

Bruna Barbosa Siqueira<sup>1</sup>  
<https://orcid.org/0000-0002-1161-0029>

Marina Cunha Assumpção<sup>1</sup>  
<https://orcid.org/0000-0002-3836-9909>

Sabrina Martins Barroso<sup>1</sup>  
<https://orcid.org/0000-0003-1759-9681>

Camila Cremonesi Japur<sup>2</sup>  
<https://orcid.org/0000-0003-0513-1758>

Fernanda Rodrigues de Oliveira  
 Penaforte<sup>1</sup>  
<https://orcid.org/0000-0001-8483-1562>

# Weight stigma and health – Repercussions on the health of adolescents and adults: integrative review of the literature

*Estigma de peso e saúde – Repercussões na saúde de adolescentes e adultos: revisão integrativa da literatura*

DOI: 10.1590/0047-2085000000324

## ABSTRACT

**Objective:** To conduct an integrative review in order to understand the repercussions of the social stigma of overweight on the health of adults and adolescents. **Methods:** The international protocol for systematic review and meta-analysis studies PRISMA was adopted to guide the writing of this review. The databases used were PubMed, Psycinfo, SciELO, Medline, Lilacs and Pepsic, considering studies published in the period from 2000 to 2020. Sixty-seven (67) articles were analyzed, and 4 categories emerged: repercussions on physical well-being; repercussions on social well-being; repercussions on mental well-being; and mixed category (physical and psychological impact). **Results:** In the vast majority of studies analyzed, weight stigma had a negative impact on the different spheres that make up the health construct, that is, the physical, social and mental spheres. **Conclusions:** The consequences of weight stigma are a source of intense suffering, with an impact that reduces the quality of life of individuals who experience stigmatization, involving physical, emotional and social aspects.

## KEYWORDS

Social stigma, body weight, prejudice.

## RESUMO

**Objetivo:** Realizar uma revisão integrativa a fim de compreender as repercussões do estigma social do excesso de peso na saúde de adultos e adolescentes. **Métodos:** O protocolo internacional de revisão sistemática e estudos de metanálise PRISMA foi adotado para guiar a redação desta revisão. As bases de dados utilizadas foram PubMed, Psycinfo, SciELO, Medline, Lilacs e Pepsic, considerando o período de 2000 a 2020. Foram analisados 67 artigos, em que emergiam 4 categorias: repercussões no bem-estar físico; repercussões no bem-estar social; repercussões no bem-estar mental; e categoria mista (impacto físico e psicológico). **Resultados:** Na ampla maioria dos estudos analisados, o estigma do peso tem um impacto negativo nas diferentes esferas que compõem o constructo saúde: física, social e mental. **Conclusões:** Tais consequências são fonte de intenso sofrimento, em uma abrangência tal que reduzem a qualidade de vida de indivíduos que passam por situações de estigmatização, tanto nos aspectos físicos quanto emocionais e sociais.

## PALAVRAS-CHAVE

Estigma social, peso corporal, preconceito.

Received in: July/6/2020. Approved in: Feb/9/2021

<sup>1</sup> Federal University of Triângulo Mineiro, Program in Psychology (PPGP-UFTM), Uberaba, MG, Brazil.

<sup>2</sup> University of São Paulo (FMRP-USP), Program in Nutrition and Metabolism at the Ribeirão Preto Medical School, Ribeirão Preto, SP, Brazil.

**Address for correspondence:** Bruna Siqueira. Av. Frei Paulino, 30, Bairro Abadia – 38025-180 – Uberaba, MG, Brazil. Telephone: +55 (34) 99262-4819.

E-mail: brunabarbosasiqueira@gmail.com



## INTRODUCTION

Obesity is a condition marked by medical criteria and diagnoses, being defined as an “excessive accumulation of body fat in adipose tissue, with negative health implications”<sup>1</sup> and a “chronic non-communicable disease”<sup>2</sup>. With the establishment of the definition of obesity as a disease, fat starts to be under the strict control of medicine, and such criteria and diagnoses can even become a legitimate tool for the exclusion of these people<sup>3</sup>.

In contrast to current times, fat bodies were once considered synonymous with health, wealth, beauty, vitality and fertility. However, fat bodies were against Judeo-Christian ideologies that preached moderation and restriction, as well as transformations experienced in the socio-cultural and historical context<sup>4</sup>. With the end of the Renaissance era and the rise of Western industrialized societies, bulky bodies succinctly lost their value, and started to have no more a positive but definitely rather a pathological connotation<sup>4</sup>.

From these notes, it is clear that the way of seeing and understanding excess weight has changed throughout history, going through social, historical, cultural and geographical contexts, in a constant struggle between the acceptable versus the criticized<sup>5</sup>. Negative stereotypes related to overweight persist to the present day and are little challenged in Western society, leaving people with overweight vulnerable to social injustice and impaired quality of life, as a result of substantial disadvantages and stigma<sup>5</sup>.

Stigma arises from the characteristic of societies of defining categories about the attributes considered normal or common to human beings, creating a social identity<sup>6</sup>. Thus, individuals who have characteristics deviating from these attributes are considered to carry a stigma<sup>6</sup>. In view of this, the stigmatized individual is one whose social identity includes any attribute that frustrates the expectations of normality observed by the society in question, which ceases to consider him a common creature and starts to reduce him to weakness, defect, disadvantage or discredit<sup>6</sup>.

The stigma associated to excess weight consists in the depreciation of an individual for having a weight above that considered ideal for a given society<sup>6</sup>. An individual's weight is a visible, particular physical characteristic that cannot be hidden, and is also one of the first aspects observed in a person<sup>5</sup>. In this context, it can be said that the individual with overweight suffers a strong social stigma, as he is considered disqualified for complete social acceptance, suffering exclusion in various situations, and may even experience the deterioration of his social identity and personal trust<sup>6</sup>. Personal (microsocial) stigma, that is, the individual psychological process in which an individual goes through situations in which they experience prejudiced and discriminatory attitudes, is the most common type of stigma. However, studies on the subject describe that there is an

alternative form of prejudice and discrimination practiced by policies of private and governmental institutions that restrict the so-called structural stigma as an opportunity for stigmatized (macrosocial) groups<sup>7</sup>.

In addition, both forms of stigma have consequences. The personal stigma experienced through individual attack can cause the internalization of stigma, causing thoughts and behavior based on the race that the bulky body is distorted and immoral, which is called self-stigma<sup>7</sup>. On the other hand, structural stigma can happen in an explicit way, as it happens in cases of bullying, or even come disguised as a health discourse<sup>7</sup>. The construction of a totally biological and medical idea of obesity replaces traditionally constructed moral causes<sup>4</sup>. In this way, a justification is created to “fight” against it and the duty to help and treat without the guilt of the moralizing gaze, creating a pretext for everyone to attack the obese patient and face this as an attempt to fight obesity<sup>4</sup>. This leads to common sense and even certain specialists in medical ethics affirm that stigmatizing, with high weight and applying social pressure is effective in stimulating weight loss and improving the health of this population<sup>8</sup>. The most recent science, however, indicates that weight stigma can trigger physiological and behavioral changes linked to poor metabolic health and increased weight gain<sup>8</sup>.

Considering the current hegemony of the lean and “healthy” body pattern, it is observed that the discrimination of fat bodies has been increasingly naturalized, even in the medical field<sup>9</sup>. Negative attitudes of health professionals towards obesity can compromise the dignified and humanized professional practice, implying a decrease in the quality of care provided to patients presenting the condition of obesity, making people living with obesity to avoid health services and impeding their adherence to treatment<sup>10</sup>.

Weight-related prejudice and stigma can result in discrimination and harm the human rights, social rights and health of those affected<sup>11</sup>. Despite being less studied, perhaps because it is more socially acceptable, weight stigma is a serious theme, and in some cases, more prevalent than racism, sexism and other forms of bias<sup>5</sup>. In many countries, it is not illegal for individuals with overweight or moderately obese to be denied services or opportunities based on their weight<sup>12</sup>. In this sense, there is a clear need to combat weight stigma, which is widespread throughout the world. Minimizing this stigma is likely to have a positive impact on the health of individuals who experience it<sup>13</sup>.

Previous reviews proposed the investigation of the association between weight stigma and biopsychosocial consequences of stigma in adults with overweight/obesity<sup>14,15</sup>. However, to the best of our knowledge, this is the first time that an integrative review evaluates the association of the social weight stigma on health, as a multidimensional concept that involves physical, mental and social well-being of adults and adolescents with overweight and obesity.

## METHODS

This is an integrative review of the scientific literature whose aim is to synthesize the knowledge on a given subject, discussing it critically and allowing to observe trends and gaps that require further research<sup>16</sup>.

The procedure carried out in this review involved the following steps<sup>16</sup>: (1) identification of the theme and guiding question; (2) establishment of inclusion/exclusion criteria; (3) categorization of studies; (4) evaluation of studies; (5) interpretation of results; and (6) synthesis of knowledge. The international protocol for systematic review and meta-analysis studies PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) was adopted to guide the inclusion and exclusion of articles and the writing of this review<sup>17</sup>.

The research question was “what are the repercussions of the social stigma of overweight on the health of adolescents and adults?”.

### Indexing bases and keywords

The search for articles was carried out in the Pubmed, Psycinfo, Scientific Eletronic Library Online (SciELO), National Library of Medicine (Medline), Latin American and Caribbean Literature in Health Sciences (Lilacs) and Electronic Psychology Journals (Pepsic) databases. Indexed descriptors were used for the search, according to the DeCs/MeSh standardization, in its Portuguese and English versions. The search terms used were: “Estigma Social” (*social stigma*), “Preconceito” (*prejudice*), “Obesidade” (*obesity*), “Sobrepeso” (*overweight*) and “Peso Corporal” (*body weight*).

### Inclusion and exclusion criteria

Criteria for inclusion of articles in the review were: (a) studies published between January 2000 and December 2020; (b) studies that directly addressed the topic of interest; (c) empirical studies; (d) published in Portuguese, English and Spanish, (e) studies that aimed to investigate the consequences of weight stigma on some health outcome.

The following articles were excluded: (a) materials such as monographs, editorials, books, book chapters, reviews and abstracts in conference proceedings; (b) theoretical articles and literature reviews; (c) studies on the elaboration and validation of instruments; (d) studies that dealt with weight stigma in children, since the objective of the review was to understand the consequences of weight stigma for adults and adolescents; (e) studies conducted with subjects who underwent bariatric surgery; (f) studies in which weight stigma has been associated with other types of stigma, such as racial and gender.

