model 3 adjusted for gender, age, race, education level, and self-efficacy for reading serving size information on Nutrition Facts labels, reducing portion sizes, and sticking to low-fat foods (i.e., self-efficacy variables were dichotomized using level of confidence data reported on a 1–5 Likert scale); χ²<sub>HL</sub> = 6.66, P = 0.57.

<sup>d</sup>Full model comprises the statistically significant variables and/or other relevant covariates included in models 1–3; χ²<sub>HL</sub> = 5.57, P = 0.70.

<sup>e</sup>Measure of confidence level based on a 5-point Likert scale "I know I can" to "I know I cannot."

<sup>∗</sup>P < 0.05, <sup>∗∗</sup>P < 0.01, and <sup>∗∗∗</sup>P < 0.001.
times (95% CI = 1.0, 2.1) more likely than men to consume 4+ servings of fruits and vegetables per day. Participants with high self-efficacy in reading Nutrition Facts labels were 2.4 times (95% CI = 1.7, 3.5) more likely than their counterparts (with low self-efficacy) to do the same. The Hosmer and Lemeshow Goodness-of-Fit test indicated that these models were compatible with the data presented ($\chi^2 = 5.57, P = .70$).

4. Discussion

Guided by a socioecological framework [5], the present study conducted a series of analyses to examine key characteristics of a subpopulation disproportionately affected by overweight and obesity in Los Angeles County [1]. This priority group is one of several vulnerable groups targeted by a number of nutrition-focused obesity prevention interventions in the region (Table 1) [7, 8]. Although prior efforts have relied on national and/or county surveillance databases to aid program planning [1, 2, 4, 10, 20], this study is among the first to collect more granular, community-level health data that are representative of the groups targeted by program interventions that sought to make changes to the food environment. These data have implications for quality improvement, especially for local health authorities and community-based organizations seeking to improve or better tailor program delivery to their intended audiences [21].

While emerging evidence supports the use of system and environmental change strategies [5, 7, 22], there remains a paucity of research that has fully elucidated the interactions between these structural modifications and individual health behavior change. To achieve meaningful outcomes in community and individual health, interventions often require substantive tailoring to match the needs and the unique social, epidemiological, and ecological characteristics of the target subpopulations [21, 23]. Oka and colleagues (2013), for instance, analyzed a community-based epidemiologic survey using multilevel modeling to better understand area-based variations in obesity [24]. They demonstrated differences in obesity prevalence by gender and race/ethnicity at the neighborhood level and concluded that, to be effective, future interventions/programs should address these and other neighborhood-specific characteristics.

In the present study, the sampled population had high prevalence of overweight and obesity; this was accentuated for Latinos and blacks. This high prevalence, however, is not uniquely different from the documented evidence in the literature for US minorities [6, 25]. In the literature, disparities in obesity burden, including associated conditions such as hypertension, generally clustered in vulnerable groups, frequently confounded by multiple social and environmental factors that are not solely explained by socioeconomic status [26]. These factors have included but are not limited to racism [27, 28], residential segregation [29], and the built environment [30].

The most striking finding in the study was that gender and self-efficacy were strong predictors of healthy eating (e.g., fruit and vegetable consumption), even after controlling for a number of confounding variables including other demographics in the sampled group. This was somewhat unexpected given that the subset of adults included in the analysis represented a source population believed to be ready for and would benefit from structural changes made to the food environment (e.g., healthy food procurement, corner store conversion, 100% healthy vending machine policy, and competitive pricing of healthy foods in food venues). However, experiential information suggests that due to perceived lower educational attainment and poor nutrition in this population, differential patterns of receptivity or readiness to capitalize on these changes were likely common. As such, after adjusting for covariates such as age, race, and education, survey participants were significantly more likely to consume fruits and vegetables than other participants when they were women and had higher self-efficacy in reading Nutrition Facts labels.

From a practical standpoint, intervening with women who typically make food selection decisions for their entire household (nutrition gatekeepers) may be advantageous to the overall effort to reduce obesity in Los Angeles County, as it can concurrently model positive changes in the diet of the entire family unit and can be applied across generations [31, 32]. Intervening with women can also indirectly target other members of the household, especially men who often eat poorly [33, 34]. The potentially additive effect that may result from this action could augment the structural changes (i.e., through system and environmental interventions) made to the food environment by the recent federal and local obesity prevention initiatives. Similarly, improving the level of confidence in practicing healthy eating behaviors may also help accelerate the community acceptance of changes made to the food environments by these efforts. To achieve optimal interventional effects, priming at-risk groups to accept and take advantage of structural improvements may be as important as improving the food environments themselves [10, 35].

The present study was subject to a number of limitations. First, generalizability of the findings to the general population in Los Angeles County was not feasible, as the sampled group principally represented the region’s low-income adult population. This, however, should not be considered a study weakness, as the demographics of the group aligned closely with the intended audiences of the various federal and local obesity prevention efforts in the region. Second, large confidence intervals were observed for some of the point estimates in the analyses. For most of these, the smaller sample size(s) of the referent group (i.e., whites) likely contributed to the imprecision. Third, self-selection and self-reporting bias likely led survey participants to over- or underestimate their food frequency and reports of self-confidence (self-efficacy in healthy eating). Fourth, the study design was cross-sectional in nature and thus was only able to describe the regional health profiles of the subpopulation at one given point in time. Finally, measurement errors, including misclassifications, likely introduced additional bias to the descriptive and comparison analyses. These potential errors, however, were minimized through iterative use of well-defined, standardized measurement protocols and rigorous training of field staff responsible for data collection.
Despite these limitations, community-level health data on particular subpopulations in Los Angeles County highlight the feasibility and utility of collecting these kinds of data to address socioeconomic factors that drive healthy eating in urban settings. To increase desired eating behaviors, both structural (system or environmental change) and individual-level approaches (e.g., changes in knowledge, attitudes, beliefs, intentions, and self-efficacy) should be employed. Developing nutrition interventions tailored to the unique characteristics of targeted subpopulations can help prepare individuals to take advantage of the structural improvements or resources that are made available to them by obesity prevention initiatives. Such tailoring of structural change interventions can be synergistically augmented by culturally sensitive public education and/or community engagement that seeks to address the underlying gender norms and self-confidence mediators known to shape eating behaviors.

