

Jason Webb*, BA, Kaylee Mach, BS, Trey Gooch, BS, Arjun Reddy, BS, Michael Anderson, DO, Jeremy Scott, DO, Jake Checketts, DO, Lance Walker, DO and Micah Hartwell, PhD

Use of person-centered language in obesity-related publications across sports medicine journals: a systematic review of adherence to person-centered language guidelines in sports medicine

<https://doi.org/10.1515/jom-2023-0254>

Received November 20, 2023; accepted January 1, 2024;

published online February 7, 2024

Abstract

Context: Stigmatizing language or non-person-centered language (non-PCL) has been shown to impact patients negatively, especially in the case of obesity. This has led many associations, such as the American Medical Association (AMA) and the International Committee of Medical Journal Editors (ICMJE), to enact guidelines prohibiting the use of stigmatizing language in medical research. In 2018, the AMA adopted person-centered language (PCL) guidelines, including a specific obesity amendment to which all researchers should adhere. However, little research has

been conducted to determine if these guidelines are being followed.

Objectives: Our primary objective was to determine if PCL guidelines specific to obesity have been properly followed in the sports medicine journals that are interacted with most frequently.

Methods: We searched within PubMed for obesity-related articles between 2019 and 2022 published in the top 10 most-interacted sports medicine journals based on Google Metrics data. A predetermined list of stigmatizing and non-PCL terms/language was searched within each article.

Results: A total of 198 articles were sampled, of which 58.6 % were found to be not compliant with PCL guidelines. The most common non-PCL terms were “obese” utilized in 49.5 % of articles, followed by “overweight” as the next most common stigmatizing term at 40.4 %. Stigmatizing labels such as “heavy, heavier, heaviness,” “fat” as an adjective, and “morbid” appeared in articles but at a lower rate.

Conclusions: Our study shows that there is a severe lack of adherence to PCL guidelines in the most-interacted sports medicine journals. Negative associations between stigmatizing language and individuals with obesity will only persist if a greater effort is not made to change this. All journals, including the most prestigious ones, should adopt and execute PCL guidelines to prevent the spread of demeaning language in the medical community.

Keywords: obesity; person-centered language; sports medicine; weight loss

The World Health Organization defines obesity as a body mass index (BMI) $>30 \text{ kg/m}^2$ with presenting risk factors to overall patient health [1]. Risk factors associated with obesity, such as heart disease, stroke, diabetes, and even some cancers, can cause lethal health problems [1]. With rising prevalence, obesity has emerged as a world health

*Corresponding author: Jason Webb, BA, Office of Medical Student Research, Oklahoma State University Center for Health Sciences, Tulsa, OK, USA; and Office of Medical Student Research, Oklahoma State University College of Osteopathic Medicine at the Cherokee Nation, W.W. Hastings Campus, 100 S. Bliss Avenue, Tahlequah 74464-2512, OK, USA, E-mail: jason.webb10@okstate.edu

Kaylee Mach, BS and Trey Gooch, BS, Office of Medical Student Research, Oklahoma State University Center for Health Sciences, Tulsa, OK, USA; and Office of Medical Student Research, Oklahoma State University College of Osteopathic Medicine at the Cherokee Nation, Tahlequah, OK, USA

Arjun Reddy, BS, Office of Medical Student Research, Oklahoma State University Center for Health Sciences, Tulsa, OK, USA

Michael Anderson, DO, Jeremy Scott, DO and Jake Checketts, DO, Department of Orthopedic Surgery, Oklahoma State University Medical Center, Tulsa, OK, USA

Lance Walker, DO, Department of Physical Therapy, Oklahoma State University Center for Health Sciences, Tulsa, OK, USA

Micah Hartwell, PhD, Office of Medical Student Research, Oklahoma State University Center for Health Sciences, Tulsa, OK, USA; and Department of Psychiatry and Behavioral Sciences, Oklahoma State University Center for Health Sciences, Tulsa, OK, USA

crisis, with an estimated 7 % of children and 13 % of adults impacted globally in 2016 [2]. Meanwhile, 33 % of the United States population was reported to have obesity in 2018 [3]. The high prevalence of obesity in the United States has an economic cost of nearly \$173 billion annually [4]. The financial burden falls not only on the healthcare system but also on individuals. A cross-sectional study found that individuals with obesity experience approximately \$2,500 more direct medical care costs than those with a BMI between 18.5 and 29.5 kg/m² [5]. Coupling the health risk with these financial burdens leads many to believe that weight loss is a simple solution. However, many are unaware of the barriers encountered by those trying to achieve their weight loss goal.

