Brief Cutting Edge Report
CLINICAL TRIALS AND INVESTIGATIONS

Obesity

Eating and Exercise-Related Correlates of Weight Stigma: A Multinational Investigation

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Objective: Weight stigma is prevalent across the world. However, little is known about whether and how the harmful health consequences of weight stigma may vary across countries. The current study examined the association between experiences of weight stigma and multiple eating and exercise-related indicators among a large, multinational sample of adults.

Methods: Adults enrolled in an international weight management program residing in Australia, Canada, France, Germany, the United Kingdom, and the United States completed identical Web-based surveys in the dominant language for their country. Participants (N = 13,996) reported on their personal experiences of weight stigma and health, including eating behaviors, attitudes toward exercise, and perceived stress.

Results: More than half of all participants in each country reported experiencing weight stigma. Participants who had experienced weight stigma reported engaging in more eating to cope, gym avoidance, and self-monitoring behaviors, as well as higher levels of stress and reduced eating self-efficacy. These associations were documented over and above sociodemographic characteristics and BMI and did not vary across countries.

Conclusions: Study findings document uniform health-related correlates of weight stigma within a multinational context and underscore the need for global initiatives to curtail weight stigma in order to support population health.

Study Importance

What is already known?

- Considerable evidence, from primarily US samples, has documented the ways in which experiencing weight stigma, independent of body weight, takes a toll on health and well-being.

What does this study add?

- This study is among the first to document uniform health-related correlates of weight stigma within a multinational context.

How might these results change the direction of research or the focus of clinical practice?

- Study results underscore the need for global initiatives to curtail weight stigma in order to support population health.

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Introduction

High rates of overweight and obesity are widespread across many countries (1). Coinciding with the rise of overweight and obesity is the growing prevalence of weight stigma toward individuals with high weight (2). Across the globe, people with high weight face societal devaluation, negative stereotypes, prejudicial attitudes, and unfair treatment because of their body weight or size (3,4). Despite this evidence, little is known about cross-national personal experiences of weight stigma and the health-related implications of such experiences. In particular, it is unclear whether associations between weight stigma and health behaviors and attitudes differ across countries. Providing insight into this question, the current study is the first multinational investigation of health correlates of weight stigma, including eating behaviors, attitudes toward exercise, and perceived stress.

Research conducted primarily within US samples has demonstrated substantial and persistent adverse health outcomes associated with weight stigma. For example, systematic review evidence (including a majority of studies conducted in the United States) have consistently linked experiences of weight stigma with unhealthy eating behaviors (e.g., binge eating) (5). In addition, experienced weight stigma can heighten stress (6) and contribute to motivation to avoid exercise (7). Importantly, the link between weight stigma and compromised weight-related health persists independent of body weight (8), pointing to the social origins of consequential health behaviors. Although

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TABLE 1 Sample characteristics by country

