



# Professional Stigma on Weight in the Pediatric Care in Italy and Andalusia: Recognize it to Successfully Treat Obesity

Rita Tanas<sup>1\*</sup>, Gil Begoña<sup>2</sup>, Francesco Baggiani<sup>3</sup>, Guido Caggese<sup>4</sup>, Giuliana Valerio<sup>5</sup>, Maria Marsella<sup>6</sup> and Giovanni Corsello<sup>7</sup>

### Abstract

#### Objective

Obesity treatment strategies are often ineffective over the long term either in primary care or in the specialist setting. The universal weight stigma is on the rise and is gaining importance as the cause of the onset, the subsistence and the worsening.

Aim of our study is to assess the presence of explicit stigma in the pediatric setting in Italy and Andalusia, in order to increase the awareness and take more effective actions to counteract it.

#### Methods

The Likert questionnaire on explicit weight stigma was translated in Italian and Spanish and filled out in 2015-16 by 988 pediatricians enrolled in the Italian Society of Pediatrics and 913 health and non-health workers enrolled in a training program for the care childhood obesity in Andalusia. The questionnaire consists of 13 items divided into 3 sub-scales: aversion, fear and role of personal responsibility towards obesity. The results were evaluated and compared by country of origin and in Italy, by catchment area: North, Center and South.

#### Results

The study reported high stigma scores especially in the Fear and Responsibility sub-scales both in Italy and Spain, with significantly lower Aversion scores and higher in the Fear and Responsibility sub-scales in Spain.

#### Conclusions

The high pediatric stigma in the two countries justifies the need to activate awareness and reduction actions, as it has been already done elsewhere, perhaps since school and university education, primarily by re-evaluating the causes of the disease and then by activating positive professional pathways. Making the pediatric professionals aware of weight-stigma, training them towards treatment of family and school derision and non-judgmental obesity management is a priority that may help overweight children.

#### Keywords

Professional weight stigma; Pediatric obesity; Treatment; Pediatricians; Educators; Nurses; Professional education

### Introduction

Obesity is a serious public health problem because it is the result of countless environmental and individual, genetic and behavioral factors. Recent reviews have shown that specialist and primary care treatment programs have minimal impact on weight at high costs [1-7]. Because of this limited efficacy, more timely interventions are needed, since pregnancy and in baby's early life, performed by the pediatrician and integrated into an expanded network of healthcare and non-healthcare services [8,9].

One of the factors responsible for persistence, worsening and hindrance to treatment is the weight stigma, called anti-fat attitudes (AFA) [10-13]. It consists in attributing negative meanings to the overweight status and by considering the individual responsible. It can manifest itself openly, explicitly, or remain unconscious, implicit. The stigma leads to imagine overweight people as "lazy, hesitant, unintelligent and unattractive" [14].

The stigma is everywhere: in family, school and health care. Parental stigma starts yet in the preschool age; it does not correlate with the Body Mass Index (BMI) of children but with stigma of their parents and leads them to adopt restrictive, health-threatening attitudes [15,16]. Studies on social behavior found that at age 6, children with obesity are already "neglected" by their peers, while those with severe obesity are even "rejected" [17].

In the healthcare, AFA is described in every area, involving primary and specialist care setting, medical students and obesity professionals [14,18-24], often without any awareness [25]; it worsens with the progression of clinical activity [26].

There are no studies on AFA prevalence in Southern Europe, nor in the pediatric field.

The causes of being overweight are complex and still under study. Its predominant attribution to energy imbalance is simplistic [27-31]. It is common belief that weight primarily depends on the individual responsibility and control of nutrition and physical activity, and that a high BMI means bad behavior and bad health. These concepts are also reinforced by media messages about healthy lifestyles [32]. This conviction perpetuates and worsens both stigma and obesity itself. The World Health Organization has also focused on raising parents' awareness, but nowadays contrary evidence is emerging. Children of conscious parents, re-evaluated after years, are at higher risk of worsening [33,34]. Mocked teenagers have more psychological suffering and less response to treatment [35-37].

The weight stigma is pervasive, stronger and more widespread than that on race and homosexuality [38] and it is rising [39]. Derision is internalized with time so that the same victims become self-mocking, with increased dissatisfaction with their body, depression, eating disorders, bullying and even mortality [13,40-43].