### Data collection and analysis procedures

For the selection of articles, an evaluation was carried out by two independent judges, obeying the following order:

(1) reading of titles of all identified studies; (2) reading of abstracts of the studies selected in the previous phase; and (3) complete reading of the selected texts. In cases where there was disagreement between the judges as to the adequacy of a study, an evaluation by a third judge occurred. After the exclusion of articles that did not meet the inclusion criteria, a listing of those composing the final *corpus* of analysis of this study was made, describing the following information: title, authors, year and place of publication, database, design, sample, instruments used to assess weight stigma, main objectives and main results. The full analysis of the articles allowed the construction of categories, in order to answer the guiding question of this review.

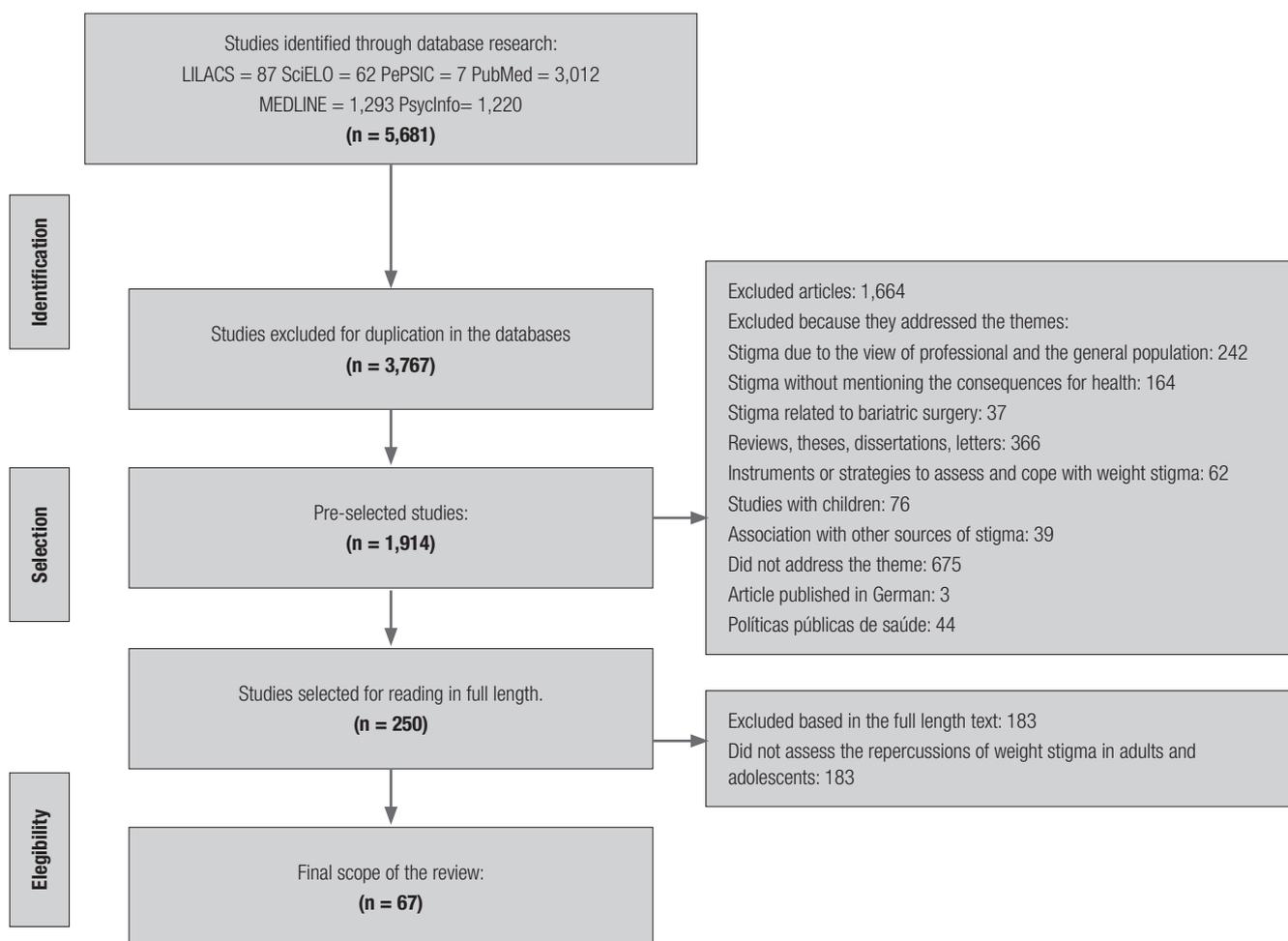
The categories were structured according to the sphere of health affected by the repercussions of weight stigma. World Health Organization’s (WHO) concept of health, that is, the physical, social and mental well-being<sup>18</sup>, was used to support this categorization. Within the sphere of “physical well-being”<sup>15</sup>, issues related to biological health itself or any behavior that directly affected it were considered. Therefore, impacts on physical well-being were considered: sedentary lifestyle; weight gain/loss; physical pain; functional capacity; seek health care; cardiovascular, inflammatory, lipid, cortisol, glycated hemoglobin index and metabolic dysregulation. For “social well-being”<sup>10</sup>, the impacts on interpersonal, professional relationships and the effect of stigma on the general social coexistence of individuals with overweight were considered. Finally, “mental well-being”<sup>15</sup> was considered to have any impact on psychological health, such as: eating disorders, self-esteem, quality of life, psychosocial function, loneliness, levels of depression and anxiety, coping, cognitive performance, developing of dementias and higher suicide rate.

## RESULTS

### Study characteristics

The searches in the databases resulted in a total of 5,681 articles. In the first stage of the analysis, 3,767 articles were excluded because they were duplicates. Then, 1,914 were excluded mainly because they did not directly address the topic of interest. There were 250 articles left to read in full length and, after this reading, 183 were excluded, leaving a total of 67 articles which made up the final *corpus* of this review. Figure 1 shows the flowchart of strategy for selecting studies according to PRISMA guidelines.

An important portion of the studies was developed exclusively with the female audience (n = 14, 20.8%), and only 01 study (1.7%) proposed to analyze male individuals. Higher prevalence of the female population was recurrent also in studies with mixed samples (n = 45), where women



**Figure 1.** Flow diagram of selection of articles that investigate the consequences of weight stigma on health.

represented more than half of these samples. Regarding body mass index (BMI), the samples ranged from 21.0 kg/m<sup>2</sup> to 49.0 kg/m<sup>2</sup>. Such variation was due to the fact that some studies included control groups with BMI within the normal range in their samples. The average BMI of the studies was 28.8.0 kg/m<sup>2</sup> (Table 1).

Most studies had a cross-sectional design (n = 55, 82.0%), a quantitative approach (n = 58, 86.5%), and performed data collection in the face-to-face modality (n = 36, 53.7%). Other forms of data collection widely used were online (n = 19, 28.3%) and telephone (n = 9, 15.5%) Interviews. Most of the studies were carried out with adults (n = 59, 88.0%) with an average age of 38 years (ranging from 18 to 57 years) (Table 1).

The forms of recruitment of participants were diverse, the most common being: individuals who sought or performed some type of treatment in weight loss services (n = 15, 22.3%), students, employees and the community near universities (n = 13, 19.4%) and population studies carried out in person, online and by telephone contact (n = 17, 25.3%). The sample sizes were also varied, varying from 6 to 10 participants (n

= 2, 3.4%), from 11 to 100 (n = 14, 20.8%), from 101 to 1,000 (n = 30, 44.7%) and 1,001 to 34,000 (n = 20, 29.8%).

An average distribution of 3.3 publications on the theme was per year, with the years 2016, 2018 and 2019 having the highest number of studies published, with 08 articles (13.7%) each. With the exception of the intervals between the years 2000-2004 and 2006-2007, that there were no publications on the impact of weight stigma on health, the year with the lowest number of publications was 2010, with only 01 study (1.7%). Despite the large number of countries producing studies on the topic (12 countries), such studies were concentrated in North America (n = 45, 67.1%) (Table 1).

For the structuring of the results of the studies, the repercussions of weight stigma were organized according to the sphere of health affected. In this way, repercussion of weight stigma were found in the three spheres of the WHO's concept of health, that is, the physical, mental and social well-being<sup>18</sup>. In addition, a fourth category was included to list the results of studies that highlighted the impact of weight stigma on more than one proposed health sphere.