Managing weight loss with diet and exercise has proven to be beneficial to people with obesity [6]; however, barriers hindering individuals' weight loss journey can be numerous and derived from a multitude of areas. A recent meta-analysis of 28 studies with over 800 participants highlighted these barriers as a lack of social support, accessibility (time, locations, resources), and little involvement of general practitioners in treatment plans [7]. However, unique hurdles may encounter those of lower socioeconomic standing. For example, individuals experiencing food insecurity – a lack of access to a stable nutritional food supply – may encounter barriers in obtaining healthy foods and instead have access to calorically dense yet nutrient-poor foods. A randomized controlled trial of 800 participants, including almost 250 food-insecure patients, showed that individuals experiencing food insecurity could not achieve similar weight loss results over a 24-month span compared to food-secure individuals [8]. Additional barriers to weight management include neighborhood safety and walkability, which may limit an individual's ability to partake in outdoor physical activity and contribute to a lack of resources, because research has shown that neighborhood safety is inversely related to weight loss attainment in individuals [9]. Contributing obstacles to obesity in adulthood include socioeconomic status, access to resources, and comorbidities. In addition to these barriers, another major barrier related to psychosocial stressors is weight-based stigmatization [2].

Adult obesity has been associated with long-term psychosocial outcomes that contribute to poor body image, self-esteem, quality of life, and mental health [10]. Further, children with obesity are more likely to have impacted school attendance, academic performance, and lower self-esteem [2, 11]. These latter factors may stem from or be facilitated from family members or peer-to-peer bullying or labeling [11]. In a 2018 study, children reported experiencing sadness and shame when their parents utilized stigmatizing language to describe their body weight [12, 13]. Another

study by Puhl et al. [14] reported desirable weight-loss outcomes when healthcare providers utilized preferred terms, such as “overweight” and “unhealthy weight,” to describe excess weight. The undesirable terms “obese,” “fat,” and “morbidly obese” resulted in 19 % of patients avoiding future medical care from their provider [13]. Given that medical research should be objective rather than subjective – especially toward research participants and patients – the American Medical Association (AMA) added person-centered language (PCL) guidelines in the 10th addition of their Manual of Style (AMAMS) in 2010 [15]. The addition of PCL guidelines regarding the use of a person-first style, and avoiding labeling and the use of euphemisms, was also introduced to reduce stigma among certain groups.

Stigma is a negative social attitude linked to a characteristic of an individual that may be regarded as a mental, physical, or social fault [16]. Many medical conditions have stigmas attributed to them, such as mental illnesses, addiction, and obesity [16–18]. In obesity, weight-based stigma can lead to adverse outcomes in health and exacerbations of the disease. When it comes to seeking medical care, patients with obesity who perceived weight prejudice from their primary care provider were less successful in losing weight than patients who did not perceive negative judgment [19]. Therefore, limiting stigmatizing language in the medical community can foster an environment to encourage weight management [20].

Given the negative impact of utilizing stigmatizing language rather than utilizing weight-neutral language within obesity research, the AMA adopted an amendment within the PCL guidelines specific to obesity in 2017, which states “[AMA] encourages the use of person-first language (patients with obesity, patients affected by obesity) in all discussions, resolutions, and reports regarding obesity” [21]. The International Committee of Medical Journal Editors (ICMJE), to which many journals across the world adhere, states, “authors should utilize neutral, precise, and respectful language to describe study participants and avoid the use of terminology that might stigmatize participants” [22]. Although these guidelines are outlined by the ICMJE and AMA, to which many sports medicine-related journals require adherence, we found no existing evidence evaluating PCL adherence within these journals, which often include articles pertaining to weight loss, BMI, obesity, and health disparities. Not only does this terminology disperse the medical research community, but it also has a unidirectional flow to medical education and media outlets. Thus, our primary objective was to examine the rates of PCL adherence among obesity-related articles published in the top 10 sports medicine journals following the 2018 AMA amendment specific to obesity terminology.

Table 1: Frequency of person-centered language compliance by journal investigated.

Journal	Non-PCL	PCL compliant	Total
	(116) No. (%)	(82) No. (%)	(198) No. (%)
British Journal of Sports Medicine	5 (62.5)	3 (37.5)	8 (4.04)
International Journal of Sports Physiology and Performance	0 (0)	1 (100)	1 (0.51)
Journal of Science and Medicine in Sport	5 (45.45)	6 (54.55)	11 (5.56)
Journal of Sports Sciences	29 (74.36)	10 (25.64)	39 (19.7)
Journal of Strength and Conditioning	7 (50)	7 (50)	14 (7.07)
Knee Surgery, Sports Traumatology, Arthroscopy	12 (75)	4 (25)	16 (8.08)
Medicine and Science in Sports and Exercise	33 (62.26)	20 (37.74)	53 (26.77)
Sports Medicine	5 (71.43)	2 (28.57)	7 (3.54)
The American Journal of Sports Medicine	1 (25)	3 (75)	4 (2.02)
The International Journal of Behavioral Nutrition and Physical Activity	19 (42.22)	26 (57.78)	45 (22.73)

PCL, person-centered language.

