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Weight stigma and bias – what is known? | Rapid review of evidence.

A University of Sydney research project undertaken in association with The Obesity Collective

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Whilst undertaken in association with The Obesity Collective, the analysis, conclusions and recommendations in this report are those of the authors and are not necessarily those of The Obesity Collective.

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Executive Summary

Weight stigma is pervasive in mass media, including news, movies and television, as well as social media. Mass media perpetuate weight stigma through overrepresentation of thin and underweight individuals, underrepresentation of individuals with obesity, and the portrayal of characters with obesity in a stigmatizing or negative light. This cumulative evidence indicates that the media is an influential source that can reinforce bias against people with obesity.

Despite having a goal to promote healthy behavior and reduce obesity, and in contrast to the argument that stigma motivates engagement in health behaviours, obesity-related media campaigns perpetuating messages of blame and stigma against individuals with obesity can instead reduce motivation to engage in weight-related health behaviours. Stigmatizing visual portrayals of obesity elicit less self-efficacy to engage in health behaviours among individuals of diverse weight status

Children and adults who experience weight stigma are vulnerable to numerous consequences affecting their psychological and physical health. Psychological consequences include increased risk of depression, anxiety, low self-esteem, poor body image, substance abuse, and suicidal thoughts and behaviours. Many of these outcomes persist even after accounting for factors such as BMI, obesity onset, gender, and age, indicating that negative psychological consequences emerge from stigmatizing experiences rather than from obesity per se. Adverse health outcomes which result from peoples experience of weight stigma can reduce quality of life and pose major obstacles to efforts to prevent and treat obesity effectively. This combined evidence suggests that weight stigma and discrimination represent a public health issue and should be prioritized alongside efforts to address this problem as a societal injustice.

The evidence on prevention and reduction of weight stigma is at an emergent stage and the quality overall is weak but ***the seriousness of the probable consequences is such that there is an ethical imperative to take precautionary action now, even as more research is underway or about to commence.***

Common themes across studies include the following points, as identified by Alberga and colleagues[59] include:

i) weight bias is common and has adverse health consequences;
ii) shaming individuals for their body weight does not motivate positive behaviour change;
iii) internalized weight bias is particularly problematic;
iv) public health interventions, if not carefully thought out, can perpetuate weight bias;
v) weight bias is a manifestation of social inequity;
vi) action on weight bias requires an upstream, population-level approach; and
vii) to achieve sustainable reductions in weight bias at a population level, substantive modifications and collaborative efforts in multiple settings are required.

The body of evidence on prevention indicates that multilevel efforts to implement stigma reduction strategies may be required. This will entail downstream stigma reduction interventions targeted to different settings (e.g., education and training of medical professionals to reduce weight-based stigma in health care), but broader upstream policy initiatives are likely required to eradicate systemic societal weight-based discrimination and prejudice that otherwise remain pervasive and impair the health and quality of life for many people who are so affected.

On message framing, the evidence suggests that neutral terminology (e.g., “weight” or “unhealthy weight”) is preferred and that words like “obese” and “fat” are least acceptable, particularly in provider-patient conversations about weight. Individual variation in language preferences is evident across demographic characteristics like race/ethnicity, gender, and weight status. Research to improve upon the limited diversity of the existing evidence, both with respect to sample diversity and the use of culturally relevant weight-related terminology (which is currently lacking in measurement) is urgently needed.

In public health media campaigns targeting obesity prevention, careful consideration should be given to messages communicated to ensure that messages intended to promote optimal weight-related health behaviours do not simultaneously stigmatize or shame individuals with obesity.

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1 Background

The Obesity Collective

The Obesity Collective is a platform for committed individuals and organisations from across the community to take on the obesity challenge together, with empathy and a whole of society perspective. The Collective Purpose is "*To Transform The Way Society Thinks, Speaks And Acts On Obesity*. One of The Collective strategies for action includes: *the creation of a new narrative by (i) decreasing weight stigma and bias and (ii) increasing acceptance that obesity is a whole of society responsibility.* In support of that action strategy, this rapid review has been undertaken by the Prevention Research Centre, a partner of The Collective based at the Charles Perkins Centre. For more information visit website of The Collective.

Purpose of this report

This report describes the results of a *rapid review* of research evidence.[1] A rapid review uses systematic review techniques but is tailored to tight time requirements; in that sense it is usually based on existing systematic reviews and meta-analyses rather than individual studies. Where individual studies are used to supplement systematic reviews, the highest available quality of evidence is sought. For more information see the Evidence Check methodology of the Sax Institute which is highly consistent with the approach used here.

Research questions

The review addresses six main research questions

Conceptual framework

1. What theoretical and conceptual constructs have been developed to explain weight stigma, sources, types of weight stigmatisation and possible target variables for prevention efforts?; Can the existing models be integrated to improve our conceptualisation of weight stigma?

Drivers of weight stigma and bias

2. What insights can research provide about the role of news, entertainment, social media with respect to the development of weight stigma and bias?

3. What, if any adverse consequences (in terms of weight stigma and bias) have been reported from anti-obesity campaigns, messages and strategies?

Weight stigma, bias and health outcomes

4. Where weight stigma and bias has occurred because of anti-obesity campaigns, messages and strategies, what evidence is available about the effects on physical and mental health?

Prevention

5. What evidence is available on the effectiveness of interventions, policies or programs designed to prevent or reduce weight stigma and bias, especially regarding news, social, entertainment media and anti-obesity campaigns?

