



COPE WEBINAR SERIES FOR HEALTH PROFESSIONALS

April 8, 2020



Stress, Obesity and Weight Stigma

Moderator: Lisa Diewald, MS, RD, LDN
Program Manager
MacDonald Center for Obesity Prevention and Education
M. Louise Fitzpatrick College of Nursing


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OBJECTIVES


1. To identify specific examples of cognitive, behavioral, physiological and biochemical pathways linking stress and obesity.
2. To explore the negative consequences of weight stigma
3. To discuss potential solutions for reducing the impact of weight stigma and stress on individuals with weight struggles.

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CE CREDITS

- This webinar awards 1 contact hour for nurses and 1 CPEU for dietitians
- Suggested CDR Learning Need Codes: 5370, 6000, 9000, 9020
- Level 2
- CDR Performance Indicators: 6.2.3, 6.2.5, 8.2.1, 9.1.3

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Stress, Obesity and Weight Stigma



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Stress, Obesity, and Weight Stigma



COPE Webinar
 Villanova April 8, 2020

A. Janet Tomiyama, Ph.D.
 Associate Professor
 Department of Psychology, UCLA

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What is stress?

“When challenged to provide a definition of stress, most of us fall back on textbook definitions with no soul or shrug our shoulders and agree that it is not a good construct.” (p. 653)

(Baum, 1990, *Health Psych*)

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My favorite definition

Stress is a negative emotional experience accompanied by predictable **biochemical**, **physiological**, **cognitive**, and **behavioral** changes that are directed either toward altering the stressful event or accommodating to its effects.

(Baum, 1990, *Health Psych*)


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Stress is widespread




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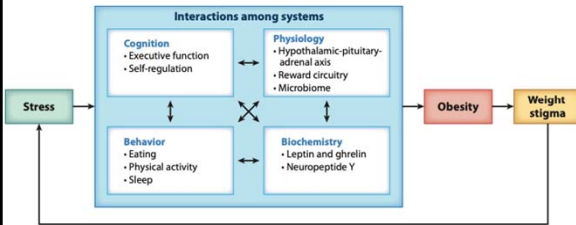
Pathways from stress to obesity?



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Pathways from stress to obesity




(Tomiya, 2019, *Ann Rev Psych*)

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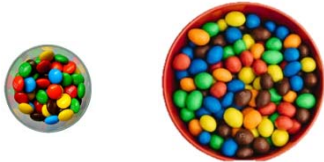
Annual Review of Psychology
Stress and Obesity
 A. Janet Tomiyama
Department of Psychology, University of California, Los Angeles, California 90095, USA;
 email: tomiyama@psych.ucla.edu

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Cognitive pathways

- Stress knocks out executive function
- ...which is necessary for self-regulation/self-control
- ...of both behaviors and emotions!



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Behavioral pathways 1

Eating

- Stress-induced comfort eating
- 39% of Americans are comfort eaters!

Solve these anagrams:

oneci
amoos
acelo
rtean
filru



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Behavioral pathways 3

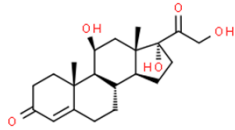
- Sleep
 - People who get less than 5.5 hours are 55% more likely to have obese BMI
 - For every hour more a person sleeps, their average BMI is 0.35 points less
 - For the average height woman (5'5") that equals 2.2 lbs

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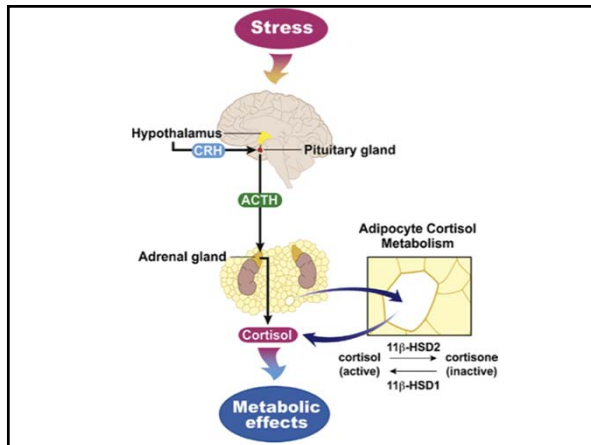


