Johnson Andrea (Orcid ID: 0000-0002-6470-8927)

Impact of Self-Efficacy on Risk Aversion in the Context of Surgical Weight Loss Decision Scenarios

Monique Turner, PhD[1], Andrea C. Johnson, MPH, CHES[1], Paula Lantz, PhD, MS[2]

1 Milken Institute School of Public Health, Department of Prevention and Community Health, George Washington University, Washington, D.C.

2 Gerald R. Ford School of Public Policy, University of Michigan, Ann Arbor, Michigan

Keywords: Obesity, Risk Aversion, Self-Efficacy, Weight Loss, Bariatric Surgery

Running Title: Risk Perceptions of Surgical Weight Loss Decisions

Correspondence
Andrea C. Johnson, MPH, CHES**,** 950 New Hampshire Ave NW, Floor 2, Milken Institute School of Public Health, Department of Prevention and Community Health, Washington, D.C., United States. Email: acjohnson@gwu.edu. Phone: #1-202-994-3672

<u>What is already known about this subject?</u>

- Several studies have found that weight loss self-efficacy is important for the success of non-surgical weight loss interventions.
- Risk aversion has been shown to influence decision making among patients when presented with weight loss scenarios.
- There is less information about how critical the role of weight loss self-efficacy is on risk perceptions during the candidacy phase for bariatric surgery while there are discussions of varying levels of side effects.

What this study adds?

- Weight loss self-efficacy was a predictor of participants' willingness to stake high risk for bariatric surgery in the context of achieving one's ideal weight.

- Those with lower weight loss self-efficacy were more likely to take risk overall, but this trend was significant for those with a BMI of 30 and above in scenarios presenting one's ideal weight as the outcome of bariatric surgery.

- Adding a measure of weight loss self-efficacy within patient assessments would identify those eligible patients who might be most likely to adopt bariatric surgery.

Abstract

Introduction: Obesity is prevalent among a third of U.S. adults and a leading indicator for many chronic diseases. Self-efficacy is important for non-surgical weight loss interventions but there is less information about the role of self-efficacy in the candidacy phase when there are discussions of side effects and decisions for uptake. The study conducted an experiment set within an online survey assessing risk aversion toward bariatric surgery as a weight loss intervention.

Materials and Methods: The survey asked about hypothetical weight loss scenarios for bariatric surgery among a national probability based sample of US adults 18 and older. Participants answered their willingness to achieve different weight loss amounts within the context of bariatric surgery in varying risk scenarios. The analysis utilized a repeated measures linear mixed model.

Results: A three-way interaction demonstrated participants were more willing to stake risk under ideal weight loss conditions even with the risk of death, particularly when considering self-efficacy (β=1.20, p=0.05). Margin projections showed those with lower self-efficacy were more likely to take risk overall. This trend was significant for those with a Body Mass Index (BMI) of 30 and above in scenarios presenting one's ideal weight as the outcome of bariatric surgery.

Discussion: Adding a measure of self-efficacy within patient assessments could identify those eligible patients which are most likely to adopt bariatric surgery, particularly among those that may have negative post-surgical outcomes due to low self-efficacy levels. Addressing self-efficacy by way of providing support resources in tandem with candidacy consultations may enhance quality of life and post-surgical outcomes.

Introduction

One third of adults in the U.S. have obesity, a leading indicator for several chronic diseases, including certain cancers, heart disease, hypertension, and type II diabetes.[1] Obesity is also correlated with depression and lower quality of life[2] and the medical costs associated with obesity are estimated at $147 billion annually.[3] Although small reductions in body weight (i.e., 5-7%) can vastly improve the health for individuals who have obesity, individuals rarely value modest weight loss.[4,5] Moreover, bariatric surgery may be the most effective intervention for losing large amounts of weight, but this intervention has low uptake.[6,7] According to the National Institutes of Health, people with a BMI equal to or greater than 40, or a BMI of 35-39.9 with an existing comorbidity, are eligible for weight loss surgery.[8] Yet, only 1% of those eligible typically uptake a surgical option to lose weight. One plausible explanation is that individuals have an aversion to the risks surgery presents. Primarily, bariatric surgery comes with potential risks of chronic diarrhea, severe infection, and death.[9]