6. What insights can research offer to inform message framing and communication efforts in obesity prevention to avoid inadvertent weight stigma and bias?

Limitations

This is a report of rapid evidence review, conducted in a short timeframe. Whilst every effort was made to approximate a full systematic review and thorough searches were undertaken, it is possible that some relevant studies were missed. The authors have completed this rapid review partly in background preparation for a systematic review which will now commence.

2 Conceptual framework

What theoretical and conceptual constructs have been developed to explain weight stigma, sources, types of weight stigmatisation and possible target variables for prevention efforts?; Can the existing models be integrated to improve our conceptualisation of weight stigma?

In keeping with good practice, we commenced with a synthesis of existing theoretical frameworks and logic models.[2-14] Team discussion and iterative development led to an integrated model version 1.0 shown at **Figure 1**.

The team decided to develop a logic model for the research study, noting the inherent advantages in offering a framework to help reviewers to 'think' conceptually at various points during the review, providing a tool which can be used to help define study inclusion and exclusion criteria, helping to guide the development of a search strategy, and identifying define relevant outcomes.[15,16]

Description of logic model

The logic model comprises six main components: (i) populations, (ii) contexts, (ii) sources, (iv) disease prevention/health promotion, (v) stigma prevention and (vi) health/social outcomes.

Populations

The model shows the *whole* population, people with overweight and obesity within that population, and the subset of people experiencing weight stigmatisation and/or discrimination. The sub-categorisation of stigma into perceived, endorsed, anticipated and received stigmatisation is explained in Table 1 and is based on the 'theoretical building blocks of stigma research – target variants' developed by Pescosolido and Martin (2015).[7] The grey dotted line is used to show the areas to be included in the systematic review; here it denotes that the review includes a focus on the stigmatisation experiences of people with overweight and obesity; although not marked within scope in populations, the model includes the whole population (through the *Contexts* component)

Stigma variant	Definition
Self-stigma	Internalised acceptance of stereotypes and prejudice
Courtesy stigma	Stereotypes, prejudice and discrimination by association with marked groups
Perceived	Belief that 'most people'/ will devalue, discriminate the stigmatised
Endorsed	Expressed agreement with stereotypes, prejudice and discrimination
Anticipated	Expectations of experiencing prejudice and discrimination among the stigmatized
Received	Overt behaviours of rejection and devaluation experiences of negative interaction

Table 1 Experiential variants of stigma (from Pescosolido and Martin)

Contexts

The model embraces the whole population since we are interested in people without obesity who may display the attitudes and behaviours which are a source of weight stigmatisation and are thus a putative target group for interventions. This is consistent with the health stigma and discrimination framework described by Stangl and colleagues.[14] Contexts also incorporates various media platforms as well as the concept of 'settings' which is commonly used in prevention.[17]

Sources

The sources (of stigma) component of the model are divided into public, provider-based and structural stigma adapted from the 'action oriented' stigma described by Pescosolido and Martin[7,11] whilst also recognising that there are cognitive, affective and discriminatory (behavioural) aspects of stigma.