Physiological pathways 1

Hypothalamic-Pituitary-Adrenal (HPA) axis
•And cortisol, its end product



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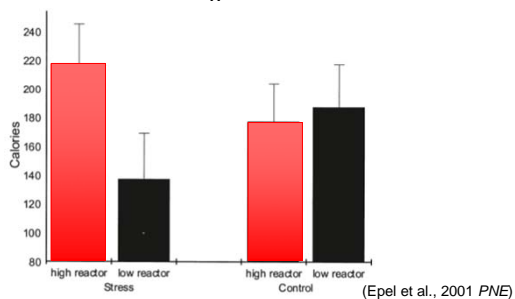


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Physiological pathways 1

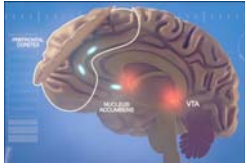
Cortisol also drives eating



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Physiological pathways 2



- Reward processing
- Stress drives motivation for high sugar, high fat, and high calorie foods
 - Dopamine system drives food seeking and eating
 - Stress sensitizes reward centers in the brain
 - High-sugar/fat/calorie foods relieve stress

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Physiological pathways 3



- Gut microbiome
- Gut microbiota can increase HPA axis activity
 - And manufacture appetite-regulating hormones
 - And maybe even regulate body weight

...but this is still speculative

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Biochemical pathways 1

Leptin



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Biochemical pathways 1

Leptin

- Leptin may protect against stress eating
- ...but individuals with obesity have higher leptin levels, indicating leptin *resistance*

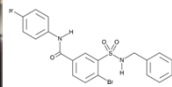
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Biochemical pathways 2

Ghrelin

- Stimulates reward pathways



In stress-eaters:
Ghrelin stays
high even after
eating



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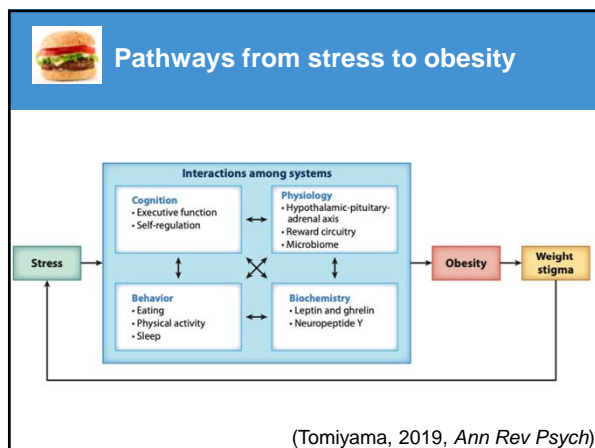
Biochemical pathways 3



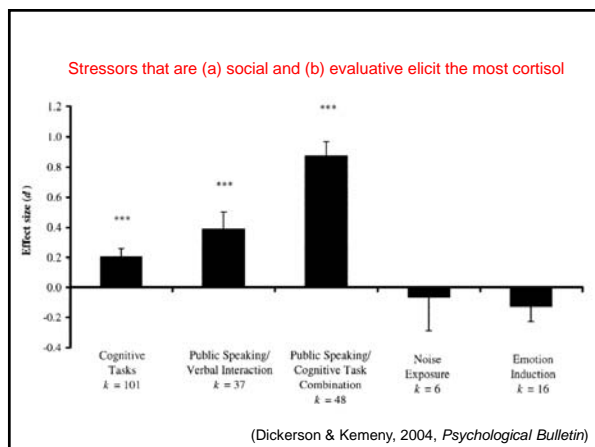
Neuropeptide Y (NPY)

- Stimulates hunger, conversion of sugars into fat
- NPY *in combination* with stress leads to greater obesity

