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Ready for Action: A National Study of Pediatric Healthcare Professionals’ Attitudes and Beliefs about Weight Stigma

A Dissertation Presented

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ABSTRACT

PURPOSE: To quantify pediatric healthcare professionals’ (HCPs’) attitudes and beliefs about weight stigma and levels of implicit and explicit weight bias and describe interventions that are most supported by pediatric HCPs.

SPECIFIC AIMS: 1) Determine the distribution of weight bias among pediatric HCPs and identify associations between characteristics and weight bias. 2) Examine attitudes and beliefs of pediatric HCPs about weight stigma and identify associations between characteristics and attitudes/beliefs. 3) Investigate the relationship between HCPs’ weight bias and attitudes/beliefs. 4) Identify interventions most supported by pediatric HCPs.

Framework: The Health Stigma Discrimination Framework guided this study.

DESIGN: This study utilized a cross-sectional survey of pediatric HCPs. Participants completed the Implicit Association Test (IAT), the Crandall Anti-Fat Attitudes Questionnaire (CAAQ), a researcher-designed questionnaire (BAWSQ), and demographic questions.

RESULTS: The sample exhibited a moderate implicit bias (M=0.59, SD=0.41) and explicit bias (M=38.95, SD=10.9). Participants generally agreed with BAWSQ statements and broadly supported interventions. The most-supported intervention was continuing education units (CEUs) for anti-weight bias activities (n=144, 81.36%). Implicit bias was associated with more years in practice, occupation, and age. Explicit bias was associated with practice setting. As explicit bias increased, so did agreement with BAWSQ question 1 (r=0.208, p=0.005), and disagreement with BAWSQ questions 3 and 4 (r=-0.237, p<0.005; r=-0.394, p<0.001, respectively).

CONCLUSION: Weight bias is prevalent in pediatric healthcare and pediatric HCPs are invested in approaches to reduce weight bias. Future interventions should be brief, concise, and should aim to broaden awareness of pediatric HCPs about the consequences of weight bias.

KEYWORDS: weight bias, weight stigma, obesity, pediatrics, healthcare professionals
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APPROVED DISSERTATION PROPOSAL

Introduction to the Problem and Specific Aims

Much attention has been given to the worldwide rise in obesity rates in recent decades, with a strong emphasis on childhood obesity prevention and treatment. As society continues to enforce a normative range of body sizes and shapes, those who do not meet these standards are increasingly marginalized, including children. Individuals living in society may harbor negative or discriminatory attitudes or beliefs about people in larger bodies, which is called weight bias (World Obesity Federation, 2020). Widespread weight bias results in the broader social construct of weight stigma, defined in the literature as “the social rejection and devaluation that accrues to those who do not comply with prevailing social norms of adequate body weight and shape” (Tomiyama et al., 2018).

Childhood weight stigma is on the rise, and with dire public health consequences. Children with a higher body mass index (BMI) experience greater rates of bullying (Blanco et al., 2020), depression (Wang et al., 2020), and disordered eating (Hunger & Tomiyama, 2018), as well as poorer academic outcomes (Zavodny, 2013) and lower quality healthcare (Phelan et al., 2015a) than those with lower BMIs. The specific experience of weight stigma has been positively associated with the development of metabolic syndrome (Pearl et al., 2017), weight gain and weight cycling (Tomiyama, 2014), diabetes risk, elevated cortisol, and elevated C-reactive protein levels (Wu & Berry, 2018). Notably, health care providers (HCPs) have been identified as one source of bias which contributes to childhood weight stigma (Budd et al., 2011; Halvorson et al., 2019; Yerges et al., 2021), creating an iatrogenic effect and possibly causing unintentional harm to patients.

Acknowledging this evidence, HCPs are compelled not only to minimize their own stigmatizing behavior, but to help children navigate a broadly stigmatizing world and to support
anti-weight stigma efforts. In 2017, a policy statement published by the American Academy of Pediatrics (AAP) highlighted the importance of addressing weight stigma at the healthcare level (Pont et al., 2017). However, anti-weight stigma efforts are still scant, and little policy change has occurred since. This gap suggests that pediatric HCPs may be unaware of weight stigma, its effects, or how to address it.

The lack of substantial forward progress after the 2017 policy statement by the AAP (Pont et al., 2017) indicates a need for additional inquiry and data to inform the next steps. However, progress cannot be made without first understanding stakeholder attitudes and beliefs. For example, if findings indicate that HCPs do not believe that weight stigma is a real problem that affects their patients, future studies should focus on spreading awareness and education. However, if HCPs appear generally concerned with the effects of weight stigma, the next steps may include investigating interventions to minimize or reduce one’s biases. Once I understand what HCPs think and believe about weight stigma, I will be better able to determine areas for improvement, informing future intervention studies and therefore policy advancement.

The proposed study aims to investigate pediatric HCPs’ attitudes and beliefs about weight stigma, as well as the relationship between one’s weight bias and attitudes or beliefs about weight stigma. To accomplish these objectives, I will conduct the following specific aims:

**Specific Aim 1:** To determine the distribution of weight bias (stigma practices) among a sample of pediatric HCPs. Explicit weight bias will be measured via the Crandall Anti-Fat Attitude Questionnaire (CAAQ) (Crandall, 1994), and implicit weight bias will be measured with the Implicit Associations Test (IAT) (Greenwald et al., 2009).

**Aim 1.1:** To identify associations between participant characteristics and weight bias.
Specific Aim 2: To examine attitudes and beliefs of pediatric healthcare providers about the drivers and facilitators of weight stigma. A researcher-developed questionnaire will be used to identify potential drivers and facilitators of stigma.

Aim 2.1: To identify associations between participant characteristics and attitudes/beliefs about weight stigma.

Specific Aim 3: To investigate the relationship between HCP’s implicit and explicit weight bias (Aim 1) and their attitudes and beliefs about weight stigma (Aim 2). It is hypothesized that HCPs with greater weight bias will be less likely to agree with questionnaire statements as these participants likely do not feel invested in addressing any weight bias that they may hold.

Specific Aim 4: To identify anti-weight stigma interventions most supported by pediatric HCPs.

Without understanding the specific reason for the lack of improvement thus far, researchers and policymakers cannot sufficiently design interventions to mitigate weight stigma. This study will provide researchers and policymakers with critical information about stakeholder attitudes and beliefs, helping to formulate a path forward.

Theoretical Framework

I used the Health Stigma and Discrimination Framework (Stangl et al., 2019) as the theoretical framework which supports the design of this study. This framework describes the process of stigmatization as it occurs at multiple levels (policy, community, organizational, interpersonal, and individual). Notably, the framework does not distinguish between the “stigmatizer” and the “stigmatized”, instead describing the entire process of stigmatization as it unfolds from beginning to end.