Methods

Search strategy

Our group conducted a PubMed (which encompasses MEDLINE) systematic search on September 20, 2022, utilizing an adapted and updated search string from *Exercise for overweight or obesity* [23] (Supplement 1).

Article inclusion

Our search included studies published from January 1, 2019, through September 20, 2022. The journals included were the top 10 journals listed utilizing Google Metrics data (scholar.google.com/citations?view_op=top_venues) under the subcategory of *Physical Education and Sports Medicine* within the *Health and Medical Sciences* genre (Table 1). The search returns were randomized and placed in a Google Sheet for screening and extraction. The inclusion criteria were: original research related to or commenting on publications related to obesity, English manuscripts, and involved human subjects. The process of exclusion of articles is shown in Figure 1. The study did not include editorials and opinion pieces because the focus was on research studies.

Data extraction

Data extraction was conducted by two investigators utilizing Google Sheets in a blinded, duplicate manner in accordance with the best practices of meta-epidemiologic research [24]. The investigators then met to resolve differences in answers. The senior author served as a third party to resolve disagreements.

Our primary outcome was looking at the adherence to guidelines established by AMAMS related to PCL [15], which are presented in the introduction and continued specifically for obesity within resolution H-440.821 [25]. Thus, we systematically included articles in our search for the terms, partial terms, and phrases, along with terms identified in other studies [14, 26, 27] included in Figure 2. Additional elements collected from the articles were the type of research, the type of intervention, the institution of the first and last authors, the funding source, and the continent of origin.

Data analysis

We reported the number of articles returned from our initial search, how many articles were excluded (and the reason), and the number of articles included overall and from each journal. We then calculated the proportion of articles adhering to PCL guidelines (i.e., not including the stigmatizing words listed above) among the sample and by a journal. Next, we calculated the incidence of each predetermined term. We utilized bivariate logistic regression to measure associations between PCL adherence and article characteristics utilizing Stata 16.1. (StataCorp, LLC; College Station, TX).

Results

Article inclusion

Our search yielded 715 studies across the top 10 sports medicine journals based on Google metric data from September 20, 2022. We then screened these articles to see if they were pertinent to our study. A total of 504 articles were excluded for not being focused on obesity, 3 were not included due to not being focused on humans, and 11 could not be accessed. A total of 198 articles based on the criteria were deemed pertinent to have word searches conducted. Among the 10 journals, only 82 bodies of work showed adherence to obesity-related guidelines.

Study characteristics

Of the 198 articles, 47.5% were cross-sectional studies (94/198) and 68.2% (135/198) did not include an intervention. Grants were the most commonly listed funded resources (127/198; 64.1%), and most of the authors were from public universities (185/198; 93.4%). Additional characteristics of the studies can be found in Table 2.

