

Research Article

Looking at a Happier Tomorrow: A Psychological Study Comparing Adults Following Bariatric Surgery

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Abstract

Bariatric surgery is an accepted method to treat obesity and its comorbidities in adults.

Objectives: This study assesses long-term bariatric surgery outcomes across four adult age groups by comparing changes in milestone BMIs, and changes in well-being, self-esteem, depression, happiness, outlook on life and perceived picture of the future.

Methods: Using a survey method, a 40-item questionnaire was mailed to 2520 patients of a Midwestern weight management center who were ≥ 18 months post-procedure. This process was researcher blinded. The 534 respondents were divided into four age groups: 18-49 years (n=171), 50-59 years (n=148), 60-69 years (n=138) and ≥ 70 years (n=77).

Results: The older and oldest age groups were as successful at losing weight and keeping it off as young and midlife groups. Respondents of all age groups were happier, reported higher self-esteem and better health after bariatric surgery.

Conclusion: Older and oldest adults had similar improved psychological outcomes and satisfaction with bariatric surgery than young and midlife age adults. Bariatric surgery should be considered for disease management for older adults as much as it is for younger adults.

Keywords: Older Adults, Bariatric Surgery, Depression, Self-Esteem, Perceived Health, BMI.

Introduction

Obesity increases psychological problems, reduces sleep quality, and reduces quality of life for many adults [1-3]. Obesity is also associated with increased mortality and reduced life expectancy as a result of increased medical risks [4-7]. With the increased obesity rates for older adults, increased life expectancy does not necessarily mean an increase in healthy years [8]. Instead, obese elderly may be facing additional years of discomfort, lack of mobility and chronic ill health [9,10]. The most common obesity related chronic diseases are type II diabetes, hypertension, heart disease, stroke, certain types of cancers, metabolic syndrome, re-

spiratory disease, sleep apnea, fatty liver disease, osteoarthritis, gall bladder disease, pulmonary embolism, gastro-esophageal reflux disease, urinary incontinence, chronic renal failure, gout, and depression [11]. If obesity continues into older age, there is a greater likelihood of increased assistance needed and earlier coupled with more frequent admissions to nursing facilities [12]. Many obese people may struggle with physical mobility as a result of their weight; these limitations may lead to increased psychological problems or reduced quality of life.

Psychological Effects of Obesity

The psychological effects of obesity are equally significant and include lowered self-esteem, depression, anxiety, social withdrawal and loneliness. (13-14) In addition to the physical and psy-

chological effects of obesity on individuals, obesity significantly affects society through rising health care costs [15,16]. People who are obese are three to four times more likely to report depression and anxiety than thinner individuals [13].

In addition to the psychological consequence obesity experienced by some individuals, many obese people experience discrimination, shunning and shame resulting from their battle with weight loss [13]. This may lead to social withdrawal and loneliness, which in turn can create more depression and isolation. Obese individuals often experience increased psychological issues related to work-related psychosocial stress such as discrimination at work [13]. Roehling [16] conducted an exhaustive literature review in which numerous work-related stereotypes were identified in the obese patients, such as lack self-discipline, laziness, sloppy appearance, disagreeableness, slower to think, and less conscientious. Other researchers report similar findings [17,18]. Obesity creates many problems, not only for the person with obesity, but also for family members and society as a whole as we struggle to deal with the far reaching concerns obesity raises.

In an examination of beliefs of General Practitioners (GPs) about the causes and solutions to obesity, Ogden et al [19] noted another aspect of GPs and obese patients-GPs believe obesity is more behaviorally based rather than biologically based; thus, GPs believe that obesity is a behavioral problem and not a medical problem. As a result, some GPs may fail to address their patients' obesity and provide appropriate lifestyle advice to obese patients [20]. Approaches to weight loss have included self-help groups, drugs, exercise programs, psychotherapy, nutritional counseling, education programs, and surgery [21]. These effects of obesity led researchers and healthcare professionals to search for effective weight loss treatments. Many diets and behavioral treatments resulted in initial weight loss, only to be followed by weight regain [14].

Weight Loss Alternatives

Even though obesity is very difficult to treat with lifestyle changes, the medical community continues to encourage people to lose weight by diet and exercise [11]. As a result of these recommendations, overweight and obese people attempt multiple diets, medications and exercise regimens resulting in very limited success over the long-term weight-loss results [11,22,23]. Increasingly, a viable option for obese patients has been surgery as a means to aid weight loss [8-11,24]. Bariatric surgery that either restricts caloric intake or absorption has been found to be the most effective method to lose weight and maintain a healthy lifestyle [9-11,24]. Since bariatric surgery has become so successful, many more healthcare providers have turned to surgical treatments for obesity [25]. There are various bariatric procedures available.

Bariatric Surgery

Bariatric surgery often results in effective and enduring weight loss with complete resolution or significant improvement in obesity-related comorbidities [25,26]. Age restrictions were initially in place because it was believed that the health risks of bariatric surgeries surpassed beneficial outcomes for aging patients [27]. In 2006, the NIH recommendations changed and Medicare reversed their policy to deny bariatric requests based solely on age; therefore, age restrictions were eliminated [26,28]. Payment for bariatric surgery has improved considerably for older adults making it a more viable option. After the Medicare authorized approval of bariatric surgery for older adults in 2006; 2.7% of all bariatric operations were performed on patients older than 60 years old in 2006 [29]. Younger patients may have a greater weight loss and have a more complete resolution of their co-morbid conditions, but older people reduced the number of medications [30-32]. It appears age did not influence the rate of occurrence of postoperative complications and outcomes between older vs. younger patients [30,32-33]. Bariatric surgery for older patients has shown to be safe and effective for weight loss and in improvement of obesity comorbidities especially type II diabetes and blood pressure [34]. The medical community recommends that surgical treatment of obesity should only be considered after all nonsurgical methods are exhausted. Potential bariatric patients are required to have attempted and failed several traditional diet methods [32]. However, more research opportunities exist for comparing older and younger bariatric patients' perceived psychological outcomes post surgery.