In the healthcare, weight stigma is manifested with shorter visits [44], faster and less convincing messages, greater physical distance between physician and patient. Puhl et al. divided the potential adverse effects of weight stigma in psychological, such as depression, anxiety, low self-esteem, suicidal ideation, dissatisfaction with her body; and physical such as unhealthy food behaviors (skipping meals, very low

\*Corresponding author: Rita Tanas, MD, Divisione di Pediatria e di Adolescentologia, Azienda Ospedaliero Universitaria, via Aldo Moro, 8, 44124 Cona, Ferrara, Italy, Tel: 0039 0532 64099; Fax 0039 0532 747505; E-mail: tanas.rita@tin.it

Received: May 25, 2017 Accepted: June 23, 2017 Published: June 30, 2017

calorie diet <800 calories/day, low calorie ready meals) or extremes (fasting, vomiting, drug use), and refusal of physical activity [45].

The weight stigma is still considered useful, even by health professionals to motivate patients adopting weight loss promoting behaviors. Actually, it negatively affects exercise, reduces or delays the demand for care and the intention to change, reduces self-efficacy, while on the contrary it correlates positively with weight gain [46-48], relative comorbidities [49] and eating disorders in later years [50].

In the light of this background, it is strongly needed to correctly train new professionals to recognize their stigma toward obesity, reduce it and defend patients from what they have already experienced in other areas [15,17,51-53].

Considering the role of pediatricians in managing children's weight, it is advisable to know their own thoughts and attitudes and those of the operators who should support them. In the presence of stigma, it becomes urgent to create educational projects at school, university and postgraduate levels in order to contain it and provide effective care [54,55].

## Aim

Aim of this study is to assess the presence of explicit stigma towards overweight or obese people among physicians and educators in Italy and Spain and whether there are any differences between two countries representing the European regions with the largest prevalence of children with obesity [56].

## Methods and Materials

In 2016 we proposed an anonymous online survey on explicit Weight and Body Stigma Anti Fat Attitudes Questionnaire (AFAQ), translated and adapted by Crandall [57] to:

- 8960 Pediatricians enrolled in the SIP - Italian Society of Pediatrics ([www.sip.it](http://www.sip.it)) within the project "Aptitudes towards the organization of a pediatric clinic dedicated to obesity". Two questions were added about type and region of work to highlight any differences between Family (PdF) and Hospital Pediatricians (PO), and among Pediatricians working in the North (Piemonte, Lombardia, Val d'Aosta, Veneto, Trentino, Friuli, Emilia Romagna and Liguria), the Center (Tuscany, Lazio, Umbria, Abruzzo, Marche and Sardinia) and the South of Italy (Molise, Campania, Puglia, Basilicata, Calabria and Sicily). Among the Pediatricians registered within the SIP 88% are hospital pediatricians (POs) and 7.1% PdF; 42.4% work in the North, 21.5% in the Center and 36.1% in the South of Italy.
- 1793 professionals enrolled in the Red de la Sandia ([www.lareddelasandia.org](http://www.lareddelasandia.org)) as a final part of a training course on motivational talk applied to obesity treatment. Red de la Sandia is a network set up in Andalusia in 2011 to train practitioners of various professional fields to prevent and treat childhood obesity. The network's professionals are: 19% pediatricians, 12% family physicians, 11% obstetricians, 35% nurses, 17% other healthcare professionals, 3% professional educators, 2% students.

The AFAQ consists of 13-items divided into 3 sub-scales: "Aversion" towards fat people; "Fear" of becoming overweight/obese and "Responsibility" that is the belief that overweight is the result of inadequate or absent personal control (see Supplement material). Answers were evaluated on a 5 points Likert scale, from 1 (strongly disagree), which indicates no stigma up to 5 (completely agree), which

indicates a very strong presence. Answers with a score higher than 1 indicate the presence of stigma.

The statistical analysis was performed with the IBM SPSS program, version 23. The group comparison was performed with the Mann Whitney test or the Kruskal-Wallis test for non-parametric variables. A value of  $p < 0.05$  was considered significant.

## Results

We divided the results into two sections: 1 the Italian survey and 2 the Andalusian survey.

### Section 1

988 pediatricians (11% of the whole sample) enrolled through the SIP website completed at least 80% of the questionnaire. Of these, 970 (98.2%) specified the type of work they performed: 526 (54.2%) were PdF and 444 (45.8%) PO; the PdF adhesion, equal to 82.6% of their total, was significantly higher than that of POs, equal to 5.6% ( $p < 0.001$ ). 956 (96.8%) respondents specified the region where they worked: 437 (45.7%) worked in the North, 217 (22.7%) in the Center and 302 (31.6%) in the South Italy.