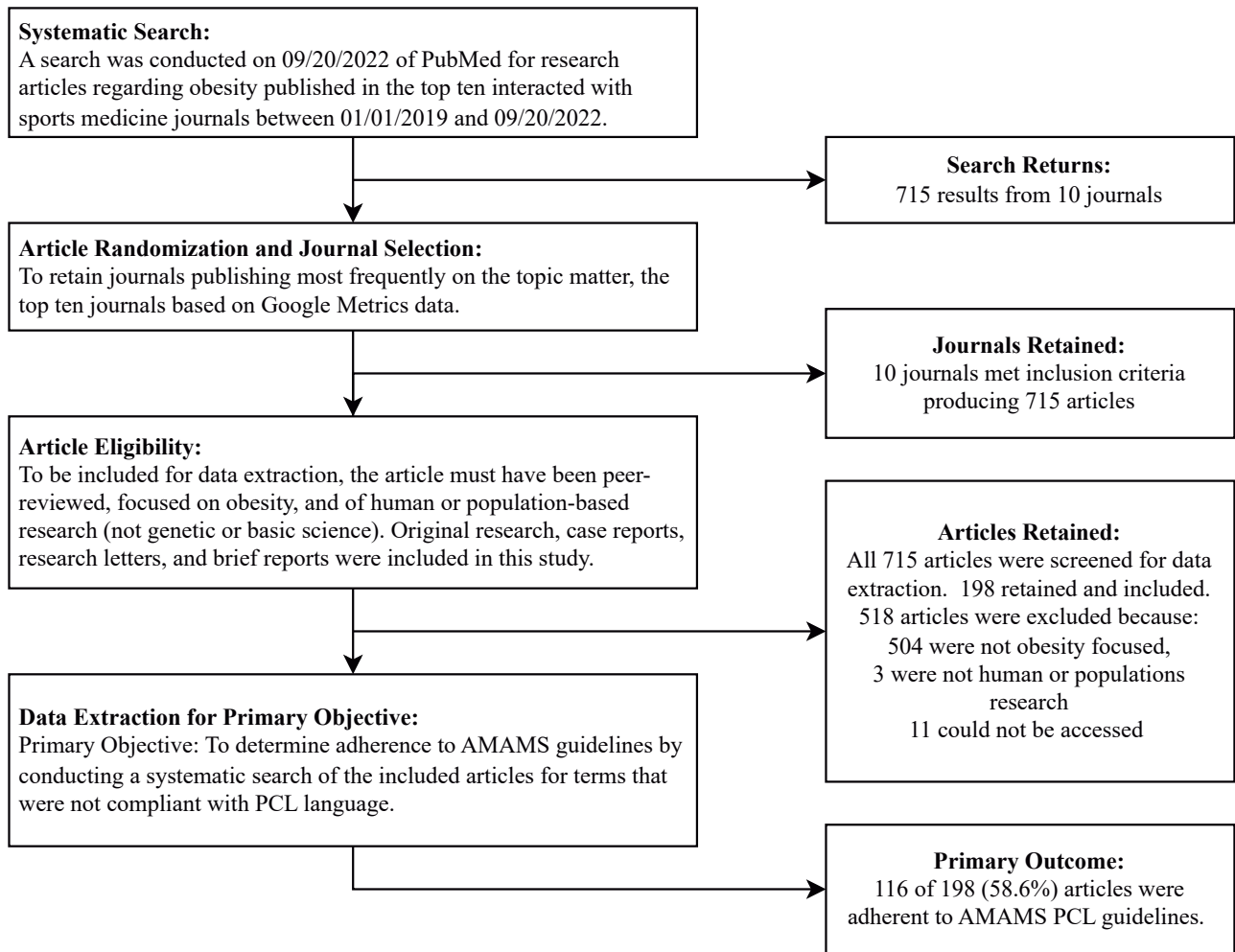


Figure 1: Flow diagram of inclusion and exclusion of articles screened.

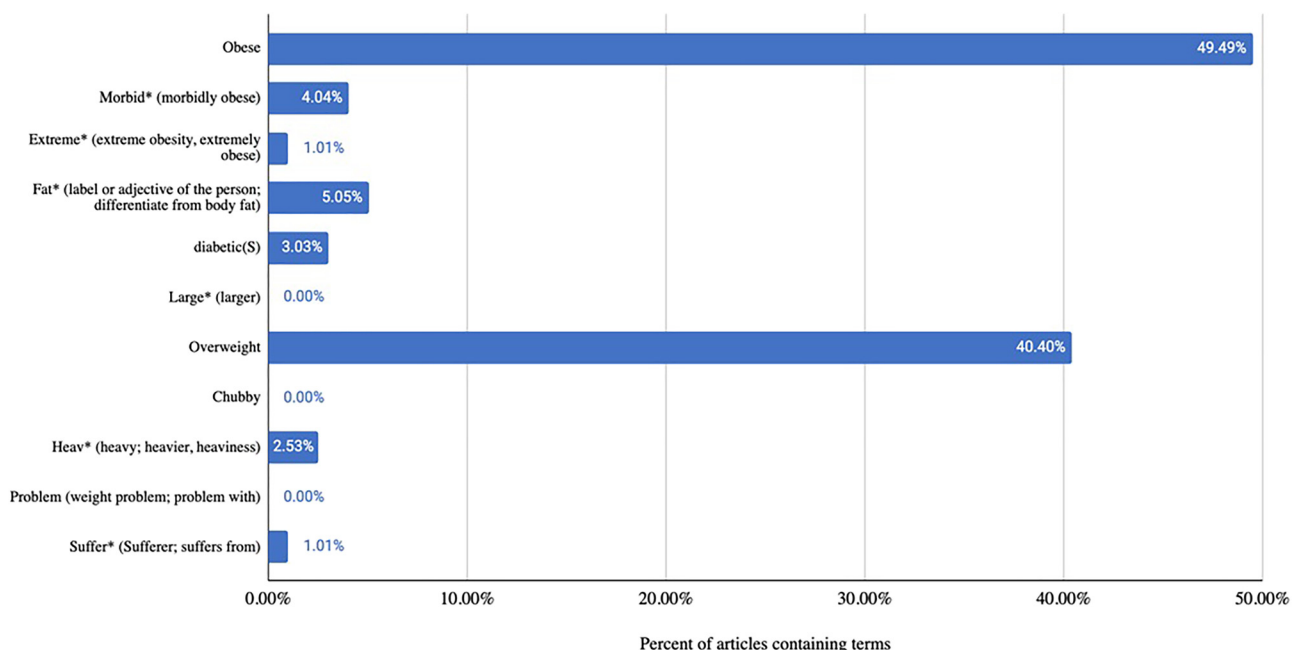


Figure 2: Percentage usage of non-person-centered language among sports medicine journals.