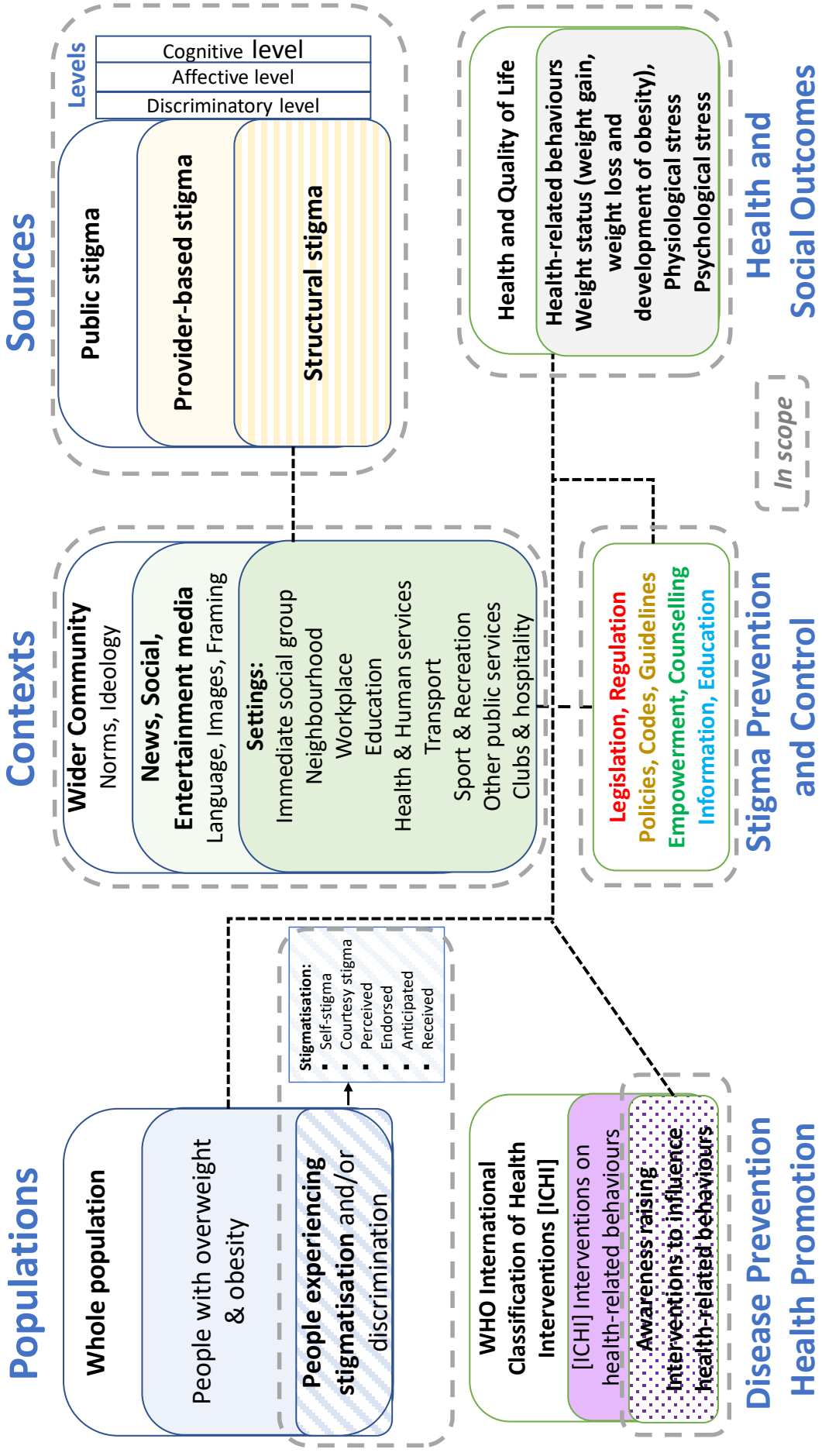


Figure 1 Logic model of weight stigmatisation V1.0 : sources, contexts, populations, prevention and outcomes

Stigma source	Definition
Public stigma	Stereotypes, prejudice and discrimination endorsed by the general population
Provider-based stigma	Prejudice and discrimination, voiced or exercised, consciously or unconsciously, by occupational groups designated to provide assistance or services to people with overweight or obesity/ stigmatised groups
Structural stigma	Prejudice and discrimination by policies, laws and constitutional practice – also called institutional stigma

Table 2 Sources of enacted stigma (adapted from Pescosolido and Martin)

Disease prevention/health promotion

The disease prevention/health promotion component of the model uses the WHO International Classification of Health Interventions[18] as its overall framework, whilst separating out the health-related behaviours component, and further separating out the awareness raising interventions such as communication campaigns designed to prevent or reduce unhealthy weight. This allows for positive impacts but also for the possibility that a campaign designed to provide benefit might inadvertently cause harm due to stigmatisation of people with overweight or obesity.

Stigma prevention

The stigma prevention and control component is based on a typology of potential interventions ranging from 'soft' educational approaches to 'hard' legislative and regulatory strategies which derives from the idea of an 'intervention ladder' put forward by the Nuffield Council on Bioethics.[19]

Health/social outcomes

The health and social outcomes component took account of a sentinel literature scan which indicated the range of harm which can result from weight stigma.[20-23]

Search strategy

PICO

Populations:	**P1** General population; **P2** People with overweight or obesity; **P3** People with overweight and obesity experiencing weight stigmatisation
Phenomena of **I**nterest	I1 Theories, Models and Frameworks explaining weight stigma and bias
	I2 Disease prevention and health promotion communication strategies addressing healthy weight/ overweight and obesity
	I3 Interventions designed to prevent or reduce weight stigma and bias
Context:	C1 Exposure to stigmatisation/bias through social norms and ideology
	C2 Exposure to stigmatisation/bias through news, social and entertainment media
	C3 Exposure to stigmatisation/bias through social settings and systems: immediate social group; neighbourhood; workplace/employment; education; health and human services; transport; sport and recreation; other public services; clubs/hospitality.

Outcomes:	**O1** Health-related behaviours;	**O4** Psychological stress
	O2 Weight status	**O5** Morbidity and mortality
	O3 Physiological stress	**O6** Quality of life

Research method: Systematic Review of quantitative and qualitative research in electronic databases and grey literature sources.

Electronic Databases: PubMed, CINAHL, Scopus, WARC, (world advertising research centre), Medline, Embase, PsycInfo, Cochrane Databases of Systematic Reviews

Inclusion and exclusion criteria

- Published since January 2000; Full text available in English
- Any study design- highest level of evidence available.
- Systematic reviews and reviews preferred (subject to quality)
- Conducted in Australia; if limited then (ii) and/or NZ, UK, Canada, USA; if few studies, then (iii) no limits by geography; No restriction on age/age group/life stage

PRISMA flow diagram is shown in Appendix 1

3 Weight stigma, bias and health outcomes

What evidence is available about the effects of weight stigmatisation and bias on physical and mental health?