Stangl et al. (2019) describe several integrant domains which influence the presence and/or effects of stigma (Figure 1). The first of these domains include drivers, which are specific
beliefs or actions that prompt stigmatizing attitudes (e.g., social judgment), and facilitators, which are structures that support the existence of stigma (e.g., cultural and social norms). The existence of drivers and facilitators precedes the second domain, stigma “marking,” which is the moment when an individual and group become recipients of stigma. Multiple different manifestations may then result, which are described by the third domain of the framework. These may be experiences, such as the experience of weight-based discrimination by a higher-weight person, and/or practices, such as the belief in stereotypes by a stigmatizing group. Manifestations then result in a wide variety of outcomes, including some within the stigmatized group of interest, such as access to healthcare, and those within the broader sociopolitical context, such as stigmatizing laws or policies.

This framework describes the entire process of stigmatization, but for this study I am primarily interested in the drivers, facilitators, and stigma practices. It is important to understand that the existence and effects of these domains influence not just individual health outcomes, but also structural, institutional, and social outcomes and behaviors further downstream.

The framework also considers the effect of intersectionality in the development and experience of stigma, including race, gender, sexual orientation, occupation, and class-related stigmas. The importance of considering intersecting identities in nursing and other health professions has been discussed in the literature (Kelly, 2009; Van Herk et al., 2011). In the case of health condition-related stigma, it is essential to consider other aspects of identity for both the stigmatizer and the stigmatized, and the ways in which they may “mark” the individual with additional stigmas, or may provide them privileges that moderate the effect of health condition-related stigma (Stangl et al., 2019). For example, a person at a higher weight with other marginalized identities (e.g., race/ethnicity or socioeconomic status) may be marked by stigma
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related to any or all of these identities but may receive certain societal advantages based on other parts of their identity (e.g., gender or sexual orientation).

In Specific Aim 1 of this study, I plan to investigate bias in pediatric HCPs. Stangl et al. (2019) describe the existence of biased attitudes as both a driver and as a manifestation of stigma, which is a cyclic process. In specific aim 2, I will investigate pediatric HCPs’ attitudes and beliefs about weight stigma, which may further facilitate stigma or provide a barrier to the cyclic process. In specific aim 3, I will investigate the relationship between the existence of stigmatizing attitudes (specific aim 1) and HCP attitudes and beliefs about weight stigma (specific aim 2). Finally, in specific aim 4, I will identify anti-weight stigma interventions most supported by pediatric HCPs, which will create a path to eventually study outcomes and their health and social impacts. If the presence of stigmatizing attitudes incites the facilitation of further stigma, as described by Stangl et al., it can be hypothesized that those with greater stigmatizing attitudes (specific aim 1) will be less likely to report that stigma is a problem for their patients (specific aim 2). The application of this framework to weight stigma will not only bring a new perspective to the weight stigma literature but will help identify areas that may be fruitful for future intervention research. Stangl et al. (2019) describe this as a critical step in the reduction of stigma.
Definition and Origins of Weight Stigma

Weight stigma is defined as “the social rejection and devaluation that accrues to those who do not comply with prevailing social norms of adequate body weight and shape” (Tomiyama et al., 2018). As described by the Health Stigma and Discrimination Framework, these beliefs may manifest as stereotyping, prejudice, and discrimination, or may be internalized by the person experiencing stigma, leading to a myriad of harmful outcomes at individual and societal levels (Stangl et al., 2019). This phenomenon is also described in the literature as
“weight bias internalization” ((Durso & Latner, 2008; Puhl et al., 2018). Individuals may encounter weight stigma via their peers, educators, parents and family members, the media, or the healthcare system (Pont et al., 2017). The drivers of weight stigma include three main fallacies: (1) body size is controllable, (2) sustained weight loss is possible and sustainable, and (3) greater weight stigma will inspire weight loss. However, none of these widespread assumptions are empirically supported.

**Fallacy 1: Body Size is Controllable**

Weight stigma is rooted in the pervasive belief that body size is controllable and can be attributed to a set of personal choices (DeJong, 1980, 1993; Musher-Eizenman et al., 2004). Individuals at higher weights are perceived as lacking willpower and having failed at engaging in health behaviors, which have been linked to one’s morality (Crandall & Schiffhauer, 1998; DeJong, 1980). However, decades of research have refuted these assumptions. Today’s science indicates that body size is complex and multifaceted. Literature has identified influences such as genetics (Frayling et al., 2007; Willyard, 2014), hormones and metabolism (Lejawa et al., 2021; Michałowska et al., 2021), and the built environment (the sociocultural factors that affect lifestyle, such as unsafe walking areas in neighborhoods) (Booth et al., 2005; Puhl & Heuer, 2010). The 2021 edition of “The State of Obesity,” an annual report published by Trust for America’s Health, discussed the social and structural inequities that contribute to one’s body size. The report cites “historical, social, economic, physical, and policy contexts” as having major roles in the development and persistence of obesity, which affect the daily life of those who are subject to them. Thus, body size is not as controllable as is widely believed, creating a pervasive yet inaccurate perception of one’s body size as a “choice” (Crandall & Schiffhauer, 1998).
Fallacy 2: Long-Term Weight Loss is Sustainable

Perhaps the most widely accepted claim about body size is that a person who is motivated and has the resources can lose weight through effective lifestyle change. Support is also lacking for this claim. Though numerous weight loss interventions show efficacy in the short term, there is limited data to support the sustainability of weight loss interventions beyond five years (Bacon & Aphramor, 2011; Hall & Kahan, 2018). One of the largest studies of long-term weight loss intervention, the Women’s Health Initiative Dietary Modification Trial, found that at a 7.5-year follow-up, the mean weight loss among intervention group participants was 0.1kg, regarded as a clinically insignificant change (Howard et al., 2006). Zenténius et al. (2018) studied Swedish participants who self-reported weight loss attempts over ten years and found that the average weight increased by 2.1% over the study period. Mann et al. (2007) and Shuval et al. (2021) reviewed evidence specifically on the impact of diet changes on weight loss, both concluding that there is little empirical evidence that diet and lifestyle changes contribute to long-term weight loss and/or health benefits. Long-term outcomes remain poor for more lasting surgical interventions. In a 2021 study that investigated 10-year follow-up after sleeve gastrectomy, nearly two-thirds (59%) of patients had regained all the weight that was lost post-procedure (Hauters et al., 2021).

Fallacy 3: Weight Stigma Leads to Weight Loss

Finally, it is commonly believed that if people of higher weights experience enough inconvenience, shame, or discouragement due to their body size, they will feel motivated to make lifestyle changes that result in weight loss (Stuber et al., 2008). However, this assumption is not supported in the literature. Not only does mounting evidence suggest that body size is minimally controllable as discussed above (Puhl & Heuer, 2010), but body shame and weight
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stigma have been shown to have the opposite effect from that which is intended. Greater weight stigma is in fact associated with less motivation to exercise (Vartanian & Shaprow, 2008), greater incidence of binge eating disorder (Friedman et al., 2008), and higher BMI (Puhl & Brownell, 2006). Furthermore, this assumption is not supported by current national trends. If the presence of weight stigma were to motivate weight loss, we would expect a subsequent decrease in obesity rates alongside an increase in stigmatizing attitudes. However, the opposite association occurs: as the prevalence of weight stigma continues to increase (Brown et al., 2022) so do obesity rates (Bryan et al., 2021).