Table 2: Article characteristics and associations with person-centered language compliance.

Article characteristics	Non-PCL (116) No. (%)	PCL compliant (82) No. (%)	Total (198) No. (%)	OR (95 % CI)
Type of intervention				
No treatment of any kind	78 (56.93)	59 (43.07)	137 (69.19)	1 [Reference]
Combined (diet/exercise)	4 (44.44)	5 (55.56)	9 (4.55)	1.65 (0.43–6.42)
Device	1 (100.00)	0 (0.00)	1 (0.51)	1 -
Diet	0 (0)	1 (100.00)	1 (0.51)	1 -
Drug/pharmacologic	2 (100.00)	0 (0.00)	2 (1.01)	1 -
Exercise	29 (70.73)	12 (29.27)	41 (20.71)	0.55 (0.26–1.16)
Psychosocial/behavioral	2 (28.57)	5 (71.43)	7 (3.54)	3.31 (0.62–17.63)
Funding source				
Grant-funded	69 (54.33)	58 (45.67)	127 (64.14)	1 [Reference]
Industry-funded	6 (75.00)	2 (25)	8 (4.04)	0.4 (0.08–2.04)
No funding	14 (66.67)	7 (33.33)	21 (10.61)	0.59 (0.23–1.57)
No statement of funding	13 (59.09)	9 (40.91)	22 (11.11)	0.82 (0.33–2.06)
University/hospital	14 (70.00)	6 (30)	20 (10.1)	0.51 (0.18–1.41)
Type of research				
Clinical trial	37 (61.67)	23 (38.33)	60 (30.3)	1 [Reference]
Literature review	4 (80.00)	1 (20.00)	5 (2.53)	0.4 (0.04–3.82)
Observational/cross-sectional	51 (54.26)	43 (45.74)	94 (47.47)	1.36 (0.7–2.62)
Systematic review/meta-analysis	24 (61.54)	15 (38.46)	39 (19.7)	1.01 (0.44–2.3)
Mention of reporting guidelines (CONSORT, PRISMA, STROBE, etc)				
No	11 (61.11)	7 (38.89)	18 (9.09)	1 [Reference]
Yes	105 (58.33)	75 (41.67)	180 (90.91)	1.12 (0.42–3.03)
First author employment				
Government	1 (50.00)	1 (50.00)	2 (1.01)	1 [Reference]
Private	4 (36.36)	7 (63.64)	11 (5.56)	1.75 (0.08–36.29)
Public	111 (60.00)	74 (40.00)	185 (93.43)	0.67 (0.04–10.83)
Continent of origin				
North America	31 (45.59)	37 (54.41)	68 (34.34)	1 [Reference]
Asia	10 (52.63)	9 (47.37)	19 (9.6)	0.75 (0.27–2.09)
Australia	5 (31.25)	11 (68.75)	16 (8.08)	1.84 (0.58–5.88)
Europe	63 (73.26)	23 (26.74)	86 (43.43)	0.31 (0.16–0.6)
South America	7 (77.78)	2 (22.22)	9 (4.55)	0.24 (0.05–1.24)

CI, confidence interval; CONSORT, Consolidated Standards of Reporting Trials; OR, odds ratio; PCL, person-centered language; PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-Analyses; STROBE, Strengthening the Reporting of Observational studies in Epidemiology.

Adherence to person-centered language

Across the 198 articles included in the final screen, 116 (58.6 %) were not compliant with the AMAMS PCL guidelines. Throughout all 198 published bodies of work, we found 201 cases of non-PCL terms being utilized. Out of all of the selected screened terms, the most commonly utilized stigmas were “obese” (98/198; 49.5 %) and “overweight” (80/198; 40.4 %). Other stigmatizing terms, such as “fat” as a label,

“morbid,” “diabetic,” and “heavy, heavier,” were less frequent but still appeared in published works.