Rebecca Puhl, an eminent researcher in weight stigma recently noted that "children and adults who experience weight stigma are vulnerable to numerous consequences affecting their psychological and physical health. Psychological consequences include increased risk of depression, anxiety, low self-esteem, poor body image, substance abuse, and suicidal thoughts and behaviours. Many of these outcomes persist even after accounting for factors such as BMI, obesity onset, gender, and age, indicating that negative psychological consequences emerge from stigmatizing experiences rather than from obesity per se." Adverse health outcomes which result from peoples experience of weight stigma can reduce quality of life and pose major obstacles to efforts to prevent and treat obesity effectively.[24]

A systematic review of health consequences of weight stigma was reported by Puhl and Suh.[23] The review examined examining the relationship between weight stigma and maladaptive eating behaviours (binge eating and increased food consumption), physical activity, weight status (weight gain and loss and development of obesity), and physiological stress responses. The authors conclusions included the following:

- people who report experiences of weight stigmatization have an increased likelihood of engaging in binge eating;
- internalization of weight bias (the extent to which a person engages in self-stigma, attributing negative weight-based stereotypes toward oneself) may have particularly important implications for binge eating behaviours;
- the influence of weight stigmatization on food consumption patterns is an emerging research area; overall, the recent evidence suggests that exposure to weight-related stigma and shame leads to overeating and increased desire for food;
- more research is needed to clarify mechanisms and identify more clearly how energy intake is affected by personal experiences of weight stigma compared to internalization of stigma or exposure to weight stigmatizing content in other forms (e.g., media);
- young people are highly vulnerable to weight-based victimization in physical activity settings and that this may in turn negatively impact their attitudes toward and engagement in physical activity (these findings have led to calls for re-examination of curricula and physical activity education to ensure that students are not marginalized because of their weight);
- less research has been conducted into weight stigma and physical activity in adults, but recent findings suggest that *internalized* weight stigma may play a particularly important role in physical activity among adults;
- in adults, longitudinal evidence demonstrates a clear link between weight discrimination and obesity and weight gain;
- in young females, compared to girls without experiences of weight stigmatization, those reporting previous experiences of weight stigma face a 64–66 % increased risk of becoming overweight and obese; during adolescence, teasing and hurtful labels from family members may be especially harmful. For young males the evidence is less clear;
- weight stigma may also pose challenges for achieving weight loss - among treatment-seeking patients, *preliminary* evidence indicates that experiences of weight stigma may interfere with weight loss outcomes;
- recent research has begun to examine how weight discrimination may trigger physiological stress responses that impair neuroendocrine control of health behaviours and contribute to

increased adiposity and elevated risk for cardiovascular and metabolic co-morbidities of obesity;[23]

The Puhl and Suh study findings from are supported and complemented by other systematic review evidence,[25] as well as other peer reviewed research and policy positions.[21,22]

Wu and Berry concluded that weight stigma was positively associated with obesity, diabetes risk, cortisol level, oxidative stress level, C reactive protein level, eating disturbances, depression, anxiety, body image dissatisfaction and negatively associated with self-esteem among overweight and obese adults.[25]

Pont and colleagues, in the peer-reviewed policy statement for the American Academy of Pediatrics, note that stigma contributes to binge eating, social isolation, avoidance of health care services, decreased physical activity, and increased weight gain, which worsen obesity and create additional barriers to healthy behavior change. These experiences of weight stigma also dramatically impair quality of life, especially for young people.[22]

Taken together, this evidence suggests that weight stigma and discrimination represent a public health issue and should be prioritized alongside efforts to address this problem as a societal injustice.

4 Drivers of weight stigma and bias

What insights can research provide about the role of news, entertainment, social media with respect to the development of weight stigma and bias?

Weight stigma is pervasive in mass media, including news,[26] movies and television[27], as well as social media[28]. Mass media perpetuates weight stigma through overrepresentation of thin and underweight individuals, underrepresentation of individuals with obesity, and the portrayal of characters with obesity in a stigmatizing or negative light.[29] Taken together, this evidence indicates that the media is an influential source that can reinforce bias against people with obesity.[24]

News media can reinforce weight bias and stereotypes; obesity is frequently attributed to personal responsibility rather than to societal causes in news reports, and remedies for obesity are more often framed as the responsibility of the individual rather than the need to change societal-level factors. Visual portrayals of obesity in the news media can also reinforce weight stigma beyond written news content. Studies analysing news reports about obesity have found that more than two thirds of images accompanying news reports portrayed obese children and adults in a stigmatizing manner. In addition, experimental studies show that viewing these types of stigmatizing images leads to increased weight bias, regardless of the gender or ethnicity of the individual portrayed in the image. Studies with young people have demonstrated that television viewing predicts negative weight stereotyping, and that media exposure is positively associated with stigmatizing attitudes toward obese young people.[24] In the study conducted by Lambert et al., exposure to weight stigma in news media was associated with a significant increase in BMI at 1-month follow-up (1.15 kg/m2, 95% CI: 0.38 to 1.92) among people with obesity.[30]

Stigmatizing portrayals of individuals with obesity are common in television shows, movies, advertisements, news media, and even in youth programming. To quote Puhl:

> *"Characters who appear to be overweight or obese in television and film are often ridiculed, depicted as engaging in stereotypical behaviours (e.g., eating or bingeing), and less likely to have positive social interactions. In youth-targeted media, overweight characters are depicted as being aggressive, antisocial, evil, unattractive, unfriendly, disliked by others, and eating food compared to thinner characters, who are more often portrayed as sociable, kind, successful, popular, and attractive".[24]*