5. Conclusions

Although local health data can help facilitate community planning and acceptance of system-level and environmental changes to the food environment, area-specific health profiles and behavioral determinants of healthy eating in the targeted subpopulations are often not well-characterized prior to nutrition program implementation or for use in subsequent program improvement efforts. The present study addresses this gap in public health practice by providing actionable data that the LACDPH can use to further address health disparities in the region. Many of the lessons learned in Los Angeles County may have similar applications in other US communities. Local or community health assessments represent a set of tools that is often underutilized by public health authorities. Ultimately, these chronic disease surveillance and assessment tools that document more granular information about subpopulations’ health status provide the opportunity for communities to tailor multisector public health programs to intended audiences.

Conflict of Interests

The authors declare that there is no conflict of interests.

Acknowledgments

The authors would like to thank staff in the Office of Health Assessment and Epidemiology and Community Health Services at the Los Angeles County Department of Public Health for their assistance with data collection and management. The authors would also like to thank Janice Casil for her work on the GIS mapping and Kathleen Whitten and Janice H. Vick from ICF International for their careful review of the paper prior to submission. This work was supported in part by a cooperative agreement from the Centers for Disease Control and Prevention, no. 1U58DP002485-01SI. The findings and conclusions in this paper are those of the authors and do not necessarily represent the views of the Los Angeles County Department of Public Health or the agencies mentioned in the text.

References


Obesity is viewed as a major public health concern, and obesity stigma is pervasive. Such marginalization renders obese persons a “special population.” Weight bias arises in part due to popular sources’ attribution of obesity causation to individual lifestyle factors. This may not accurately reflect the experiences of obese individuals or their perspectives on health and quality of life. A powerful role may exist for applied social scientists, such as anthropologists or sociologists, in exploring the lived and embodied experiences of this largely discredited population. This novel research may aid in public health intervention planning. Through these studies, applied social scientists could help develop a nonstigmatizing, salutogenic approach to public health that accurately reflects the health priorities of all individuals. Such an approach would call upon applied social science’s strengths in investigating the mundane, problematizing the “taken for granted” and developing emic (insiders’) understandings of marginalized populations.

1. Introduction

Obesity stigma and negative stereotypes of obese people are widespread and damaging to the health, dignity, human rights, and quality of life of obese individuals [1]. Standard media and biomedical depictions of obese individuals contribute to this stigmatization by positing that obesity incidence is nearly entirely dependent on individualistic actions [1]. Furthermore, obese individuals’ may occupy numerous intersecting social roles and identities based on their gender, class, race, and other social positions. Such intersectional processes may compound the degree of marginalization obese persons’ experience.

Biomedical and media depictions invariably refer to obesity as a crisis or epidemic. Obesity’s multifactorial and multilevel etiology is reduced to an “energy balance” model of causation, which inadequately explains weight trajectories [2]. Despite the oft-reported inefficacy of weight loss dieting, public health almost invariably recommends weight loss [3, 4].

Interventions may be unsuccessful due to a narrow focus on weight loss, an overly simplistic notion of how obese individuals live; experience their bodies; the contexts they inhabit; and the opportunities available to them in seeking wellness, happiness, and a full life. Furthermore, while health is posited as the ultimate goal, these projects frequently focus on weight and deem fatness or higher weights as necessarily pathological. This is especially important given that the populations often targeted by such campaigns may differ culturally and socioeconomically from dominant groups. These diverse factors may affect their lifeways, priorities, and health conceptualizations in manners which may require in-depth exploration to produce truly beneficial and sensitive programming. Qualitative social scientists, such as anthropologists or sociologists, trained in methods such as ethnography, may be uniquely suited to explore the lived experiences of obese individuals. They may aid in developing a public health strategy that is suited to the priorities and lifestyles of all individuals and is implemented in a manner consistent with a salutogenic, positive, and holistic understanding of health promotion. This paper discusses the potential for in-depth, qualitative social science research to concretely contribute to program delivery. Even within the expanding fields of critical obesity research, as Warin and Gunson note...
the compiling of actual obese people’s experiences and perspectives has been limited. Through actual collaboration between disciplines, rather than public health researchers and programmers and qualitative social scientists operating in separate silos, programming may be developed that addresses the needs of multiple marginalized populations. Importantly, rather than reliance on stereotypes, such an approach would facilitate compassionate and evidence-based policy and programming.

2. Context

Understanding how both patients and providers view health-related topics and how these actors must negotiate these views in a care-setting context is critical to planning effective and respectful public health care delivery. Biomedical research nearly invariably posits obesity as a health crisis, despite evidence that obese individuals may be metabolically healthy; overweight people live longer than “normal” weight persons, as do obese individuals in chronic disease populations and fit obese persons compared to unfit “normal weight” persons [2, 6].

Weight bias is moderate to high among healthcare professionals and trainees, including those specializing in obesity or nutrition-related practice [7–11]. A recent systematic review of physicians’ views on treating adult obesity found that physicians believed it was important to treat obesity [12]. They were confident in their skills respecting obesity treatment, although obesity knowledge was actually limited. Physicians believed they were largely unsuccessful in treating obesity but attributed this to patient noncompliance and lack of motivation, which coincides with their general view of overweight and obese individuals as lazy [12]. Similar results were attained by Foster and colleagues in 2 nationally representative American surveys (n = 5000) [13]. Physicians felt treatment for obesity was ineffective; held negative views of obese patients’ appearance and compliance; attributed obesity causation to lifestyle factors; and sought greater compensation in delivering obesity treatment [13]. Similar to other studies, physicians in New York State expressed frustration in attempting to treat obesity [14]. This frustration was based on the extent to which obesity-contributing factors were outside their control, low sense of self-efficacy in treating obesity, and a perceived lack of reimbursement.