Associations of person-centered language and article characteristics

We utilized binary logistic regression to determine associations of PCL adherence and type of intervention, funding

source, type of research, first-author employment, and the study's continent of origin. Among these models, the only statistically significant association was for the continent of origin from which comparisons were made to studies from North America, and those published in European countries were less likely to be PCL adherent (OR: 0.31; 95 % CI: 0.16–0.60).

Discussion

Our findings show that a majority of obesity-related studies published in the top sports medicine journals contain stigmatizing language toward individuals with obesity. Stigmatizing words such as “obese” and “overweight” were the most commonly utilized incidences of non-PCL. Even extremely offensive terminology, including “fat,” “heavy,” and “heavier,” appeared multiple times throughout these bodies of work. The quantity of non-PCL language in these journals shows a lack of adherence to both AMA and ICMJE PCL guidelines, especially those pertaining to obesity. Our findings show that literature published by European countries may have different views on language surrounding obesity; however, all journals in which these articles were published instruct authors to follow ICMJE guidelines for appropriate language, and all of these articles had a significantly higher incidence of non-PCL. The *American Journal of Sports Medicine* was the only journal among the most interacted journals that also follows AMA guidelines. While ensuring that journals follow PCL guidelines has not been well studied, many studies have established consequences that arise from utilizing stigmatizing language.

Patient–provider interactions with stigmatizing language present have been shown to greatly reduce one's quality of care, leading to mistrust in doctors, poor treatment adherence, and stress associated with losing weight [28]. In a nationwide cross-sectional study of 600 individuals, patients who perceived judgment from their provider were more likely to attempt weight loss; however, the achieved weight loss was insignificant compared to patients who did not perceive judgment [19]. A similar study showed that approximately 20 % of patients who interacted with providers utilizing stigmatizing language such as “fat” and “obese” to describe one's weight reported that they would avoid future medical visits with their doctor [14]. Behaviors that are typically modifiable in patients with obesity can become undermined by stigma, leading to poorer health maintenance [29]. Patients who have reported greater incidents of weight-based stigma also reported exercise avoidance and diet refusal [30, 31].

While stigmatizing language has been well documented to hinder positive patient outcomes in face-to-face provider–patient encounters [32], when non-PCL is utilized in medical research, it also directly translates into the medical community through incorporation into medical textbooks, journal clubs, and scientific meetings. Thus, medical research establishes and dictates much of the terminology and jargon that providers utilize not only within physician consultations but also during lectures in which it is passed on to students and profoundly impacts medical education, shaping future providers' vocabulary during their training [33]. Non-PCL also often transfers into to media for reporting on new medical findings providing a broader audience with the terminology utilized in manuscripts. This one-way flow of dictating acceptable medical terminology makes it essential for medical researchers to learn and adopt PCL into their bodies of works – which may compound the stigma and shame felt by individuals with obesity.

These harms of stigmatizing language can be easily corrected with the education and acceptance of PCL by medical researchers and providers. Numerous resources are accessible to learn and become proficient in utilizing PCL. A tip sheet from the Resources for Integrated Care, a free-access resource for medical professionals, provides recommendations in word choice for more inclusive language (https://www.resourcesforintegratedcare.com/wp-content/uploads/2020/04/Using_Person_Centered_Language_Tip_Sheet.pdf). This provides access to additional resources outlining specific writing guidelines about appropriate PCL for individuals. These guidelines include describing one's disability in a respectful way, how to avoid common non-PCL phrases, and education for writers to grasp the power that language has in shaping attitudes within communities [34]. *Disability is Natural*, an advocacy group for individuals with disabilities, provides a PCL chart that reframes common sentences in everyday practice into appropriate PCL phrases. The chart suggests utilizing possessive language when referring to disabilities, such as utilizing “has” instead of “is.” For example, a patient *has* obesity rather than *is* obese [35]. By adopting these methods, writers can correct non-PCL into PCL easily.

These findings are important because society's biases and stigmatizing language can become frequently utilized in journal terminology. Thus, it is vital that proper language be utilized in medical research to prevent stigmatizing language's negative impact on obesity, future weight-loss potential, and self-perception of a patient's condition. Ensuring that PCL is utilized in published literature can help create the needed separation between a patient's identity and disease.