Risk aversion has been shown to influence decision making among patients when presented with weight loss scenarios.[4] Bariatric surgery patients reported that they expected to lose 38% of their total body weight on average and would be disappointed if they did not lose at least 24% of their body weight.[5] This current research indicates people with obesity appear to be more accepting of incurring a small risk of death to achieve their "dream" weight than to lose clinically meaningful proportions which can have substantial health benefits (e.g., 20% or 10% of their current weight).[4,5] Importantly, extant studies did not experimentally vary other forms of risk based on type or severity. Thus, it is unclear whether these results were driven by the magnitude of the risk (e.g., death). It is critical to examine risk aversion experimentally and examine causal antecedents. Although surgical options for obesity are associated with risks, there are risks simply in having obesity. When presented with treatment options, outcomes including modest weight loss reductions may not provide enough incentive to proceed.[10]

It is unclear how the role of individual attributes may impact risk aversion in this area. When risks are not observable or known, and when individuals lack control, this can result in fear and/or anxiety.[11] Control or confidence, commonly referred to as self-efficacy, is the perception that one can engage in behavior toward a goal despite perceived barriers.[12] Studies show that weight loss self-efficacy is vital for the success of non-surgical weight loss interventions.[13] However, there is less information about the role of weight loss self-efficacy in assessing risk of bariatric surgery. One recent study showed that eligible patients perceived bariatric surgery as high-risk but those that were interested were dissatisfied with their current weight loss results and saw surgery as an opportunity to attain their goal weight quickly.[6]

Studying if and how patients' ideal weight or weight loss self-efficacy might interact with risk-related decision making for surgical weight loss interventions is relevant for clinical practice,[14] particularly due to the rise of obesity rates and forecasted projections.[15,16] Longitudinal models of patient trajectories have also demonstrated individuals with Class I obesity are likely to continue to gain weight over time.[17-19] The purpose of this study was to examine factors that correlate with the acceptance of risk in relation to bariatric surgery. This controlled experiment varied risk magnitude and amount of weight loss expected. The study also assessed weight loss self-efficacy to see if it moderated the relationship between risk magnitude and amount of weight lost in relation to accepting risk.

Materials and Methods

Study Design

The experimental study asked about hypothetical weight loss scenarios for bariatric surgery among a national probability based sample of US adults ages 18 and older. Participants were recruited through The GfK Group and the survey was conducted using a sample from KnowledgePanel® in 2013. Eligible individuals were emailed the online survey and received a cash-equivalent of $5 for their participation. Within the survey, participants were randomly presented with different experimental conditions that assessed risk aversion in relation to bariatric surgery. This paper presents a subsample of participants meeting the criteria for a diagnosis of clinical obesity (having a Body Mass Index greater than or equal to 30) and took part in the experimental portion. Eligible individuals were presented with all experimental scenarios. Participants responded about their risk acceptance to achieve different weight loss amounts within the context of bariatric surgery in varying risk scenarios.

Measures

At the start of the survey participants were asked about their current height and weight, their ideal weight, and demographic variables including age, gender, and race/ethnicity. The primary outcome is risk "willingness." Participants were asked to indicate the highest chance of risk they would be willing to stake to lose weight in different scenarios (ranging from 0% risk to 100% risk). Specifically, the survey asked, "*Imagine that you could lose weight with the use of weight loss surgery that involved gastric bypass or banding surgery (sometimes called stomach stapling) and then keep it off with a healthy diet and physical activity. Please answer the next questions with this type of surgery in mind.*"

The outcome of risk willingness was assessed across different scenarios, including different weight loss conditions (1. Ten percent weight loss or 2. Percent for ideal weight loss) within different bariatric surgery side effect levels (1. Low (chronic diarrhea), 2. Moderate (severe infection), and 3. High (death)). For example, in the ideal weight loss condition and high risk level scenario, the survey asked, "*What is the highest chance of DEATH you would be willing to stake to lose [##] pounds with stomach surgery?*" The symbol [##] was a number, calculated from each participant's current weight minus their ideal weight asked at the beginning of the survey, and auto-filled into the ideal weight scenario questions.

A primary variable of interest was weight loss self-efficacy.[20] The weight loss self-efficacy measure was assessed using 12 items (± = 0.83). Individuals answered True or False to general weight loss self-efficacy items such as, "*I often doubt whether I have what it takes to succeed at weight control.*" The responses were coded dichotomously, where "False" was coded as one. The items were summed and centered, where a higher score indicates higher self-efficacy to lose weight. Additionally, there was a question which inquired about minor comorbidities. The comorbidities available for a portion of the analysis included pre-diabetes and sleep apnea. These two comorbidities were coded as one if endorsed by participants as having been told by their doctor.