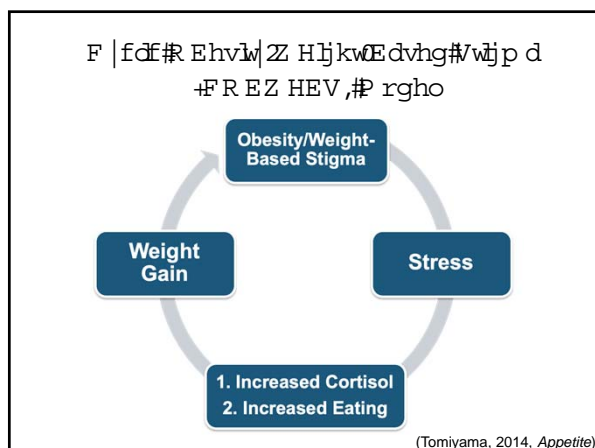
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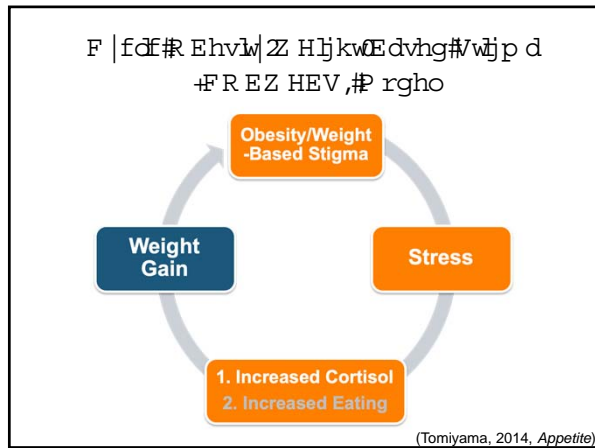
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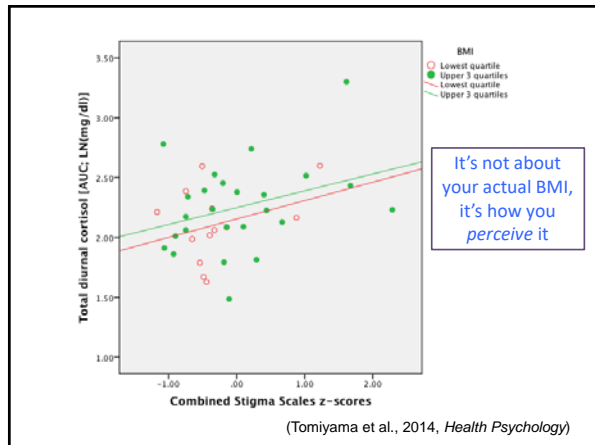
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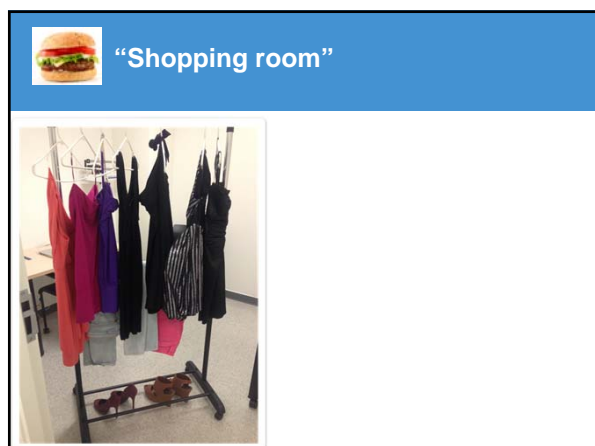
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Methods, continued

- Weighed
- Sit in waiting room with a very thin confederate
- ...who is accepted into the shopping activity

(Himmelstein, Incollingo Belsky, Tomiyama, 2014, *Obesity*)

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Manipulation

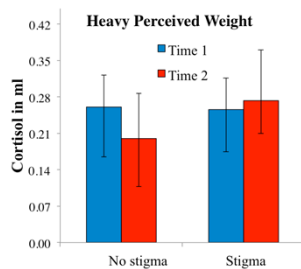


"Unfortunately your shape and size just aren't ideal for this style of clothing and we really do want everyone to have fun and feel good. Plus, we want to return the clothing to the designer in good condition."