Physician attitudes respecting childhood obesity are comparable to those for adult obesity [15]. Physicians believe treating childhood obesity is important and provide lifestyle advice and dietitian referrals. However, they also feel they are unsuccessful in treating obesity, largely as a result of noncompliance and lack of motivation of patients. Reimbursement appeared to be less of an issue regarding physicians’ views of childhood obesity [15].

Studies have also presented more nuanced views of clinicians’ attitudes relating to obesity treatment. For example, physician’s BMI may mediate physicians’ likelihood of counseling obese patients. Among primary care physicians, weight loss discussions were more likely to be initiated by physicians who believed clients had a higher BMI than themselves [16]. Normal weight physicians were more likely to feel confident administering said advice, to feel physicians were responsible for serving as normal weight role models and to doubt patients would trust weight-related advice from overweight or obese clinicians [16].

Another study conducted in New York City involved a chart review and patient survey, and its results suggest little focus on obesity in practice [17]. It was found that physicians were relatively unlikely to enter an official diagnosis of overweight or obesity on a patient’s chart, to advice weight loss or refer to a dietitian [17]. This generally contrasted with patient wishes. Patients generally wanted to lose weight and receive physician advice and referral to a dietitian. A qualitative study on German physicians’ and patients’ views on obesity management found that doctors were concerned with a potential overemphasis on obesity [18]. Both physicians and patients emphasized the need for multidisciplinary approaches to obesity management, the excess burden on primary care centres, and emphasized respectful trusting relationships between practitioners and patients [18]. The need for more services and professional involvement, delivered by physicians or other providers, either separate from or within a primary care setting, was also referred to by both groups [18].

A recent debate in the Canadian Family Physician journal has highlighted that practitioners may be developing a more critical view on the orthodoxy of advocating weight loss for every obese patient. Bosomworth presents a review on possible negative mortality, morbidity, and quality-of-life outcomes of weight loss [19]. It is suggested that metabolically healthy obese individuals should strive to remain weight stable, not to gain or lose weight [19]. An accompanying editorial encourages promoting self-acceptance and healthy lifestyles for obese patients, as weight loss is nearly impossible [20]. Havrankova presents the argument that weight loss as a public health goal is futile and contends that the focus should be on preventing obesity [21, 22]. Garrel posits that obesity prevention is largely outside the practitioner’s purview and argues instead for obesity treatment [23, 24]. The treatment proposed, however, involves fairly modest goals. Garrel adopts the Edmonton Obesity Staging System (EOSS) for guiding obesity treatment [25]. Based on these guidelines, Garrel supports urging weight loss only in obese individuals who have comorbid conditions; physicians should work with obese individuals without comorbid conditions to prevent weight gain [23, 24]. Treatment of obese individuals with comorbid conditions would involve treating these comorbidities, setting realistic weight goals with patients, and warning them of unsafe weight loss methods. The EOSS presents a more nuanced view of obesity than mere anthropometric measures. It allows for the possibility that some obese patients may be healthy and not benefit from treatment [25].

Dietitians are also viewed as a key factor in obesity management. Physicians are more likely to refer to dietitians than to gastric bypass surgeons or to prescribe medication [12]. Dietitians agree on their primacy in obesity treatment [26]. In a sample of 514 Canadian dietitians, about 90% felt obesity contributed to ill-health and a large majority
felt obese individuals should be encouraged to lose weight. However, they also emphasized the importance of health measures other than weight in obesity treatment, and the majority advised their clients against weighing themselves [26]. Indeed, many dietitians were positively disposed toward a weight-neutral, Health-at-Every-Size (HAES) approach; however, there was variation in plans to adopt more structured eating plans and abandoning weight loss as a goal. Some also argued that certain (larger) sizes exceeded healthy limits [27].

In examining clinician perspectives on obesity, what appears to be essential, therefore, is the establishment of trusting and respectful relationships between clinicians and their obese patients in designing interventions for obese persons. These relationships must be sustained in light of obesity's likely intractability and potential nonpathological nature. A greater understanding of clinicians’ and obese patients’ health perspectives, perceptions, and priorities over the life course is paramount for achieving these aims. Better understanding of the experience of visiting healthcare providers as a larger patient may also provide valuable insight into sensitive care delivery and health (not weight)-centric treatment approaches.

A greater awareness of the stigma obese individuals encounter in day-to-day life, as well as in the healthcare system, is of particular importance to improve health and quality of life. Examining these issues in depth is essential to rectify a social justice issue that has immense health and quality-of-life implications for a significant population. Ethnographers and other applied social science researchers may be especially adept at exploring this issue and learning from obese persons about the oppression they may endure.

2.2. Weight Stigma. Obese individuals report high levels of weight discrimination in their everyday lives. This discrimination occurs in both interpersonal encounters and in institutional settings such as social situations, places of employment, and healthcare settings [7]. This discrimination is particularly notable among heavier individuals (BMI > 35 kg/m²), 40% of whom reported experiencing discrimination in the American 1995-96 National Midlife Development survey. Women and younger adults were also at considerably higher relative risk of experiencing weight stigma [7].

These findings coincide well with reports of high levels internationally of stigmatizing attitudes toward obese persons [28]. The public emphasizes the presumed causal role of the individual in developing obesity, and this was the single strongest predictor of possessing a stigmatizing attitude [28]. The pervasiveness of obesity stigma in health care settings is of particular importance for obese individuals’ health and public health planning [7, 8]. Awareness of these sentiments may make it especially difficult for obese individuals to find adequate medical care [1]. Social scientists could explore these issues and seek to deploy an in-depth, exploratory perspective from obese individuals’ own (emic) perspective. Ultimately, such studies may contribute to improved health care and public health strategies.