Consequences of the Stigmatization of Children Due to Body Size

As described, weight stigma has detrimental effects on all of those who are subject to it, but the effects are especially deleterious in children as they are concurrently developing their own self-image. These effects can include adverse social, emotional, and physical outcomes. Compared to their peers, children who experience greater weight stigma have generally worse mental health, including greater levels of depression and poor self-esteem (Bucchianeri et al., 2014), increased loneliness and social anxiety (Juvonen et al., 2017), and are more likely to engage in substance use and self-harm behaviors (Bucchianeri et al., 2014). Academically, greater weight stigma has been shown to decrease children’s working memory (Guardabassi & Tomasetto, 2020) and increase school avoidance (Puhl & Luedicke, 2012).

As discussed earlier, weight stigma often has the opposite consequence than is intended: an increase in weight gain or greater BMI. As Schvey et al. (2019) and Hübner et al. (2016) noted, the same phenomena occur in pediatric patients. Both studies noted that children who experienced weight stigma or weight-related teasing were less likely to lose weight and had greater BMIs over time. Similarly, weight stigma has been strongly correlated with disordered
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eating behaviors. A 2012 study noted that children who experienced weight-related teasing were five times more likely to engage in unhealthy weight control behaviors (UWCBs) than those who had not (Madowitz et al., 2012). The same trend was noted by Libbey et al. (2008), who found a positive correlation between the amount of weight-based stigmatization and the likelihood of adolescents engaging in UWCBs and binge eating behavior.

Prevalence of Weight Bias/Anti-Fat Attitudes Among Pediatric HCPs

Several studies have attempted to quantify the prevalence of weight stigma among pediatric HCPs with mixed findings. In general, evidence suggests that stigmatizing or anti-fat attitudes are prevalent among those who treat children. Sabin et al. (2015) found a strong implicit pro-thin bias within their sample (N=75), with as many as 91% of clinicians sampled showing some degree of pro-thin bias. Halvorson et al. (2019) found that 71% of providers and nurses sampled (N=28) exhibited either moderate or strong implicit weight bias, and Rincon-Subtirelu (2017) reported a moderate to strong preference for thin people in general. Thompson et al. (2021) found that 25-40% of their participants (N=285) were frustrated with obese patients, and 47% of participants felt that patients with obesity would be non-compliant with recommendations. Hauff et al., (2020) found that 27.4% of nurse practitioners who were observed by nurse practitioner students (N=225) engaged in biased behaviors. Though the potential bias held by students themselves may compromise some internal validity of the study, this finding is significant as it is the only one to measure weight-stigmatizing behaviors within real-world interactions.

The variability of these findings suggests that weight stigma is not only widely prevalent in pediatric healthcare but may be difficult to measure reliably. Later sections of this proposal will discuss challenges around the measurement of weight stigma.
Weight Stigma Reduction Efforts

Efforts to reduce weight stigma are variable in both methodology and rates of success. Perhaps the largest investigation of interventions to reduce weight stigma was in a 2014 meta-analysis which included 29 studies (Lee et al., 2014). In general, Lee and colleagues observed a small to moderate change in both the attitudes and beliefs of those who partook in interventions. The authors also noted that interventions were widely variable in success, with significant heterogeneity among findings. Effect sizes were not moderated by the focus of the intervention, study population (student, professional, or general adult), or by publication type (journal article or dissertation). These findings indicate that weight stigma reduction interventions may be fruitful, but that no single approach stands out as most effective, and that an assortment of interventions may be best.

Studies conducted after the meta-analysis by Lee et al. (2014) have noted similarly modest, yet positive findings among a variety of intervention types. Success has been noted with interventions such as an educational encounter with a large-bodied standardized patient (Kushner et al., 2014), and interventions that center genetics as a determinator of body size (Hilbert, 2016). However, recent findings echo the sentiments of Lee and colleagues: that any one intervention likely is not sufficient to overcome weight stigma. Berry and Myre (2021) observed that the use of inclusive images alone was not sufficient to change weight stigmatizing attitudes and beliefs, but concluded that such interventions may be useful as one layer in a larger strategy.

Phelan et al. (2015) also discussed the complex nature of weight-based attitudes and beliefs, finding that medical students’ implicit weight bias decreased throughout medical school, while explicit weight bias increased overall. Of note, the authors concluded that positive interactions with large-bodied patients and faculty role modeling were important factors in the
development and mitigation of weight bias. This conclusion was in agreement with previous literature which showed a successful reduction in weight bias when the social consensus about people in large bodies was altered (Puhl et al., 2005).

Measurement of Weight Bias

The measurement of weight bias is an ongoing challenge and may account for some variation in study findings. Studies that measure both implicit and explicit bias have noted contrasting results between the two – often finding a high prevalence of implicit biases and a lower prevalence of explicit biases (Halvorson et al., 2019; Sabin et al., 2015). This may suggest (1) a social desirability bias, (2) that providers possess a cognitive understanding of the complexities of body size, but still hold implicit negative biases toward people of larger sizes, or (3) that bias is difficult to reliably measure.

It is likely that all three of these factors have a role in the variation of study findings, but specific attention should be paid to the reliability of implicit bias measurement tools, as they are commonly used and should be interpreted correctly. The tool used most to measure implicit bias is the Implicit Associations Test (IAT) (Greenwald et al., 1998). The IAT has drawn scrutiny, as investigations into its reliability and validity have shown questionable results (Azar, 2008; Han et al., 2010; Nguyen, 2019). However, the IAT continues to be used consistently throughout bias and stigma literature despite this uncertainty, as it has shown a modest ability to predict the behavior of subjects within a meta-analysis (Greenwald et al., 2009).

The most responsible interpretation of implicit and explicit bias instruments is to interpret the two as distinct constructs. This conclusion is supported by a meta-analysis of the relationship between implicit and explicit attitudes, which noted that the two concepts are related, but cannot be considered the same (Hofmann et al., 2005). Later findings have agreed with that of Hofmann...
et al. (Nosek & Smyth, 2007), indicating that measures of implicit bias should be considered alongside measures of explicit bias and that the presence of one does not indicate the presence or absence of the other.

**Significance**

The most salient call for action to address childhood weight stigma in healthcare was in a 2017 position statement from the AAP (Pont et al., 2017). This report discusses the importance of overcoming weight stigma in healthcare and offers several clinical, educational, and policy recommendations to do so. This sentiment was reinforced by a 2020 joint international consensus statement that called for an end to weight stigma and activism among HCPs to move this work forward (Rubino et al., 2020). However, little change has been noted in the literature since these seminal publications, begging the question “are HCPs invested in stigma reduction efforts?”

The proposed study will investigate whether HCPs are interested in or concerned about the concept of weight stigma, as well as in reducing it or mitigating its effects. Understanding the current attitudes and beliefs of HCPs about weight stigma will 1) help to ensure that the education being offered to professionals and trainees is at an appropriate level and 2) allow for more targeted weight stigma reduction interventions.