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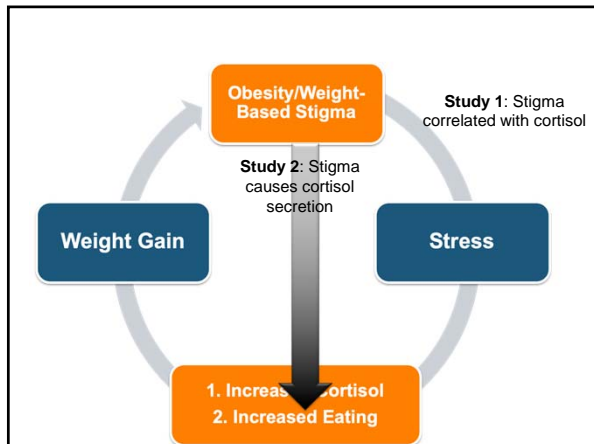


Study 2: Results



(Himmelstein, Incollingo Belsky, Tomiyama, 2014, *Obesity*)

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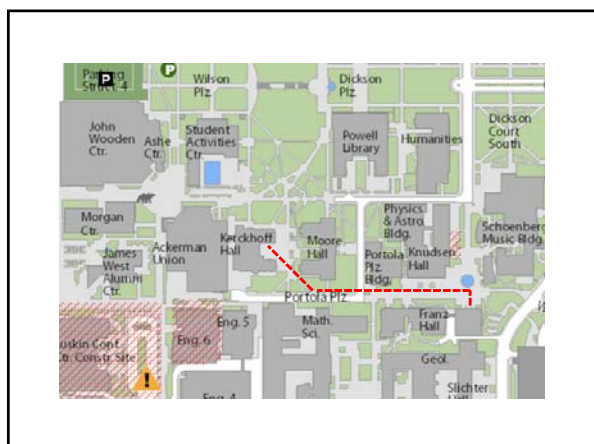
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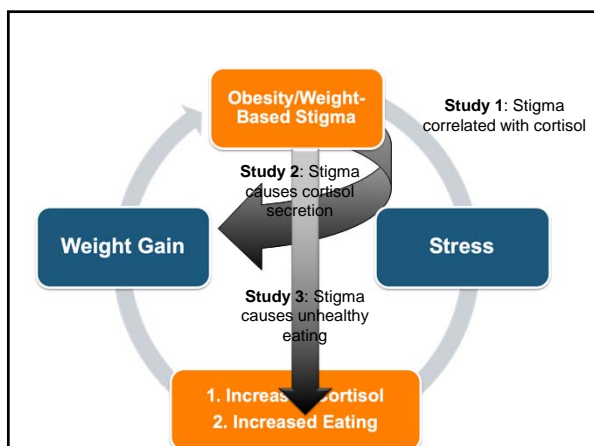
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Study 3: Outcome measures

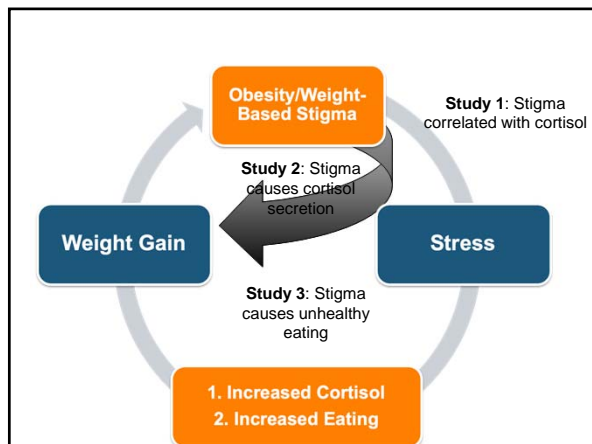
- Psychological: **Anger, depression, anxiety, rejection, self-esteem, antifat attitudes**
- Behavioral: **M&Ms, potato chips, Coca-Cola consumption**

(Heldreth, Incollingo Rodriguez, & Tomiyama, 2018, *Obesity*)

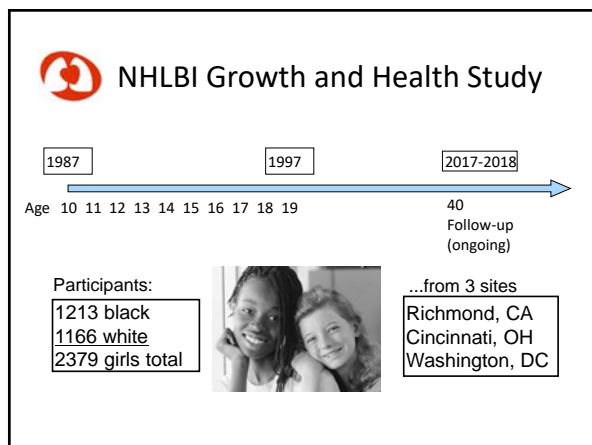
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Weight stigma measure