2.3. Portrayal of Obesity. The depiction of obesity in biomedical, media, and other popular accounts contributes to the manifestation and degree of obesity stigma present among the public. Gard and Wright identified that obesity research was communicated to the public in a way that erases the inherent uncertainty and imprecision of epidemiological studies and presents obesity as necessarily a health crisis, despite nondefinitive evidence [2]. As this work is generated from within a biomedical institution, it is presumed to be unquestionably objective and lacking in any moralizing, political, or ideological thrust [2]. Such a frame allows for the dismissal of alternate views as fallacious, whether they originate from alternate epistemological scholarly arenas, lay perspectives, or embodied experience. It also disqualifies concerns of how this research may affect or be affected by antifat bias.

These portrayals may inadvertently silence the source most important to understanding the public health programming needs of obese individuals, that is, obese individuals themselves, by presenting a homogenizing and blaming view of such individuals’ lifestyles and experiences. These views are likely to be reliant on assumptions, rather than data on obese persons’ lived experiences. Bringing forth obese individuals’ perspectives and learning from their embodied knowledge through multidisciplinary research may enhance public health programming efforts.

Media commentators’ particular moral values help to establish which component of life they choose to implicate as causing obesity. Often these values are related and presumed to be unique to modern life, such as diminished quality family time or the slothful nature of the current generation of children [2]. Similar to these accounts are evolutionary explanations for obesity stressed in media [2], which may present an inaccurate understanding of the biological or archaeological evidence of humanity’s evolutionary past. Regardless of the validity of such claims, these and other arguments that invoke a golden era of nonobesity and health continue to deploy a moralistic frame that denigrates modern lifestyles as decadent, slothful, and gluttonous. Particularly, adult commentators often direct their ire toward children as embodying the presumed deterioration of societal values and lifestyles [2]. Child health prevention programs reliant on this framing may risk stigmatizing, disempowering, and harming children, rather than on trying to understand the children’s own perspectives.

The individualistic notion of obesity etiology remains dominant in media accounts [1]. These portrayals posit that individuals are responsible for both the cause and cure for obesity. This depiction contributes to stigmatizing attitudes toward obese individuals, who come to be viewed as embodying a remediable social and health burden, borne, in part, by others. It further discounts that obese individuals may be healthy, may choose to emphasize more holistic, less weight-centric conceptualizations of health, or may have lives that preclude investment or engagement in self-care. Interestingly, since 2003, Lawrence has detected a shift in American media coverage of obesity [29]. Personal responsibility framing
dominates; however, increasing focus is being placed on environmental factors that may contribute to obesity, particularly the fast food industry. Unfortunately, this emphasis has not significantly affected antifat attitudes [28, 29]. While environmental risks for obesity are acknowledged, individuals are assumed to willingly incur these risks and thus still be largely culpable for their body size and worthy of disapproval [29]. This discrimination has spread to previously nonstigmatizing nations [30]. Rather than castigating obese individuals for their size, qualitative social science researchers may be in a position to rewrite common stereotypical assumptions of obese individuals’ lives by working collaboratively to better understand the health and experiences of an often-maligned group and addressing the health concerns most relevant to them.

In addition to referring to obesity as an epidemic or crisis [2, 31], an even more extreme figurative device is employing military metaphors [32]. This discourse effectively constructs obese individuals as targets in a war or even as domestic terrorists [32]. Terms like “contagious” are also used when describing obesity in epidemiological studies using methods such as social network analysis [33, 34]. This frame seems to be particularly detrimental to the potentially health-enhancing and stress-reducing benefits of social support networks for individuals. As developing obesity is extremely feared [35, 36], it may be very isolating for obese individuals to have their friendship portrayed as a risk for developing obesity [37].

2.4. Risks of Weight Stigma. It has been suggested that stigma may serve as a motivator for weight loss among obese individuals [1, 38]. However, the evidence provides a far bleaker picture; stigmatizing obese individuals is an ineffective tactic in reducing obesity rates. Rather than stimulating healthful behaviors, stigma is more likely to produce poor eating habits and inactivity and thus may actually augment both obesity prevalence and disordered eating [1, 39–42]. Additionally, the catastrophic rhetoric used to describe the obesity epidemic has been suggested as a potential contributor to rising rates of eating disorders [43]. Interventions designed to ameliorate childhood obesity have also been implicated in the development of eating disorders [44–49].

Given the adverse psychological outcomes produced from weight discrimination, stigma may also compromise physical and psychological health through stress-induced neuroendocrine dysregulation [1, 50]. Muennig and colleagues found that the difference between ideal weight and actual weight had a stronger effect on mentally and physically unhealthy days than BMI in American adults [50], suggesting that body dissatisfaction may have a potent impact on health, over and above objective fatness. The health effects of stigma-induced stress will likely be exacerbated by healthcare discrimination [7, 8], consequent inadequate care, and subsequent avoidance of healthcare providers [1]. Similarly, Ernsberger reviewed the evidence on obesity, socioeconomic status, and mortality [51]. Obesity may increase the risk of poverty, downward social mobility, and subsequent ill-health through prejudice and discrimination affecting education, employment, income, housing, and healthcare opportunities [51]. Thus, weight stigma may be far more health-damaging than previously thought and far more damaging than “excess weight” [51].

Importantly, weight loss may not eliminate the consequences of stigma. For example, formerly obese adolescent girls continued to suffer from the lower self-esteem characteristic of chronically obese adolescents [52]. Additionally, there is qualitative evidence that weight loss efforts and concomitant lifestyle, dynamic, and emotional changes may result in dissolutions of friendships [41]. This may be compounded by the “contagious” framing of obesity [37]. This deterioration of social support may be an unacknowledged mechanism through which weight stigma affects health, which may previously have been erroneously attributed to the weight itself.

2.5. Stigma Management. In such a stigmatizing context, individuals may utilize a variety of stigma management techniques [53]. These methods may include attempting to lose weight as both an act of contrition and to minimize the fatness for which obese individuals are oppressed [54–58]. Monaghan conducted ethnography on male members of a United Kingdom slimming club and explored the effects of stigma on their lives. One method of managing stigma utilized by these individuals, who varied in their acceptance of obesity as a discredited state, involved the accounts they related concerning their weight issues [56, 58]. Some accounts entailed offering excuses that mitigated individual responsibility for obesity, such as appeals to a genetic condition or environmental issues. Other individuals justified their size through appeals to their enjoyment of food or pride in their powerful size. Individuals who rejected the discredited nature of obesity emphasized natural body diversity or deemphasized the importance of weight regarding health [56, 58]. Significantly, these accounts are socially contingent. While one account may suit a particular context, a different account may be more useful in different situations [56, 58].