**Table 1.** Studies that aimed to investigate the consequences of weight stigma on health outcomes

Health Dimension Assessed	Ref.	Main goal	Participants/%Women/Mean Age/BMI	Method/Instruments used to assess stigma	Main results
<b>Physical well-being</b>					
	2009, USA <sup>19</sup>	Test an expansion of the Stereotype Threat Model in the domain of exercise intentions/ food health.	100 overweight women; 100% women; mean age 38 years; mean BMI 30.	Quantitative; Subjective evaluation.	Meetings with a stereotyped threat contribute to an erosion of food/exercise self-efficacy, personal health intentions and potentially healthy behaviors among overweight individuals.
	2011, USA <sup>20</sup>	Examine how discrimination based on perceived weight influences identity and physical health.	3,034 participants; 51% women; mean age 46 years; mean BMI 26.	Quantitative; Set of questions on evaluations of discriminatory experiences, formulated by the authors.	The social processes of discrimination of perceived weight are responsible, at least in part, for the deleterious effects of severe obesity on health.
	2014, UK <sup>21</sup>	Examine the relationships between perceived weight discrimination and changes in weight, waist circumference and weight over four years in a large population sample.	2,944 participants; 58% women; mean age 63 years; mean BMI 31.	Quantitative; Instrument developed by the authors.	There was a significant association between perceived weight discrimination and weight change over four years. There was a trend towards greater weight gain (or less weight loss) in all groups.
	2014, USA <sup>22</sup>	To investigate the effects of experiences of weight stigma and internalization of weight bias on exercise motivation, behavior and attitudes with weight bias among overweight and obese individuals.	484 women recruited; 100% women; mean age 35 years; mean BMI 32.	Quantitative; Fat Phobia Scale, Belief Scale About Obese People (BAOP) and Weight Bias Internalization Scale.	Reports of experiences of weight stigma predicted higher levels of current reported exercise behavior. The internalization of weight bias was negatively correlated with motivation and self-efficacy of exercise, and was associated with lower levels of reported exercise behavior.
	2015, USA <sup>23</sup>	Testing whether self-reported weight discrimination is related to worse outcomes related to diabetes.	185 patients with type 2 diabetes; 65% women; 55 years; mean BMI 37.	Quantitative; Daily Discrimination Scale.	The attribution of self-reported weight discrimination was associated with a higher rate of diabetes, more emotional distress due to diabetes and fewer days of participation in diabetes self-care activities.
	2016, USA <sup>24</sup>	Assess whether weight-related discrimination triggers multisystem deregulation.	932 participants; 57% women; mean age 57 years; mean BMI 29.	Quantitative; Selfreporting of cases of perceived discrimination in interpersonal relationships on a day-today basis, both in the baseline and in 10-year follow-up surveys.	Long-term weight discrimination was associated with more than twice the risk of high allostatic; experiencing weight discrimination seems to promote many of the pathological characteristics of obesity.
	2017, UK <sup>25</sup>	Examine the association between the perception of weight discrimination and self-reported physical activity.	5,480 participants; 55% women; mean age 62 years; mean BMI 31.	Quantitative; Instrument developed by the authors.	Participants with experience of weight stigma were less likely to believe that weight was controllable, which could reduce the motivation to engage in exercise for weight control purposes.
	2017, USA <sup>26</sup>	Examine the role of weight stigma as potential contributors to maintaining weight loss and weight recovery.	3,087 adults; 59% women; mean age 42 years; BMI of 66% > 25.	Quantitative; Modified Weight Bias Internalization Scale.	Internalized weight stigma predicted significantly worse maintenance of weight loss.
	2018, USA <sup>27</sup>	Determine the mechanisms that link women's weight status to health care prevention.	315 participants in an online survey, 100% women; mean age 56 years; mean BMI 28.	Quantitative; 10-item Stigmatizing Situation Inventory (summary from SSI; Vartanian) and 11-item weight bias internalization scale modified (WBIS-M).	This study demonstrated a direct association between the BMI and the experienced and internalized weight stigma, which ended up being associated with a greater avoidance of health care.

Health Dimension Assessed	Ref.	Main goal	Participants/%Women/Mean Age/BMI	Method/Instruments used to assess stigma	Main results
	2018, USA <sup>28</sup>	Examine the effect of a stigmatizing social weight assessment threat on HPA reactivity (hypothalamus-pituitary-adrenocortical, which governs the secretion of cortisol, a stress hormone).	170 adults; 63% women; mean age 35 years; mean BMI 27.	Quantitative; Subjective evaluation.	For lean participants, the test induced an increase in cortisol levels, for overweight participants, the test induced attenuated cortisol responses.
	2019, USA <sup>29</sup>	Determine whether the experienced stigma and/or internalized weight bias mediate BMI for the pain-related disability ratio.	309 women recruited online; 100% women; mean age 56 years; mean BMI 28.	Qualitative; Abbreviated Stigmatizing Situations Inventory (SSI-Brief).	Weight-related stigma is associated with pain symptoms in a non-clinical/community sample of women and these relationships are evident for individuals across the weight spectrum.
	2019, Ireland <sup>30</sup>	Examine the relationship, over 4 years, between obesity and longitudinal increases in biological disease in the form of physiological dysregulation and test whether the physiological consequences of obesity can be, at least in part, attributable to the stress of weight discrimination.	3,609 participants; 52% women; mean age 64 years; mean BMI 28.	Quantitative; Perceived Scale of Daily Experiences with Discrimination.	Obesity is associated with increases in physiological dysregulation over 4 years. Obese participants were more likely to report having suffered discrimination based on weight, and these stigmatizing experiences predicted adverse changes in physiological dysregulation over time.
<b>Social well-being</b>					
	2019, Chile <sup>31</sup>	Determine the association between stigmatization based on weight, psychological stress, cortisol, negative emotions and eating behavior.	82 university employees; 100% women; mean age 45 years; BMI of 55% > 25.	Quantitative; Positive Affect and Negative Affect Schedule (PANAS).	Perceived stress was associated with greater food consumption, only among women belonging to the stigmatized group. Stigmatization experiences interact with the perception of stress, generating greater physiological reactivity to stress.
	2005, USA <sup>32</sup>	Examine obesity stigma in adults by looking at the relationship between obesity stigma and adults' preferences for sexual partners.	449 undergraduate psychology students; 61% women; mean age 19 years; mean BMI 79% < 25.	Quantitative; Instrument developed by the authors.	Men are more likely to choose sexual partners on the basis of weight than women are. Obesity stigma may specifically affect women in sexual relationships.
	2005, USA <sup>33</sup>	Evaluate the prevalence, types, and psychological consequences of perceived discrimination reported by persons with obesity in the United States.	3,437 individuals; 49% women; mean age 47 years; mean BMI 61% > 25.	Quantitative; Instrument developed by the authors.	People with overweight and obesity are more likely, to report major discrimination, interpersonal discrimination, and work-related discrimination. However, only people with obesity (obese II/III) reported health care related discrimination, job discrimination and poorer self-acceptance levels.
	2009, UK <sup>34</sup>	Examine weight-related stigma in intimate relationships.	57 heterosexual college couples; 50% women; mean age 23 years; mean BMI 24.	Quantitative; Instrument developed by the authors.	Heavier women had lower quality ratios and predicted they were less likely to remain intact.
	2013, Germany <sup>35</sup>	Examine whether obese job seekers are treated or behave differently than non-obese candidates.	1,457 adults; 46% women; mean age 35 years; BMI of 55% < 25.	Quantitative; Instrument developed by the authors.	The only group that experiences negative results in the labor market are obese women.
	2016, USA <sup>36</sup>	Testing whether weight stigma in individuals with higher body weight are mediated by expectations of social rejection.	162 individuals; 52% women; mean age 20 years; mean BMI 25.	Quantitative; Rosenberg's Self-Esteem Scale.	Expectations of rejection were a major contributor to the deleterious psychological effects of the threat of weight-based social identity among overweight women.
	2016, Poland <sup>37</sup>	To investigate personal and subjective experiences of obese women related to weight bias and discrimination in the workplace.	420 women; 100% women; mean age 51 years; mean BMI 36.	Qualitative; Interviews were conducted in focus groups whose central theme was stigmatization and discrimination against obese people in the workplace.	All subjects experienced significant mood disorders as a result of job discrimination.

Health Dimension Assessed	Ref.	Main goal	Participants/%Women/Mean Age/BMI	Method/Instruments used to assess stigma	Main results
<b>Mental well-being</b>					
	2008, USA <sup>38</sup>	Evaluate the associations between stigmatization based on weight, psychological distress and binge eating behavior.	93 individuals; 74% women; mean age 53 years; mean BMI 42.	Quantitative; Stigmatizing Situations Inventory (SSI).	A stigmatizing situation can trigger a negative mood, which, in turn, can lead to binge eating behavior designed to reduce suffering.
	2008, USA <sup>39</sup>	Evaluate the psychological and behavioral correlates of recent stigmatization of weight.	94 individuals; 73% women; mean age 47 years; mean BMI 47.	Quantitative; Inventory of Stigmatizing Situations (SSI).	Recent stigmatizing experiences are associated with psychological distress as well as binge eating behavior.
	2009, USA <sup>40</sup>	Identify relationships between perceived discrimination based on weight and multiple psychiatric disorders.	34,653 adults; 43% women; mean age 48 years; mean BMI 26.	Quantitative; Scales of Experiences with Discrimination developed by Krieger and collaborators.	Perceptions of weight discrimination can be a risk factor for multiple diagnoses of mental disorders and substance use, as well as psychiatric comorbidities.
	2009, USA <sup>41</sup>	Examine whether the experience and fear of the negative consequences of obesity are associated with relatively greater success in weight loss and maintenance.	185 members of a behavioral group treatment program for obesity; 83% women; mean age 55 years; mean BMI 27.	Quantitative; Inventory of Stigmatizing Situations (ISS).	The history of weight-based stigmatization was associated with poorer psychological functioning, however, more frequent stigmatizing experiences also predicted greater weight loss.
	2010, USA <sup>42</sup>	Determine the contribution of weight stigmatization to the risk of binge eating.	99 clinic patients for weight control; 85% women; mean age 27 years; mean BMI 28.	Quantitative; Myers and Rosen's Stigmatizing Situations Inventory.	Weight stigmatization represented a significant variation in binge eating only among students.
	2011, USA <sup>43</sup>	Examine whether coping mediates the relationship between perceived weight stigma and psychological distress.	54 adults; 79% women; mean age 47 years; mean BMI 37.	Quantitative; Inventory of Stigmatizing Situations (ISS).	Greater stigmatization experiences were significantly related to greater maladaptive coping responses, which were positively related to depression.
	2011, USA <sup>44</sup>	Analyze and elaborate the nature and impact of stigma from the point of view of obese individuals themselves.	142 participants; 100% women; mean age 44 years; mean BMI 39.	Qualitative; It was not asked specifically about the stigma of obesity, as the authors were interested in whether descriptions of the stigma would emerge "spontaneously".	One of the most common impacts of stigmatization experiences was on emotional health and well-being and, in particular, self-worth and self-esteem.
	2011, USA <sup>45</sup>	To determine whether exposure to a stigmatizing video influenced caloric intake, mood and blood pressure in overweight and normal weight women.	102 women; 100% women; mean age 31 years; BMI of 50% > 25.	Quantitative; Fat Phobia Scale (shortened form).	Overweight women consumed more than three times the calories of overweight women who watched an emotionally neutral video.
	2012, USA <sup>46</sup>	Examine the relationship between discrimination and binge eating.	486 participants; 81% women; mean age > 18 years; BMI of 56% > 25.	Quantitative; Items from the National Middle Age Development Survey in the United States to measure the frequency and impact of discrimination and the scale of internalization of weight bias.	Perceived discrimination is associated with eating disorders.
	2012, USA <sup>47</sup>	Examine whether weight-related stigma increases the likelihood of suicide.	396 individuals who sought weight loss services; 76% women; mean age 43 years; mean BMI 49.	Quantitative; The Stigmatizing Situations Inventory (SSI).	The rates of suicide attempts are higher than in community samples.
	2012, USA <sup>48</sup>	To study the relationship between the different aspects of quality of life of patients who sought weight loss surgery, in particular, the impact of weight stigma on this relationship.	574 patients being evaluated for weight loss surgery; 73% women; mean age 43 years; mean BMI 46.	Quantitative; Impact of weight on quality of life (IWQOL-lite).	Weight stigma not only has an adverse effect on psychosocially obese individuals, but it can also lead some obese people to avoid the necessary health care, which ends up having direct medical implications.