The AFAQ totaled an average score of  $2.42 \pm 0.63$ . Looking specifically at the 3 sub-scales: "Aversion" scored  $1.88 \pm 0.69$ , "Fat Fear"  $2.96 \pm 1.03$  and "Responsibility"  $3.18 \pm 0.79$ . The results of the individual items are listed in Table 1. The questions that received the highest score (higher stigma) were: "I'm afraid of getting fat" and "People weighing too much could lose at least a bit of their weight with a little exercise". Those that obtained the lowest score (lower stigma) were: "Although some overweight people are smart, I'm guessing they are often not" and "I'm struggling to take overweight people seriously."

The mean scores of PdF and PO are not significantly different. The comparison among the three areas of origin (North, Central and South Italy) showed significant difference only in the "Fat Fear" sub-scale, which was higher in the South than in Center ( $p < 0.05$ ) and North Italy ( $p < 0.001$ ) (Table 2).

Only 5 out of 988 pediatricians (0.5%), all of them were PdFs, provided consistent responses with no stigma in all 13 items; only 9 (0.9%) and 22 (2.2%) gave only 1 and 2 stigmatizing responses out of 13.

There were 4469 single responses (34.8%) with score 1 (absence of stigma) and 998 (7.8%) with score 5 (maximum stigma value).

### Section 2

913 professionals from Andalusia accepted. The AFAQ totaled an average score of  $2.52 \pm 0.56$ ; in the three subscales: "Aversion"  $1.63 \pm 0.58$ , "Fat Fear"  $3.71 \pm 1.09$  and "Responsibility"  $3.45 \pm 0.96$  (Table 1). Questions that received the highest and the lowest score were the same as in Section 1.

Only 21 out of 913 operators (2.3%) provided consistent responses with no stigma in all items; only 7 (0.8%) and 5 (0.6%) gave only 1 and 2 stigmatizing responses out of 13.

Evaluating single responses, there were 4843 (40.8%) responses consistent with no stigma (score 1) and 1646 (13.9%) with maximum stigma value (score 5).

The scores of Andalusian operators were significantly higher than those reported by the Italian Pediatricians considered both globally, and in the Fear and Responsibility sub-scales, but lower in the

**Table 1:** Score in the individual items of the AFAQ (mean ± standard deviation) of the Italian and Andalusian groups.

Statement	Mean ± DS Italy	Mean ± DS Andalusia	P
<b>Aversion</b>			
I have few overweight or obese friends	2.90 ± 1.47	3.02 ± 1.31	Ns
I'm led to think that overweight people are a little unreliable	1.59 ± 0.89	1.29 ± 0.67	<0.001
Even though some overweight people are smart, I'm led to think that often they are not	1.43 ± 0.81	1.26 ± 0.66	<0.001
I find it hard to take overweight people seriously	1.40 ± 0.71	1.29 ± 0.67	<0.001
Obese people make me feel a bit uncomfortable	1.90 ± 1.08	1.38 ± 0.80	<0.001
If I was an employer, I would avoid hiring an overweight person	1.69 ± 0.94	1.61 ± 0.95	<0.05
I do not like overweight or obese people	2.21 ± 1.27	1.57 ± 0.99	<0.001
<b>Fear</b>			
I'm disgusted with myself if I gain weight.	2.71 ± 1.23	3.77 ± 1.21	<0.001
One of the worst things that could happen to me is to gain 10 kg.	2.92 ± 1.35	3.40 ± 1.43	<0.001
I am afraid of gaining weight	3.25 ± 1.28	3.96 ± 1.24	<0.001
<b>Responsibility</b>			
Overweight people could lose at least a little weight with some exercise.	4.18 ± 0.90	4.11 ± 1.04	<0.05
Overweight people have little willpower	2.82 ± 1.17	3.49 ± 1.28	<0.001
It's their fault if they are overweight	2.56 ± 1.18	2.74 ± 1.25	<0.05

**Table 2:** Comparison of mean scores on the Aversion, Fear and Responsibility sub-scales obtained by Andalusian and Italian operators, both globally and subdivided into the geographical areas of North, Central and South Italy.

