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Prejudice associated with weight images in health communication in the social networks

Preconceito relacionado ao peso em imagens para a comunicação em saúde nas redes sociais

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ABSTRACT

Objective
The aim of this study was to evaluate whether the depiction of a fat body for health communication on the Instagram social network by the national societies governing obesity management present elements that enhance weight-related prejudice, with the slim body as a reference.

Methods
We investigated the last publication quintile, totaling 2,155 publications. A total of 72 images were included and 99 bodies were decoded. The bodies were classified according to positive and negative characteristics into four categories (body presentation, clothing, food and moving behavior) in which the negative characteristics have the potential to enhance the prejudice. The chi-square test was applied to test the difference in the proportion of bias elements associated with body weight between the fat body and the thin body.

Results
The fat body was more represented ($p \leq 0.05$ for all) headless (32.3% *vs* 9.2%), with bare abdomen (17.6% *vs* 0%), with a focus on the abdomen (11% *vs* 0%), with tight clothes (32.3% *vs* 0%), sad expression (23.5% *vs* 6.1%), involved with food of low nutritional value (14.7% *vs* 0%) and in sedentary behavior (11% *vs* 0%) compared to the thin body.

Conclusion
National societies that govern management of obesity presented the fat body with more negative elements that enhance the prejudice associated with excess weight, which is an important public health problem.

Keywords: Health education. Social network. Social stigma.

RESUMO

Objetivo

O objetivo do presente estudo foi avaliar se a representação do corpo gordo nas imagens para a comunicação em saúde em perfis de sociedades nacionais diretivas orientadas ao manejo da obesidade na rede social Instagram apresentam elementos que potencializam o preconceito relacionado ao peso, tendo como referência o corpo magro.

Métodos

Foi analisado o último quintil de postagens, totalizando 2.155 publicações. Setenta e duas imagens foram incluídas e 99 corpos foram decodificados. Os corpos foram classificados em quatro categorias (apresentação do corpo, vestimenta, alimentação e comportamento de movimento) de acordo com características positivas e negativas, sendo que as negativas possuem potencial para reforçar o preconceito. O teste qui-quadrado foi aplicado para testar a diferença na proporção de elementos de preconceito relacionados ao peso entre o corpo gordo e o corpo magro.

Resultados

O corpo gordo foi mais representado (p≤0,05 para tudo) sem cabeça (32,3% vs 9,2%), com abdomen nu (17,6% vs 0%), com foco no abdomen (11% vs 0%), com roupa apertada (32,3% vs 0%), expressão triste (23,5% vs 6,1%), envolvido com alimento de baixo valor nutricional (14,7% vs 0%) e relacionado a um comportamento sedentário (11% vs 0%) em comparação ao corpo magro.

Conclusão

Sociedades nacionais diretivas ao manejo da obesidade apresentaram o corpo gordo com mais elementos negativos que reforçam o preconceito relacionado ao peso, sendo importante problema de saúde pública.

Palavras-chave: *Educação em saúde. Rede social. Estigma social.*

INTRODUCTION

Obesity is a public health issue on a global scale. Concomitantly with ithis problem growth, there has been an increase in reports about weight-related prejudice [1]. Weight-related prejudice is any form of discrimination or stereotype against people with obesity [1]. People with obesity who experience weight-related prejudice have worse cardiometabolic biomarkers, reduced levels of physical activity and self-efficacy, greater chances of developing psychological disorders (*i.e.* 2.5 times) and greater weight gain [2-6]. Despite decades of research pointing to weight-bias as a risk of morbidity and mortality, being higher than the risk inferred by obesity itself, this subject is still little considered in the efforts to prevent and treat obesity in public health [7,8]. Obesity is considered a chronic disease; however, moralistic and cultural beliefs, overcoming scientific evidence, enhance the concept that weight is solely a personal control matter, which helps to spread weight-related prejudice throughout all the society layers [8].

The media is an important disseminator of weight-related prejudice [9]. People with obesity are portrayed in the media in a stereotyped way, usually consuming foods of low nutritional value (*i.e.*, junk food and soft drinks), with a partitioned body (*e.g.*, only abdomen, without head or seen from the back), wearing tight clothing and in sedentary behavior [10]. Images contain unspoken information and symbols that influence the audience's perception and belief; thus, a negatively stereotyped image, even when accompanied by neutral or positive news about obesity, increases per se biased attitudes against obesity [11]. Images are the center of interactions among tens of millions of social media users. On Instagram, the most popular social network in Brazil and in the world, 10 million images are uploaded per hour [12]. Interestingly, this social media has become one of the main sources of health information search [13]. The most important national societies governing the management of obesity have official Instagram accounts, where they broadcast

images with new information to tens of thousands of followers. However, little is known if these images enhance or combat weight-related prejudice.