Health Dimension Assessed	Ref.	Main goal	Participants/%Women/Mean Age/BMI	Method/Instruments used to assess stigma	Main results
	2013, USA <sup>49</sup>	Examine the impact of weight-based provocation on aspects of psychological well-being, self-perceptions and behaviors in the physical domain, and physical fitness.	1,419 teenage students; 55% women; mean age 12 years; mean BMI 21.	Quantitative; Instrument developed by the authors.	The results support the connection between weight-based teasing and lower levels of psychological well-being as well as low self-esteem and higher levels of depression, low physical self-concept and less effective physical fitness.
	2014, USA <sup>50</sup>	Examine the moderating role of external discrimination and weight-based self-discrimination in the relationship between BMI and health-related quality of life.	81 women; 100% women; mean age 41 years; mean BMI 43.	Quantitative; Weight-weight internalization scale and Daily discrimination scale.	The greatest internalized weight bias was associated with worse physical and mental quality of life, and more perceived discrimination experience from others was associated with worse physical quality of life. BMI alone is not sufficient to explain the variance in quality of life.
	2014, Spain <sup>51</sup>	To analyze the relationship between open and subtle discrimination and physical and psychological quality of life in patients with obesity.	111 obese outpatients; 66% women; mean age 43 years; mean BMI 38.	Quantitative; Multidimensional Perceived Discrimination Scale.	People who suffer direct and indirect forms of social discrimination report lower well-being and quality of life.
	2014, Austrália <sup>52</sup>	Develop a more refined understanding of the ecologically valid experience of weight stigma in people's daily lives.	46 community members; 52% women; mean age 28 years; mean BMI 30.	Quantitative; Inventory of Stigmatizing Situations (SSI).	Study participants reported experiences of weight stigma almost once a day, which was associated with more negative mood.
	2014, USA <sup>53</sup>	Examine the importance of social stigma related to obesity in relation to other factors of Quality of Life in reducing general well-being.	337 primary care patients with moderate to severe obesity; 68% women; mean age 46 years; mean BMI 40.	Quantitative; Public aid subscale.	Social stigma related to obesity was the most important determinant of quality of life in the adverse effect of obesity on how Caucasian women valued their health. Obesity-related sexual function impairment was the most important contributor for African American women, and the adverse impact of obesity on professional life was the most important factor for Hispanic women.
	2015, USA <sup>54</sup>	To assess whether stigma or self-stigma is associated with factors that affect vulnerability to stress among overweight and obese medical students.	4,687 students; 50% women; mean age 23 years; BMI of 75% < 25.	Quantitative; Crandall's Anti-Fat Attitudes Questionnaire, Fat-Thin IAT and Everyday Discrimination Scale.	Participants had worse general health and low self-esteem than students with normal weight, as well as high risk of stress, risk of professional burnout, low professionalism and empathy, lower academic performance, poor mental health, higher risk of substance abuse and suicidal ideation.
	2015, UK <sup>55</sup>	Investigate the extent to which perceived weight discrimination mediates quality of life, life satisfaction and depressive symptoms.	5,056 participants; 55% women; mean age 67 years; mean BMI 28.	Quantitative; Instrument developed by the authors.	Individuals who reported experiences of weight discrimination had worse psychological well-being in all three domains.
	2016, USA <sup>56</sup>	Test the relative effects of BMI and weight-based peer discrimination on increasing emotional problems.	5,128 adolescents; 52% women; mean age < 18 years; BMI of 23% > 25.	Quantitative; Four items adapted from the Teenage Distressed Discrimination Distress Index.	Young people are more dissatisfied with their bodies, as well as feeling more anxious, lonely and sick, due to the way they perceive being treated by their colleagues because of their weight.

Health Dimension Assessed	Ref.	Main goal	Participants/%Women/Mean Age/BMI	Method/Instruments used to assess stigma	Main results
	2016, USA <sup>57</sup>	Examine weight stigmatization throughout life as a mediator between weight and psychological health.	299 students; 100% women; mean age 20 years; mean BMI 23.	Quantitative; Inventory of Stigmatizing Situations (SSI).	The stigma of weight throughout life significantly mediated the relationships between the variables of weight status and the psychological health variables (depressive symptoms and dissatisfaction with body image).
	2016, USA <sup>58</sup>	Demonstrate how the stigmatizing experience associated with being overweight influences the healthy and unhealthy caloric intake of overweight people.	260 undergraduate students; 54% women; mean age 21 years; BMI of 50% > 25.	Quantitative; Subjective evaluation.	Stigmatized overweight consumers end up eating more calories, regardless of the context of consumption.
	2016, USA <sup>59</sup>	Examine the association between weight discrimination and various eating-related behaviors.	5,129 adults; 50% women; mean age 44; BMI <i>unavailable</i> .	Quantitative; Perceived discrimination was measured with the version of daily experiences perceived with a discrimination scale.	Discrimination has been associated with overeating, that is, those who experience weight discrimination eat more convenience foods and eat more irregularly than those who have not experienced discrimination.
	2017, USA <sup>60</sup>	Examine the interaction of perceived weight stigma as a predictor of food selection (inhibitory control).	84 university students; 90% women; mean age 21 years; mean BMI 32.	Quantitative; Instrument developed by the authors.	Weight stigma has implications for both cognitive function and eating behavior.
	2017, USA <sup>61</sup>	Determine the effects of weight stigma on disordered eating and physical activity.	302 students from ninth to twelfth grade; 72% women; mean age 16 years; BMI of 62% < 25.	Quantitative; Implicit Association Test (IAT).	Students who reported bullying were more likely to use avoidable coping strategies and increased strategies to cope with food consumption.
	2017, Spain <sup>62</sup>	Investigate the relationship between unmasked and subtle discrimination and internalized weight stigma; and between unmasked and subtle discrimination and depression and anxiety.	170 participants; 34% women; mean age 46 years; mean BMI 42.	Quantitative; Weight Self-Stigma Questionnaire (WSSQ).	Discrimination experiences, both unmasked and subtle, are positively related to self weight stigma in people with obesity; and negative beliefs about yourself increase the chance of developing depression and anxiety problems.
	2018, UK <sup>63</sup>	Examine whether concerns about weight stigma explain why individuals who perceive their weight status as being overweight are at increased risk of overeating.	1,236 participants; 56% women; mean age 37 years; mean BMI 26.	Quantitative; Perceived Everyday Experiences with Discrimination Scale and Weight Stigma Concerns Scale.	Concerns about weight stigma may explain why perceiving one's own weight status as being overweight is associated with an increased tendency to overeat.
	2018, USA <sup>64</sup>	Examine whether weight discrimination increases the risk of incident dementia, regardless of BMI and other risk factors involved in discrimination and dementia.	12,053 participants; 60% women; mean age 67 years; BMI of 75% > 25.	Quantitative; A measure of everyday discrimination was included in the questionnaire that participants completed in 2006 or 2008.	Weight discrimination was associated with a 40% increased risk of developing dementia in the next eight to 10 years.
	2018, Italy <sup>65</sup>	To test whether weight stigma, through the stereotyped threat mechanism, is responsible for deficits in working memory among individuals with obesity.	137 University students and staff; 75% women; mean age 41 years; mean BMI 34.	Quantitative; Subjective evaluation.	The results revealed a negative relationship between the body mass index and working memory only under conditions of stereotyped threat.
	2018, Austrália <sup>66</sup>	Examine whether the frequency of weight stigma experienced and internalized weight bias predicts different coping responses and whether this, in turn, predicts psychological distress.	1,391 participants; 56% women; mean age 36 years; mean BMI 35.	Quantitative; Inventory of Stigmatizing Situations (SSI).	Weight stigma predicts poor psychological well-being, through a tendency to internalize bias and to become involved in maladaptive coping in response to weight stigma.

Health Dimension Assessed	Ref.	Main goal	Participants/%Women/Mean Age/BMI	Method/Instruments used to assess stigma	Main results
	2018, USA <sup>67</sup>	Examine whether and to what extent the threat of weight-based social identity occurs in non-romantic social interactions.	146 women; 100% women; mean age 19 years; mean BMI 30.	Quantitative; Crandall's Anti-Fat Attitude Scale.	Greater anticipated rejection impaired cognitive performance, judgment of one's appearance and social self-esteem, more negative emotions, more stressful interaction, more rumination, more reported efforts to compensate and more spontaneous thoughts related to anxiety and evaluative concern.
	2018, Netherlands <sup>68</sup>	Testing the suggestion that the internalized weight bias predominantly reflects threats to morality.	561 participants; 52% women; mean age 47 years; mean BMI 28.	Quantitative; Modified Weight Bias Internalization Scale (WBISM).	The stigma of weight that emphasizes that overweight and obese people is immoral gives rise to fear of condemnation and will lead to preferences for responses that will allow to show quickly and visibly to others that someone is willing to improve and change behavior.
	2019, USA <sup>69</sup>	Examine the association between weight discrimination and multiple domains of cognitive function.	2,593 adults; 60% women; mean age 75 years; mean BMI 29.	Quantitative; Everyday Experiences with Discrimination measure; Consortium to establish a registry for Alzheimer's disease (CERAD).	Weight discrimination was associated with an about two-fold increased risk of poor performance on tasks that measured episodic memory, speed-attention, visuospatial ability, and numeric reasoning.
	2019, USA <sup>70</sup>	Examine the experienced and internalized weight stigma and its associations with health.	1,249 men; 0% women; mean age 39 years; mean BMI 26.	Quantitative; Modified Weight Bias Internalization Scale.	The stigma of weight can contribute negatively to some health indexes in men such as: depressive symptoms, binge eating and lower self-rated health.
	2019, Germany <sup>71</sup>	Investigate the extent to which individuals with obesity suffer from loneliness and determine the role of depression and weight stigma in this context.	1,000 participants; 45% women; mean age 56 years; mean BMI 30.	Quantitative; German version of the weight bias internalization scale (WBIS) and the Lifelong Discrimination Scale of the National Midlife Development Survey in the USA (MIDUS) on self-perceived. discriminatory experiences.	Loneliness can occur more frequently in obese individuals and is related to depressive symptoms, greater self-stigma and weight discrimination.
	2019, Australia <sup>72</sup>	Test the hypothesis that the label increases weight prejudice and disgust towards people with obesity and whether the label negatively affects the mood and self-esteem of obese people.	1,187 adults; 58% women; mean age 41 years; mean BMI 26.	Quantitative; Universal Measure of Bias.	The negative image of obesity promotes prejudice and disgust towards people with obesity. In addition, worsened their mood and the state of low self-esteem.
	2019, Canada <sup>73</sup>	Explore weight bias and obesity stigma experiences of people living with obesity.	10 people living with obesity; 80% women; mean age >18 years; mean BMI 25.	Quantitative; Narrative investigation of experiences with obesity, weight bias and stigma, focusing on the personal, public and health domains.	Internalized weight bias and stigma can lead to negative conversations, feelings of shame and guilt that affect your ability to engage in health-promoting behavior. External stigmatization can reduce the participation of individuals in education, employment and in health promotion environments.
	2019, Brazil <sup>74</sup>	Investigate the body image of overweight people and the psychosocial aspects experienced by them.	58 adults; 81% women; mean age 38 years; mean BMI 25.	Qualitative; Semi structured interview.	The look of the other had an impact on the configuration of the body image, influenced the way of thinking and feeling about oneself.