**Methods**

**Design**

The proposed study will be a cross-sectional study involving a survey of pediatric HCPs to better understand their attitudes and beliefs about weight stigma. A cross-sectional design was selected as it is a preferred methodology to study attitudes and beliefs (Fowler, 2014), and may help me to gain insights into a large sample of people within a brief data collection period. The cross-sectional nature also mitigates the potential for attrition that results from multiple
encounters. The study will include a consent process, the completion of two instruments, a brief researcher-designed questionnaire, and demographic questions.

**Sample and Setting**

The study sample will be a convenience sample of pediatric HCPs who are licensed and currently practicing as physicians, physician assistants, licensed practical nurses, registered nurses, or advanced practice nurses. I chose these professions since they are the roles that maintain the greatest level of contact with pediatric patients, and likely have the greatest influence on their patients.

Inclusion criteria will include: currently licensed as a physician, resident physician, physician assistant, licensed practical nurse, registered nurse, or advanced practice nurse; provides care to children ages 18 and under; and has access to desktop or laptop computer. Exclusion criteria will include: those who do not currently hold a position in their discipline (unemployed, retired, or not currently practicing), students (with the exception of resident physicians), and those who treat children for less than 50% of their clinical hours.

Resident physicians will be included as practicing physicians for the purposes of this study, as they hold decision-making authority and may lead patient care. Trainees completing other clinical learning requirements, such as physician assistant students, nurse practitioner students, and nursing students, will not be included, as they do not routinely make independent clinical decisions that impact patient care. Furthermore, this study aims to describe the attitudes and beliefs of those currently practicing to inform next steps for intervention. Thus, students will not be representative of attitudes and beliefs among the current pediatric healthcare workforce. Those who treat children for fewer than 50% of their clinical hours are excluded as this study aims to gain insight into childhood weight stigma, and providers who see only a minority of
children will likely be unable to isolate their experiences with children to respond only about these experiences.

**Sample Size**

The target sample size for this study is 85 participants. The target N was determined for Aim 3 with the goal of detecting a correlation between weight bias (Aim 1) and attitudes and beliefs about weight stigma (Aim 2). Cohen’s power analysis was used to calculate the target sample size (1988, p. 134, 1992). The following values were selected: $\alpha = 0.05$, $\beta = 0.20$, effect size ($q$) = 0.30. This target sample size will likely also allow sufficient precision to estimate mean scores on each of the three variables (CAAQ, IAT, and questionnaire responses).

**Recruitment**

Participants will be recruited via two primary modalities: (1) two consecutive email campaigns to professional organizations of which potential participants may be members and (2) direct outreach to hospitals and community health organizations. Emails will be prioritized as the initial method of recruitment as this strategy will likely yield greater variability among participants in terms of geographic location, type of care provided, clinical interest, experience level, and source of recruitment.

I will contact physicians, physician assistants, and nurse practitioners via email by contracting with Medical Marketing Service, Inc., a communications service that markets to HCPs for advertising, career recruitment, and recruitment for research studies (MMS, 2022). As this organization does not communicate directly with those working as nurses, recruitment of this population will be done via outreach to the Society for Pediatric Nurses (SPN), a national professional organization for nurses who work in pediatrics. Randomly selected subscribers to these email services will receive an email with an invitation to participate in the study that
contains a link to the data collection form. At the end of the form, participants will be invited to share a link to the study with interested colleagues via a copy-and-paste link, ideally snowballing recruitment.

If the target sample size is unattainable via national email distributions, I will reach out directly to local hospitals and community health organizations and ask to have the study information forwarded to providers and nurses. The email sent to prospective participants at these organizations will be identical to the email distributed nationally. Organizations will be contacted up to three times to remind managers to forward information to potential participants but will not be contacted beyond three attempts so as not to burden or persuade participants to join against their wishes. Managers or representatives from hospitals or healthcare centers whom I contact may declare that they wish to not have their organization participate, and if so, they will no longer be contacted.

Recruitment, enrollment, the consent process, and data collection will all occur electronically on a desktop or laptop computer. In the recruitment email, participants will be provided with information detailing the objectives and procedures of the study.

**Measures**

Two different measures were selected to measure both implicit and explicit weight bias, which are widely regarded as separate constructs (Halvorson et al., 2019; Sabin et al., 2015). These two instruments will be used to accomplish aim 1, measuring participants’ weight bias. The Project Implicit Weight Bias Implicit Associations Test (IAT) (Greenwald et al., 2009) will be used to measure implicit biases, and the Crandall Anti-Fat Attitude Questionnaire (CAAQ) (Crandall, 1994) will be used to measure explicit biases. Each of these measures has been previously validated for use among HCPs (Halvorson et al., 2019; Ip et al., 2013; McLean et al.,
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2021). To accomplish aim 2, a short researcher-designed questionnaire was developed which aims to determine participants’ attitudes and beliefs about weight stigma.

**Project Implicit Weight Bias Implicit Associations Test (IAT)**

The IAT measures the degree to which participants associate opposing concepts (fat vs. thin) with opposing qualities (good vs. bad). It has been adapted into multiple formats (paper, keyboard/software-based, and electronic), though each format shares the same basic set of principles: Participants complete a series of word association tasks and researchers measure the speed at which they can create an association. The premise of the tool is that participants will more quickly be able to sort stimuli that they find congruent (e.g. insect and bad, flower and good) than stimuli that they find incongruent (e.g. insect and good, flower and bad) (Greenwald et al., 1998, 2003).

Overall, evidence has shown varying predictive validity and reliability of the IAT, but the measure has been the subject of some criticism (Azar, 2008; Han et al., 2010). A 2020 meta-analysis reported an average test-retest reliability of $r = 0.50$ and an average internal consistency of $\alpha = 0.80$ (Greenwald & Lai, 2020). Though these findings show only moderate validity and reliability, it is believed that when the IAT is used to assess correlations of its scores with other measures or characteristics, and not to diagnose an individual with a certain level of implicit bias, these values are acceptable (Greenwald et al., 2022). Given that this is my intended use of the measure and that the IAT is the prevailing measure of implicit bias in the study of weight bias, I determined that the potential limitations of the instrument’s validity and reliability were outweighed by the benefit of the ability to compare results to other studies in this area.

For this study, I will be using the traditional timed-response word association IAT. In this version, participants complete seven word association “blocks” and key in responses with their
computer keyboard. Blocks 1, 2, and 5 are practice trials, and Blocks 3, 4, 6, and 7 are used to score the measure. Since scoring the instrument requires precise timing of responses, traditional survey software cannot support the use of the IAT. I will be employing Iatgen, a publicly available software platform that allows researchers to input the timed-response format IAT into Qualtrics survey software (Carpenter et al., 2019). In trials, this mode of delivery showed good internal consistency ($\alpha = 0.85$) (Carpenter et al., 2019).