- Have any of these people told you you're too fat?
 - Father
 - Mother
 - Sister
 - Brother
 - Best girlfriend
 - Boy you like best
 - Teacher

(Hunger & Tomiyama, 2014, *JAMA Pediatrics*)

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Results

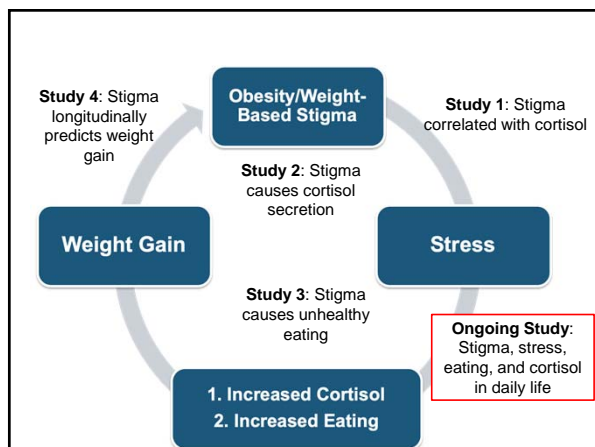
Predictor	Source of Labeling, OR (95% CI)		
	Model 1: Anyone	Model 2: Family	Model 3: Nonfamily
Baseline BMI	1.70 (1.61-1.80)	1.70 (1.61-1.80)	1.72 (1.62-1.82)
Race	1.31 (0.93-1.84)	1.30 (0.93-1.82)	1.32 (0.94-1.86)
Parental education	0.73 (0.58-0.93)	0.73 (0.58-0.93)	0.75 (0.59-0.95)
Household income	0.76 (0.64-0.89)	0.76 (0.64-0.89)	0.74 (0.63-0.88)
Age at menarche	1.01 (0.91-1.12)	1.00 (0.90-1.11)	1.01 (0.91-1.13)
Baseline labeling	1.66 (1.20-2.30)	1.62 (1.18-2.22)	1.40 (1.01-1.94)

For every additional...


- Family member: 0.54 BMI points higher
- Others: 0.21 BMI points higher


(Hunger & Tomiyama, 2014, *JAMA Pediatrics*)

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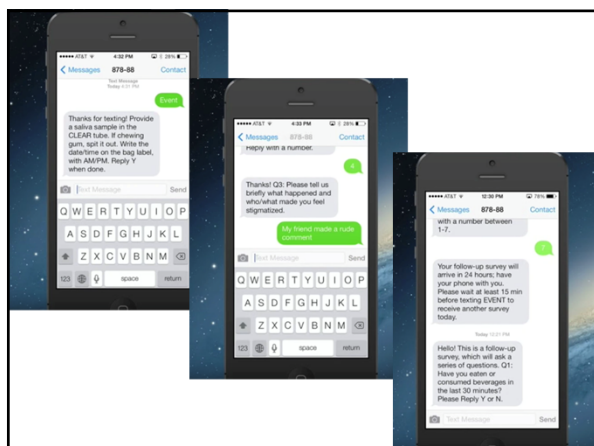


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tinyurl.com/uclatextingstudy



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Preliminary results


"I went in the store to try on clothes and the sales person told me that they didn't have anything in my size."

"I was at the gym playing ball and one of the other guys said I've got the fat guy."


"I was at the doctor office and of course I was told I need to lose weight, as if I'm not trying."

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Preliminary results

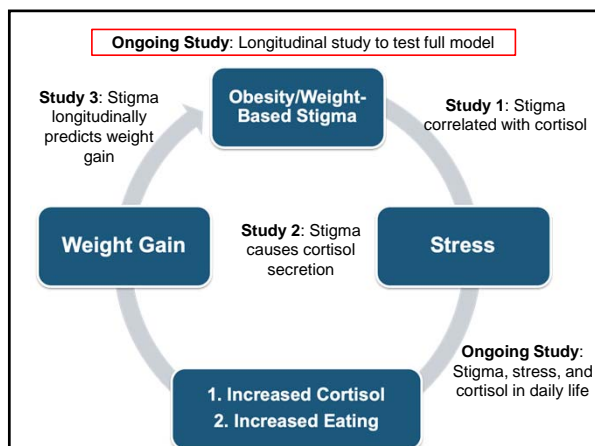


Mean food servings post-stigma: **3.21** (95% CI: 2.31,4.11)