	Aversion	Fear	Responsibility
Andalusia	1.63 ± 0.58***	3.71 ± 1.09***	3.45 ± 0.96***
Italy	1.87 ± 0.69	2.96 ± 1.03	3.19 ± 0.80
North	1.86 ± 0.69	2.83 ± 1.03	3.21 ± 0.83
Center	1.87 ± 0.74	2.94 ± 1.08	3.16 ± 0.76
South	1.89 ± 0.67	3.16 ± 0.97**#	3.18 ± 0.76

\*\*\* p<0.001 Andalusia vs Italy, North, Center and South

\*\* p<0.001 South vs North

# p<0.03 South vs Center

Aversion sub-scale (Table 2). The comparison between Andalusia and the different areas of Italy shows no significant differences.

## Discussion

The results of our study reveal a high degree of explicit stigma toward obesity in professionals working in the pediatric field both in Italy and in Andalusia, with significant differences in the total and in the three sub-scales.

Higher scores are found in Andalusia on the total and sub-scales fears and responsibility, while in Italy higher score was obtained in the Aversion sub-scale. Small differences were found between Italian pediatricians working in different setting (primary care versus hospital) and the three macro-regions of the peninsula: in the North and Center, the scores for Aversion and Fear were lower when compared to the South.

It can be assumed that where obesity is less frequent and less severe [58] and the awareness of families higher, there is less aversion and fear among practitioners than where people are not yet ready to face the problem for historical and cultural reasons. Andalusia for history and socio-cultural level is closer to the regions of South Italy and this could partially justify the results.

In both countries the tendency to stigma prevails in Fear and Responsibility subscales, that cause shame in patients, and mild in Aversion, almost exclusively tied to the question “I like to think that I do not have overweight or obese friends”, which could also

only mean the pleasure of having healthy friends, without the risk of many comorbidities associated with weight. In Nebraska a study on primary care practitioners has also provided equally high and unbalanced scores in the 3 subscales for fear and responsibility [21], as well as in Australia in a study on physiotherapists, professionals whose work highly depends on body involvement and personal commitment [22].

Since stigma is universally shared and strongly supported by media messages, it was foreseeable that thoughts and attitudes were similar everywhere, regardless of the type of profession and country. Though understandable, the stigma of professionals, entrusted with the task of preventing and treating obesity by raising awareness in families without judging them and motivating them to begin treatment, is a serious obstacle to the management of childhood obesity: a disease orphan pharmaceutical therapies, whose treatment is based on a good therapeutic relationship and empathetic support to self-efficacy.

Equipping pediatricians with online BMI zscore calculators and preparing them on issues of lifestyle changes, communication and psychological correlations [59] as it was done in Italy, and even on the Motivational Interviews, as in Andalusia, is not enough to end stigma. Further training is necessary, which should be more adequate, prompt and continuous. Not having been used to tools such as motivational counseling and lacking an extended support network, operators do not believe they can help children and often assume guilty attitudes, hoping them to make change. Even the goals proposed by Guidelines and Consensus positions for pediatric obesity, which seem excessive, often unattainable or hardly long-lasting, may only increase frustration [60]. On the one hand the feeling of failure increases mistrust and worsens the timing and quality of treatments; on the other hand, it worsens the family's food and physical activity behaviors, inhibiting their request for help [44,61]. Addressing the problem without proper professional support, however, exposes these children to a high risk of developing eating disorders later in life [62].

## Limits

Our study has several limits. The AFAQ questionnaire measures only the explicit stigma. It was chosen for its simplicity: the reduced number of items facilitates adherence. The number of possible responses has been reduced for this reason from 9 to 5. The AFAQ is

not validated in Italy or Spain, furthermore it does not fit completely with professional AFA: for example, if a doctor does not like to gain weight does not necessarily mean to be stigmatizing, but only to know the consequences of obesity [24]. We have limited the personal information required to avoid a selection bias, hindering admission, or altering the exactness of the answers, so we cannot evaluate gender and age differences of participants. It is also possible that compilation on a voluntary basis, such as it was done in Italy, or addressed to operators interested in pediatric obesity as done in Andalusia, creates a selection bias and consequently overestimates or underestimates the phenomenon. It could be assumed that the most mocking doctors are those who do not want to deal with obesity and therefore did not participate in Italy, while professionals participating in the Andalusian network, who are learning the motivational interview, might be more sensitive to the problem. Another limit is that the operators were not equal in academic training: they were represented only by pediatricians in the Italian survey, while there were pediatricians, primary care, obstetrician's educators and nurses in the Spanish survey. Unfortunately nurses, midwives, and educators may be convinced that awareness of the disease makes it easier to cure and therefore they become more stigmatizing, perhaps even for their shorter training. The use of the web compilation of the questionnaire could lead to further inaccuracies over traditional compilation [63,64].