Therefore, in view of the deleterious consequences of weight-related prejudice for people with obesity and the important representation of national societies governing obesity management on Instagram, it seems important to investigate whether the images posted on Instagram by these societies take into account the evidence of weight-related prejudice. Therefore, the objective of the present study was to evaluate whether the depiction of the fat body in the images published by national societies governing the management of obesity on Instagram present elements that enhance weight-bias, having as a reference depiction of the slim body.

METHODS

In an exploratory study, it was investigated whether the images published on Instagram by national societies governing the management of obesity include elements that potentiate the bias related to excess weight in comparison with the depiction of the thin body.

The societies responsible for the management of obesity were determined from the recognition of the National Agency of Supplementary Health [14]; they include: *Associação Brasileira para o Estudo da Obesidade e Síndrome Metabólica* (ABESO, Brazilian Association for the Study of Obesity and Metabolic Syndrome); Associação Brasileira de Nutrição (ASBRAN, Brazilian Nutrition Association); *Conselho Federal de Nutrição* (CFN, Federal Nutrition Council); *Conselho Federal de Educação Física* (CONFEF, Federal Council of Physical Education); *Ministério da Saúde* (MS, Ministry of Health; *Sociedade Brasileira de Cirurgia Bariátrica e Metabólica* (SBCBM, Brazilian Society of Bariatric and Metabolic Surgery); *Sociedade Brasileira de Diabetes* (SBD, Brazilian Society of Diabetes); *Sociedade Brasileira de Endocrinologia e Metabologia* (SBEM, Brazilian Society of Endocrinology and Metabology); and *Sociedade Brasileira de Pediatria* (SBP, Brazilian Society of Pediatrics).

All the societies together had issued, until the date of collection (*i.e.*, February 20, 2020), 10,784 publications (ABESO, 715; ASBRAN, 209; CFN, 1232; CONFEF, 458; MS, 6362; SBCBM, 307; SBD, 618; SBEM, 576; and SBP, 307). The society was included as long as it had educational images depicting bodies of obese adults, whether complete or partitioned. Images containing more than one body were included, provided that all bodies could be assessed without compromise (*i.e.*, with no overlap and shown from head to toe or from the waist up). A total of 20% of the publications from each account were selected, considering the most recent ones [15]. Thus, we initially reviewed 2,155 publications. Publications containing only texts (822), people from the Societies themselves (555), pregnant women and children (89), duplicate images (86), drawings (218), videos (147), educational images with other illustrations (56) and images in which the identification of bodies was not possible (110) were excluded. In the end, 72 images were considered eligible (ABESO, 13; ASBRAN, 2; MS, 48; and SBCBM, 9). Of the 72 images, 56 contained only one body and 16 contained two bodies or more. totaling 99 bodies. All bodies were individually decoded.

The theoretical basis for decoding bodies and understanding the bias and stigmatization process is based on the Goffman framing theory and, from that, positive and negative demographic variables were used to identify the presence of elements of weight-related prejudice [16]. The variables were adapted from Heuer, McClure and Puhl [17], and were divided into four blocks:

1) Body presentation: Body size was classified as fat (excessive body fat, *i.e.* a body mass index ≥30 kg/m/^{2}) or Slim (no excess body fat, *i.e.* a body mass index between ≥18.5 and <25 kg/m^2); Whole body (or most of the body from the waist up, including the face/head) or Partitioned body (only

the abdomen or most of the body from the waist up without the head); Facial expression Happy (smiling, eyes open, cheeks and eyebrows arched) or Sad (corner of lips down, cheeks down, eyelids slightly closed, and lost look).

2) Clothing: Tight clothing (clearly tight clothing for the body size, with buttons half open and parts of the belly and body showing due to insufficient fabric); Naked abdomen (Clothing covering only half of the belly because the abdomen is raised or it is without any clothing); and Professional attire (such as jacket and tie or lab coat).

3) Food (eating, sitting at the table, and associated with any food). If foods were present, they were further classified according to type of food: high nutritional value: fruits, vegetables and/or water; or with low nutritional value: fast food and/or soda.

4) Moving behavior: it was divided between active behavior (Running, walking or practicing any sport) and sedentary behavior (Sitting, lying down or in a way showing the body without any movement) [17].