Mean food servings 24 hrs later (control): **2.21** (95% CI: 0.54, 3.13)

NSF CAREER: BCS1454735

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OBESITY

Children, Stigma, and Obesity

VIEWPOINT

Daniel Callahan, PhD
The Hastings Center,
Garrison, New York

Viewpoint pages 788 and 790

Author Audio
Interview at
jama.pediatrics.com

In the winter of 2012, Children's Healthcare of Atlanta, Georgia's largest pediatric health care provider, developed an advertising campaign consisting of television and posters. A central focus of that effort was publishing pictures of obese children. The pictures were accompanied by messages, one of which was "you can stop your child's obesity." The targeted audience was not the obese children but their parents, many of whom seem to be in denial of their child's condition. That strategy backfired.¹ The pictures and messages were received with a torrent of indignation, from parents and others, so much so that the project organizers removed them. Did the organizers of the campaign feel sorry for what they unleashed? Not at all, one spokesperson for the project said, "Our intention was to get people talking about childhood obesity and we did that." The context for that effort was the fact that 40% of Georgia's children...

a means of bringing social pressure to bear, even if there is some scattered evidence it influences some people to get help.²

But note a key detail of the story: the target audience was not the depicted children but their parents. To even show a picture of a fat child, whatever the aim, is taken to be wrong. But is it still wrong if the aim is to get parents to see with their own eyes, cutting through the denial, what may be wrong with their children? There is still some truth to the old adage that "one picture is worth a thousand words." The anti-stigmatization stalwarts obviously reject the use of such pictures whatever their capacity for attracting attention.

If so, that still leaves up in the air another question, not much addressed: should it be acceptable to put social pressure on parents to do something about their overweight or obese children and even publicly

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Why this matters for providers

Tomiyama et al. BMC Medicine (2016) 16:123
https://doi.org/10.1186/s12916-016-1116-5

BMC Medicine

OPINION **Open Access**

How and why weight stigma drives the obesity 'epidemic' and harms health

A. Janet Tomiyama^{1,2}, Deborah Carr³, Ellen M. Granberg⁴, Brenda Major⁵, Eric Robinson⁶, Angelina R. Sutin⁶ and Alexandra Breiwe¹

Abstract


Background: In an era when obesity prevalence is high throughout much of the world, there is a correspondingly pervasive and strong culture of weight stigma. For example, representative studies show that some forms of weight discrimination are more prevalent even than discrimination based on race or ethnicity.

Discussion: In this Opinion article, we review compelling evidence that weight stigma is harmful to health, over and above objective body mass index. Weight stigma is prospectively related to heightened mortality and other chronic diseases and conditions. Most notably, it actually begins heightened risk of obesity through multiple obesogenic pathways. Weight stigma is particularly prevalent and detrimental in healthcare settings, with documented high levels of anti-fat bias in healthcare providers, patients with obesity receiving poorer care and having worse outcomes, and medical students with obesity reporting high levels of alcohol and substance use to cope with internalized weight stigma. In terms of solutions, the most effective and ethical approaches should be aimed at changing the behaviors and attitudes of those who stigmatize, rather than towards the targets of weight stigma. Medical training must address weight bias, training healthcare professionals about how it is perpetuated and on its potentially harmful effects on their patients.


Conclusion: Weight stigma is likely to drive weight gain and poor health and thus should be eradicated. This effort can begin by training compassionate and knowledgeable healthcare providers who will deliver better care and ultimately lessen the negative effects of weight stigma.

Keywords: Weight stigma, Weight bias, Anti-fat attitudes, Discrimination, Health policy, Obesity

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Thank you



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Early life risk factors for obesity in children with Autism Spectrum Disorder

Date to be announced soon!



Presented by:
Tanja Kral, Ph.D.
 Associate Professor of Nutrition Science
 University of Pennsylvania School of Nursing
 & Perelman School of Medicine

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QUESTIONS & ANSWERS



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