## Conclusions

The stigma on weight in the pediatric field is crucial in conditioning the effectiveness of care, reducing on one hand the commitment of professionals, changing on the other the time and conviction with which families turn to a certified professional to receive support [44]. It is essential to help operators developing a more neutral environment and a respectful, non-judgmental and collaborative communicative style: *empowering*.

The stigma demonstrated by healthcare professionals and other operators, including particularly the pediatricians and nurses, involved in addressing the obesity in childhood can condemn to unsuccessfulness. Families often put their children on restrictive diets late and autonomously with inappropriate professional support, seeking professionals who are not specifically trained on childhood or using inadequate counseling times. Previous studies on stigma have deceived that it was enough to clarify the marginal role of patient and family responsibilities over environmental and genetic factors in order to reduce it [65], but the efforts so far have been unsuccessful [24,66]. Today, it is proposed to reduce stigma with multiple paths: not just training on causes, but also development of awareness and positive contact experiences.

In conclusion, it unfortunately seems that the stigma has not spared the pediatric area neither in Italy nor in Spain. Addressing it in schools and professional training from the initial stages, with dedicated and shared programs, might lead to better quality of treatment. For all pediatric operators, offering support without being conditioned by preconceptions or past experience should be a primary objective [67-69] to avoid nullifying prevention and treatment of childhood obesity [70].

## Acknowledgments

We thank Elisa Consonni SIP BIOMEDIA, Srl Scientific Area in Milan, for her invaluable collaboration in the organization of distribution, collection and processing of the Italian questionnaires, and Silvia Toro Cárdenas, Escuela Andaluza de Salud Publica, for providing the Spanish questionnaires.

## References

1. Oude Luttikhuis H, Baur L, Jansen H, Shrewsbury VA, O'Malley C, et al. (2009) Interventions for treating obesity in children. *Cochrane Database Syst Rev* 21: CD001872.
2. Whitlock EP, O'Connor EA, Williams SB, Beil TL, Lutz KW (2010) Effectiveness of weight management interventions in children: a targeted systematic review for the USPSTF. *Pediatrics* 125: e396-418.
3. Ho M, Garnett SP, Baur L, Burrows T, Stewart L, et al. (2012) Effectiveness of lifestyle interventions in child obesity: systematic review with meta-analysis. *Pediatrics* 130: e1647-71.
4. Danielsson P, Svensson V, Kowalski J, Nyberg G, Ekblom O, et al. (2012) Importance of age for 3-year continuous behavioral obesity treatment success and dropout rate. *Obes Facts* 5: 34-44.
5. Martin A, Saunders DH, Shenkin SD, Sproule J (2014) Lifestyle intervention for improving school achievement in overweight or obese children and adolescents. *Cochrane Database Syst Rev* 14: CD009728.
6. Sim LA, Lebow J, Wang Z, Koball A, Murad MH (2016) Brief Primary Care Obesity Interventions: A Meta-analysis. *Pediatrics* 138: e20160149.
7. Mitchell TB, Amaro CM, Steele RG (2016) Pediatric Weight Management Interventions in Primary Care Settings: A Meta-Analysis. *Health Psychol*.
8. Dietz WH, Solomon LS, Pronk N, Ziegenhorn SK, Standish MD, et al. (2015) An integrated framework for the prevention and treatment of obesity and its related chronic diseases. *Health Aff* 34: 1456-63.
9. Fiechtner L, Cheng ER, Lopez G, Sharifi M, Taveras EM (2017) Multilevel Correlates of Healthy BMI Maintenance and Return to a Healthy BMI among Children in Massachusetts. *Child Obes* 13: 146-153.
10. Soto L, Armendariz-Anguiano AL, Bacardí-Gascón M, Jiménez Cruz A (2014) Beliefs, attitudes and phobias among Mexican medical and psychology students towards people with obesity. *Nutr Hosp* 30:37-41.
11. Swift JA, Hanlon S, El-Redy L, Puhl RM, Glazebrook C (2013) Weight bias among UK trainee dietitians, doctors, nurses and nutritionists. *J Hum Nutr Diet* 26: 395-402.
12. Puhl R, Suh Y (2015) Stigma and eating and weight disorders. *Curr Psychiatry Rep* 17: 552.
13. Papadopoulos S, Brennan L (2015) Correlates of weight stigma in adults with overweight and obesity: A systematic literature review. *Obesity (Silver Spring)* 23:1743-1760.
14. Schwartz MB, Chambliss HO, Brownell KD, Blair SN, Billington C (2003) Weight bias among health professionals specializing in obesity. *Obes Res* 11:1033-1039.
15. Musher-Eizenman DR, Holub SC, Hauser JC, Young KM (2007) The relationship between parents' anti-fat attitudes and restrictive feeding. *Obesity (Silver Spring)* 15: 2095-2102.
16. Musher-Eizenman DR, Holub SC, Miller AB, Goldstein SE, Edwards-Leeper L (2004) Body size stigmatization in preschool children: the role of control attributions. *J Pediatr Psychol* 29: 613-620.
17. Harrist AW, Swindle TM, Hubbs-Tait L, Topham GL, Shriver LH, et al. (2016) The social and emotional lives of overweight, obese, and severely obese children. *Child Dev* 87: 1564-80.
18. Mulherin K, Miller YD, Barlow FK, Diedrichs PC, Thompson R (2013) Weight stigma in maternity care: women's experiences and care providers' attitudes. *BMC Pregnancy Childbirth* 13: 19.
19. Foster GD, Wadden TA, Makris AP, Davidson D, Sanderson RS, et al. (2003) Primary care physicians' attitudes about obesity and its treatment. *Obes Res* 11: 1168-1177.
20. van Gerwen M, Franc C, Rosman S, Le Vaillant M, Pelletier-Fleury N (2009) Primary care physicians' knowledge, attitudes, beliefs and practices regarding childhood obesity: a systematic review. *Obes Rev* 10: 227-236.
21. Khandalavala BN, Rojanala A, Geske JA, Koran-Scholl JB, Guck TP (2014) Obesity bias in primary care providers. *Fam Med* 46: 532-535.
22. Setchell J, Watson B, Jones L, Gard M, Briffa K. (2014) Physiotherapists demonstrate weight stigma: a cross-sectional survey of Australian physiotherapists. *J Physiother* 60: 157-162.