Images that potentiate weight-bias were considered to be the display of one or more of the following negative characteristics 1) Partial exposure of the body; 2) Sad facial expression; 3) Inadequate clothing; 4) Food of low nutritional value; and 5) Sedentary behavior [17]. With regard to the aspect of socialization any image that had more than one body was considered a group [17]. The individuals' level of socialization (*i.e.*, alone or in a group), and demographic characteristics (Gender and Race) do not constitute an element of weight-bias; nevertheless they were collected with the purpose of comparison between the representation of the fat and thin body.

The reviewers PAF and IRMM (authors of this paper) evaluated independently a subsample of 30 randomly selected images to assess inter-coder reliability. At the end, all the images were evaluated by authors, on the same day and time, and obtained 82.3% agreement with a kappa coefficient of 0.46, indicating moderate agreement.

The chi-square test was applied to compare the proportions of positive and negative elements between the fat and thin bodies. For data analysis, the Statistical Package for the Social Sciences SPSS (version 22.0) software was used, adopting the value of $p \leq 0.05$ as a level of statistical significance.

RESULTS

In our analysis, out of the 99 bodies included for decoding, 34.3% (n=34) exhibited a fat body. Among the fat bodies, 55.8% (n=19) were represented as being male and 50.7% (n=33) of the thin bodies were represented as being female.

In both body sizes, there was a higher prevalence of white bodies: 76.4% (n=26) and 73.8% (n=48) for fat and thin bodies, respectively. Only bodies of white and black ethnicity were depicted. As for socialization, 67.6% (n=23) of fat bodies were represented alone (p=0.081), compared to thin bodies 50.7% (n=33).

Out of the total fat bodies evaluated, 29.4% (n=10) showed only one element that enhances weight-related prejudice, and 41.1% (n=14) had more than two, totaling 76.4% (n=26) . In turn, thin bodies had 15.3% (n=10) of negative elements and absence of bodies with more than one negative element. The description of the negative and positive elements associated with weight-bias for each society can be found in Table 1.

Table 1 – Description of fat and thin bodies in images published on Instagram by national scientific societies that govern the management of obesity.

Descriptions	ABESO n=15		ASBRAN n=2		MS n=70		SBCBM n=12	
	Fat n=8	Lean n=7	Fat n=2	Lean n=0	Fat n=17	Lean n=53	Fat n=7	Lean n=5
	%		%		%		%	
Negative characteristics								
1 negative element	12.5	14.2	0	0	41.1	1.88	28.5	20
≥2 negative elements	62.5	0	0	0	29.4	0	57.1	0
Only abdomen	12.5	0	100	0	5.8	0	0	0
Naked abdomen	12.5	0	50	0	17.4	0	14.2	0
Inappropriate clothing	37.5	0	50	0	29.4	0	28.5	0
Headless	25	28.5	0	0	35.2	5.6	42.8	20
Sad expression	25	0	0	0	11.7	7.5	57.1	0
Low nutritional value food	0	0	50	0	5.8	0	42.8	0
Sedentary behavior	25	0	0	0	5.8	0	14.2	0
Positive characteristics								
1 positive element	100	71.4	0	0	47	71.6	28.5	80
≥2 positive elements	12.5	0	0	0	5.8	18.8	0	0
Happy expression	37.5	71.4	0	0	52.9	88.6	14.2	100
Food with high nutritional value	12.5	14.2	0	0	0	1.8	0	20
Professional attire	12.5	0	0	0	5.8	18.8	14.2	0
Active behavior	12.5	71.4	0	0	29.4	18.8	14.2	0

Nota: ABESO: *Associação Brasileira para o Estudo da Obesidade e Síndrome Metabólica*; ASBRAN: *Associação Brasileira de Nutrição*; MS: *Ministério da Saúde*; SBCBM: *Sociedade Brasileira de Cirurgia Bariátrica e Metabólica*.

The presence of elements that enhance prejudice associated with weight were more prevalent in the fat body ($p<0.001$). All the negative elements evaluated were found in the fat bodies. Out of the seven negative elements evaluated, only two of them were found in thin bodies (sad expression, 6.1% (n=4) and headless, 9.2% (n=6).

Regarding the positive elements, the fat body had a lower prevalence of happy facial expressions 38.2% (n=13) and high nutritional value food 2.9% (n=1) ($p<0.05$). Negative and positive characteristics between the fat and thin body is shown in Figure 1.

Figure 2 presents the phenotype of the fat body in the images published by national societies governing the management of obesity on Instagram, having as a reference the elements of weight-related prejudice that were more prevalent when compared to the thin body, as shown in Figure 1.