Weight stigma is pervasive across settings, including the increasingly important arena of social media. For example, Lydecker and colleagues undertook a content analysis of Twitter, using "fat" as a keyword and selecting all keyword-filtered tweet content over a four-hour period. Of all messages, 56.57 % were negative and 32.1 % were neutral. Of those containing weight-stigmatizing messages (n = 529), themes relating to fatness included: gluttonous (48.6 %), unattractive (25.1 %), not sexually desirable (2.6%), sedentary (13.8%), lazy (5.9 %), and stupid (4.2 %).[28] Chou and colleagues undertook research to describe social media interactions about weight through a mixed methods analysis. Data were collected across 60 days through social media monitoring services, yielding 2.2 million posts. Twitter (the most common channel) and Facebook were dominated by derogatory and misogynist sentiment, pointing to weight stigmatization, whereas blogs and forums contained more nuanced comments.[31] The YouTube channel has also shown similar weight stigma characteristics.[32,33]

The Chou et al study examined multiple social media channels which allowed a comparative analysis, as a result of which the researchers concluded that there are distinct differences between channels. Those channels with predefined audience networks and implicit or explicit limitations on length (e.g., Facebook's typically brief status update and Twitter's 140-character limit), and those that are more amenable to "stream-of-consciousness" sharing, encourage discourse about "fat," presumably

because of its more casual and quotidian nature. On the other hand, social media channels with no length limits (e.g., forums and blogs) that typically support ongoing conversation among a smaller number of participants may better enable discussions related to weight management and healthy lifestyle choices. The researchers conclude that Twitter appears to be the most significant channel for weight stigma:

> *"Twitter appears to be a unique channel that potentially perpetuates and enables terse and insensitive flaming or aggressive cyberbullying. Our analysis suggests the importance of considering the uniqueness of each social media channel in future research and intervention design".*[31]

What, if any adverse consequences (in terms of weight stigma and bias) have been reported from anti-obesity campaigns, messages and strategies?

Despite having a goal to promote healthy behavior and reduce obesity, and in contrast to the argument that stigma motivates engagement in health behaviours, obesity-related media campaigns perpetuating messages of blame and stigma against individuals with obesity can instead reduce motivation to engage in weight-related health behaviours. Stigmatizing visual portrayals of obesity elicit less self-efficacy to engage in health behaviours among individuals of diverse weight status.[34,35]

The study conducted by Simpson suggested that weight-focused obesity prevention campaigns had the potential to pose serious public health consequences.[36]

> "*These (weight-centric) campaigns posit that body weight is a marker of health and appear to encourage negative attitudes towards obesity. These messages imply personal responsibility to make behavioral changes, creating blame and promoting stigma towards individuals with obesity. Stigmatizing attitudes towards obesity are concerning, as these beliefs create social disparities, threaten the psychological and physical health of individuals with obesity, and impede the intended effects of health messages*".[36]

Couch et al. undertook a case study of the Australian *LiveLighter®* campaign, developed by Heart Foundation Western Australia and Cancer Council of Western Australia under contract of the Western Australian Government Department of Health and launched in 2012. The authors analysis identifies problems with stigmatising fat as disgusting, portrayals of risk, messaging about 'toxic fat'; they also question the way this campaign has a focus exclusively on *personal* responsibility and *personal* control while ignoring the myriad of other factors that contribute to obesity as well as other considerations (including socio-economic factors and personal values) that likely are important in an individual's food and physical activity choice decisions and their ability and willingness to implement the campaign's suggested actions.[37] The issue of weight stigma features in the Clarke et al analysis of the policy processes underpinning the next iteration of *LiveLighter®* in the State of Victoria.[38] The campaign was delivered through paid advertising, social media and various other communication platforms in Victoria, Australia from 2015 to 2017, under an intellectual property license agreement between the Western Australian Department of Health and Cancer Council of Victoria. In this case a systems paradigm is used, which incorporates analysis of an opposing advocacy group who believed the *LiveLighter®* social marketing campaign may lead to increased stigma and negative health outcomes for obese and overweight individuals. This group also suggested the campaign might negatively impact on children and increase the risk of eating disorders in the general community. The authors noted that the theme of personal responsibility was ideologically closer to the views of the Liberal Government so that the issues required careful navigation.[38]

Johnstone and Grant investigated the impact of images on weight stigma using mock anti-obesity campaigns featuring different types of images. Participants (n=240) were randomly assigned to one of four campaign conditions: stereotypical images, counter-stereotypical images, neutral images, or no images. Stereotypical images were rated as the most stigmatising and were also associated with higher negative and lower positive trait ratings of the target and more desired social distance from the target. Neutral images generally produced the least weight stigma. The authors conclude that stereotypical images that blame individuals for their weight reinforce obesity stigma and are likely to be ineffective in increasing healthier behaviour and reducing obesity. Developing, testing and disseminating non-stigmatising campaigns is important to reduce stigma and better engage individuals with antiobesity public health messages.[39]

Dixon's experimental audience study with 1116 Australian adults aged 21-55 years provides preliminary evidence of the most promising content and executional styles of advertisements that could be pursued as part of obesity prevention campaigns.[40] Ads which emphasised the negative health consequences of excess weight appeared to elicit stronger cognitive and emotional responses from adults with overweight/obesity. The author noted that careful pre-testing of these types of ads is needed prior to their inclusion in actual campaigns to ensure they do not have unintended negative impacts such as increased stigmatisation of vulnerable individuals and increased levels of body dissatisfaction and/or eating-disordered behaviour among at-risk population sub-groups.[40]

The recent review by Sharma and Sallas of review public and private sector obesity policies in Canada makes explicit mention of tackling weight stigma at the *strategic* level. The authors describe an emerging recognition in Canada of weight bias and obesity stigma as important determinants of health.[41] The recognition of the impact of weight bias and obesity stigma on health outcomes is also creating an emerging paradigm shift in Canada toward *health and wellness* as opposed to *weight-centric* population health approaches.[41]

5 Prevention

What evidence is available on the effectiveness of interventions, policies or programs designed to prevent or reduce weight stigma and bias?