23. Edmunds LD (2005) Parents' perceptions of health professionals' responses when seeking help for their overweight children. *Fam Pract* 22: 287-292.
24. Jung FU, Luck-Sikorski C, Wiemers N, Riedel-Heller SG (2015) Dietitians and Nutritionists: Stigma in the Context of Obesity. A Systematic Review. *PLoS One* 10: e0140276.
25. Miller DP Jr, Spangler JG, Vitolins MZ, Davis SW, Ip EH, et al. (2013) Are medical students aware of their anti-obesity bias? *Acad Med* 88: 978-982.
26. Ip EH, Marshall S, Vitolins M, Crandall SJ, Davis S, et al. (2013) Measuring medical student attitudes and beliefs regarding patients who are obese. *Acad Med* 88: 282-289.
27. Gard M, Wright J (2005) *The obesity epidemic: science, morality and ideology*. Routledge, London.
28. Brown RE, Sharma AM, Ardern CI, Mirdamadi P, Mirdamadi P, et al. (2016) Secular differences in the association between caloric intake, macronutrient intake, and physical activity with obesity. *Obes Res Clin Pract* 10: 243-255.
29. Llewellyn CH, Trzaskowski M, Plomin R, Wardle J (2014) From modeling to measurement: developmental trends in genetic influence on adiposity in childhood. *Obesity (Silver Spring)* 22: 1756-1761.
30. Luglio HF, Sulistyoningrum DC, Susilowati R (2015) The role of genes involved in lipolysis on weight loss program in overweight and obese individuals. *J Clin Biochem Nutr* 57: 91-97.
31. Kerr JA, Long C, Clifford SA, Muller J, Gillespie AN, et al. (2017) Early-life exposures predicting onset and resolution of childhood overweight or obesity. *Arch Dis Child*.
32. Taylor A, Ogden J (2009) Avoiding the term 'obesity': an experimental study of the impact of doctors' language on patients' beliefs. *Patient Educ Couns* 76: 260-264.
33. Robinson E, Boyland E, Christiansen P, Harrold J, Kirkham T (2014) Stigmatization and obesity: unexpected consequences with public health relevance. *Int J Obes (Lond)* 38: 1481.
34. Major B, Hunger JM, Bunyan DP, Miller CT (2014) The ironic effects of weight stigma. *Journal of Experimental Social Psychology* 51: 74-80.
35. Greenleaf C, Petrie TA, Martin SB. (2014) Relationship of weight-based teasing and adolescents' psychological well-being and physical health. *J Sch Health* 84: 49-55.
36. Yeatts PE, Martin SB, Petrie TA, Greenleaf C (2016) Weight control behavior as an indicator of adolescent psychological well-being. *J Sch Health* 86: 561-567.
37. Gow ML, Baur LA, Ho M, Chisholm K, Noakes M, et al. (2016) Can early weight loss, eating behaviors and socioeconomic factors predict successful weight loss at 12- and 24-months in adolescents with obesity and insulin resistance participating in a randomised controlled trial? *Int J Behav Nutr Phys Act* 13: 43.
38. Latner JD, O'Brien KS, Durso LE, Brinkman LA, MacDonald T (2008) Weighing obesity stigma: the relative strength of different forms of bias. *Int J Obes (Lond)* 32: 1145-1152.
39. Andreyeva T, Puhl RM, Brownell KD (2008) Changes in perceived weight discrimination among Americans, 1995-1996 through 2004-2006. *Obesity (Silver Spring)* 16: 1129-1134.
40. Puhl RM, Moss-Racusin CA, Schwartz MB (2007) Internalization of weight bias: Implications for binge eating and emotional well-being. *Obesity (Silver Spring)* 15: 19-23.
41. Carels RA, Burmeister J, Oehlhof MW, Hinman N, LeRoy M, et al. (2013) Internalized weight bias: ratings of the self, normal weight, and obese individuals and psychological maladjustment. *J Behav Med* 36: 86-94.
42. Bacchini D, Licenziati MR, Garrasi A, Corciulo N, Driul D, et al. (2015) Bullying and victimization among overweight and obese outpatient children and adolescents: an Italian Multicentric Study. *PLoS ONE* 10: e0142715.
43. Sutin AR, Stephan Y, Terracciano A (2015) Weight Discrimination and Risk of Mortality. *Psychol Sci* 26: 1803-1811.
44. Hebl MR, Xu J (2001) Weighing the care: physicians' reactions to the size of a patient. *Int J Obes Relat Metab Disord*. 25: 1246-1252.
45. Puhl RM, Latner JD (2007) Stigma, obesity, and the health of the nation's children. *Psychol Bull* 133: 557-80.
46. Robinson E, Sutin AR. (2016) Parental Perception of Weight Status and Weight Gain Across Childhood. *Pediatrics*.