	Total sample (*N* = 13,996)	Australia (*n* = 1,245)	Canada (*n* = 2,708)	France (*n* = 2,510)	Germany (*n* = 2,613)	UK (*n* = 2,305)	US (*n* = 2,615)
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Age, y	52.24 (12.77)	54.39 (11.42)	56.27 (12.47)	48.95 (12.70)	47.29 (10.74)	50.29 (12.42)	56.87 (12.86)
BMI, kg/m^2	30.51 (6.68)	31.07 (6.71)	30.70 (7.00)	29.32 (5.55)	30.58 (6.24)	30.86 (7.26)	30.82 (7.10)
	% *(N)*	% *(n)*	% *(n)*	% *(n)*	% *(n)*	% *(n)*	% *(n)*
Sex							
Male	5.0 (693)	2.6 (32)	6.2 (168)	3.5 (89)	4.9 (129)	6.0 (138)	5.3 (137)
Female	94.9 (13,288)	97.4 (1,213)	93.7 (2,538)	96.4 (2,419)	95.0 (2,483)	93.8 (2,163)	94.5 (2,472)
Other	0.1 (15)	0.0 (0)	0.1 (2)	0.1 (2)	0.1 (1)	0.2 (4)	0.2 (6)
Race/ethnicity[a]							
White	94.5 (8,375)	97.2 (1,209)	95.3 (2,580)	–	–	96.2 (2,216)	90.8 (2,370)
Non-White	5.5 (487)	2.8 (35)	4.7 (126)	–	–	3.8 (87)	9.2 (239)
Education							
College degree (eqv)	49.0 (6,862)	47.5 (591)	41.4 (1,121)	65.9 (1,654)	21.0 (548)	48.8 (1,125)	69.7 (1,823)
No college degree (eqv)	51.0 (7,134)	52.5 (654)	58.6 (1,587)	34.1 (856)	79.0 (2,065)	51.2 (1,180)	30.3 (792)
BMI category							
<18.5 kg/m^2	0.2 (23)	0.0 (0)	0.4 (10)	0.1 (3)	0.0 (1)	0.1 (3)	0.2 (6)
18.5 to 24.9 kg/m^2	19.5 (2,731)	15.6 (194)	20.5 (556)	20.6 (516)	17.6 (461)	19.8 (457)	20.9 (547)
25 to 29.9 kg/m^2	35.6 (4,976)	36.7 (457)	33.3 (902)	41.1 (1,031)	36.1 (942)	34.4 (794)	32.5 (850)
≥30 kg/m^2	44.8 (6,266)	47.7 (594)	45.8 (1,240)	38.2 (960)	46.3 (1,209)	45.6 (1,051)	46.4 (1,212)
Experienced weight stigma							
Any	57.9 (8,100)	56.1 (698)	61.3 (1,660)	55.6 (1,396)	55.6 (1,452)	58.0 (1,336)	59.6 (1,558)
None	42.1 (5,896)	43.9 (547)	38.7 (1,048)	44.4 (1,114)	44.4 (1,161)	42.0 (969)	40.4 (1,057)

[a]Collection of race/ethnicity data was prohibited in France and Germany.

the health-related consequences of weight stigma have been documented in non-US samples (9), to our knowledge, these associations have not been investigated in a multicountry context using identical assessment measures with comparable samples of adults.

To address this gap, we assessed the association between experiences of weight stigma and multiple health indicators, including unhealthy eating behaviors and exercise avoidance, among a large, multinational sample of adults enrolled in an internationally available weight management program across six Western countries. Comparisons across countries were exploratory. Given the existing literature documenting that weight stigma uniquely contributes to poor health, weight stigma was expected to be similarly consequential in the multinational context. However, different features of national cultural contexts may augment or mitigate the health implications of weight stigma. Understanding whether (and how) associations between weight stigma and health vary across countries represents a critical first step for the development of global initiatives to address weight stigma and its harmful health impact.

Methods

Study design and measures

Data for this study came from a large, multinational, Web-based survey of adults enrolled in WW (formerly Weight Watchers). Participants were recruited via email in six countries: Australia, Canada, France, Germany, the United Kingdom (UK), and the United States. All participants (≥age 18) had been members of WW for at least 3 months. Although 23,415 individuals entered the survey website (hosted by Qualtrics.com), 8.0% screened ineligible (e.g., younger than age 18, declined consent), and 2.8% who reported residence outside of the six countries (or did not report a country of residence) were excluded. An additional 6,875 individuals who completed less than 50% of the survey and/or did not provide key study variables (e.g., sex, height, weight) were excluded, resulting in a final analytic sample of 13,996 adults (Australia: *n* = 1,245, Canada: *n* = 2,708, France: *n* = 2,510, Germany: *n* = 2,613, UK: *n* = 2,305, US: *n* = 2,615). Table 1 summarizes sample characteristics.

The University of Connecticut's Institutional Review Board approved all study protocols. The study was advertised to WW members via email as a survey regarding body weight and health, including related social experiences. Interested individuals completed an identical, anonymous survey online in the dominant language for the country. To ensure content consistency, for non-English-speaking countries (i.e., France, Germany), the survey was translated (and back translated) by a professional translation services company (Language Scientific) (10). Participants did not receive compensation for study participation. Additional details describing study methodology are reported elsewhere (11).

All survey measures were self-reported by participants in the online questionnaire. Table 2 contains a full description of the survey items and response options used to assess weight stigma (12) (presented to participants first, in order to minimize attrition in the primary construct of interest) , health-related behaviors (i.e., eating to cope, eating self-efficacy, gym avoidance, exercise self-efficacy, self-monitoring behaviors, perceived stress) (13-17), and covariate indicators.