**Crandall Anti-Fat Attitude Questionnaire (CAAQ)**

The Crandall Anti-Fat Attitude Questionnaire (CAAQ) will be used to measure explicit biases. The CAAQ asks about participant agreement with 13 different statements which indicate their overt attitudes toward fat people on a 7-point Likert scale ranging from “strongly agree” to “strongly disagree.” The CAAQ has shown satisfactory validity (Cronbach’s $\alpha = 0.81$) (Robstad et al., 2019) and reliability ($\alpha = 0.86$) (McLean et al., 2021) in HCP populations. The CAAQ is included in Appendix A.

**Attitudes and Beliefs About Weight Stigma Questionnaire**

The researcher-developed Attitudes and Beliefs About Weight Stigma Questionnaire asks participants to evaluate four statements about weight stigma using a 4-point Likert scale, ranging from negative attitudes toward weight stigma (e.g. “strongly disagree”) to positive attitudes toward weight stigma (e.g. “strongly agree”). These statements are informed components of Stangl et al.’s Health Stigma and Discrimination Framework (2019). Appendix B describes the four statements and their linkages to the study framework. After responding to the four statements, participants will be asked to choose from a list of potential anti-stigma interventions to indicate which, if any, they would support. Responses to the questionnaire will be examined on an individual item basis unless internal consistency is shown among statements. Prior to data
collection, the questionnaire will undergo cognitive testing amongst a group of readers who are not eligible for the study but share some characteristics with the target study population. Readers will assess the questionnaire for readability, clarity, and usability.

**Demographic Form**

A demographic questionnaire will be used to collect data to describe the sample, examine the intersectionality of weight bias with other factors, and determine the generalizability of the study. Data will be collected on age, gender, occupation (physician, physician assistant, advanced practice nurse, licensed practical nurse, registered nurse), race/ethnicity, state of licensure to practice, clinical practice setting (inpatient vs. outpatient), specialty or subspecialty (if applicable), number of years in practice, and whether participants report having struggled with their own weight. The demographic form is available in Appendix C.

**Procedures**

After obtaining IRB approval, I will contract with the organizations listed above to distribute email invitations to potential study participants. The invitation will briefly describe the study and the inclusion criteria (Appendix D). Interested respondents can either click on or type a hyperlink into their browser to participate in the study. The first page of the survey will explain the purpose of the study, procedures necessary, time commitment, and the potential of minimal risk. My contact information will be provided should anyone have questions about the study or their rights as a research subject. Subjects will be informed that their participation is voluntary and that they can withdraw from the study at any time. Clicking on the Consent button (link) will bring them to a secure website that contains the two instruments, the questionnaire, followed by the demographic form.
Of the instruments, the IAT will be administered first to avoid a potential priming effect, as it was theorized that participants may have lower levels of implicit weight bias after answering questions discussing explicit weight bias. After the IAT, the CAAQ will be administered followed by the Attitudes and Beliefs About Weight Stigma Questionnaire. Finally, participants will be prompted to answer demographic questions.

**Data management**

Surveys will be accessed and data will be collected via Qualtrics, a secure software platform. No identifiable information will be requested, and all subjects will be assigned a unique ID number. The anticipated time to complete all forms is 15-20 minutes. All data will be collected anonymously and kept confidential for research purposes on a secure drive at UMass Chan Medical School. Recruitment information will also be stored on this drive in a separate document and will be kept separately from study data. This drive will only be accessible to me and my dissertation committee and will be accessible for three years, after which it will be deleted. Finally, data analysis will be completed using SAS software, Version 9.4 (SAS Institute, Cary, NC).

**Analysis**

Data analysis will occur in SAS software with close supervision by Dr. Sybil Crawford. The initial review will search for missing values, outliers, or obvious errors. An analysis will be conducted to determine the scope of missing data. Complete case analysis will be used to account for missing data, therefore participants with significant missing data (fewer than two study components completed) will be excluded from the analysis. Any subset of participants with significant missing data will be closely examined for differences from the remaining study sample. Once raw data has been reviewed for missingness, outliers, and obvious errors, the
analysis will begin with demographic information. Demographic data will be assessed with descriptive statistics. The mean, median, and standard deviation will be calculated for continuous variables, while categorical variables will be assessed with frequency data. Distributions will also be assessed for skewness and normality.

Two variables will be considered to investigate aim 1. Participants will receive a numeric composite score on the CAAQ, which ranges from 13-91, with lower scores indicating greater explicit weight bias. Scoring of the IAT will follow the D-score approach, developed by Greenwald et al. (2003) and validated by Lane et al. (2007). In this procedure, a D-score is calculated for each participant, with negative scores (<0) indicating a negative implicit association between the two constructs of interest (fat/thin and good/bad), and positive scores (>0) indicating a positive implicit association. Lower D-scores indicate greater implicit weight bias. The relationship between the two components of this aim (participants’ CAAQ scores and their IAT scores) will be modeled with ANCOVA, with demographic variables included as covariates.

To accomplish aim 2, I will examine responses to the Attitudes and Beliefs About Weight Stigma Questionnaire. Analysis of this aim will depend on whether there is adequate internal consistency amongst individual statements. If there is adequate internal consistency, total scores will be quantified on a 5-20 scale, with lower scores indicating more agreement with questionnaire statements. These scores will then be displayed and contextualized using descriptive statistics and correlations among questionnaire responses and demographic variables. If Cronbach’s alpha is low, I will examine the four items as individual constructs. Analysis of the fifth questionnaire item (“Please select from the following list of interventions to address weight bias in healthcare to indicate which you would support, if any”) will occur via frequency data.
about the list of responses, satisfying aim 4. Any qualitative responses given to the “other” field of this question will be addressed based on the number that are received. If there are few, they will be listed as individual results; if there are a large number of qualitative responses, they will be organized, coded, and presented as themes in order to be more easily represented.

Aim 3 will be addressed via a series of analyses that compare results from the prior two aims; I will examine the associations of implicit and explicit weight bias (measured for Aim 1) with attitudes (questionnaire responses, measured for Aim 2). If all variables are normally distributed, Pearson correlation coefficients will be used to estimate correlations. If there is not a normal distribution, Spearman’s rank correlation coefficient will be the nonparametric test of choice. Since I hypothesize that these associations may be altered by one’s specialty or subspecialty, or whether they have struggled with their own weight, I will examine associations for effect modification with these variables.

**Expected Outcomes and Implications**

With multiple aims, the implications of the proposed study are potentially wide-ranging. These may include intervention studies, policies, or recommendations. Specifically, if findings suggest that weight bias is prevalent among HCPs, researchers should next investigate potential interventions and their effectiveness in reducing bias in this population. If there is a consensus amongst participants about what interventions would garner their support, policymakers may use these findings as background for policy development. If findings indicate that HCPs are not concerned about the effects of weight stigma, researchers may focus future efforts on educating the healthcare workforce about its deleterious effects.

**Limitations**
The proposed study has some limitations. The IAT has drawn some criticism for its validity and reliability in previous studies. The instrument was selected despite this scrutiny, as it is the prevailing measure used in studies of implicit bias and will allow for more contextualization of the results of this study. Additionally, there has been recent investigation into best practices, and recommendations for high-quality use of the IAT have been published (Greenwald et al., 2022). I will pay close attention to these recommendations and will implement each of these best practices that are applicable to my study. Additionally, this study utilizes a researcher-developed questionnaire that has not been used in previous research, meaning questions have not been evaluated for quality and clarity. To mitigate this, the questionnaire will be piloted amongst a group of people who are not eligible for the study but are comparable to the target study population (e.g. HCPs who do not meet the inclusion criteria) and adjusted based on their feedback.