There is a generic literature on interventions for the reduction of various types of stigma (for example stigma relating to HIV, mental health, leprosy, substance abuse).[42-46] In younger LMIC populations, community education, individual empowerment and social contact are commonly used. Most interventions are implemented at one socio-ecological level and are of short duration (between half a day and a week).[43] In a global review of general populations, strategies used involve social contact, social marketing, counselling, faith, and problem solving, with most reduction strategies using education-based approaches. Research studies have examined community-level interventions alongside interpersonal and/or intrapersonal levels but have found a dearth of strategies which combined a structural-level intervention with another level. While most reviewed studies (17 of 24) reported statistically significant declines in at least one measure of stigma, fewer than half reported measures of practical significance (i.e., effect size) and those that were reported varied widely in magnitude and were typically in the small-to-moderate range.[45] Overall, this literature describes efforts that can be characterised as single, downstream strategic approaches to stigma reduction with poor quality evidence and modest results.

For more specific evidence on the prevention and/or reduction of weight stigma and bias, this rapid review identified relevant systematic reviews,[23,47-49] randomized trials,[50-53] quasi-experimental studies,[40,54,55] descriptive research,[56,57] and other papers based on expert commentary and consensus.[41,58-60]

Alberga and colleagues reported a systematic review of various weight bias reduction strategies in healthcare settings. Many of the reviewed studies had methodological weaknesses, including short assessment periods, lack of randomization, lack of control group and small sample sizes. Although many studies reported changes in health professionals' beliefs and knowledge about obesity aetiology, evidence of effectiveness is poor, and long-term effects of intervention strategies on weight bias reduction remain unknown. The authors highlight the lack of experimental research. The researchers conclude that whilst changes in practice will likely require multiple strategies in various sectors, well-designed trials are nonetheless needed to test the impact of interventions to decrease weight bias in healthcare settings.[47]

The systematic review of educational settings by Nutter et al. found a lack of quality research studies examining weight bias reduction interventions with students, teachers, and preservice teachers, with existing research limited to small sample sizes. Most research has been with cross-sectional samples and generating descriptive, correlational, or qualitative data. These studies have provided valuable information regarding the harmful impact of weight bias on the educational experiences of students, although more sociodemographic diversity in study populations is required. For prevention, solutions focussed rather than harm descriptive research is needed, using experimental and/or longitudinal designs.[48]

The review of workplace settings by Giel and colleagues is similarly harm descriptive rather than prevention oriented, noting that ‘more evidence is needed on weight-caused stigmatization in the real work environments and on the mechanisms of such a weight bias. This would enable the development of prevention strategies for discrimination on an individual level, in teams and organizations and, on a larger scale, emphasize the need for the consideration of weight discrimination in company policies and legislation’.[49]

Pearl has reported on a randomized intervention involving cognitive-behavioral intervention for weight bias combined with behavioral weight loss (twelve weekly group meetings followed by 2 biweekly and 2 monthly meetings (26 weeks total) produced short-term reductions in some aspects of weight self-stigma in persons with obesity.[53]

Buller et al conducted a randomized trial evaluating targeted photographic health communication messages in three stigmatized populations: physically disabled, senior, and overweight/obese individuals. Matched visual images in health messages improved intervention effectiveness by capitalizing on the homophily (the tendency of individuals to associate and bond with similar others) and identification processes. The authors concluded that intervention could leverage these hardwired, evolutionary, biological phenomena that extend to health status as well as race and ethnicity; for optimal effects, not all persons shown need to be homophilous to the target audience, reducing logistical difficulties in showing diverse persons of various types.[50]

Burmeister and colleagues' randomized trial examined the effects of viewing the weight stigma portion of HBO's *The Weight of the Nation* documentary on viewers' attitudes about obesity across several important domains, including support for equal rights for those with obesity. The researchers found that negative judgments toward people with obesity, desire for social distance, and belief in equal rights for individuals with obesity improved after watching this brief documentary about weight stigma.[51]

Hilbert has reported two independent studies from Germany using randomized designs with delayed-intervention control groups served to (i) develop and pilot a brief, interactive stigma reduction intervention to educate N = 128 university students on gene x environment interactions in the aetiology of obesity; and to (ii) evaluate this intervention in the general population (N = 128) and determine mechanisms of change. The results showed decreased weight stigma and controllability beliefs two weeks post-intervention in the student sample; and decreased internal attributions and increased genetic attributions, knowledge, and deterministic beliefs four weeks post-intervention in the population sample. The author concludes that these results underline the usefulness of a brief, interactive intervention promoting an interactionist view of obesity to reduce weight stigma, at least in the short term, and lend support to the mechanisms of change derived from attribution theory.[52]