Analysis

The analysis was conducted using STATA Version 14.2. Descriptive statistics were assessed for demographic variables, weight loss self-efficacy, and participants' willingness to take risk (by risk level and weight loss condition). We next utilized a repeated measures linear mixed model for multivariable analyses.[21-25]

Two multivariable models were tested for this study. Model 1 was a constrained model including those individuals with BMIs of 40 and above, or including those with BMIs of 30 and above with self-reported pre-diabetes or sleep apnea. Model 2 expanded the criteria to those with BMIs of 30 and above. The dependent variable was the percent of risk individuals were willing to stake (Risk Willingness). Predictors included the variables, including each condition (Condition) and risk level (Level) for each individual within each repeated set. Weight loss self-efficacy was included to assess its potential interaction. Covariates were also added to the models, including: BMI, age, education, gender, and race/ethnicity.

After running the two models, margin projections were plotted for the risk willingness across different levels and conditions by high and low weight loss self-efficacy. For this step, the original self-efficacy variable was recoded into a dichotomous variable by splitting responses at the mean. Those individuals who answered 0% to all scenarios were removed for this analysis. Additional analyses were conducted and found no significant differences for demographics among the randomization order as well as those missing.

Results

Table 1 outlines descriptive statistics for the sample of individuals with a BMI of 30 and above (N=334). The mean age was 48.3 (SD=14.3) and the mean BMI was 38.7 (SD=6.0). A majority of the sample was Non-Hispanic White (74.6%) and achieved a high school diploma (31.7%) or some college (33.8%). There were also slightly more females (56.6%). The average weight loss self-efficacy score was mid-range at 5.5 (SD=3.6). In Table 2, with the average percent of risk a participant was willing to take is shown by the different experimental conditions. The average percent lowers as the risk level increases. However, the average percent is higher for the ideal weight loss scenarios (low 18.1%, moderate 12.1%, and high 8.6%) compared to the 10% weight loss scenarios (low 13.8%, moderate 7.5%, and high 6.5%).

Table 3 outlines the amount of risk a participant in this sample was willing to stake using two repeated measures linear mixed models. The models include the different experimental condition and risk level scenarios as well as interactions with weight loss self-efficacy. Model 1 included those with a BMI of 40 and above, as well as those with a BMI of 30 and above with a comorbidity. Results from Model 1 indicate a main effect for staking more risk on average with every unit increase where participants hypothetically achieve their ideal weight (^{2} =11.5, *p*<.01) compared to the 10% weight loss scenario, holding all other variables constant in the model. There was a significant interaction effect, where participants were less willing to stake risk for every unit increase where they hypothetically achieve their ideal weight when taking into account their weight loss self-efficacy (^{2} =-1.32, *p*=0.05).

Model 2 was expanded to include individuals with a BMI of 30 and above. The results indicate that participants were more likely to stake more risk for every unit increase where they hypothetically achieve their ideal weight (^{2} =11.2, *p*<.001) but less so under the highest risk condition of death (^{2} =-5.80, *p*=0.04). The interactions show a parallel trend where, compared to a low risk of chronic diarrhea, participants were less likely to stake higher risk of death, even if they would achieve ideal weight (^{2} =-8.30, *p*=0.03), controlling for all other variables in the model. On its own weight loss self-efficacy was not significantly predictive of risk willingness. Yet, the three-way interaction in Model 2 demonstrated participants were more willing to stake risk under ideal weight loss conditions even with the risk of death, particularly when considering weight loss self-efficacy (^{2} =1.20, *p*=0.05). No demographic covariates were statistically significant in either model. A modest increase in BMI was significantly related to risk willingness in Model 2 (^{2} =0.50, *p*=0.02).

In order to further assess the impact of weight loss self-efficacy within the interactions, follow-up margin predictions were conducted. Figure 1 shows two margin predictions using the dichotomized (high and low) weight loss self-efficacy variable for Model 1. Figure 2 shows two margin predictions for Model 2. The projections demonstrate individuals in the sample who had lower weight loss self-efficacy were more likely to take risk overall. This trend is significant for those with a BMI of 30 and above in scenarios presenting one’s ideal weight as the outcome of bariatric surgery.

Discussion

The results indicate weight loss self-efficacy is a predictor of participants' willingness to stake high risk for bariatric surgery in the context of achieving one's ideal weight for those in the sample with elevated BMIs. In the sample, individuals who had lower weight loss self-efficacy were more likely to take a hypothetical risk of death compared to a risk of chronic diarrhea from surgery. Results were significant for those individuals with a BMI of 30 and above in scenarios presenting one's ideal weight as the outcome of bariatric surgery. This trend was not significant for those scenarios which there was moderate risk compared to low risk across all scenarios.