**Anticipated Challenges**

The two greatest challenges anticipated with this study are difficulty with recruitment and non-completion of all study components. Challenges with recruitment are anticipated based on the study population, who may have many commitments and receive many emails per day, making it difficult to reach them via email. For this reason, a multistep recruitment approach was designed which includes alternate recruitment methods if needed. Non-completion of the entire survey may also be of concern, given that the study includes four components. I have taken extra care to minimize participant burden by streamlining questionnaire questions and choosing instruments that are relatively brief. Additionally, I believe that the target population may feel a sense of professional responsibility to participate in research and may therefore be more apt to complete the study requirements.
Conclusion

Weight stigma has notable and tangible consequences for the children whom it affects. HCPs are aptly positioned to minimize their own biases and to help their patients navigate a broadly stigmatizing world. The proposed study aims to investigate pediatric HCPs’ attitudes and beliefs about weight stigma, as well as the relationship between one’s weight bias and their attitudes or beliefs about weight stigma. Understanding HCPs’ attitudes and beliefs will better allow researchers to formulate next steps and design interventions that aim to reduce the weight bias of HCPs and the general burden of weight stigma toward children.
References


Hauters, P., Dubart, J.-W., Desmet, J., Degolla, R., Roumain, M., & Malvaux, P. (2021). Ten-


https://doi.org/10.1080/15374416.2016.1188703

https://doi.org/10.1097/ANS.0b013e3181a3b3fc


ATTITUDES AND BELIEFS ABOUT WEIGHT STIGMA


Pont, S. J., Puhl, R., Cook, S. R., Slusser, W., SECTION ON OBESITY, & OBESITY


crosscutting framework to inform research, intervention development, and policy on health-related stigmas. *BMC Medicine, 17*(1), 31. https://doi.org/10.1186/s12916-019-1271-3


SUMMARY OF CHANGES FROM PROPOSAL

As planned, the Beliefs About Weight Stigma Questionnaire (BAWSQ) was piloted with a group of participants who were similar to the target population. Proposed statements were edited based on their feedback. Statements 1 and 2 were edited, and were employed as follows:

- Final Statement 1: “Every healthcare provider has at least some bias against heavier patients.”
- Final Statement 2: “Weight stigma is a problem that negatively affects the patients I care for.”

Statements 3 and 4 remained the same after piloting.

During data collection, a modification was submitted to and approved by the UMass Chan IRB. This modification allowed for additional modes of recruitment (social media, word of mouth, and targeted outreach).

After data collection, Cronbach’s alpha was run to assess internal consistency of questionnaire items. Cronbach’s alpha was low (α = 0.55), and thus the four questionnaire items were assessed as individual constructs. Cronbach’s alpha was also run on the 13-items of the Crandall Anti-Fat Attitudes Questionnaire (CAAQ) and was sufficient (α = 0.81). Thus, the CAAQ was aggregated and used as a single instrument.
Conflicts of Interest & Funding

- I have no conflicts of interest to declare
- This work was supported by the Paul Emsberger Research Scholarship from the National Association to Advance Fat Acceptance
Introduction

Weight bias and stigma toward children

- Some individuals harbor negative or discriminatory attitudes or beliefs about children in larger bodies (weight bias)
- Widespread weight bias results in the broader social construct of weight stigma
  - Defined as “the social rejection and devaluation that accrues to those who do not comply with prevailing social norms of adequate body weight and shape” (Tomiyama et al., 2018).
Misconceptions contribute to weight bias and stigma

- Common misconceptions:
  - Body size is controllable
  - Long-term weight loss is sustainable
  - Greater weight stigma leads to weight loss

- Current evidence:
  - Body size is complex and multifaceted - influenced by genetics, hormones and metabolism (Lohi et al., 2021; Michalski et al., 2021), and the built environment (Booth et al., 2009; Puhl & Heuer, 2010).
  - Limited data to support the sustainability of weight loss interventions beyond five years (Bacon & Agrawal, 2011; Hall & Kahan, 2010).
  - Greater weight stigma is associated with less motivation to exercise (Vartanian & Shaprow, 2008), greater incidence of binge eating disorder (Friedman et al., 2008), and higher BMI (Puhl & Brownell, 2006).

---

Childhood weight stigma contributes to disordered eating, greater body size, academic challenges, and mental health concerns.

**Consequences of childhood weight stigma**

<table>
<thead>
<tr>
<th>Mental health</th>
<th>Academic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greater rates of depression, poor self esteem, self-harm, substance use (Hudson et al., 2014)</td>
<td>Decrease in working memory (Guardabassi &amp; Cardwell, 2003)</td>
</tr>
<tr>
<td>Greater rates of loneliness and social anxiety (Juvonen et al., 2017)</td>
<td>Greater school avoidance (Puhl &amp; Luedicke, 2012)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Body size</th>
<th>Eating behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greater BMI (Zibner et al., 2018; Schvey et al., 2019)</td>
<td>Increase in disordered weight control behaviors (DWCBS) (Libbey et al., 2008; Maddowitz et al., 2012)</td>
</tr>
</tbody>
</table>
Gaps in the literature provide directions for future research

- Multiple calls have been made to address weight bias in pediatric healthcare with little to no action
- Weight bias remains highly prevalent in pediatric healthcare (Sabin et al., 2015; Halvorson et al., 2019)

**Purpose:** To quantify healthcare professionals’ attitudes and beliefs about weight stigma and to determine weight stigma reduction interventions that are most supported by pediatric healthcare professionals

**Specific Aims**

- **Specific Aim 1:** Determine the distribution of weight bias among a sample of pediatric HCPs
  - **1.1:** Identify associations between participant characteristics and weight bias

- **Specific Aim 2:** Examine attitudes and beliefs of pediatric healthcare providers about the drivers and facilitators of weight stigma
  - **2.1:** Identify associations between participant characteristics and attitudes/beliefs about weight stigma

- **Specific Aim 3:** Investigate the relationship between HCPs’ weight bias (Aim 1) and their attitudes and beliefs about weight stigma (Aim 2)

- **Specific Aim 4:** Identify anti-weight stigma interventions most supported by pediatric HCPs
Theoretical Framework

The Health Stigma and Discrimination Framework (HSDF)
(Stangi et al., 2019)

- Stigma is a cyclical process that is affected by both the stigmatizer and the stigmatized individual/group
- Aspects of one's identity intersect to alter the experience of stigma

Methods
Sample and Setting

- Cross-sectional survey of US-based HCPs
- Recruitment:
  - Email distribution lists, social media advertising, targeted outreach
- Target sample = 85 participants
  - \( \alpha = 0.05, \beta = 0.20, \) and effect size \( (\eta) = 0.30 \)