Analytic plan

Data were analyzed in SPSS Statistics software (version 27; IBM Corp., Armonk, New York). General linear modeling was used to estimate associations between weight stigma and health separately for each outcome variable. Analyses were adjusted for age, sex, level of education, BMI, WW membership duration, WW membership type, and country. (Race/ethnicity was not included as a covariate because it was not permissible by law to collect this information in France and Germany.) Continuous variables were group-mean centered within countries; a log transformation prior to centering corrected for non-normality of BMI and WW membership duration. Statistical significance was set at $P \leq 0.001$ to reduce the likelihood of type I error given the large sample size (18). Missing data were handled with listwise deletion. To examine whether the associations between weight stigma and health varied across countries, five two-way interaction terms (i.e., weight stigma × country) were tested for each health outcome using the United States as the comparison group (given that most data on weight stigma to date have come from the United States). Significant interaction terms were probed with simple effects analyses.

Results

More than half of all participants in each country reported experiencing weight stigma (across country range = 55.6% to 61.3%). As displayed in Table 3, weight stigma was significantly associated with each of the health-related indicators, even after accounting for sociodemographic characteristics, anthropometrics, and WW membership information. Specifically, participants who had experienced any (vs. no) weight stigma reported engaging in more eating to cope ($\beta = 0.20$, $P < 0.001$), gym avoidance ($\beta = 0.18$, $P < 0.001$), self-monitoring of weight, eating, and physical activity ($\beta = 0.10$, $P < 0.001$), and higher levels of stress ($\beta = 0.15$, $P < 0.001$), as well as reduced eating self-efficacy ($\beta = –0.12$, $P < 0.001$) and exercise self-efficacy ($\beta = –0.07$, $P < 0.001$).

Across the 30 weight-stigma-by-country interactions tested, only one was statistically significant (weight stigma × France, for exercise self-efficacy); follow-up analyses revealed that although weight stigma and exercise self-efficacy were negatively associated in the United States, the association was nonsignificant among participants in France ($\beta = –0.04$, $P = 0.088$). Otherwise, as indicated by all other nonsignificant interactive effects, the associations between weight stigma and health outcomes did not vary across countries.

Discussion

Capitalizing on a large, multinational sample, this study found that individuals who experienced stigma because of their weight have

TABLE 2 Description of survey measures

	Survey items or description
Experienced weight stigma	Three items assessing general history of being teased, unfairly treated, and/or discriminated because of body weight (*yes*/*no*). A dichotomous variable was computed to reflect at least one (1) vs. no (0) experiences of weight stigma (12).
Eating to cope	Five-item Coping subscale of the Motivations to Eat Scale (13) (e.g., *How often do you eat as way to comfort yourself?*), with five response options (1 = *almost never or never* to 5 = *almost always or always*) averaged into a composite score. Cronbach α ranged from 0.89 to 0.92 across countries.
Eating self-efficacy	Short-form Weight Efficacy Lifestyle Questionnaire (14). Eight statements (e.g., *I am confident that I can resist overeating when I am watching TV* [*or using the computer*]). Response options for each item ranged from *not at all confident* to *very confident*; responses were summed to form a scale with Cronbach α = 0.85 to 0.89 across countries.
Gym avoidance	Gym Avoidance subscale of the Social Exercise and Anxiety Measure (15). Four items (e.g., *I do not go to the gym because I feel like people are looking at me*) rated on a scale of 1 (*not like me at all*) to 7 (*completely like me*), summed together (Cronbach α = 0.87 to 0.91).
Exercise self-efficacy	Social Exercise Self-Efficacy subscale of the Social Exercise and Anxiety Measure (15). Five items (e.g., *I am confident that I could work out/exercise at a public gym where strangers also work out*) rated on a scale of 0 (*not at all*) to 100 (*completely confident*), summed together (Cronbach α = 0.83 to 0.93).
Self-monitoring (for weight control)	Seven-item Self-Monitoring subscale of the Weight Control Strategies Scale (16) (e.g., *I weighed myself daily*), with five response options (0 = *never* to 4 = *always*), averaged into a composite score (Cronbach α = 0.73 to 0.78).
Perceived stress	Brief version of the Perceived Stress Scale (17). Four items (e.g., *In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?*), rated on a scale of 1 (*never*) to 5 *(very often*), combined into an average mean score (Cronbach α = 0.77 to 0.82).
Covariates	Sex (male = 0, female = 1; "other" excluded from main analyses because of low prevalence), highest level of education (no college degree = 0, college degree or equivalent = 1), age, current BMI (calculated from self-reported height and weight), WW membership duration, WW membership type (two dummy coded variables with "Digital" as reference group).