There are important considerations from this study. In clinical practice, adding a measure of weight loss self-efficacy within patient assessments could identify those eligible patients which are most likely to adopt bariatric surgery. Additionally, a focus on shared decision making could optimize appropriate interventions while bolstering patients' weight loss self-efficacy, particularly in relation to post-surgical success as well.[26-28]

This study suggests weight loss self-efficacy is an important predictor for risk perceptions of bariatric surgery outcomes. It is also important to consider if the severity of obesity itself was a factor in participant's calculation of their willingness to stake risk.[11,12,29,30] There are also implications for individuals with low weight loss self-efficacy. Addressing this by way of providing time and/or tools for increased problem- or emotion-focused coping in tandem with candidacy consultations may enhance quality of life and post-surgical outcomes (e.g., reducing relapse rates). Integration of health communication principles[31] for bariatric surgery candidate materials should be strategically tested and applied when aiming to increase risk perceptions or intervene with this target population.[32-35]

This study's contribution should be considered within its limitations. This study included a sample assessing perceptions at one time point. This excluded other factors (e.g., comprehensive health history, insurance) that could contribute to treatment decision making. Bariatric surgery was the only intervention considered for this analysis. Additionally, the study compared acute and chronic risks together in analysis, where chronic diarrhea could also be categorized as a moderate risk provided quality of life concerns.[36] Hypothetical thinking can be a challenging task and individuals with low numeracy or low literacy abilities may have had challenges when presented with numerical risk questions. There could have been additional items in the survey questionnaire about comorbidities (e.g., heart disease).[37] Lastly, each participant has their own ideal weight that may be different from each other, though the statistical analysis aimed to control for this concern.

The current study complements and adds to the literature on risk perceptions for bariatric surgery as a weight loss intervention for eligible individuals with obesity. A strength of this study is that it is grounded in theoretical concepts for individual decision making. Additional empirical evidence is warranted to further understand specific clinical decision making within subpopulations. Future research can directly apply and test theories with weight loss self-efficacy constructs to address patient expectations in clinical weight loss and shared decision making interventions. Though patients with obesity generally prefer large weight reductions, addressing and identifying levels of weight loss self-efficacy among eligible patients could increase uptake of bariatric surgery and enhance patient outcomes.

Conflict of Interest Statement

The authors declared no conflict of interest.

Acknowledgements

MT and PL conceived and carried out experiments, ACJ analysed data. All authors were involved in writing the paper and had final approval of the submitted and published versions. Funding for this study was received from the Strategies to Overcome and Prevent (STOP) Obesity Alliance, directed by William Dietz, MD, PhD. The STOP Obesity Alliance is based within the Sumner M. Redstone Global Center for Prevention and Wellness at the George Washington University Milken Institute School of Public Health.

References

1. Ogden CL, Carroll MD, Fryar CD, Flegal KM. Prevalence of obesity among adults and youth: United States, 2011–2014. *NCHS Data Brief*. 2015(No. 219).
2. Luppino FS, de Wit LM, Bouvy PF, et al. Overweight, obesity, and depression: A systematic review and meta-analysis of longitudinal studies. *Arch Gen Psychiatry*. 2010;67(3):220-229. doi: 10.1001/archgenpsychiatry.2010.2.
3. Finkelstein EA, Trogdon JG, Cohen JW, Dietz W. Annual medical spending attributable to obesity: Payer-and service-specific estimates. *Health Aff (Millwood)*. 2009;28(5):w822-31. doi: 10.1377/hlthaff.28.5.w822.
4. Wee CC, Hamel MB, Davis RB, Phillips RS. Assessing the value of weight loss among primary care patients. *J Gen Intern Med*. 2004;19(12):1206-1211. doi: JGI40063.
5. Wee CC, Jones DB, Davis RB, Bourland AC, Hamel MB. Understanding patients' value of weight loss and expectations for bariatric surgery. *Obes Surg*. 2006;16(4):496-500. doi: 10.1381/096089206776327260.
6. Wharton S, Serodio KJ, Kuk JL, Sivapalan N, Craik A, Aarts MA. Interest, views and perceived barriers to bariatric surgery in patients with morbid obesity. *Clin Obes*. 2016;6(2):154-160. doi: 10.1111/cob.12131.
7. Chan CP, Wang BY, Cheng CY, et al. Randomized controlled trials in bariatric surgery. *Obes Surg*. 2013;23(1):118-130. doi: 10.1007/s11695-012-0798-6.