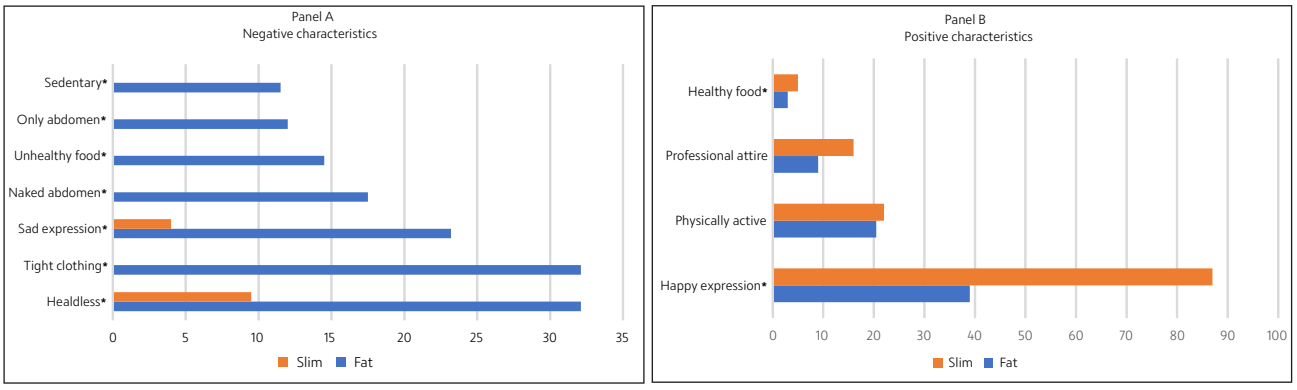

Figure 1 – Comparison of negative (Panel A) and positive (Panel B) characteristics of fat and thin bodies in images published on Instagram by national scientific societies governing the management of obesity.

Note: *difference ($p<0.05$) between fat and thin.

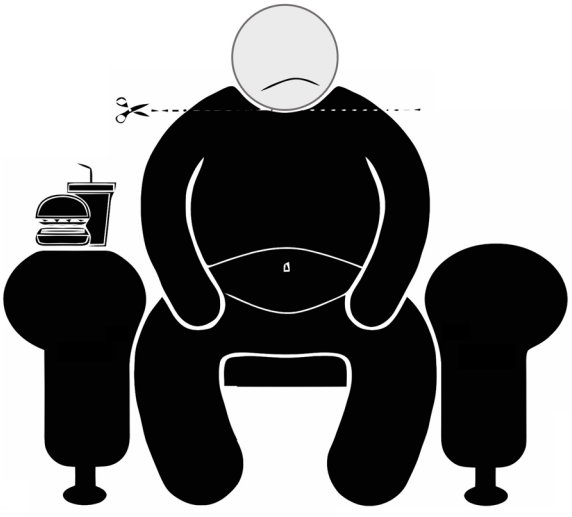

Figure 2 – Phenotype of the representation of the fat body in images published by national scientific societies governing obesity management on Instagram.

DISCUSSION

We evaluated whether the images published on Instagram by national societies governing the management of obesity exhibit elements that potentiate weight-bias, having as a reference the slim body. The main findings were: (i) 76.4% of the fat bodies were exhibited with some prejudice element related to excess weight, while in the thin body this prevalence was 15.3%; (ii) The fat body was more represented without a head (32.3% *vs* 9.2%), with naked abdomen (17.6% *vs* 0%), with a focus on the abdomen (11% *vs* 0%), with tight clothes (32.3% *vs* 0%), sad expression (23.5% *vs* 0%), with low nutritional value food (14.7% *vs* 0%) and sedentary behavior (11% *vs* 0%), compared to the slim body; (iii) the fat body was less represented with a happy facial expression (38.2% *vs* 87.6%) and involved with foods of high nutritional value (2.9% *vs* 4.6%). This is the first Brazilian study that evaluated the images published by national societies governing obesity management in the social networks, in order to identify elements that potentiate prejudice in connection with excess weight.

In our findings, we noticed the presence of the phenomenon Headless fatty [18], or "fat man without a head", in 1/3 of the fat bodies examined. This negative characteristic can symbolize the dehumanization of these individuals, since they do not have a head, voice, thoughts or any factor that humanize them [18]. The objectification of fat bodies is justified on account of "identity protection"; however, in many cases such images are removed without permission, demonstrating the lack of privacy and care for fat bodies [19]. Further, facial expressions of sadness associated with the fat body were observed. This fact enhances the stereotype that fat people suffer from mood disorders, are more temperamental and carry excess body fat; that is, they are the symbol of guilt and fear in Western cultures, and hence they are sad [10,20].