Quasi-experimental studies have been reported by Myre[54] and Pearl.[55] Myre investigated using four-week online retraining intervention with counter-stereotypical images to reduce weight stigma internalisation in women with obesity. Both intervention and controls had reduced weight stigma, thus the retraining did not conclusively reduce WBI; nonetheless, qualitative findings reported by the researchers were said to support the use of counter-stereotypical PA images.[54] Pearl et al set out to identify non-stigmatizing visual content for health education materials that could promote physical activity among people of diverse weight status. An online sample of 483 US women viewed: (i) a woman with obesity portrayed stereotypically; (ii) a woman with obesity exercising; (iii) a woman with obesity portrayed neutrally; or (iv) a lean woman exercising. Race of the models pictured was randomized (White or Black). Across all participants, neutral obesity portrayals elicited lower expressions of weight-biased attitudes and higher reports of exercise liking/comfort. Among non-overweight participants, images portraying women with obesity stereotypically or counter-stereotypically produced greater endorsement of negative stereotypes than control, lean images. No effects of the race of the models were found. The authors conclude that these findings suggest that the public responds differently to visual portrayals of obesity depending on weight status, and that neutral portrayals may be an effective route toward promoting exercise without perpetuating stigma.[55]

Descriptive research reported by Brady[56] and by Sikorski[57] provide examples of identifying the population prevalence of, and socio-demographic differences in weight stigma related beliefs and attitudes about causes of and responsibility for obesity. Noting how scarce (7 papers) studies of this

type were in the literature, Sikorski et al conclude that research on public attitudes toward and perception of overweight and obesity is urgently needed to depict the prevailing degree of stigmatization. The authors suggest the introduction of a multidimensional concept of the aetiology of obesity to the general public as a starting point in stigma reduction[57].

Other retained articles in the current rapid review were based on research summits[60], policy reviews[41], position statements[59] and /or expert commentary[58]. Common themes include the following points:

i) weight bias is common and has adverse health consequences;
ii) shaming individuals for their body weight does not motivate positive behaviour change;
iii) internalized weight bias is particularly problematic;
iv) public health interventions, if not carefully thought out, can perpetuate weight bias;
v) weight bias is a manifestation of social inequity;
vi) action on weight bias requires an upstream, population-level approach; and
vii) to achieve sustainable reductions in weight bias at a population level, substantive modifications and collaborative efforts in multiple settings are required.

The cumulative body of evidence indicates that multilevel efforts to implement stigma reduction strategies may be required. This will entail downstream stigma reduction interventions targeted to different settings (e.g., education and training of medical professionals to reduce weight-based stigma in health care), but broader upstream policy initiatives are likely required to eradicate systemic societal weight-based discrimination and prejudice that otherwise remain pervasive and impair the health and quality of life for many people who are so affected.

What insights can research studies offer to inform message framing and communication efforts in obesity prevention to avoid inadvertent weight stigma and bias?

Puhl has noted that despite hundreds of public health media campaigns targeting obesity that have been disseminated (across the USA), very little assessment or evaluation of media campaigns has occurred.[23] This is reinforced by the recent systematic review reported by Bristow.[61] As noted earlier, Dixon has noted that careful pre-testing of obesity prevention campaign advertising is needed prior to their inclusion in actual campaigns to ensure they do not have unintended negative impacts such as increased stigmatisation of vulnerable individuals and increased levels of body dissatisfaction and/or eating-disordered behaviour among at-risk population sub-groups.[40]

Young reported an experimental study which found that stigmatizing images of overweight individuals in antiobesity campaigns might overemphasize the role of individual behavior in obesity at the expense of other factors; in addition, awareness of multilevel determinants of health outcomes can be a precursor of support for policy solutions to obesity among those not politically inclined to support antiobesity policy.[62]

A recent systematic review of quantitative and qualitative research has examined preferences for weight-related terminology.[63] Findings generally suggest that neutral terminology (e.g., “weight” or “unhealthy weight”) is preferred and that words like “obese” and “fat” are least acceptable, particularly in provider-patient conversations about weight. Individual variation in language preferences is evident across demographic characteristics like race/ethnicity, gender, and weight status. Research to improve upon the limited diversity of the existing evidence, both with respect to sample diversity and the use of culturally relevant weight-related terminology (which is currently lacking in measurement) is urgently needed.[63] Narrative messages may also be a promising approach for shifting responsibility attributions and reducing public stigma for obesity stigma-reduction efforts.[64]

In light of this research, careful consideration should be given to messages communicated in public health media campaigns targeting obesity prevention, to ensure that messages intended to promote optimal weight-related health behaviours do not simultaneously stigmatize or shame individuals with obesity.

6 Conclusions

Children and adults who experience weight stigma are vulnerable to numerous consequences affecting their psychological and physical health. Psychological consequences include increased risk of depression, anxiety, low self-esteem, poor body image, substance abuse, and suicidal thoughts and behaviours. Many of these outcomes persist even after accounting for factors such as BMI, obesity onset, gender, and age, indicating that negative psychological consequences emerge from stigmatizing experiences rather than from obesity per se. Adverse health outcomes which result from peoples experience of weight stigma can reduce quality of life and pose major obstacles to efforts to prevent and treat obesity effectively. This

The evidence on prevention and reduction of weight stigma is at an emergent stage and the quality overall is weak. Common themes across studies include the following points:

i) weight bias is common and has adverse health consequences;
ii) shaming individuals for their body weight does not motivate positive behaviour change;
iii) internalized weight bias is particularly problematic;
iv) public health interventions, if not carefully thought out, can perpetuate weight bias;
v) weight bias is a manifestation of social inequity;
vi) action on weight bias requires an upstream, population-level approach; and
vii) to achieve sustainable reductions in weight bias at a population level, substantive modifications and collaborative efforts in multiple settings are required.