Health Dimension Assessed	Ref.	Main goal	Participants/%Women/Mean Age/BMI	Method/Instruments used to assess stigma	Main results
	2020, USA <sup>75</sup>	Examined the nature of weight stigma-specific coping strategies in response to both experienced weight stigma and weight bias internalization.	11,924 adults engaged in weight management; 94% women; mean age 50 years; mean BMI 33.	Quantitative; 10-item version of the Modified Weight Bias Internalization Scale, Coping with Weight Stigma Scale and the Brief COPE inventory.	Weight bias internalization is associated with more use of coping strategies with the potential to harm health (e.g., disordered eating, substance use, self-blame), while more lifetime experiences of weight stigma appear to be associated with more attempts to cope in general.
	2020, USA <sup>76</sup>	Examined whether anticipated weight stigma may explain the relations between weight discrimination and disordered eating.	297 participants recruited through a online data collection; 52% women; mean age 31 years; mean BMI 27.	Quantitative; Everyday Discrimination Scale.	Greater experiences with weight discrimination were indirectly associated with disordered eating behaviors and cognitions (eg: cognitions related to eating disorders) via anticipated weight stigma.
	2020, UK <sup>77</sup>	Determine whether weight related self-stigma predicted worsening "food addiction" over time.	308 first-year psychology students; 91% women; mean age 18 years; mean BMI 21.	Quantitative; Yale Food Addiction Scale, and Weight Self-Stigma Questionnaire.	Fear of stigma but not self-devaluation was associated with worsening "food addiction" symptomatology over time.
<b>Physical and psychological well-being</b>					
	2009, USA <sup>78</sup>	To investigate whether weight stigma is associated with obesity-related morbidity.	87 adults; mean 44 years; BMI <i>unavailable</i> .	Quantitative; Instrument developed by the authors.	The stigma associated with obesity plays a role as a determinant of self-rated health, however, it may not be an important explanatory variable in the association of BMI-hypertension.
	2012, USA <sup>79</sup>	Investigate whether overweight individuals experience threats of social identity in situations that trigger concerns about weight stigma.	99 individuals; 100% women; mean age 18 years; mean BMI 27.	Quantitative; Subjective evaluation.	Women who believed that their weight would be visible to the evaluators, the higher the BMI, the greater their reactivity to stress and the more cognitively impoverished.
	2015, USA <sup>80</sup>	Investigate whether BMI and self-reported psychological health and physical health are mediated by past discrimination experiences and stigma concerns.	171 individuals; 60% women; mean age 34 years; mean BMI 25.	Quantitative; Instrument developed by the authors.	Perceived discrimination harms psychological and physical health, raising concerns about future stigmatization.
	2016, USA <sup>81</sup>	Examine the relationship between the perception of weight discrimination and change in health markers in approximately 10 years.	2,994 participants; 51% women; mean age 55 years; mean BMI 30.	Quantitative; Instrument developed by the authors.	The results indicate that weight discrimination is associated with worse physical and mental health over time.
	2018, USA <sup>82</sup>	Identify how "overweight" endurance athletes experience stigma and how it affects their mental and physical health, as well as their participation in endurance sports.	6 adults; 83% women; mean age 42 years; mean BMI 25.	Qualitative; Semi structured interview.	The perceived stigma was what led most of the athletes to train indoors, however, after the initial discomfort of moving to public environments, none of the participants indicated that they had participated less in the chosen sport because of the perceived stigma.
	2020, USA <sup>83</sup>	Assessed whether pre-pandemic experiences of weight stigma predicted maladaptive eating behaviors, physical activity, stress, and depressive symptoms during the spring and early summer months of the COVID-19 outbreak in the USA.	584 participants in a longitudinal study; 64% women; mean age 24 years; mean BMI 28.	Quantitative; Questionnaire on Eating and Weight Patterns-Revised, Motivations to Eat Scale, Godin Leisure Time Exercise Questionnaire.	Pre-pandemic experiences of weight stigma predicted higher levels of stress, depressive symptoms, eating to cope with stress, and an increased likelihood of binge eating among young adults during the COVID-19 pandemic.

Health Dimension Assessed	Ref.	Main goal	Participants/%Women/Mean Age/BMI	Method/Instruments used to assess stigma	Main results
	2020, Brazil <sup>84</sup>	Understand the experience of discrimination perceived by overweight women.	11 participants; 100% women; mean age 40 years; mean BMI <i>unavailable</i> .	Qualitative; Instrument developed by the authors.	The stigma brought serious psychosocial repercussions, such as behavior and attitudes of social isolation, deprivation of conjugal intimacy, withdrawal from work, concealment of the body and physical illness.
	2020, Brazil <sup>85</sup>	Investigate, qualitatively, fat Brazilian women's perceptions of their own bodies and their experiences with weight-related discriminations, and how these experiences affect their well-being.	39 individuals; 100% women; mean age 34 years; mean BMI 34.	Qualitative; semi-structured interview developed by the authors.	Having a larger body was related to physical (e.g., body pains, unwillingness to perform activities) and psychological (e.g., low self-esteem, less social engagement) consequences. Furthermore, the participants voiced negative attitudes towards themselves and a hateful relationship with their own bodies.

### Impact on physical well-being

Of the studies found, 22.4% (n = 13) dealt with the impact of weight stigma on physical well-being, more specifically assessing the effect of stigma on structural and biological factors such as: greater tendency towards sedentary lifestyle; increase and/or difficulty in losing weight; increased physical pain; decreased perception of functional capacity; avoidance to seek health care; cardiovascular, inflammatory, lipid and metabolic dysregulation; changes in cortisol levels; and elevation of glycated hemoglobin index.

One of the consequences of weight stigma that draws attention is the tendency for greater weight gain (or less loss), because such a result could perpetuate the stigma. One study pointed out that, over four years, there was an average increase of 1.66 kg among individuals who reported experiences of weight discrimination<sup>21</sup>. Weight gain has been more frequently placed as a risk factor for increased physical pain and, although it is possible to explain this relationship with physiological reasons, it is also correct to state that the stress induced by the experience of weight stigma can be involved in the case of individuals having more physical pain with and without associated medical conditions<sup>29</sup>.

It is also important to draw attention to the results of studies that found a positive association between perceived weight discrimination and physiological dysregulation, as measured by cardiovascular, inflammatory, lipid and metabolic dysregulation<sup>30</sup>; as well as a negative association between stigma and excess weight and allostatic load (measured using 7 systems: sympathetic and parasympathetic nervous system, hypothalamic-pituitary adrenal axis, cardiovascular functioning, general and lipid metabolic activity, glucose metabolism, and inflammatory system) and, potentially, morbidity and mortality from chronic diseases<sup>24</sup>.

Although overweight and obesity are the main contributors to the increased prevalence of type 2 diabetes and comorbidities, self-reported weight-related discrimination showed to be associated with elevated glycated hemoglobin index, greater emotional distress due to diabetes, fewer days of participation in self-care activities and even non-adherence to behaviors essential to the success of diabetes treatment, such as a balanced diet, exercise and regular blood glucose monitoring<sup>23</sup>.

### Impact on social well-being

Only 8.9% (n = 6) of the studies addressed direct social impacts caused by weight stigma. The results showed that, in this sphere, there are differences between the sexes, and the most affected were women with obesity. In addition, weight stigma causes women to tend to maintain relationships of lower quality and stability or even to avoid building new relationships<sup>36</sup>.

Regarding the repercussions of weight stigma in the sphere of work, it was noted that men with overweight and obesity and women with overweight did not suffer discrimination in terms of access to programs that were part of active labor market policies or in their labor and wages outcomes. The only group that experienced negative results in the job market was the group of women with obesity. Despite making more job applications and becoming more involved in vocational training programs, they had worse job results, and were less likely to be employed than normal weight women and more likely to earn less in terms of hourly wages<sup>35</sup>. In addition, women with obesity commonly experienced work-related discrimination, humiliation, provocation or social isolation at the workplace<sup>37</sup>.

## Repercussions on mental well-being

The studies that aimed to verify the impact of weight stigma on mental well-being were the majority in the *corpus* of the present review (59.7%, n = 40). Among the findings, the consequences of weight stigma on mental well-being stood out, including: dysfunctional eating behavior (quantity and quality of food eaten), eating disorders (binge eating and bulimia), low self-esteem, worse psychological well-being in quality of life and life satisfaction domains, bad psychosocial function, lower levels of physical self-concept and self-efficacy of physical fitness, depreciation of appearance, more stressful interactions, more rumination, greater perception of loneliness, higher levels of depression and anxiety, maladaptive coping, worse cognitive performance, worse working memory performance, higher probability of developing dementias and higher suicide rate.

Based on the results of studies that aimed to understand the impacts of weight stigma on dysfunctional eating behavior (n = 11), it is possible to conclude that weight stigmatization is related to binge eating among samples of university students<sup>42</sup>, adults in general<sup>46</sup> and men<sup>70</sup>. In the latter study, in addition to binge eating, depressive symptoms, dietary restrictions aimed at losing weight and worse self-reported health were identified as consequences of weight stigma<sup>70</sup>. Concerns about weight stigma partially explained the relationship between perceived overweight and overeating<sup>63</sup>.