Recommendations

Sports medicine journal adherence to PCL guidelines may be improved by increasing author, editor, and journal awareness to obesity-centered stigma on health outcomes. By educating authors on utilizing PCL, we could limit the stigmatizing language that is filtered into academic literature. Education throughout all levels of medical education (physicians, residents, and medical students) can aid in limiting the usage of non-PCL in medical academia. We recommend that researchers utilize a similar protocol that we utilized here by screening their own manuscripts for stigmatizing language. Utilizing terminology such as “individuals with obesity” can be easily done by utilizing the “search/find” feature available throughout all writing platforms, including Google Docs, Microsoft Word, and Adobe Acrobat Reader. We also advise that all institutions that produce medical research adopt PCL guidelines similar to the AMAMS and ICMJE. This will prevent the perception of stigmatizing language in their bodies of work. Along with literature adherence, we encourage educators, physicians, and researchers to be trained in person-first language to influence the adoption of nonstigmatizing language into health-related careers. This includes utilizing PCL in reference to patients who are overweight/obese in the clinical setting. Clinicians, medical students, and health-care workers should be taught to avoid identifying patients based on their medical conditions to limit harmful outcomes and prioritize patient well-being. With these changes, we can more effectively target patient-centered weight loss while minimizing the barriers set forth by stigmatizing language in medical care.

Limitations

Limitations of this study include the potential of human error in screening for stigmatizing language, as defined by AMAMS. To mitigate this error, screeners were trained in data extraction procedures for non-PCL terms and followed a stepwise protocol for reviewing publications. Additionally, the list of predetermined non-PCL may not include all stigmatizing terminology. Finally, our study focused on the 10 top journals from the specified category within Google Metrics; therefore, other journals need to be evaluated. The strengths of our study include a publicly available protocol to ensure reproducibility and our focus on the top impactful journals. Studies in the future should focus on expanding the literature on PCL adherence in accordance with AMAMS guidelines in other medical specialties.

Conclusions

Based on our study, stigmatizing language toward individuals with obesity was prevalent among manuscripts published in top sports medicine journals – with 58.6 % being nonadherent to the AMAMS’ and ICMJE’s PCL guidelines. Because language utilized in medical journals translates into clinical education and practice and into the media, we encourage the use of inclusive language within the manuscripts and for journals to adopt stricter guidelines for publication. The pervasive use of non-PCL in medical literature may evoke itself in patient-provider conversations, which can lead to poorer communication, lower self-esteem, and poorer overall health outcomes.

Research ethics: This project does not qualify as human subject research as defined in 45 CFR 46.102 (d) and (f) and is not subject to oversight by the Institutional Review Board.

Informed consent: Not applicable.

Author contributions: JW, TG, and MH provided substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data; JW, KM, AR, MA, JS, JC, LW drafted the article or revised it critically for important intellectual content; JW, KM, TG, and MH gave final approval of the version of the article to be published; and all authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Competing interests: Dr. Hartwell reports receiving funding from the National Institute for Justice and Health Resources and Services Administration for research unrelated to the current topic.

Research funding: None declared.

Data availability: The raw data can be obtained on request from the corresponding author.

References

1. Obesity and overweight. <https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight> [Accessed 18 Nov 2022].
2. Apovian CM. Obesity: definition, comorbidities, causes, and burden. *Am J Manag Care* 2016;22(7 Suppl):s176–85.
3. Andolfi C, Fisichella PM. Epidemiology of obesity and associated comorbidities. *J Laparoendosc Adv Surg Tech* 2018;28:919–24.
4. CDC. Why it matters. Centers for Disease Control and Prevention; 2022. <https://www.cdc.gov/obesity/about-obesity/why-it-matters.html> [Accessed 18 Nov 2022].
5. Cawley J, Biener A, Meyerhoefer C, Ding Y, Zvenyach T, Smolarz BG, et al. Direct medical costs of obesity in the United States and the most populous states. *J Manag Care Spec Pharm* 2021;27:354–66.
6. Powell-Wiley TM, Poirier P, Burke LE, Després JP, Gordon-Larsen P, Lavie CJ, et al. Obesity and cardiovascular disease: a scientific