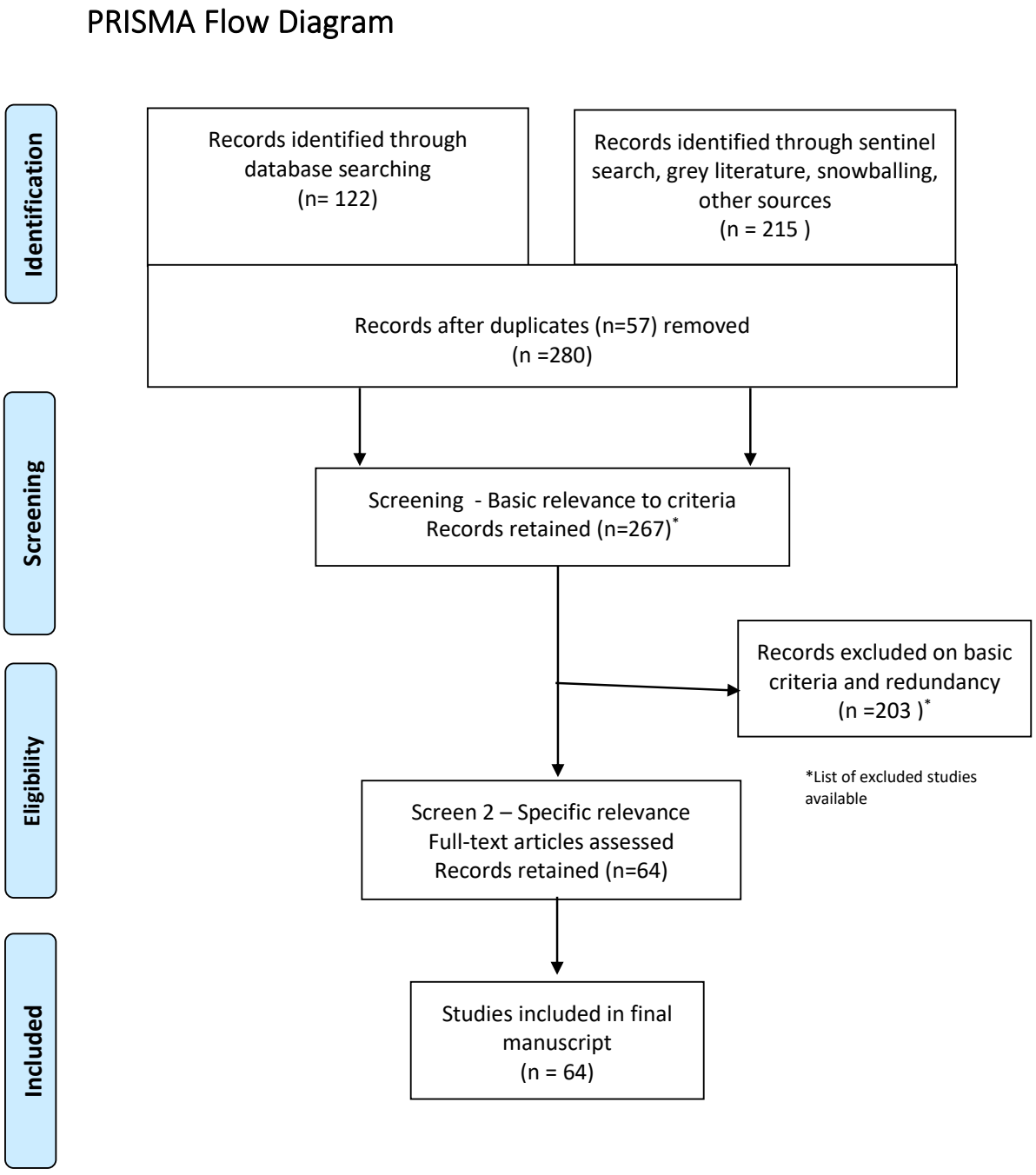
The combined evidence suggests that weight stigma and discrimination represent a public health issue and should be prioritized alongside efforts to address this problem as a societal injustice. Adverse health outcomes which result from people's experience of weight stigma can reduce quality of life and pose major obstacles to efforts to prevent and treat obesity effectively. Given the seriousness of these consequences ***there is an ethical imperative to take precautionary action now***, even as more research is underway or about to commence.

The cumulative body of evidence on prevention also indicates that ***multilevel efforts to implement stigma reduction strategies may be required***. This will entail downstream stigma reduction interventions targeted to different settings (e.g., education and training of medical professionals to reduce weight-based stigma in health care), but broader upstream policy initiatives are likely required to eradicate systemic societal weight-based discrimination and prejudice that otherwise remain pervasive and impair the health and quality of life for many people who are so affected.

On message framing, the evidence suggests that neutral terminology (e.g., "weight" or "unhealthy weight") is preferred and that words like "obese" and "fat" are least acceptable, particularly in provider-patient conversations about weight. Individual variation in language preferences is evident across demographic characteristics like race/ethnicity, gender, and weight status. Research to improve upon the limited diversity of the existing evidence, both with respect to sample diversity and the use of culturally relevant weight-related terminology (which is currently lacking in measurement) is urgently needed.

In public health media campaigns targeting obesity prevention, ***careful consideration should be given to messages communicated to ensure that messages intended to promote optimal weight-related health behaviours do not simultaneously stigmatize or shame individuals with obesity***.

Appendix 1 PRISMA Flow Diagram



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