8. National Heart, Lung, and Blood Institute, National Institutes of Health. Clinical guidelines of the identification, evaluation, and treatment of overweight and obesity in adults: The evidence report. 1998.
9. Picot J, Jones J, Colquitt JL, et al. The clinical effectiveness and cost-effectiveness of bariatric (weight loss) surgery for obesity: A systematic review and economic evaluation. *Health Technol Assess*. 2009;13(41):1-190, 215-357, iii-iv. doi: 10.3310/hta13410.
10. Homer CV, Tod AM, Thompson AR, Allmark P, Goyder E. Expectations and patients' experiences of obesity prior to bariatric surgery: A qualitative study. *BMJ Open*. 2016;6(2):e009389-2015-009389. doi: 10.1136/bmjopen-2015-009389.
11. Slovic P. Perception of risk. *Science*. 1987;236(4799):280-285.
12. Bandura A. The primacy of self-regulation in health promotion. *Applied Psychology: An International Review*. 2005;2:245-254.
13. Jerome GJ, Myers VH, Young DR, et al. Psychosocial predictors of weight loss by race and sex. *Clin Obes*. 2015;5(6):342-348. doi: 10.1111/cob.12120.
14. Terranova L, Busetto L, Vestri A, Zappa MA. Bariatric surgery: Cost-effectiveness and budget impact. *Obes Surg*. 2012;22(4):646-653. doi: 10.1007/s11695-012-0608-1.
15. Ng M, Fleming T, Robinson M. Global, regional, and national prevalence of overweight and obesity in children and adults during 1980-2013: A systematic analysis for the global burden of disease study 2013. *Lancet*. 2014;384(9945):766-781. doi: 10.1016/S0140-6736(14)60460-8.
16. Finkelstein EA, Khavjou OA, Thompson H, et al. Obesity and severe obesity forecasts through 2030. *Am J Prev Med*. 2012;42(6):563-570. doi: 10.1016/j.amepre.2011.10.026.

17. Wong ES, Wang BC, Alfonso-Cristancho R, et al. BMI trajectories among the severely obese: Results from an electronic medical record population. *Obesity (Silver Spring)*. 2012;20(10):2107-2112. doi: 10.1038/oby.2012.29.

18. Finkelstein EA, Ostbye T, Malhotra R. Body mass trajectories through midlife among adults with Class I obesity. *Surg Obes Relat Dis*. 2013;9(4):547-553.e1. doi: 10.1016/j.soard.2012.01.004.

19. Busetto L, Dixon J, De Luca M, Shikora S, Pories W, Angrisani L. Bariatric surgery in Class I obesity: A position statement from the International Federation for the Surgery of Obesity and Metabolic Disorders (IFSO). *Obes Surg*. 2014;24(4):487-519. doi: 10.1007/s11695-014-1214-1.

20. Straw MK, Straw RB, Mahoney MJ, et al. The master questionnaire: Preliminary report on an obesity assessment device. *Addict Behav*. 1984;9(1):1-10. doi: 0306-4603(84)90002-9.

21. Hargreaves EA, Mutrie N, Fleming JD. A web-based intervention to encourage walking (StepWise): Pilot randomized controlled trial. *JMIR Res Protoc*. 2016;5(1):e14. doi: 10.2196/resprot.4288.

22. Mendoza JA, Baranowski T, Jaramillo S, et al. Fit 5 kids TV reduction program for Latino preschoolers: A cluster randomized controlled trial. *Am J Prev Med*. 2016;50(5):584-592. doi: S0749-3797(15)00590-5.

23. Bell JA, Sabia S, Singh-Manoux A, Hamer M, Kivimaki M. Healthy obesity and risk of accelerated functional decline and disability. *Int J Obes (Lond)*. 2017;41(6):866-872. doi: 10.1038/ijo.2017.51.

24. Pearl RL, Wadden TA, Chao AM, et al. Weight bias internalization and long-term weight loss in patients with obesity. *Ann Behav Med*. 2018. doi: 10.1093/abm/kay084.

25. Laird NM, Ware JH. Random-effects models for longitudinal data. *Biometrics*. 1982;38(4):936-974.

26. Weinstein AL, Marascalchi BJ, Spiegel MA, Saunders JK, Fagerlin A, Parikh M. Patient preferences and bariatric surgery procedure selection; the need for shared decision-making. *Obes Surg*. 2014;24(11):1933-1939. doi: 10.1007/s11695-014-1270-6.