To cope with stigmatizing environments, some individuals may also choose to align themselves with the fat acceptance movement [57]. Being aware of the everyday effects of stigma on individuals’ lives, lifestyles, and health is an essential factor in planning salutogenic, engaging, beneficial, and inclusive public health strategies. For example, understanding obese persons’ decisions to avoid particularly stigmatizing physical fitness venues may allow public health planners to design an atmosphere conducive to supporting individuals of all sizes to engage in enjoyable, health-conducive movement.

2.6. The Need for Obese Individuals’ Perspectives. The literature thus suggests that obese individuals experience substantial stigmatization and exist in an environment saturated with nonproblematized information concerning the health risks of excess weight. This information is often presented in a manner that assumes control for health resides in the individual, the possibility of health and obesity are mutually exclusive, and that achieving wellness constitutes a moral imperative. To a greater or lesser extent, individuals appear to
have adopted this discourse and allowed it to influence their perspectives and lifestyles. Individuals’ health perceptions may be influenced by pervasive mainstream weight discourse but also be mediated by somatic understandings of wellbeing. As evidence suggests that obese individuals may be healthy, obese individuals may not absorb popular obesity-related messaging, based on their own somatic signaling or knowledge of their lifestyles. Individuals may also have differing priorities regarding wellness that supersede weight concerns, such as an emphasis on experiencing pleasure or mitigating income-related food insecurity. Regardless of the health risks associated with obesity, a greater understanding of how obese individuals feel concerning their health and quality of life, what obese individuals regard as their priorities concerning health, and what they feel would most benefit their quality of life and wellness is necessary. These views may also alter over time as different weight trajectories are experienced, and this is essential to consider given the chronicity of obesity. In crafting public health messaging, programs, and policies, such knowledge will be essential in creating effective and ethical interventions.

Also essential is considering the potentially multifaceted effects of stigma on obese individuals’ lives [59, 60]. This includes incorporating that which is “most at stake for actors in a local social world” within the social dimensions of stigma [60, p. 1525]. For example, this may involve stigma impeding life chances, financial and life opportunities, and the fulfillment of individual or familial role functions [59, 60]. This view of stigma also considers the manner through which stigma is sociosomatic and how through psychobiological, moral-somatic, and moral-emotional pathways, stigma may have direct physiological consequences [61]. These data on obese people’s perspectives and health will add to the rich work conducted in critical obesity and fat studies, theoretical understandings of the body, and qualitative research done on discursive bodily and health perspectives of individuals of all sizes, for example, [2, 32, 36–48, 56–58, 62–68].

3. Alternative Models to a Weight-Centric Public Health

3.1. Health-at-Every-Size. Recent movements have emerged that are critical of a weight-centric public health model. One such undertaking is the Health-at-Every-Size (HAES) approach. HAES advocates promote healthy living without a focus on weight loss [3]. HAES advocates are critical of weight loss dieting’s very low rates of sustained weight loss and potentially negative effects on physical and mental health. Such effects can include lowered self-esteem, heightened stress, weight cycling, and bone loss [4]. Furthermore, HAES advocates are critical of the overestimation of excess weight’s effects on morbidity and mortality; the discounting of the existence of healthy obese individuals; and the ethics of promoting weight loss, given its low levels of success and possible harms [3]. Instead, the HAES movement promotes the benefits of engaging in enjoyable physical activity and body acceptance. HAES practitioners advise eating nutritionally according to an intuitive eating model, based on intuitive cues of hunger and satiety [3]. Clinical trials of HAES lifestyle interventions have demonstrated improvements in psychosocial, clinical, physiological, and behavioral measures, independent of weight loss. Critically, participants did not experience negative consequences, including weight gain, and these results compared favorably with diet-focused intervention groups [3, 4]. The inclusion of social scientists into public health strategizing would facilitate the inclusion of true insiders’ (i.e., obese individuals’) perceptions on the advantages and disadvantages of these novel developments.

3.2. Critical Obesity Scholarship. Frequently aligned with HAES, or fat acceptance advocates, are critical obesity scholars [68]. These scholars, often from outside health fields, have raised critiques concerning dominant obesity discourse. Studies critiquing the biological and epidemiological underpinnings of the prevailing view of obesity as a major health concern and the product of individual behavior have been published. A variety of issues have been raised by these scholars and include the use of terms such as epidemic or crisis in referring to obesity; the moralization of a presumed health issue and resultant ethical and stigma- tizing implications of interventions and messaging; and the dominant obesity discourse’s effects on individuals’ bodily understandings, [2, 32, 36–48, 56–58, 62–68]. Findings from these and similar studies would benefit intervention planners in better understanding the daily lives of obese persons, obese individuals’ perspectives on health, and how to plan the most beneficial interventions.

4. Obesity and Ethnography

4.1. Ethnographic Exploration of Stigma. Anthropology’s traditional focus on the subaltern has become more cognizant and reflective of power relations in research than in past, more colonially complicit, eras of anthropology. A focus today on stigmatized populations, such as obese persons, would draw upon emerging strengths in anthropology, including the utilization of anthropology in social critique and the development of critical ethnography [69]. While in the contemporary social climate obese individuals are often stigmatized, obese individuals and their allies have also marshaled resistance to dominant obesity messaging. Monaghan conducted ethnography on the lives of male members of a United Kingdom slimming club [56, 58]. This provided invaluable information on the experience and management of stigma in these individuals’ lives. Further investigations into the experience of weight stigma for men, women, and children are necessary to grapple with a source of discrimination, which can be life and health-damaging but has attracted limited attention and censure. Indeed, ethnographers may be especially useful in this respect. Such forms of stigma may operate largely unconsciously, and participant observation may be a valuable tool in detecting this stigma, its effects, and providing empirical support for effecting change. Further ethnography on obese individuals,
with a focus on health and with applied aims, would be immeasurably useful to health care providers, public health professionals, and the general public of all sizes.