Only three studies evaluated samples with subjects under 18 years of age, all of which were related to the repercussions of weight stigma on mental well-being, indicating the impact of this stigma on the psychological distress of adolescents. Young people who experienced weight stigma showed low self-esteem, higher levels of depression, and lower levels of physical self-concept and self-efficacy of physical fitness than adolescents who did not experience this situation<sup>49</sup>. In addition, the way school-age young people perceived the treatment of peers based on their weight made them more dissatisfied with their bodies and more anxious, lonely and sick<sup>56</sup>. Still in this discussion, it is important to highlight that the assessment of weight stigmatization throughout life has the potential to deteriorate the health of individuals in the long run<sup>57</sup>.

In a sample of 1,000 participants, it was observed that the high perception of loneliness occurred more frequently in individuals with obesity and was related to depressive symptoms, greater self-stigma and weight discrimination<sup>71</sup>. This characteristic was also observed in a specific population of women looking for surgical procedures to treat obesity. It was observed that the frequency with which experiences of stigmatization related to weight occurred were associated with a greater perception of loneliness, which in turn was associated with a higher rate of suicide, with 30.3% of the

women reporting suicidal thoughts, 11.1% somewhat serious suicidal ideation, 7.6% suicide attempt/plan, and 5.6% lifelong suicide attempt<sup>47</sup>.

Important aspects related to cognition can also be affected by the experience of stigmatization by being overweight. A study with a longitudinal sample showed that, over a 10-year period, there were 40% more cases of dementia than would be expected, based on the initial profile of the participants, among individuals who reported experiencing weight discrimination<sup>64</sup>. In this same perspective, the working memory performance also seems to be an aspect affected by weight stigma. It was found that such an aspect of cognition may be lower in individuals in whom concerns related to overweight stigma became prominent<sup>65</sup>.

## Mixed category (physical and psychological impact)

Of the studies analyzed, 11.9% (n = 8) found results that demonstrate the impact of social stigma in more than one sphere of health. Some of the main impacts of this category are: increased blood pressure as a result of a stressful situation, which can generate an attention deficit; increased physical pain and psychological illness; and difficulty in finding clothes and equipment suitable for the practice of physical activity by individuals with obesity that can generate physical accidents and contribute to negative self-concept and body image results among these subjects.

Individuals who experience discrimination report more daily stressors over the course of a normal week, experience more physical symptoms (body pains, for example) and feel more negative affect (sadness, anger) and less positive affect (joy, pride) than individuals who do not experience weight discrimination. In addition to physiological responses to weight stigmatization experiences, individuals who perceive weight discrimination are more vulnerable to stressors in the course of their daily lives. The impact of these stressors is likely to accumulate over time and may be a mechanism by which weight discrimination is associated with poorer health over time<sup>81</sup>.

In a very specific sample of medical students with overweight and obesity compared to normal weight students, a worse general health condition was observed (symptoms of fatigue - chronic tiredness, headaches, dizziness, sore muscles, etc.) and low body esteem among the individuals with overweight and obesity, placing them at high risk of stress and also professional exhaustion, low professionalism and empathy, lower academic performance, low mental health, higher substance abuse and suicidal ideation<sup>54</sup>.

In this category, there was a study that disagreed with the impact of weight stigma on blood pressure. The hypothesis was tested in a cohort of individuals from the

Dominican Republic, a culture that values the fat bodies over thin ones. This study highlighted that the stigma associated with obesity plays a determining role in self-rated health, that is, people who have a preference for larger bodies have a tendency to feel better about their health, even though they are overweight. Perhaps for this reason, in this study, it was found that stigma may not be an important explanatory variable in the association between BMI and hypertension<sup>78</sup>.

## DISCUSSION

The aim of the present study was to carry out an integrative review of the growing body of research studies that investigate the repercussions of the social stigma of overweight on the health of adults and adolescents. The results showed that, in the vast majority of studies analyzed, weight stigma had a negative impact on the health. The most studied dimension of health analyzed in the recent literature was the mental well-being.

Contemporary society attributes negative values and stigmas to subjects who have a fat body, and this characteristic ends up becoming an undesirable social, moral and identity mark, which disqualifies subjects because they do not fit the current body standards<sup>86</sup>. Individuals living with overweight often experience situations of stigmatization and are submitted at all times with media information about how their body should be<sup>14</sup>. Consequently, these subjects, affected by the stigmatization of their social environment, agree with the negative attitudes and blame themselves for being overweight<sup>5</sup>. Thus, there is an internalization of stigmatizing attitudes, and individuals who live with excess weight start to believe in their physical and moral disbelief<sup>5</sup>. This is one of the mechanisms through which weight stigma has been associated with depression, anxiety and other psychological correlates<sup>14</sup>. It was noteworthy that there were higher levels of depression and an increase in the frequency of discrimination experiences among individuals with a higher BMI<sup>71</sup>.

The shame of showing the body or exposing it to social situations are another mechanism through which weight stigma causes damage to the health of people with overweight<sup>87</sup>. Due to shamed of their weight/body and fear of judgments, including by health professionals, these individuals avoid seeking health care and also feel uncomfortable about exercising in public, and this ultimately makes them more sedentary<sup>87</sup>. It is worth noting that the fear of judgment on the part of health professionals is a consequence of the treatment given by most of them. That was observed in studies that found that physical therapists<sup>88</sup>, occupational therapists<sup>89</sup>, physicians, nurses, and other professionals of a university hospital<sup>90</sup>, maintained harmful

attitudes and stereotyped beliefs about obesity. According to these studies, these professionals use to judging patients according to negative adjectives as often as the general population, and this could result in the non-involvement of people living with obesity with the health system<sup>91</sup>.

It is worth mentioning the question of anticipated expectation of rejection, a psychological mechanism in which individuals who anticipate being stigmatized. This makes people with overweight avoid putting themselves in situations where they fear suffering stigma, preventing them from applying for certain jobs, participating in social events, and seeking medical care<sup>92</sup>. Given the extent of the weight bias and discrimination in our culture, individuals with overweight or obesity are likely to encounter numerous situations in which they anticipate rejection based on their weight<sup>92</sup>. They are, therefore, susceptible to experiencing threats of social identity and its deleterious cognitive, affective and physiological effects, chronically associated in their daily lives.

In this light, it is clear that weight stigma causes consequences that unfold and are perpetuated in other areas of the lives of individuals who experience such a situation. Low intelligence, for example, is a stereotyped characteristic commonly attributed to individuals with obesity<sup>5</sup>. Due to the anticipated expectation of rejection, individuals with obesity are at risk of confirming this stereotype whenever their cognitive functioning is under evaluation, perpetuating internal consequences such as low self-esteem, stress, anxiety, depression, and external consequences such as difficulty finding a job or relating to other people<sup>93</sup>.

Physiological aspects that are apparently not linked to the social sphere, such as inflammatory, lipid, metabolic and cardiovascular regulation, seem to be directly and indirectly affected by the experience of weight stigma, and are associated with multiple chronic health conditions<sup>94</sup>. In this sense, it is possible to point out that the repercussion of obesity on the physiology of the body goes beyond physical aspects and includes an important influence of stigma<sup>94</sup>. Furthermore, high levels of cortisol, which have been associated with experiences of weight stigmatization, suggest that these experiences can sharply increase the response to stress and compromise its regulation; this, in turn, can increase sensitivity to stress in general and lead to the development of several health problems. Thus, discrimination based on weight can increase the medical burden associated with obesity<sup>94</sup>.

Ayaka Tomiyama proposed the "cyclic obesity/weight-based stigma model", named by the acronym COBWEBS, which theorizes, among other questions, that weight stigma-induced stress initiates a cascade of behavioral, emotional and physiological responses<sup>95</sup>. The modal response in any of these domains causes weight gain, either directly, through

stress-induced cortisol secretion, or mediated by coping attempts that promote eating and weight gain<sup>95</sup>. Such a model helps to explain part of the results found, especially with regard to the increase in the probability of gaining weight and the decrease in the chances of losing weight, greater propensity to binge eating and increased tendency to eat in response to mood changes<sup>95</sup>.

This model also characterizes weight stigma not as a static construction, but as a “vicious cycle” – a positive feedback cycle in which weight stigma generates weight gain through increased food consumption and other behavioral biological mechanisms. The net effect of this process is to promote weight gain, which exposes individuals to greater experiences of weight stigma, triggering the cycle again<sup>95</sup>.

It is known that being overweight can be directly associated with the appearance of chronic health conditions such as kidney disease, cancer, diabetes, sleep apnea, liver disease, high blood pressure and cardiovascular diseases<sup>96</sup>. However, based on this review, some physical symptoms were intensified because of weight stigmatization. This finding is possibly related to the fact that, contrary to what is desired, weight stigma takes individuals away from healthy and self-care behaviors<sup>23</sup>.

Regarding sex distribution in the samples, it was observed that studies in the literature on weight stigma are mostly focused on one group, the female<sup>27</sup>. The scarcity of researches aimed at assessing weight stigma and its repercussions on the health of men is due, in part, to the perceptions that women are more affected by body image and stigma than men<sup>97</sup>. However, according to the results of studies that included men in their samples, it is possible to state that this population is also affected by weight stigma. Greater attention has to be given to men and their relationship with weight stigma both in research and in the clinical practice of health professionals. Overweight was diagnosed in about half of men and women, and the prevalence of obesity was 12.5% and 16.9% for men and women, respectively. These data reinforce the importance of shedding light on the issue of weight stigma in men, since the male population represents a large portion of the population with overweight<sup>98</sup>.

In addition, it is worth noting that, because it is a very complex condition that indirectly reunites a series of repercussions in the psychosocial spheres<sup>10</sup>, it is clear that, despite the didactic division made in the present review to better visualize the consequences of stigma on health, they all permeate the emotional sphere. This is because, although the weight stigma is a social process, it directly affects the individual's relationship with his own identity.

The negative repercussions of weight stigma on people's health are mostly confirmed by quantitative studies, what hinders a further deepening in the issues involved in this

process. Another point to be considered concerns the small number of studies that have proposed to study the male population, which also suffers the consequences of weight stigma, and should be a target of future investigations. The absence of national studies in this review indicates a great gap in Brazilian scientific production on this topic and stresses the importance of moving forward to minimize this gap.