47. Hunger JM, Tomiyama AJ (2014) Weight labeling and obesity: a longitudinal study of girls aged 10 to 19 years. *JAMA Pediatr* 168: 579-580.
48. Gerards SM, Gubbels JS, Dagnelie PC, Kremers SP, Stafleu A, et al. (2014) Parental perception of child's weight status and subsequent BMIz change: the KOALA birth cohort study. *BMC Public Health* 14: 291.
49. Tull ES, Sheu YT, Butler C, Cornelious K (2005) Relationships between perceived stress, coping behavior and cortisol secretion in women with high and low levels of internalized racism. *J Natl Med Assoc* 97: 206-212.
50. Puhl R, Suh Y (2015) Health Consequences of Weight Stigma: Implications for Obesity Prevention and Treatment. *Curr Obes Rep* 4: 182-190.
51. Puhl RM, Peterson JL, Luedicke J (2013) Weight-based victimization: bullying experiences of weight loss treatment-seeking youth. *Pediatrics* 131: e1-9.
52. Puhl RM, King KM (2013) Weight discrimination and bullying. *Best Pract Res Clin Endocrinol Metab* 27: 117-127.
53. Alberga AS, Pickering BJ, Alix Hayden K, Ball GD, Edwards A, et al. (2016) Weight bias reduction in health professionals: a systematic review. *Clin Obes*. 6: 175-188.
54. Kolko RP, Kass AE, Hayes JF, Levine MD, Garbutt JM, et al. (2017) Provider training to screen and initiate evidence-based pediatric obesity treatment in routine practice settings: a randomized pilot trial. *J Pediatr Health Care* 31: 16-28.
55. Phelan SM, Burgess DJ, Yeazel MW, Hellerstedt WL, Griffin JM, et al. (2015) Impact of weight bias and stigma on quality of care and outcomes for patients with obesity. *Obes Rev* 16: 319-326.
56. Wijnhoven TM, van Raaij JM, Spinelli A, Starc G, Hassapidou M, et al. (2014) WHO European Childhood Obesity Surveillance Initiative: body mass index and level of overweight among 6-9-year-old children from school year 2007/2008 to school year 2009/2010. *BMC Public Health* 14: 806.
57. Crandall CS (1994) Prejudice Against Fat People: Ideology and Self-Interest. Crandall CS. *Prejudice Against Fat People: Ideology and Self-Interest*. *J Pers Soc Psychol* 66: 882-894.
58. Nardone P, Spinelli A, Buoncristiano M, Lauria L, Pizzi E, (2016) Il Sistema di sorveglianza OKkio alla SALUTE: risultati 2014.
59. Mazur A, Matusik P, Revert K, Nyankovskyy S, Socha P, et al. (2013) Childhood obesity: knowledge, attitudes, and practices of European pediatric care providers. *Pediatrics* 132: e100-8.
60. Rudolf MC, Krom AJ, Cole TJ (2012) How good are BMI charts for monitoring children's attempts at obesity reduction? *Arch Dis Child* 97: 418-422.
61. Armstrong SC, Skinner AC (2016) Defining "Success" in Childhood Obesity Interventions in Primary Care. *Pediatrics* 138.
62. Cena H, Stanford FC, Ochner L, Fonte ML, Biino G, et al. (2017) Association of a history of childhood-onset obesity and dieting with eating disorders. *Eat Disord* 25: 216-229.
63. Cronk BC, West JL (2002) Personality research on the Internet: a comparison of Web-based and traditional instruments in take-home and in-class settings. *Behav Res Methods Instrum Comput* 34: 177-180.
64. Kraut R, Olson J, Banaji M, Bruckman A, Cohen J, et al. (2004) Psychological research online: report of Board of Scientific Affairs' Advisory Group on the Conduct of Research on the Internet. *Am Psychol* 59: 105-117.
65. Phelan SM, Burgess DJ, Puhl R, Dyrbye LN, Dovidio JF, et al. (2015) The Adverse Effect of Weight Stigma on the Well-Being of Medical Students with Overweight or Obesity: Findings from a National Survey. *J Gen Intern Med* 30: 1251-1258.
66. Azevedo RT, Macaluso E, Viola V, Sani G, Aglioti SM (2014) Weighing the stigma of weight: An fMRI study of neural reactivity to the pain of obese individuals. *Neuroimage* 91: 109-119.
67. Sharifi M, Marshall G, Goldman R, Rifas-Shiman SL, Horan CM, et al. (2014) Exploring innovative approaches and patient-centered outcomes from positive outliers in childhood obesity. *Acad Pediatr* 14: 646-655.
68. Sharifi M, Marshall G, Goldman RE, Cunningham C, Marshall R, et al. (2015) Engaging children in the development of obesity interventions: Exploring outcomes that matter most among obesity positive outliers. *Patient Educ Couns* 98: 1393-1401.