27. Stanford FC, Kyle TK, Claridy MD, Nadglowski JF, Apovian CM. The influence of an individual's weight perception on the acceptance of bariatric surgery. *Obesity (Silver Spring)*. 2015;23(2):277-281. doi: 10.1002/oby.20968.

28. Strategies to Overcome and Prevention Obesity Alliance. WHY WEIGHT? A guide to discussing obesity & health with your patients. http://stopobesityalliance.org/wp-content/themes/stopobesityalliance/pdfs/STOP-Provider-Discussion-Tool.pdf. Updated 2014. Accessed January 25, 2019.

29. Rosenstock IM. What research in motivation suggests for public health. *Am J Public Health Nations Health*. 1960;50(3 Pt 1):295-302.

30. Armitage CJ, Norman P, Alganem S, Conner M. Expectations are more predictive of behavior than behavioral intentions: Evidence from two prospective studies. *Ann Behav Med*. 2015;49(2):239-246. doi: 10.1007/s12160-014-9653-4.

31. Hovland CI, Janis IL, Kelley HH. Communication and persuasion: Psychological studies of opinion change. *American Sociological Review*. 1954;19(3):355-357.

32. Ancker JS, Senathirajah Y, Kukafka R, Starren JB. Design features of graphs in health risk communication: A systematic review. *J Am Med Inform Assoc*. 2006;13(6):608-618. doi: M2115.

33. Chaiken S. Heuristic versus systematic information processing and the use of source versus message cues in persuasion. *Journal of Personality and Social Psychology*. 1980;39(5):752-766.

34. Rimal RN, Turner MM. Use of the Risk Perception Attitude (RPA) framework for understanding health information seeking: The role of anxiety, risk perception, and efficacy beliefs. In: Thompson TL, Parrott R, Nussbaum JF, eds. *The Routledge Handbook of Health Communication.* 2nd ed. Taylor & Francis Group; 2011.

35. Harris P, Middleton W, Joiner R. The typical student as an in-group member: Eliminating optimistic bias by reducing social distance. *European Journal of Social Psychology*. 2000;30:235-253.

36. Gyrd-Hansen D. Willingness to pay for a QALY: Theoretical and methodological issues. *Pharmacoeconomics*. 2005;23(5):423-432. doi: 2352.

37. American Society for Metabolic and Bariatric Surgery. Metabolic and bariatric surgery. Resources Web site. https://asmbs.org/resources/metabolic-and-bariatric-surgery. Updated 20132017.

Tables

Table 1: Descriptive Statistics (N=334)

	***M*(SD) or n(%)**
Age	48.3 (14.3)
Gender	
Male	145 (43.4)
Female	189 (56.6)
Race	
Non-Hispanic White	249 (74.6)
Non-Hispanic Black	35 (10.5)
Hispanic	16 (4.8)
Other Race/Two or more races	34 (10.2)
Education	
Less than high school	26 (7.8)
High school	106 (31.7)
Some college	113 (33.8)
Bachelors degree or higher	89 (26.7)
Comorbidity [Pre-diabetes or Sleep apnea]	
Yes	142 (42.5)
No	180 (53.9)

Body Mass Index (BMI) [30 and above]	38.7 (6.0)
Weight Loss Self-Efficacy [0-12 range]	5.5 (3.6)

Table 2: Willingness to Take Risk (by Level and Condition) Mean Percent (Standard Deviation)

	Condition	
Risk Level	10% weight loss scenario	Ideal weight loss scenario
Low – Chronic Diarrhea	13.8 (23.9)	18.1 (25.5)
Moderate – Severe Infection	7.5 (17.8)	12.1 (22.1)
High – Death	6.5 (18.0)	8.6 (19.1)

Table 3: Predicting Risk Willingness using a Self-Efficacy Score[a]

	Model 1 **N=135 (p < .001)** BMI 40+ or BMI 30+ with Comorbidity **Beta Coefficient** **(Confidence Interval)**	**Model 2** **N=223 (p < .001)** BMI 30+ **Beta Coefficient** **(Confidence Interval)**
Body Mass Index (BMI)	0.40 (-0.18 – 0.97)	0.50* (0.08 – 0.92)
Main Effects		
Condition		
10% weight loss scenario	Ref.	Ref.
Ideal weight loss scenario	11.5** (4.29 – 18.76)	11.2*** (5.78 – 16.53)
Risk Level		
Low – Chronic Diarrhea	Ref.	Ref.
Moderate – Severe Infection	-4.92 (-12.22 – 2.40)	-4.57 (-9.98 – 0.84)
High – Death	-3.37 (-10.64 – 3.91)	-5.80* (-11.20 – -0.41)
Weight Loss Self-Efficacy Score	0.21 (-1.00 – 1.43)	0.54 (-0.38 – 1.47)
Interaction Effects		