Thus, collaboration between ethnographers and health researchers in planning health interventions would serve the interests of both disciplines and more importantly the needs of obese individuals. Ethnographers could study individuals' experiences in health care settings, fitness centers, or in employment and educational settings, in which weight bias has been reported. In documenting the manner in which obese individuals’ live; the choices they make; their priorities in wellness and quality of life; their contributions to society and their potential experiences with others’ biases; applied social scientists could put a human face on obesity and work toward producing a positive, life-affirming, and inclusive public health focused on reducing stigma and blame and helping all people achieve a high quality-of-life.

4.2. Applied Outcomes of Social Science Research.

Applied social science can enhance obese individuals’ quality of life by providing a greater understanding and problematization of “taken for granted” assumptions regarding obese individuals’ health, lives, and lifestyles. This epitomizes what Rabinow [70] views as a particularly salient and novel area for anthropological exploration. The problematization of “serious speech acts” and practices, things, and classifications. Anthropological experimentation in these areas could move aspects of a culture from being viewed as natural, to contingent, and finally, from a reflexive perspective [70, p. 67]. The problematization of taken-for-granted social attitudes and processes is particularly relevant in studying weight stigma, which is largely considered unremarkable, or even acceptable, in current sociocultural climes.

Prevailing attitudes suggest that obese individuals are necessarily unhealthy, lazy, self-indulgent, and lacking in will power [1]. Internalization of such accounts may make individuals feel unhealthy, unworthy, immoral, or disempowered based on their body size or innocuous lifestyle choices. Emic understandings of obese individuals’ lives, through ethnography or similar in-depth research methods, could lead to a less-stigmatizing, more healthful view of how obese individuals navigate their everyday lives. Such knowledge could inform more effective public health strategizing.

This more in-depth understanding may contribute invaluably to public health approaches in the future. A greater understanding would be available on what constitutes health to obese individuals, what they prioritize in terms of wellbeing, and their experiences in seeking to live well lives. This perspective would help counter potentially traumatic past experiences of dieting or healthcare discrimination; produce a more patient-centered approach more congruent to obese individuals’ lives and wishes; and help establish trusting relationships and bonds between obese individuals, health care providers, and public health officials. All these aims are essential for any collaborative health venture to proceed. Applied social scientists, particularly those with access to health practitioner and policy-related audiences, may be especially valuable in this research endeavor with respect to disseminating findings and facilitating progress. These individuals may circulate a critique to key stakeholders in health-related fields, who are in a position to effect change [69].

Specific opportunities for qualitative researchers could involve participant observation of obese persons’ interactions with the healthcare system to identify what these persons find the most challenging and most promising aspects of their care in these settings. Critical ethnography could also be conducted within existing prevention programs to identify successful, sensitive, or problematic components of existing programs. Multisited ethnography could allow obese persons to identify sites of stigmatization and places of support for undertaking self-care.

4.3. Challenges and Facilitators for Applying Ethnographic Research.

Needless to say, challenges would arise in attempting a critical ethnography of the lived experience of obese individuals. Investment in orthodox obesity understandings are entrenched among biomedical, public health, and lay audiences. Seeking to conduct and disseminate such research may prove difficult. This may be particularly evident in trying to demonstrate its value to those largely unaware of obesity stigma's pervasiveness, its effects, or who have internalized negative stereotypes of obese persons. Researchers would also have to be reflexive concerning their own biases and truly and accurately reflect the findings of research participants. In order to best stimulate change, these researchers would also have to strive to create positive, open-minded, and collaborative relationships with a variety of biomedical, public health, and lay audiences in order to exchange findings in a manner most conducive to cooperation and reform. Otherwise, researchers risk merely circulating critique among those already critical of dominant obesity discourse or incapable of initiating reform to public health interventions and messaging [69].

Facilitating the collaboration of partnerships between patient-providers and policy makers would be of great value. This would allow policy makers to learn from patients’ experiences and desires to rewrite public health messaging, programs, and clinical guidelines to better address obese persons needs and priorities in terms of healthcare system allocation; address systemic and interpersonal discrimination; and establish weight industry regulations more in keeping with respect for consumers and truth in advertising. These possibilities, along with numerous others, would allow researchers and public-health planners to learn what health priorities are pertinent to a needlessly pathologized and stigmatized population. It may open the doors to previously nonconsidered structural reforms and the provision of holistic, local health needs.

5. Conclusions

Exposure to obesity discourse is likely inescapable for obese individuals. These individuals are inundated daily with messages concerning the risk that they embody, solely by virtue of their size. These risks are thought to extend beyond their
own health, to the health of others, the sustainability of the health care system, and even society’s future. Furthermore, society deems them as culpable for their presumed poor health and for straining the health care system. Within this environment, widespread and largely acceptable weight stigma has become normalized. Exposure to such messaging renders obese individuals as a population worthy of special consideration in planning public health programs to avoid reinforcing demeaning stereotypes. What are lacking, despite this oppressive focus on obesity, are the perspectives of obese individuals themselves concerning their health, goals, wishes, and quality of life. Furthermore, limited attempts have been made to bridge communicative gaps between physicians and obese patients and to gain a more thorough view of physicians’ perceptions on obesity. Given applied social scientists’ dedication to understanding emic perspectives and expertise in in-depth exploratory methods such as ethnography, they may be particularly suited to aid in this pursuit. The outcome may be beneficial, inclusive, and nonstigmatizing public health programs from which all individuals would greatly benefit.

**Conflict of Interests**

The author declares that there is no conflict of interests regarding the publication of this paper.

**Acknowledgments**

Andrea Bombak is the recipient of funding from the Manitoba Health Research Council (MHRC) (2010–2012), Western Regional Training Centre for Health Services Research (WRTC) (2010-2011), and the Canadian Institutes of Health Research (CIHR) Doctoral Research Award (2012–2014). The author is grateful for commentary from Dr. Sharon Bruce, Dr. Moss Norman, Dr. Deborah McPhail, and Dr. Lawrence Elliot.