<table>
<thead>
<tr>
<th>Inclusion Criteria</th>
<th>Exclusion Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physicians, physician assistants, nurses, advanced practice nurses</td>
<td>Unemployed, retired, not currently practicing</td>
</tr>
<tr>
<td>Provide care to children 18 and under</td>
<td>Students (except for residents)</td>
</tr>
<tr>
<td>Have access to a desktop or laptop computer</td>
<td>Those who treat children for &lt;50% of clinical hours</td>
</tr>
</tbody>
</table>

Measures and Participant Flow

- Implicit Association Test (IAT)
- Crandall Anti-Fat Attitudes Questionnaire (CAAQ)
- Beliefs About Weight Stigma Questionnaire (BAWSQ)
- Demographic Information
Analyses

Aim 1
- Descriptive statistics
- Pearson's correlation coefficient (IAT x CAAQ)
- ANOVA (IAT x characteristics, CAAQ x characteristics)

Aim 2
- Descriptive statistics
- Pearson's chi-square (BAWSQ x characteristics)

Aim 3
- Spearman's rho (IAT/CAAQ x BAWISQ)

Aim 4
- Descriptive statistics
- Organization of qualitative responses into themes

Results
Results

Sample
- 177 participants
- Predominantly:
  - Cisgender female (n=170, 96.05%)
  - White (n=156, 88.14%)
  - Nurses (n=136, 77.27%)
  - Southwestern (n=105, 59.32%) or northeastern (n=38, 21.47%) United States

Aim 1: Determine the distribution of weight bias among sample and (Aim 1.1) identify associations between participant characteristics and weight bias.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Mean CAAQ Score</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practice Setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inpatient (reference)</td>
<td>46.57 (38.74-43.21)</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Outpatient</td>
<td>37.39* (34.95-39.84)</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Other</td>
<td>33.50* (27.94-39.62)</td>
<td>&lt;0.05</td>
</tr>
</tbody>
</table>
Attitudes and Beliefs About Weight Stigma

Aim 1: Determine the distribution of weight bias among sample and (Aim 1.1) identify associations between participant characteristics and weight bias.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Mean IAT Score</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25 or under (reference)</td>
<td>0.354</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>26-35</td>
<td>0.590</td>
<td></td>
</tr>
<tr>
<td>36-45</td>
<td>0.610</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>45-65</td>
<td>0.702</td>
<td>&lt;0.005</td>
</tr>
<tr>
<td>66 or more</td>
<td>0.814</td>
<td></td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
<td>&lt;0.005</td>
</tr>
<tr>
<td>Nurse (reference)</td>
<td>0.645</td>
<td></td>
</tr>
<tr>
<td>Advanced Practice Provider</td>
<td>0.289</td>
<td>&lt;0.005</td>
</tr>
<tr>
<td>Physician</td>
<td>0.604</td>
<td></td>
</tr>
<tr>
<td>Years in Practice (controlled for age)</td>
<td></td>
<td>&lt;0.005</td>
</tr>
<tr>
<td>5 or fewer (reference)</td>
<td>0.396</td>
<td></td>
</tr>
<tr>
<td>6-10</td>
<td>0.508</td>
<td></td>
</tr>
<tr>
<td>11-15</td>
<td>0.525</td>
<td></td>
</tr>
<tr>
<td>16-20</td>
<td>0.758</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>21+</td>
<td>0.812</td>
<td>&lt;0.05</td>
</tr>
</tbody>
</table>

Aim 2: Examine attitudes and beliefs and (Aim 2.1) identify associations between participant characteristics and attitudes/beliefs

- Every healthcare provider has at least some bias against heavier patients.
- Weight stigma negatively affects the patients I care for.
- Healthcare professionals have a responsibility to address their weight bias, if they have any.
- I am interested in taking steps to address weight bias in healthcare.

Tan Chingfen Graduate School of Nursing
Aim 3: Investigate the relationship between weight bias (Aim 1) and attitudes and beliefs (Aim 2)

<table>
<thead>
<tr>
<th>Statement</th>
<th>IAT</th>
<th></th>
<th>CAAQ</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Every healthcare provider has at least some bias against heavier patients.&quot;</td>
<td>-0.09</td>
<td>NS</td>
<td>0.208</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>&quot;Weight stigma is a problem that negatively affects the patients I care for.&quot;</td>
<td>-0.01</td>
<td>NS</td>
<td>0.035</td>
<td>NS</td>
</tr>
<tr>
<td>&quot;Healthcare providers have a responsibility to address their own weight bias, if they have any.&quot;</td>
<td>-0.09</td>
<td>NS</td>
<td>-0.237</td>
<td>&lt;0.005</td>
</tr>
<tr>
<td>&quot;I am interested in taking steps to address weight bias in healthcare.&quot;</td>
<td>-0.05</td>
<td>NS</td>
<td>-0.394</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Aim 4: Identify most-supported interventions

Support for anti-weight stigma interventions
Discussion

Implicit & Explicit Biases

- Strong weight biases among sample, consistent with or greater than prior estimates (Sabin et al., 2012; 2015; Halvorson et al. 2019; Ip et al. 2013)
  - Levels of bias are steady or possibly increasing
- Implicit biases increased steadily with years in practice, even when controlling for age
  - The healthcare environment may perpetuate stigma, or biases are seemingly confirmed over time
Attitudes and Beliefs About Weight Stigma

- No association between characteristics and BAWSQ responses
  - Personal identity did affect levels of bias, but did not affect attitudes and beliefs about stigma
  - Approaches to reduce weight stigma may be universal and not targeted
- Greater explicit bias = agreement that all HCPs have weight bias
- Greater explicit bias = disagreement that HCPs are responsible for addressing bias
- Greater explicit bias = disinterest in addressing weight bias

Interventions

- CEUs are most supported, but can sometimes be ineffective at reducing bias in the long term (Knaak et al., 2014)
  - Now-documented level of interest in reducing bias may increase the impact of CEU-form interventions, per HSDF
- Excluding terms “obesity” and “morbid obesity” was the least supported intervention
  - However, consistently supported by patients and caregivers (Puhl et al., 2011; Klier et al., 2014; Volger et al., 2012; Dutton et al., 2010)
  - Future studies may investigate this disconnect between patient and provider beliefs
**Limitations**

- Mostly-nurse sample
- Scrutiny of IAT
- No validated measure of attitudes and beliefs about weight stigma

**Conclusion & Future Directions**
Implications for Future Research

- There is work to do, but many HCPs are ready for it
- Anti-weight stigma interventions should focus on increasing awareness of weight bias and its impacts and consequences
  - Short-form interventions may be best and most feasible
- By aligning initiatives with current attitudes and beliefs of HCPs, we can more effectively reduce biases and improve pediatric healthcare

Acknowledgements

- Drs. Nancy Morris, Sybil Crawford, Sean Phelan
- Kevin & Harrison
- GSN cohort & faculty
- Friends and family
- Patients, families, and participants
ATTITUDES AND BELIEFS ABOUT WEIGHT STIGMA

References


The outcomes of this dissertation study were submitted for publication as an original research article to *Academic Pediatrics* on May 31, 2023. The manuscript is entitled “Ready for action: A national study of pediatric healthcare professionals’ attitudes and beliefs about weight stigma.”
APPENDICIES

Appendix A

The Crandall Anti-Fat Attitudes Questionnaire (CAAQ) (Crandall, 1994)

*The AFA is scored using a Likert-type response format (0 = very strongly disagree; 9 = very strongly agree). Higher scores indicate stronger anti-fat attitudes.*

Dislike

1. I really don’t like fat people much.
2. I don’t have many friends that are fat.
3. I tend to think that people who are overweight are a little untrustworthy.
4. Although some fat people are surely smart, in general, I think they tend not to be quite as bright as normal weight people.
5. I have a hard time taking fat people too seriously.
6. Fat people make me somewhat uncomfortable.
7. If I were an employer looking to hire, I might avoid hiring a fat person.