The strength of this review includes the categorization of the findings within a globally accepted health concept and perspective. With regard to limitations, it is assumed that the cut of the age group ends up restricting the understanding of the impacts of weight stigma in childhood. In addition, the decision not to include stigma consequences in specific contexts, such as performing bariatric surgery, can also be seen as a limitation of the study.

## CONCLUSION

The results of this review indicate that weight stigma causes negative repercussions on the physical, social and emotional well-being of subjects with obesity and overweight. These repercussions go far beyond the issues generated by excess weight itself and result in important losses in physical and mental health, and in the quality of life of these individuals.

## INDIVIDUAL CONTRIBUTIONS

**Bruna Barbosa Siqueira** – Worked on the study design, data collection and analysis, interpretation of results and writing of the text.

**Marina Cunha Assumpção** – Worked on data collection, as second judge in the selection of articles, and assisted in the writing of the article.

**Sabrina Martins Barroso** and **Camila Cremonezi Japur** – Critically reviewed and approved the final version of the article.

**Fernanda Rodrigues de Oliveira Penaforte** – Worked on the study design, interpretation of results, writing of the text, critical review and approval of the final version of the article.

## CONFLICTS OF INTEREST

The authors report no conflicts of interest.

## ACKNOWLEDGEMENTS

The authors did not receive any type of financing for the preparation of the article.

## REFERENCES

- World Health Organization (WHO). Obesity: Preventing and managing the global epidemic. Report of a WHO Consultation on Obesity. Geneva: WHO; 1998.
- Brasil. Ministério da Saúde. Estratégias para o cuidado da pessoa com doença crônica: obesidade. Brasília: Ministério da Saúde; 2014.
- Araújo LS, Coutinho MPL, Araújo-Morais LC, Simeão SSS, Maciel SC. Preconceito frente à obesidade: representações sociais veiculadas pela mídia impressa. *Arq Bras Psicol.* 2018;70(1):69-85.
- Francisco LV, Diez-García RW. Abordagem terapêutica da obesidade: entre conceitos e preconceitos. *Demetra: Alimentação, Nutrição & Saúde.* 2015;10(3):705-16.
- Puhl RM, Heuer CA. The stigma of obesity: a review and update. *Obesity.* 2009;17(5):941-64.
- Goffman E. Estigma: notas sobre a manipulação da identidade deteriorada. Rio de Janeiro: LTC; 1988.
- Corrigan PW, Watson AC, Gracia G, Slopen N, Rasinski K, Hall LL. Newspaper Stories as Measures of Structural Stigma. *Psychiatric Serv.* 2005;56(5):551-6.
- Tomiyama AJ, Carr D, Granberg EM, Major B, Robinson E, Sutin AR, et al. How and why weight stigma drives the obesity 'epidemic' and harms health. *BMC Med.* 2018;16(1):123
- Rodrigues DC, Guedes GC, Fernandes LM, Oliveira JLC. Estigmas dos profissionais de saúde frente ao paciente obeso: uma revisão integrativa. *HU Rev.* 2016;42(3):197-203.
- Araújo LS. Representações sociais da obesidade: identidade e estigma [thesis]. João Pessoa (PB): Universidade Federal da Paraíba; 2017.
- Rubino F, Puhl RM, Cummings DE, Eckel RH, Ryan DH, Mechanick JJ, et al. Joint international consensus statement for ending stigma of obesity. *Nat Med.* 2020;26(4):485-97.
- Puhl RM, Heuer CA. Estigma da obesidade: considerações importantes para a saúde pública. *Sou J Saúde Pública.* 2010;100(6):1019-28.
- Benfield LE. Implementing evidence-based practice in home care. *Home Healthc Nurse.* 2003;21(12):804-11.
- Papadopoulos S, Brennan L. Correlates of weight stigma in adults with overweight and obesity: A systematic literature review. *Obesity.* 2015;23(9):1743-60.
- Wu YK, Berry DC. Impact of weight stigma on physiological and psychological health outcomes for overweight and obese adults: A systematic review. *J Adv Nurs.* 2017;74(5):1030-42.
- Mendes KS, Silveira RCCP, Galvão CM. Revisão integrativa: método de pesquisa para a incorporação de evidências na saúde e na enfermagem. *Texto Contexto Enferm.* 2008;17(4):758-64.
- Moher D, Liberati A, Tetzlaff J, Altman DG; The PRISMA Group. Preferred reporting items for systematic reviews and meta-analyses: The PRISMA Statement. *Ann Intern Med.* 2009;151(4):264-69.
- Biblioteca Virtual de Direitos Humanos da Universidade de São Paulo. Constituição da Organização Mundial da Saúde; 1946.
- Seacat JD, Mickelson KD. Stereotype threat and the exercise/dietary health intentions of overweight women. *J Health Psychol.* 2009;14(4):556-67.
- Schafer MH, Ferraro KF. The Stigma of Obesity. *Soc Psychol Q.* 2011;74(1):76-97.
- Jackson SE, Beeken RJ, Wardle J. Perceived weight discrimination and changes in weight, waist circumference, and weight status. *Obesity.* 2014;22(12):2485-8.
- Pearl RL, Puhl RM, Dovidio JF. Differential effects of weight bias experiences and internalization on exercise among women with overweight and obesity. *J Health Psychol.* 2014;20(12):1626-32.
- Potter L, Wallston K, Trief P, Ulbrecht J, Juth V, Smyth J. Attributing discrimination to weight: associations with well-being, self-care, and disease status in patients with type 2 diabetes mellitus. *J Behav Med.* 2015;38(6):863-75.
- Vadiveloo M, Mattei J. Perceived Weight Discrimination and 10-Year Risk of Allostatic Load Among US Adults. *Ann Behav Med.* 2016;51(1):94-104.
- Jackson SE, Steptoe A. Association between perceived weight discrimination and physical activity: a population-based study among English middle-aged and older adults. *BMJ Open.* 2017;7(3):e014592.
- Puhl RM, Quinn DM, Weisz BM, Suh YJ. The Role of Stigma in Weight Loss Maintenance Among U.S. Adults. *Ann Behav Med.* 2017;51(5):754-63.
- Mensinger JL, Calogero RM, Tylka TL. Mechanisms underlying weight status and healthcare avoidance in women: A study of weight stigma, body-related shame and guilt, and healthcare stress. *Body Image.* 2018;25:139-47.
- McCleary-Gaddy AT, Miller CT, Grover KW, Hodge JJ, Major B. Weight Stigma and Hypothalamic-Pituitary-Adrenocortical Axis Reactivity in Individuals Who Are Overweight. *Ann Behav Med.* 2019;53(4):392-8.
- Olson KL, Mensinger JL. Weight-related stigma mediates the relationship between weight status and bodily pain: A conceptual model and call for further research. *Body Image.* 2019;30:159-64.
- Daly M, Sutin AR, Robinson E. Perceived Weight Discrimination Mediates the Prospective Association Between Obesity and Physiological Dysregulation: Evidence From a Population-Based Cohort. *Psychol Sci.* 2019;30(7):1030-9.
- Gómez-Pérez D, Ortiz MS. Estigma de obesidad, cortisol e ingesta alimentaria: un estudio experimental con mujeres. *Rev Méd Chile.* 2019;147(3):314-21.
- Chen EY, Brown M. Obesity Stigma in Sexual Relationships. *Obes Res.* 2005;13(8):1393-7.
- Carr D, Friedman MA. Is Obesity Stigmatizing? Body Weight, Perceived Discrimination, and Psychological Well-Being in the United States. *J Health Soc Behav.* 2005;46(3):244-59.
- Boyes AD, Latner JD. Weight stigma in existing romantic relationships. *J Sex Marital Ther.* 2009;35(4):282-93.
- Caliendo M, Lee WS. Fat chance! Obesity and the transition from unemployment to employment. *Econom Hum Biol.* 2013;11(2):121-33.
- Blodorn A, Major B, Hunger J, Miller C. Unpacking the psychological weight of weight stigma: A rejection-expectation pathway. *J Exp Soc Psychol.* 2016;63:69-76.
- Obara-Golebiowska M. Employment discrimination against obese women in obesity clinic's patients perspective. *Rocz Panstw Zakl Hig.* 2016;67(2):147-53.
- Ashmore JA, Friedman KE, Reichmann SK, Musante GJ. Weight-based stigmatization, psychological distress, & binge eating behavior among obese treatment-seeking adults. *Eat Behav.* 2008;9(2):203-9.
- Friedman KE, Ashmore JA, Applegate KL. Recent experiences of weight-based stigmatization in a weight loss surgery population: psychological and behavioral correlates. *Obesity.* 2008;16 Suppl 2:S69-S74.
- Hatzenbuehler ML, Keyes KM, Hasin DS. Associations between perceived weight discrimination and the prevalence of psychiatric disorders in the general population. *Obesity.* 2009;17(11):2033-9.
- Latner JD, Wilson GT, Jackson ML, Stunkard AJ. Greater history of weight-related stigmatizing experience is associated with greater weight loss in obesity treatment. *J Health Psychol.* 2009;14(2):190-9.
- Almeida L, Savoy S, Boxer P. The role of weight stigmatization in cumulative risk for binge eating. *J Clin Psychol.* 2010;67(3):278-92.
- Koball AM, Carels RA. Coping responses as mediators in the relationship between perceived weight stigma and depression. *Eat Weight Disord.* 2011;16(1):e17-e23.
- Lewis S, Thomas SL, Blood RW, Castle DJ, Hyde J, Komesaroff PA. How do obese individuals perceive and respond to the different types of obesity stigma that they encounter in their daily lives? A qualitative study. *Soc Sci Med.* 2011;73(9):1349-56.
- Schvey NA, Puhl RM, Brownell KD. The impact of weight stigma on caloric consumption. *Obesity (Silver Spring).* 2011;19(10):1957-62.
- Durso LE, Latner JD, Hayashi K. Perceived Discrimination Is Associated with Binge Eating in a Community Sample of Non-Overweight, Overweight, and Obese Adults. *Obesity Facts.* 2012;5(6):869-80.
- Chen EY, Fattich KC, McCloskey MS. Correlates of Suicidal Ideation and/or Behavior in Bariatric-Surgery-Seeking Individuals With Severe Obesity. *Crisis.* 2012;33(3):137-43.
- Wee CC, Davis RB, Huskey KW, Jones DB, Hamel MB. Quality of life among obese patients seeking weight loss surgery: the importance of obesity-related social stigma and functional status. *J Gen Intern Med.* 2012;28(2):231-8.
- Greenleaf C, Petrie TA, Martin SB. Relationship of Weight-Based Teasing and Adolescents' Psychological Well-Being and Physical Health. *J Sch Health.* 2013;84(1):49-55.