Cronbach α values are specific to the current sample and computed within country.

TABLE 3 Standardized estimates of the effects of weight stigma on eating and exercise-related health indicators

Predictors	Eating to cope	Eating self-efficacy	Gym avoidance	Exercise self-efficacy	Self-monitoring	Perceived stress
Main predictor						
Experienced weight stigma	0.20*	−0.12*	0.18*	−0.07*	0.10*	0.15*
Covariates						
Age	−0.15*	0.08*	−0.13*	−0.11*	0.02	−0.19*
Current BMI	0.20*	−0.17*	0.19*	−0.20*	−0.17*	0.11*
Sex (male)						
Female	0.09*	−0.08*	0.04*	−0.06*	−0.02	0.05*
Education (no college degree)						
College degree	0.02	−0.02	−0.09*	0.10*	0.01	−0.02
WW membership duration	0.00	−0.02	−0.03*	0.03*	−0.04*	0.02
WW membership type (digital)						
Digital + workshop	0.04*	−0.02	−0.05*	0.05*	0.05*	0.00
Personal coaching + digital	0.02	0.00	−0.01	0.01	0.00	0.00
Country (US)						
Australia	0.05*	−0.07*	0.04*	−0.05*	−0.06*	0.03*
Canada	0.03*	−0.04*	0.01	−0.02	−0.01	0.03
France	0.12*	−0.11*	0.11*	−0.24*	−0.13*	0.06*
Germany	−0.06*	−0.02	−0.06*	−0.01	−0.03	0.01
UK	0.10*	−0.13*	0.10*	−0.09*	−0.04*	0.11*

Experienced weight stigma (0 = no experienced weight stigma, 1 = at least one experience of weight stigma). Logarithmic transformation used for BMI and WW membership duration. Sex reference group = male. Educational attainment reference group = no college degree. WW membership type reference group = digital. Country reference group = US.
*$P \leq 0.001$.

higher levels of eating to cope, gym avoidance, and stress, as well reduced eating self-efficacy and exercise self-efficacy. In addition, weight stigma was positively associated with self-monitoring of weight, eating, and physical activity. These findings were documented over and above sociodemographic, anthropometric, and weight management characteristics and were highly consistent across each of the six countries. Supporting recent calls for international approaches to address weight stigma (4), the results are among the first to document uniform health-related correlates of weight stigma within a multinational context.

The associations between weight stigma and adverse eating behaviors and exercise attitudes are particularly concerning given that the majority of participants within each country reported having experienced weight stigma. Furthermore, the health implications of experiencing weight stigma were documented regardless of the national rates of obesity, which differ across the countries in the present study. Thus, to support healthy outcomes, initiatives to reduce societal weight stigma are critically needed at the population level across countries to minimize experiences of weight-related teasing, discrimination, and unfair treatment.

There are several limitations to this study. First, the health-related implications of weight stigma were assessed cross-sectionally; therefore, causality cannot be concluded. Although stigma was presumed to precede adverse eating behaviors and exercise attitudes (consistent with directional evidence) (6,8), it is possible that compromised weight-related health influences perceptions of stigma. Future longitudinal multinational investigations are needed to assess how experiences of weight stigma, including both isolated incidences and accumulated mistreatment, may alter long-term health trajectories. Second, the present cross-country study was limited to Western nations (four sharing English as the dominant language), which possess similar individualistic cultural propensities (19). It is possible that experiences of weight stigma and the associated health consequences may vary in different parts of the world. Third, the current multinational sample had limited gender and racial/ethnic diversity. Thus, additional research with diverse multinational samples is needed, particularly in light of compounded health risks associated with experiencing multiple forms of stigma (e.g., mistreatment based on weight and race/ethnicity).

Despite these limitations, the study findings underscore striking similarity in the health-related implications of weight stigma across countries. Thus, as global initiatives endeavor to curtail escalating increases in overweight and obesity, it is essential that such approaches are careful to avoid exacerbating weight stigma by placing blame and negative judgement on individuals with high weight. Insofar as the stigma of weight, apart from weight itself, contributes to adverse weight-related health (8), international efforts to reduce the stigma of weight are likely to support significant gains in global health.O

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