- statement from the American heart association. *Circulation* 2021;143:e984–1010.
7. de Jong M, Jansen N, van Middelkoop M. A systematic review of patient barriers and facilitators for implementing lifestyle interventions targeting weight loss in primary care. *Obes Rev* 2023;24:e13571.
 8. Myers CA, Martin CK, Apolzan JW, Arnold CL, Davis TC, Johnson WD, et al. Food insecurity and weight loss in an underserved primary care population: a post hoc analysis of a cluster randomized trial. *Ann Intern Med* 2021;174:1032–4.
 9. Kim SJ, Blesoff JR, Tussing-Humphrys L, Fitzgibbon ML, Peterson CE. The association between neighborhood conditions and weight loss among older adults living in a large urban city. *J Behav Med* 2023;46:882–9.
 10. Payne ME, Porter Starr KN, Orenduff M, Mulder HS, McDonald SR, Spira AP, et al. Quality of life and mental health in older adults with obesity and frailty: associations with a weight loss intervention. *J Nutr Health Aging* 2018;22:1259–65.
 11. Sagar R, Gupta T. Psychological aspects of obesity in children and adolescents. *Indian J Pediatr* 2018;85:554–9.
 12. Puhl RM, Himmelstein MS, Armstrong SC, Kingsford E. Adolescent preferences and reactions to language about body weight. *Int J Obes* 2017;41:1062–5.
 13. Puhl RM, Peterson JL, Luedicke J. Parental perceptions of weight terminology that providers use with youth. *Pediatrics* 2011;128:e786–93.
 14. Puhl R, Peterson JL, Luedicke J. Motivating or stigmatizing? Public perceptions of weight-related language used by health providers. *Int J Obes* 2013;37:612–19.
 15. Committee AM of S, AMA Manual of Style Committee. *AMA manual of style*; 2020. <https://doi.org/10.1093/jama/9780190246556.001.0001>.
 16. Hartwell M, Naberhaus B, Arnhart C, Ottwell R, Dunn K, Rogers T, et al. The use of person-centered language in scientific research articles focusing on alcohol use disorder. *Drug Alcohol Depend* 2020;216:108209.
 17. Bharadwaj P, Pai MM, Suziedelyte A. Mental health stigma. *Econ Lett* 2017;159:57–60.
 18. Brewis A, SturtzSreetharan C, Wutich A. Obesity stigma as a globalizing health challenge. *Global Health* 2018;14:20.
 19. Gudzone KA, Bennett WL, Cooper LA, Bleich SN. Perceived judgment about weight can negatively influence weight loss: a cross-sectional study of overweight and obese patients. *Prev Med* 2014;62:103–7.
 20. Tomiyama AJ, Janet Tomiyama A, Carr D, Major B, Robinson E, Sutin AR, et al. How and why weight stigma drives the obesity “epidemic” and harms health. *BMC Med* 2018;16:4–8.
 21. Policy finder. <https://policysearch.ama-assn.org/policyfinder/detail/obesity?uri=%2FAMADoc%2FHOD.xml-H-440.821.xml> [Accessed 4 Jan 2023].
 22. ICMJE. <https://www.icmje.org/recommendations/browse/manuscript-preparation/preparing-for-submission.html> [Accessed 21 Aug 2023].
 23. Shaw K, Gennat H, O’Rourke P, Del Mar C. Exercise for overweight or obesity. *Cochrane Database Syst Rev* 2006;2006:CD003817.
 24. Murad MH, Wang Z. Guidelines for reporting meta-epidemiological methodology research. *Evid Based Med* 2017;22:139–42.
 25. American Medical Association. Person-first language for obesity; 2017. <https://policysearch.ama-assn.org/policyfinder/detail/obesity?uri=%2FAMADoc%2FHOD.xml-H-440.821.xml> [Accessed 2 Mar 2021].
 26. Dutton GR, Tan F, Perri MG, Stine CC, Dancer-Brown M, Goble M, et al. What words should we use when discussing excess weight? *J Am Board Fam Med* 2010;23:606–13.
 27. Volger S, Vetter ML, Dougherty M, Panigrahi E, Egner R, Webb V, et al. Patients’ preferred terms for describing their excess weight: discussing obesity in clinical practice. *Obesity* 2012;20:147–50.
 28. Phelan SM, Burgess DJ, Yeazel MW, Hellerstedt WL, Griffin JM, van Ryn M. Impact of weight bias and stigma on quality of care and outcomes for patients with obesity. *Obes Rev* 2015;16:319–26.
 29. Lee KM, Hunger JM, Tomiyama AJ. Weight stigma and health behaviors: evidence from the Eating in America Study. *Int J Obes* 2021;45:1499–509.
 30. Puhl RM, Brownell KD. Confronting and coping with weight stigma: an investigation of overweight and obese adults. *Obesity* 2006;14:1802–15.
 31. Greger M, FACLM. *How not to diet: the groundbreaking science of healthy, permanent weight loss*. New York City, NY: Flatiron Books; 2019.
 32. Nickel B, Barratt A, Copp T, Moynihan R, McCaffery K. Words do matter: a systematic review on how different terminology for the same condition influences management preferences. *BMJ Open* 2017;7:e014129.
 33. Dolmans DHJM, van der Vleuten CPM. Research in medical education: practical impact on medical training and future challenges. *GMS Z Med Ausbild* 2010;27:Doc34.
 34. Tip sheet: using person-centered language. Baltimore, MD: Resources for integrated care; 2020. https://www.resourcesforintegratedcare.com/using_person_centered_language/?csr=10572773116194202666 [Accessed 4 July 2023].
 35. People first language. Disability is natural. <https://www.disabilityisnatural.com/people-first-language.html> [Accessed 4 July 2023].