50. Latner JD, Barile JP, Durso LE, O'Brien KS. Weight and health-related quality of life: the moderating role of weight discrimination and internalized weight bias. *Eat Behav.* 2014;15(4):586-90.
51. Magallares A, Benito de Valle P, Irlas JA, Jauregui-Lobera I. Overt and subtle discrimination, subjective well-being and physical health-related quality of life in an obese sample. *Span J Psychol.* 2014;17:E64.
52. Vartanian LR, Pinkus RT, Smyth JM. The phenomenology of weight stigma in everyday life. *J Contextual Behav Sci.* 2014;3(3):196-202.
53. Wee CC, Davis RB, Chiodi S, Huskey KW, Hamel MB. Sex, race, and the adverse effects of social stigma vs. other quality of life factors among primary care patients with moderate to severe obesity. *J Gen Intern Med.* 2014;30(2):229-35.
54. Phelan SM, Burgess DJ, Puhl R, Dyrbye LN, Dovidio JF, Yeazel M, et al. The Adverse Effect of Weight Stigma on the Well-Being of Medical Students with Overweight or Obesity: Findings from a National Survey. *J Gen Intern Med.* 2015;30(9):1251-8.
55. Jackson SE, Beeken RJ, Wardle J. Obesity, perceived weight discrimination, and psychological well-being in older adults in England. *Obesity (Silver Spring).* 2015;23(5):1105-11.
56. Juvonen J, Lessard LM, Schacter HL, Suchilt L. Emotional Implications of Weight Stigma Across Middle School: The Role of Weight-Based Peer Discrimination. *J Clin Child Adolesc Psychol.* 2016;46(1):150-8.
57. Stevens SD, Herbozo S, Morrell HE, Schaefer LM, Thompson JK. Adult and childhood weight influence body image and depression through weight stigmatization. *J Health Psychol.* 2016;22(8):1084-93.
58. Sinha J. We are where we eat: How consumption contexts induce (un)healthful eating for stigmatized overweight consumers. *J Consum Psychol.* 2016;26(2):289-97.
59. Sutin A, Robinson E, Daly M, Terracciano A. Weight discrimination and unhealthy eating-related behaviors. *Appetite.* 2016;102:83-9.
60. Araiza AM, Wellman JD. Weight stigma predicts inhibitory control and food selection in response to the salience of weight discrimination. *Appetite.* 2017;114:382-90.
61. Hand WB, Robinson JC, Stewart MW, Zhang L, Hand SC. The Identity Threat of Weight Stigma in Adolescents. *West J Nurs Res.* 2017;39(8):991-1007.
62. Magallares A, Bolaños-Rios P, Ruiz-Prieto I, Benito de Valle P, Irlas JA, Jauregui-Lobera I. The Mediation Effect of Weight Self-Stigma in the Relationship between Blatant and Subtle Discrimination and Depression and Anxiety. *Span J Psychol.* 2017;20:E4.
63. Romano E, Haynes A, Robinson E. Weight Perception, Weight Stigma Concerns, and Overeating. *Obesity.* 2018;26(8):1365-71.
64. Sutin AR, Stephan Y, Robinson E, Daly M, Terracciano A. Perceived weight discrimination and risk of incident dementia. *Int J Obes.* 2018;43(5):1130-4.
65. Guardabassi V, Tomasetto C. Does weight stigma reduce working memory? Evidence of stereotype threat susceptibility in adults with obesity. *Int J Obes.* 2018;42:1500-7.
66. Hayward LE, Vartanian LR, Pinkus RT. Weight Stigma Predicts Poorer Psychological Well-Being Through Internalized Weight Bias and Maladaptive Coping Responses. *Obesity.* 2018;26(4):755-61.
67. Hunger JM, Blodorn A, Miller CT, Major B. The psychological and physiological effects of interacting with an anti-fat peer. *Body Image.* 2018;27:148-55.
68. Täuber S, Gausel N, Flint SW. Weight Bias Internalization: The Maladaptive Effects of Moral Condemnation on Intrinsic Motivation. *Front Psychol.* 2018;9:1836.
69. Sutin AR, Stephan Y, Gerend MA, Robinson E, Daly M, Terracciano A. Perceived weight discrimination and performance in five domains of cognitive function. *J Psychosom Res.* 2019;131:109793.
70. Himmelstein MS, Puhl RM, Quinn DM. Overlooked and Understudied: Health Consequences of Weight Stigma in Men. *Obesity.* 2019;27(10):1598-605.
71. Jung FU, Luck-Sikorski C. Overweight and Lonely? A Representative Study on Loneliness in Obese People and Its Determinants. *Obesity Facts.* 2019;12:440-7.
72. Hayward LE, Vartanian LR. Potential unintended consequences of graphic warning labels on sugary drinks: do they promote obesity stigma? *Obes Sci Pract.* 2019;5(4):333-41.
73. Ramos Salas X, Forhan M, Caulfield T, Sharma AM, Raine KD. Addressing Internalized Weight Bias and Changing Damaged Social Identities for People Living With Obesity. *Front Psychol.* 2019;10:1409.
74. Silva NG, Silva J. Aspectos psicossociais relacionados à imagem corporal de pessoas com excesso de peso. *Rev Subj.* 2019;19(1):1-16.
75. Himmelstein MS, Puhl RM, Pearl RL, Pinto AM, Foster GD. Coping with Weight Stigma Among Adults in a Commercial Weight Management Sample. *Int J Behav Med.* 2020;27(5):576-90.
76. Hunger JM, Dodd DR, Smith AR. Weight discrimination, anticipated weight stigma, and disordered eating. *Eat Behav.* 2020;37:101383.
77. Meadows A, Higgs S. Internalized weight stigma and the progression of food addiction over time. *Body Image.* 2020;34:67-71.
78. Muennig P, Bench KK. Obesity-associated stigma and physiological markers of stress: evidence from the Dominican Republic. *Stress Health.* 2009;25(3):241-6.
79. Major B, Eliezer D, Rieck H. The Psychological Weight of Weight Stigma. *Soc Psychol Personal Sci.* 2012;3(6):651-8.
80. Hunger JM, Major B. Weight stigma mediates the association between BMI and self-reported health. *Health Psychol.* 2015;34(2):172-5.
81. Sutin AR, Stephan Y, Grzywacz JG, Robinson E, Daly M, Terracciano A. Perceived weight discrimination, changes in health, and daily stressors. *Obesity.* 2016;24(10):2202-9.
82. Inderstrod-Stephens J, Acharya L. "Fat" Chicks Who Run: Stigma Experienced by "Overweight" Endurance Athletes. *J Sport Soc Issues.* 2017;42(1):49-67.
83. Puhl RM, Lessard LM, Larson N, Eisenberg ME, Neumark-Stzainer D. Weight Stigma as a Predictor of Distress and Maladaptive Eating Behaviors During COVID-19: Longitudinal Findings From the EAT Study. *Ann Behav Med.* 2020;54(10):738-46.
84. Palmeira CS, Santos LS, Silva SMBD, Mussi FC. Stigma perceived by overweight women. *Rev Bras Enferm.* 2020;73(4).
85. Ulian MD, Sato PM, Pinto AJ, Benatti FB, Campos-Ferraz PL, Coelho D, et al. "It is over there, next to that fat lady": a qualitative study of fat women's own body perceptions and weight-related discriminations. *Saúde Soc.* 2020;29(4):e180313.
86. Gracia-Arnaiz M. Thou shalt not get fat: medical representations and self-images of obesity in a Mediterranean society. *Health.* 2013;5(7):1180-9.
87. Ridolfi DR, Crowther JH. The link between women's body image disturbances and body-focused cancer screening behaviors: A critical review of the literature and a new integrated model for women. *Body Image.* 2013;10(2):149-62.
88. Setchell J, Watson B, Jones L, Gard M, Briffa K. Physiotherapists demonstrate weight stigma: a cross-sectional survey of Australian physiotherapists. *J Physiother.* 2014;60(3):157-62.
89. Vroman K, Cote S. Prejudicial Attitudes Toward Clients Who Are Obese: Measuring Implicit Attitudes of Occupational Therapy Students. *Occup Ther Health Care.* 2010;25(1):77-90.
90. Sikorski C, Luppá M, Glaesmer H, Brähler E, König HH, Riedel-Heller SG. Attitudes of Health Care Professionals towards Female Obese Patients. *Obes Facts.* 2013;6(6):512-22.
91. Albury C, Strain WD, Brocq SL, Logue J, Lloyd C, Tahrani A, et al. The importance of language in engagement between health-care professionals and people living with obesity: a joint consensus statement. *Lancet Diabetes Endocrinol.* 2020;8(5):447-55.
92. Hunger JM, Major B, Blodorn A, Miller C. Weighed down by stigma: How weight-based social identity threat contributes to weight gain and poor health. *Social Personal Psychol Compass.* 2015;9(6):255-68.
93. Schmader T, Johns M, Forbes C. An integrated process model of stereotype threat effects on performance. *Psychol Rev.* 2008;115:336-56.
94. Udo T, Purcell K, Grilo CM. Perceived weight discrimination and chronic medical conditions in adults with overweight and obesity. *Int J Clin Pract.* 2016;70(12):1003-11.
95. Tomiyama AJ. Weight stigma is stressful. A review of evidence for the Cyclic Obesity/Weight-Based Stigma model. *Appetite.* 2014;82:8-15.
96. Associação Brasileira para o Estudo da Obesidade e da Síndrome Metabólica (Abeso). Diretrizes brasileiras de obesidade. 4ª ed. São Paulo: Abeso; 2016.
97. Dutton GR, Lewis TT, Durant N, Halanich J, Kiefe CI, Sidney S, et al. Perceived weight discrimination in the CARDIA study: Differences by race, sex, and weight status. *Obesity.* 2014;22(2):530-6.
98. Instituto Brasileiro de Geografia e Estatística (IBGE). Pesquisa de Orçamentos Familiares 2008-2009. Antropometria e Estado Nutricional de Crianças, Adolescentes e Adultos no Brasil. Rio de Janeiro: IBGE; 2010.