	Model 1 **N=135 (p < .001)** BMI 40+ or BMI 30+ with Comorbidity **Beta Coefficient** **(Confidence Interval)**	**Model 2** **N=223 (p < .001)** BMI 30+ **Beta Coefficient** **(Confidence Interval)**
Condition x Risk Level		
Ideal weight loss x Chronic Diarrhea	Ref.	Ref.
Ideal weight loss x Severe Infection	-2.51 (-12.80 – 7.80)	-2.31 (-9.95 – 5.33)
Ideal weight loss x Death	-8.49 (-18.74 – 1.77)	-8.31* (-15.92 – -0.69)
Condition x Self-Efficacy Score		
10% weight loss	Ref.	Ref.
Ideal weight loss	-1.32* (-2.45 – -0.19)	-1.30** (-2.13 – -0.48)
Risk Level x Self-Efficacy Score		
Low – Chronic Diarrhea	Ref.	Ref.
Moderate – Severe Infection	-0.60 (-1.74 – 0.53)	-0.50 (-1.32 – 0.33)
High – Death	-0.91 (-2.05 – 0.23)	-0.36 (-1.18 – 0.47)
Condition x Risk Level x Self-Efficacy Score		

	Model 1 **N=135 (p < .001)** BMI 40+ or BMI 30+ with Comorbidity **Beta Coefficient** **(Confidence Interval)**	**Model 2** **N=223 (p < .001)** BMI 30+ **Beta Coefficient** **(Confidence Interval)**
Ideal weight loss x Chronic Diarrhea	Ref.	Ref.
Ideal weight loss x Severe Infection	0.70 (-0.91 – 2.30)	0.71 (-0.46 – 1.90)
Ideal weight loss x Death	1.22 (-0.39 – 2.83)	1.20* (0.03 – 2.36)

Table 3: Legend

* p<0.05, ** p<0.01, *** p<0.001

[a] Models control for age, education, gender, and race/ethnicity.

Figure 1: Legend

Light gray = 10% weight loss

Dark gray = Ideal weight loss

Figure 2: Legend

Light gray = 10% weight loss

Dark gray = Ideal weight loss

Impact of Self-Efficacy on Risk Aversion in the Context of

Surgical Weight Loss Decision Scenarios

Monique Turner, PhD[1], Andrea C. Johnson, MPH, CHES[1], Paula Lantz, PhD, MS[2]

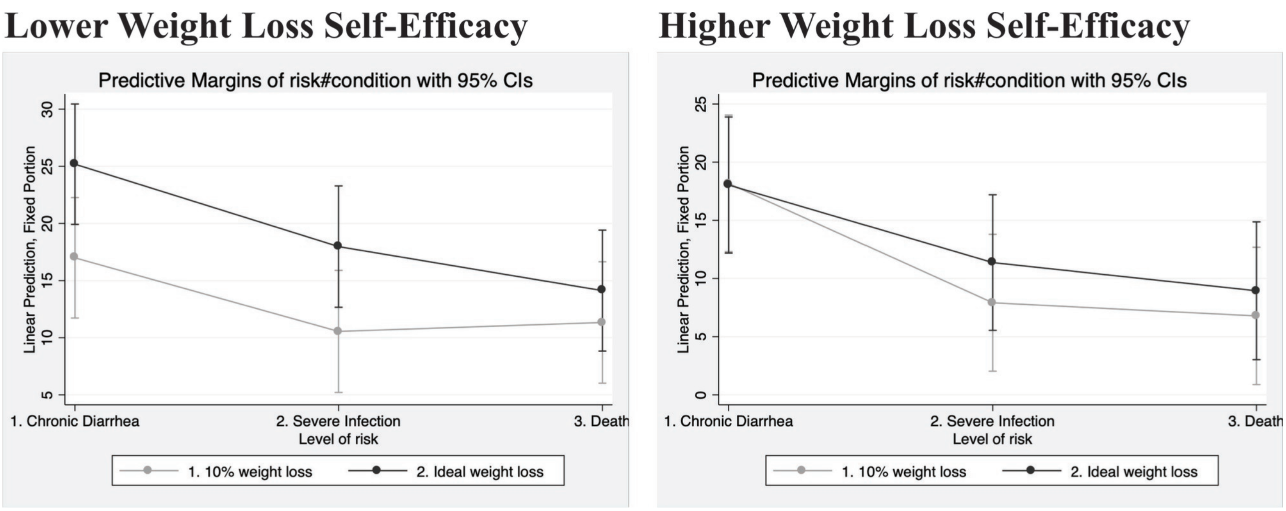
1 Milken Institute School of Public Health, Department of Prevention and Community Health, George Washington University, Washington, D.C.