**References**


canadian women's discursive constructions of physical activity,”
[63] T. George and G. Rail, “Barbie meets the bindi: discursive
constructions of health among young south-asian canadian
women,” Women’s Health & Urban Life, vol. 4, no. 2, pp. 45–67,
2005.
[64] J. Wright and D. Macdonald, Eds., Young People, Physical
[65] G. Rail, “Canadian youth's discursive constructions of health in
the context of obesity discourse,” in Biopolitics and the "Obesity
Epidemic": Governing Bodies, J. Wright and V. Harwood, Eds.,
[66] J. Wright, G. O’Flynn, and D. MacDonald, “Being fit and looking
healthy: young women's and men's constructions of health and
[67] J. Wright and V. Harwood, Eds., Biopolitics and the "Obesity
[68] C. Cooper, “Fat studies: mapping the field,” Sociology Compass,
[69] G. E. Marcus, Ethnography through Thick and Thin, Princeton
[70] P. Rabinow, Anthropos Today: Reflections on Modern Equipment,
Clinical Study

Obesity Does Not Increase Mortality after Emergency Surgery

Paula Ferrada,1,2 Rahul J. Anand,2 Ajai Malhotra,2 and Michel Aboutanos2

1 Trauma, Critical Care and Emergency Surgery, Virginia Commonwealth University, West Hospital, 15th Floor East, 1200 E. Broad Street, P.O. Box 980454, Richmond, VA 23298, USA
2 Department of Surgery, Virginia Commonwealth University, Richmond, VA 23298, USA

Correspondence should be addressed to Paula Ferrada; pferrada@mcvh-vcu.edu

Received 18 October 2013; Revised 19 December 2013; Accepted 9 January 2014; Published 16 February 2014

Objective. The aim of this study is to evaluate the impact of obesity on patient outcomes after emergency surgery.

Methods. A list of all patients undergoing emergent general surgical procedures during the 12 months ending in July 2012 was obtained from the operating room log. A chart review was performed to obtain the following data: patient characteristics (age, gender, BMI, and preexisting comorbidities), indication for surgery, and outcomes (pulmonary embolus (PE), deep venous thrombosis (DVT), respiratory failure, ICU admission, wound infection, pneumonia, and mortality). Obesity was defined as a BMI over 25. Comparisons of outcomes between obese and nonobese patients were evaluated using Fischer's exact test. Predictors of mortality were evaluated using logistic regression.

Results. 341 patients were identified during the study period. 202 (59%) were obese. Both group were similar in age (48 for obese versus 47 for nonobese, P = 0.42). Obese patients had an increased incidence of diabetes, (27% versus 7%, P < 0.05), hypertension (52% versus 34%, P < 0.05), and sleep apnea (0% versus 5%, P < 0.05). There was a statistically significant increased incidence of postoperative wound infection (obese 9.9% versus nonobese 4.3%, P < 0.05) and ICU admission (obese 58% versus nonobese 42%, P = 0.01) among the obese patients. Obesity alone was not shown to be a significant risk factor for mortality.

Conclusions. A higher BMI is not an independent predictor of mortality after emergency surgery. Obese patients are at a higher risk of developing wound infections and requiring ICU admission after emergent general surgical procedure.

1. Introduction

Obesity is a growing health concern both nationally and globally [1, 2]. Obese individuals are at increased risk of having serious health problems, including hypertension, dyslipidemia, coronary artery disease, respiratory problems, and diabetes mellitus to name a few [3]. Body mass index (BMI) is the standard measure of obesity [4]. Increased BMI has been reported as a risk factor for several causes of death, including ischemic heart disease and stroke [5].

Studies evaluating the outcome of obese patients admitted to the intensive care unit (ICU) [6, 7] have shown contradictory results regarding the impact of BMI in morbidity and mortality [8, 9]. Moreover, there is a paucity of data regarding obese patients undergoing emergency surgery.

This is an initial pilot study to evaluate if patients with a higher BMI have more complications and increased mortality after emergency surgery in order to create awareness and potentially allocate resources for further research and stratification of obesity in this specific patient population. The groups were divided between obese/overweight (patients had a BMI higher than 25) and nonobese to be able to include more patients in the obese group and evaluate the impact of BMI in acute care surgery patients. We will refer to this as the obese group.

2. Methods

The study was approved by the Institutional Review Board at the Virginia Commonwealth University. A list of all patients undergoing emergency general surgical procedures (posted as less than 2 hours to the OR) during the 12 months ending in July 2012 was obtained from the operating room log. A chart review was performed to obtain data including patient age, gender, BMI, and presence of comorbidities including previous deep venous thrombosis (DVT), pulmonary embolism (PE), coronary artery disease (CAD), peripheral...
artery disease (PVD), chronic obstructive pulmonary disease (COPD), hypertension (HTN), diabetes, and obstructive sleep apnea (OSA). Data regarding patient outcomes was also collected including development of respiratory failure, PE, DVT, wound infection, and pneumonia.

Patients who underwent cardiac, trauma, and vascular procedures were removed from the database in an effort to evaluate patients who underwent emergency acute care general surgery only. All cases were listed as emergency. Of the entire group, 70% of the patients were in the emergency room before the surgical procedure took place. Surgical procedures were coded as appendectomy (n = 28), small bowel obstruction (n = 53), necrotizing soft tissue infection (n = 15), peritonitis (n = 18), bowel ischemia (n = 28), bowel perforation (n = 11), GI bleeding (n = 6), perforated diverticulitis (n = 16), leak (n = 8), and incarcerated hernia (n = 29).

The groups were divided between obese/overweight (patients had a BMI higher than 25) and nonobese to be able to include more patients in the obese group and evaluate the impact of BMI in acute care surgery patients. In other words, to prevent ourselves from missing BMI related complications, we wanted to be inclusive in our criteria.