Fear of Fat

8. I feel disgusted with myself when I gain weight.
9. One of the worst things that could happen to me would be if I gained 25 pounds.
10. I worry about becoming fat.

Willpower

11. People who weigh too much could lose at least some part of their weight through a little exercise.
12. Some people are fat because they have no willpower.
13. Fat people tend to be fat pretty much through their own fault.

Appendix B

Attitudes and Beliefs About Weight Stigma Questionnaire

Please rate your agreement or disagreement with the following statements:

1. Every healthcare provider has some bias against heavier patients.
   a. Strongly agree
   b. Somewhat agree
   c. Somewhat disagree
   d. Strongly disagree

2. Weight stigma is a problem that afflicts the patients that I care for.
   a. Strongly agree
   b. Somewhat agree
   c. Somewhat disagree
   d. Strongly disagree

3. Healthcare providers have a responsibility to address their own weight bias, if they have any.
   a. Strongly agree
   b. Somewhat agree
   c. Somewhat disagree
   d. Strongly disagree

4. I am interested in taking steps to address weight bias in healthcare.
   a. Strongly agree
   b. Somewhat agree
   c. Somewhat disagree
   d. Strongly disagree

Please select which, if any, of the interventions listed below to address weight bias in healthcare you would support:
   a. Laws that prohibit weight-based discrimination
   b. Required anti-weight bias education in medical or nursing coursework
   c. Optional anti-weight bias education in medical or nursing coursework
   d. Continuing education for completing anti-weight bias activities
   e. Excluding the terms “obesity” and “morbid obesity” from clinical documentation
   f. School-based anti-bullying policies that specify the prohibition of weight-based teasing
   g. Other: ________________
   h. I would not support any of these interventions.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Connection to Framework</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Every healthcare provider has some bias</td>
<td>Facilitators of Stigma (cultural, social and gender)</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>1.</td>
<td>against heavier patients.</td>
</tr>
<tr>
<td>2.</td>
<td>Weight stigma is a problem that afflicts the patients that I care for.</td>
</tr>
<tr>
<td>3.</td>
<td>Healthcare providers have a responsibility to address their weight bias, if they have any.</td>
</tr>
<tr>
<td>4.</td>
<td>I am interested in taking steps to address weight bias in healthcare.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>norms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Health and Social Impacts (incidence, morbidity, mortality, quality of life, social inclusion)</td>
</tr>
<tr>
<td>3.</td>
<td>Facilitators of Stigma (cultural, social, and gender norms)</td>
</tr>
<tr>
<td>4.</td>
<td>Outcomes and Health/Social Impacts</td>
</tr>
</tbody>
</table>

Figure B1. Connections between questionnaire statements and components of Health Stigma and Discrimination Framework
Appendix C

Demographic Form

1. Please select your age range from the following categories:
   a. 25 years or under
   b. 26-35 years
   c. 36-45 years
   d. 46-55 years
   e. 56-65 years
   f. 65 years or more
   g. Prefer not to answer

2. With which gender do you most identify?
   a. Male
   b. Female
   c. Transgender male
   d. Transgender female
   e. Non-binary
   f. A gender identity not listed here
   g. Prefer not to answer

3. How would you best describe your race/ethnicity?
   a. American Indian or Alaska Native
   b. Asian
   c. Black or African American
   d. Hispanic or Latino
   e. Native Hawaiian or Other Pacific Islander
   f. White
   g. Prefer not to answer

4. What is your occupation? (If more than one option applies, please select the occupation in which you work with children most frequently).
   a. Physician
   b. Physician Assistant
   c. Licensed practical nurse/licensed vocational nurse
   d. Registered nurse
   e. Advanced practice nurse
   f. Other: ______________
   g. Prefer not to answer

5. In which state are you licensed to practice? (If licensed in more than one state, select the state in which you work with children most frequently).
   a. [Drop-down list of 50 U.S. states and Puerto Rico]
ATTITUDES AND BELIEFS ABOUT WEIGHT STIGMA

6. Which setting do you practice in most frequently?
   a. Inpatient settings (e.g., hospital, emergency room, acute care/rehabilitation/long-term care facility)
   b. Outpatient settings (e.g., primary care clinic, community health center ambulatory surgery center)
   c. Neither of these options describe my work setting
   d. Prefer not to answer

7. Which of these best describes your clinical specialty or subspecialty?
   a. Pediatric primary care
   b. Pediatric hospital medicine
   c. Neonatal-perinatal care
   d. Adolescent medicine
   e. Pediatric internal medicine (e.g., pediatric cardiology, pediatric critical care, pediatric emergency medicine, pediatric hematology-oncology, pediatric endocrinology, etc.).
   f. Community care (e.g., school-based care)
   g. My specialty or subspeciality is not listed here
   h. Prefer not to answer

8. How many years have you been licensed to practice in your field?
   a. 5 years or fewer
   b. 6-10 years
   c. 11-15 years
   d. 16-20 years
   e. 20 years or more
   f. Prefer not to answer

9. In the past year, have you struggled with your own weight or body size?
   a. Yes, very much
   b. Yes, somewhat
   c. Not at all
   d. Prefer not to answer
ATTITUDES AND BELIEFS ABOUT WEIGHT STIGMA

Appendix D

Invitation to Participate

Email Subject: Invitation to Participate in a Study of Pediatric Healthcare Providers

Email Body:
Hello,

You are invited to participate in a study of pediatric healthcare providers. We are interested in understanding attitudes and beliefs about weight stigma and greatly value your input and perspective. Your participation in the study is entirely voluntary. It is expected that your participation will take between 15 and 20 minutes. After completing the study you can opt to be entered into a raffle to win one of three $100 Bank of America gift cards. Raffles will be held after data collection has ended, which is expected in to be March of 2023.

You are eligible for the study if you are:
- Currently licensed as a physician, resident physician, physician assistant, licensed practical nurse, registered nurse, or advanced practice nurse
- Provides care to children ages 18 and under
- Have access to a computer

Your responses to the study will help us to formulate strategies to improve pediatric healthcare for children of higher weights. To participate in the study, please [click here].

If you have questions about the study, you may contact the researcher at samantha.turner@umassmed.edu.