69. Dietz WH, Baur LA, Hall K, Puhl RM, Taveras EM, et al. (2015) Management of obesity: improvement of health-care training and systems for prevention and care. *Lancet* 385: 2521-33.

70. Tomiyama AJ (2014) Weight stigma is stressful. A review of evidence for the Cyclic Obesity/Weight-Based Stigma model. *Appetite* 82: 8-15.

### Author Affiliations

[Top](#)

<sup>1</sup>Divisione di Pediatria e di Adolescentologia, Azienda Ospedaliero Universitaria, Ferrara, Italy

<sup>2</sup>Plan Integral de Obesidad Infantil de Andalucía, Servicio Andaluz de Salud, Consejería de Salud de la Junta de Andalucía, Sevilla, Spain

<sup>3</sup>Cooperativa Sociale Onlus La Stadera Greve in Chianti, Firenze, Italy

<sup>4</sup>UO Anestesia e Rianimazione, Az Ospedaliero Universitaria Ferrara, Italy

<sup>5</sup>Dipartimento di Scienze Motorie e del Benessere, Università degli Studi di Napoli Parthenope, Napoli, Italy

<sup>6</sup>UOC di Pediatria, Azienda Ospedaliera "G Moscati", Avellino, Italy

<sup>7</sup>Dipartimento di Scienze per la Promozione della Salute e Materno Infantile "G D'Alessandro" Università degli Studi Palermo, Italy

### Submit your next manuscript and get advantages of SciTechnol submissions

- ❖ 80 Journals
- ❖ 21 Day rapid review process
- ❖ 3000 Editorial team
- ❖ 5 Million readers
- ❖ More than 5000 
- ❖ Quality and quick review processing through Editorial Manager System

Submit your next manuscript at • [www.scitechnol.com/submission](http://www.scitechnol.com/submission)