Comparisons between groups were evaluated using Fischer’s exact test. Predictors of mortality were evaluated using logistic regression. All analyses were performed using SAS 9.3 software (Cary, NC, USA). Statistical difference was defined as a P value less than 0.05 (P < 0.05).

3. Results

341 patients were identified during the study period. 202 (59%) patients had a BMI higher than 25 kg/m². In the obese/overweight group, 112 patients (55.4%) had a BMI higher than 30 kg/m², meeting the CDC criteria for obesity. The average BMI of the obese/overweight group was 38.8 kg/m² with a range of 30.5 to 70.41, and the nonobese group had an average BMI of 23.2 kg/m² with a range from 16.5 to 29.1.

Both groups were similar in age (47.1 versus 48.6, P = 0.42). Obese/overweight patients, compared to their nonobese counterparts, had an increased incidence of diabetes (27% versus 7%, P < 0.05), hypertension (52% versus 34%, P < 0.05), and OSA (0% versus 5%, P < 0.05). See Table 1.

Although obese patients had an increased incidence of some postoperative complications, there was no statistically significant difference in the occurrence of postoperative PE (obese 1.5% versus nonobese 2.2%, P = 0.69), postoperative DVT (4.5% versus 2.2%, P = 0.37), postoperative pneumonia (3.5% versus 2.2%, P = 0.74), or respiratory failure (16.8% versus 12.2%, P = 0.28). There was a statistically significant increased incidence of postoperative wound infection (9.9% versus 4.3%, P < 0.05) and ICU admission (58% versus 42%, P < 0.05) among the obese patients. See Table 2. All of the ICU admissions were to the surgical intensive care unit with the exception of 2 patients in the nonobese group.

The database does not delineate specific reasons for ICU admission. Mortality was not higher in the obese group when compared with the non-obese group (15.8% versus 13.6%, P = 0.60).

Logistic regression was used using each variable to predict mortality. The variables included in the analysis were diabetes, hypertension, deep venous thrombosis, pulmonary emboli, obstructive sleep apnea, peripheral vascular disease, coronary artery disease, and BMI > 25. Obesity alone was not shown to be a risk factor for mortality. Patients with CAD and PVD were shown to have a significantly higher mortality after emergency surgery procedures (PVD; odds ratio = 3.674, CI = 1.131–11.933, P < 0.05; CAD; odds ratio = 2.850, CI = 1.390–5.840, P < 0.05) regardless of BMI. The population of patients with PVD and CAD was too small to compare obese and nonobese counterparts (PVD nonobese n = 9, PVD obese n = 6; CAD nonobese n = 23, CAD obese n = 34).

4. Discussion

Obesity is a growing health care problem, especially in the United States [5, 10]. This is problematic for the surgical community since obesity has been shown to increase the risk of perioperative complications [11, 12]. Obese patients require an aggressive preventive strategy to decrease the rate of adverse events [13, 14]. Patients undergoing emergency surgery are a group of patients who demand special care, due to the fact that mortality in this group is eight times that of patients undergoing elective procedures [15]. In the present study, however, obese patients undergoing emergency surgery had a higher incidence of comorbidities but were not shown to have a higher mortality rate.

The previous literature has agreed with our findings that obesity is not a risk factor for increased mortality [16]. One explanation for the lack of difference could be that obese patients are subject to heightened awareness on the part of the care teams for potential complications. However, in the current study, obese patients still developed more wound infections than nonobese counterparts.

A recent systematic review supports the association of obesity with higher mortality in trauma patients [8]. In this paper the authors highlighted the complexity of the postoperative care of obese patients resulting in longer ICU stays and increased complications. Similarly, in this study, obese patients had a higher rate of ICU admission, requiring more resources to get this population healthy and safely discharged.

5. Conclusions

In summary, in our center obese patients requiring emergency surgery did not have increased mortality. Higher mortality was associated with CAD and PVD. Attention needs to be given to factors to decrease the cardiac complications as well as postoperative soft tissue infections.
Table 1: Demographics and comorbidities.

<table>
<thead>
<tr>
<th>Study groups</th>
<th>Age</th>
<th>% of males</th>
<th>DM</th>
<th>HTN</th>
<th>DVT</th>
<th>PE</th>
<th>COPD</th>
<th>OSA</th>
<th>PVD</th>
<th>CAD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonobese (n = 139)</td>
<td>47.1</td>
<td>65.47</td>
<td>10</td>
<td>47</td>
<td>3</td>
<td>1</td>
<td>10</td>
<td>0</td>
<td>9</td>
<td>23</td>
</tr>
<tr>
<td>Obese (n = 202)</td>
<td>46.8</td>
<td>49.5</td>
<td>54</td>
<td>105</td>
<td>10</td>
<td>6</td>
<td>15</td>
<td>11</td>
<td>6</td>
<td>34</td>
</tr>
</tbody>
</table>


Table 2: Postoperative comorbidities.

<table>
<thead>
<tr>
<th>Study groups</th>
<th>Mortality</th>
<th>ICU</th>
<th>Pneumonia</th>
<th>Wound infection</th>
<th>Postoperative PE</th>
<th>Postoperative DVT</th>
<th>RF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonobese (n = 139)</td>
<td>15.80%</td>
<td>42%</td>
<td>2.20%</td>
<td>4.30%</td>
<td>2.20%</td>
<td>2.20%</td>
<td>12.20%</td>
</tr>
<tr>
<td>Obese (n = 202)</td>
<td>13.60%</td>
<td>58%</td>
<td>3.50%</td>
<td>9.95%</td>
<td>1.50%</td>
<td>4.50%</td>
<td>16.80%</td>
</tr>
</tbody>
</table>

PE: pulmonary embolism, DVT: deep venous thrombosis, and RF: respiratory failure.

Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

Authors’ Contribution

Dr. Paula Ferrada designed the study, analyzed and interpreted the data, and wrote the paper. Dr. Rahul Anand wrote the paper and analyzed the data. Dr. Ajai Malhotra wrote the paper and analyzed the data. Dr. Michel Aboutanos wrote the paper and analyzed the data.

References