2 Gerald R. Ford School of Public Policy, University of Michigan, Ann Arbor, Michigan

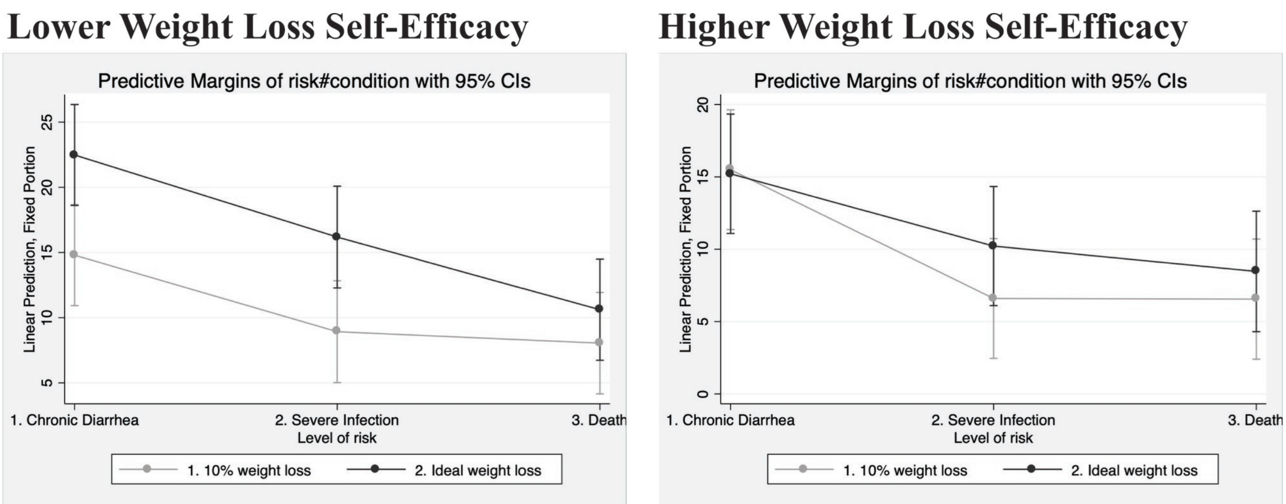
Keywords: Obesity, Risk Aversion, Self-Efficacy, Weight Loss, Bariatric Surgery

Running Title: Risk Perceptions of Surgical Weight Loss Decisions

Correspondence
Andrea C. Johnson, MPH, CHES**,** 950 New Hampshire Ave NW, Floor 2, Milken Institute School of Public Health, Department of Prevention and Community Health, Washington, D.C., United States. Email: acjohnson@gwu.edu. Phone: #1-202-994-3672



cob_12311_figure1.eps



cob_12311_figure2.eps

Please wait...

If this message is not eventually replaced by the proper contents of the document, your PDF viewer may not be able to display this type of document.

You can upgrade to the latest version of Adobe Reader for Windows®, Mac, or Linux® by visiting http://www.adobe.com/go/reader_download.

For more assistance with Adobe Reader visit http://www.adobe.com/go/acrreader.

Windows is either a registered trademark or a trademark of Microsoft Corporation in the United States and/or other countries. Mac is a trademark of Apple Inc., registered in the United States and other countries. Linux is the registered trademark of Linus Torvalds in the U.S. and other countries.

Please wait...

If this message is not eventually replaced by the proper contents of the document, your PDF viewer may not be able to display this type of document.

You can upgrade to the latest version of Adobe Reader for Windows®, Mac, or Linux® by visiting http://www.adobe.com/go/reader_download.

For more assistance with Adobe Reader visit http://www.adobe.com/go/acrreader.

Windows is either a registered trademark or a trademark of Microsoft Corporation in the United States and/or other countries. Mac is a trademark of Apple Inc., registered in the United States and other countries. Linux is the registered trademark of Linus Torvalds in the U.S. and other countries.