The fat body in the images published by the societies investigated was more depicted with a naked abdomen, just like the bodies that are portrayed in newspapers in other studies [10,17,20]. Exposing people with excess abdominal fat, naked, is often associated with feelings of anger and disgust [21]. In addition, the fat body was associated with low nutritional value foods and involved in sedentary behaviors. This fact reduces multicausality to a simplistic epidemiological model, in which the causal agents are food and physical inactivity, the body is the host and the disease is obesity [22]. These images can perpetuate erroneous evidence that body weight is exclusively

regulated by the individual, which may be one of the reasons why the general population and health professionals have erroneous beliefs about the genesis of obesity [23,24]. This fact becomes even more serious, since the images have great reach on Instagram and are disseminated to millions of people by societies responsible for the population health education.

The negative characteristics investigated enhance the symbolic concepts that fat bodies means people who transgress the rules of "normality", are inadequate and undisciplined; consequently a hostile environment for people who actually suffer from a chronic disease is developed [25]. The prejudice related to the fat body in images is supported by the logic that shame can change individual behaviors; however, there is no evidence to support this idea [8,26,27]. Studies show that prejudice experiences can make individuals avoid physical activity, engage in inappropriate eating behaviors (*i.e.*, binge eating or increased consumption of ultra-processed foods) and reduce self-efficacy, an important component for engaging in behavioral changes that would benefit health and quality of life [28-30]. In addition, individuals who receive messages of weight-related prejudice have an increase in prejudiced attitudes [31].

Five of the nine societies investigated did not publish pictures of fat people in the last quintile of publications on their Instagram accounts. In fact, fat people are less represented in conventional media (*i.e.*, TV and Magazines), and this lack of representation can further increase the experience of stress and identity inadequacy, solely based on weight [32-34]. National scientific societies that propose to address the issue of obesity to overweight/obese audiences speak out to an important portion of the Brazilian population, (*i.e.*, 55.7% overweight and 19.8% obese, according to the body mass index) [35]. The images issued by these scientific societies not only disseminate health information, but also ideas that directly influence the conception of values, principles and identity [20]. Without representativeness by an institution responsible for health management can hamper the degree of engagement and acceptance of these messages [36].

On the other hand, studies show that non-stigmatized images of fat people reduce the bias of those who receive them, and don't hamper health education [37]. It appears that images of non-stereotyped fat people further reduce negative feelings and may offer support for behavioral change [37,38]. This evidence has been considered in government plans and strategies in some countries, such as Canada, that reformulated all documents from 2017 onwards based on the reduction of weight-related prejudice [38,39]. Simple language modifications (*e.g.*, talking in the first person, replacing the word "obese" with "obese person") and image changes (*e.g.*, people with their families, exercising and having fun) seem to reduce weight-bias. and to bring people closer to health information messages [40-43].

We hope that these findings constitute an important warning to the Brazilian scientific community that is still not aligned with the evidence on weight-related prejudice or obesity stigma. Despite our important findings, some limitations in our work should be mentioned. First, the instrument used to decode the images has no translation or validation for the Brazilian population, despite its wide international use [8-10]. Due to the simple structure of the questionnaire, containing adjectives which are common in the Western culture (*e.g.*, fat and thin), it is believed that the translation and validation would not impact the results, and to our knowledge, there is still no validated instrument for this purpose. In addition, the images were not randomly selected, and we used what the literature recommends to ensure a representative sample [15]. Future investigations are required to validate an instrument for the Brazilian population, to evaluate other social networks and forms of communication of societies governing the management of obesity.

CONCLUSION

This study found that there is a difference in the representation of the fat and thin body in images published by national societies governing the management of obesity. The fat body was more represented with negative elements that potentiate weight-related bias and was less represented with positive elements, when compared to the slim body. The negative depiction of the fat body in images, even though the messages are positive and govern the population's health education, they feed the symbolic aspect of individuals with a fat body/obesity stereotypes, enhancing the bias related to weight. Weight-related prejudice directly harms the rights and health of people with obesity and should not be underestimated.

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CONTRIBUTORS

PA FLAUZINO contributed to the conception and design of the study, analysis and interpretation of data, corrections, and revision of the final version. AAF CARIOCA contributed to the conception, guidance for preparation, corrections, and revision of the final version. YA FREIRE, IRM MONTEIR and SCMR SOARES contributed to the analysis and interpretation of data and revision of the final version.