Outcomes of Bariatric Surgery for Older Persons

Physical outcomes of bariatric surgery have steadily improved during the past decade [34]. The most common obesity related chronic diseases are type II diabetes, hypertension, heart disease, stroke, certain types of cancers, metabolic syndrome, respiratory disease, sleep apnea, fatty liver disease, osteoarthritis, gall bladder disease, pulmonary embolism, gastro-esophageal reflux disease, urinary incontinence, chronic renal failure, gout, and depression which can all be improved by weight loss from bariatric surgery [11,35].

Bariatric surgery can offer patients an effective and long lasting treatment for obesity and its related diseases. Literature is limited on many of the experiences of older adults and bariatric surgery, the bulk of existing research has focused on the safeness of bariatric surgical procedures itself [5,8,22]. Quite a number of studies that have demonstrated that the surgery is safe for the aging population [29]. Many of the existing studies review the immediate response to the surgery while still in the hospital analyzing such things as length of time of procedure and/or hospitalization,

while other research only reviews a small aspect of the bariatric experience such as number of medications reduced or amount of weight lost.

Purpose of the Study

The purpose of this study was to compare long-term (≥ 18 months post-bariatric procedure) outcomes across four broad adult age groups by comparing changes in milestone Body Mass Indices (BMIs), changes in well-being, self-esteem, depression, outlook on life and perceived picture of their future. The study identified four age groups: young adult - ages 18-49, midlife adult - ages 50-59, older adult - ages 60-69 and oldest adult ages 70 and greater.

Methods

Research Design

The research design for this study was a survey method, using a cross-sectional, self-reported questionnaire. Institutional Review Board (IRB) approval was given by North Dakota State University for this research.

Survey Instrument

After an exhaustive search, the researchers found no existing bariatric questionnaire that met their needs. The researchers, therefore, developed a bariatric questionnaire addressing the surgical outcomes of patients who were at least 18 month post-bariatric surgery. The questionnaire included demographic information such as age, height, 4 milestone weights, and type of surgery. The 4 milestone weights were highest weight before surgery, weight on surgery day, lowest weight after surgery, and current weight. Likert-style questions were designed which focused on changes in well-being, self-esteem, depression, outlook on life, and their perceived picture of their future between age groups. The questionnaire was reviewed by education and health professionals for content and readability. The instrument was revised and pilot tested with a sample of 12 bariatric patients to test clarity.

Participants

Bariatric patients were recruited from a Midwestern hospital

in the United States which specializes in bariatric surgery. Criteria included patients who were at least 18 years old, ≥ 18 months post-procedure as a minimum and 15 years post-surgery as a maximum.

Procedure

To abide by HIPPA regulations, hospital personnel mailed paper questionnaires to individuals who met the selection criteria. There was an option to complete the questionnaire online instead of completing the paper version. The questionnaires were returned to the researchers in postage paid envelopes with no identifying information. The questionnaires were then coded and entered into Qualtrics (Survey Software, Provo, UT, version 60,114). Approximately 12 weeks after the questionnaires were mailed, the data collection was stopped.

Data Analysis

The data was analyzed using SAS (Statistical Analysis Software, Cary, NC, version 10.3). Analyses included frequency, percentages and ANOVA. BMI was calculated using the 4 milestone weights and height.

Results

A total of 2520 surveys were mailed, with 178 returned as undeliverable. Overall, 534 surveys were completed and returned, a 22.8% response rate. As seen in Table 1, the 534 respondents were divided into four age groups: 18-49 years ($n=171$), 50-59 years ($n=148$), 60-69 years ($n=138$) and ≥ 70 years ($n=77$). The majority were female ($n=442$; 82.8%), and the majority of all participants were married ($n=350$; 65.7%). Employment status varied with part-time work ($n=254$; 47.7%), and full-time work ($n=66$; 12.4%), and a large number of retired participants ($n=160$; 30.1%), likely due to the age of many respondents. The majority had some college ($n=252$; 47.3%) or a college degree ($n=142$; 26.4%), and the majority of all participants underwent gastric bypass surgery ($n=511$; 96.2%) rather than the gastric sleeve or gastric band or other alternative.

	Overall N=534	Young n=171	Midlife n=148	Older n=138	Oldest n=77
Characteristic	Number (%)	Number (%)	Number (%)	Number (%)	Number (%)
Gender					
Woman	442 (82.8)	153 (89.4)	123 (83.1)	103 (74.6)	63 (81.8)
Man	92 (17.2)	18 (10.5)	25 (16.9)	35 (25.4)	14 (18.2)
Education					
< High School	8* (1.5)	0	2 (1.4)	3 (2.2)	3 (3.9)
High School/GED	131 (24.6)	30 (17.5)	32 (21.8)	38 (27.5)	31 (40.3)
Some College	252 (47.3)	91 (53.2)	64 (43.5)	63 (45.7)	34 (44.2)
College Degree	142 (26.4)	50 (29.2)	49 (33.3)	34 (24.6)	9 (11.7)
Marital Status					
Single / Never Married	48 (9.0)	30 (17.5)	13 (8.8)	4 (2.9)	1 (1.3)
Married	350 (65.7)	100 (58.5)	105 (71.0)	92 (67.2)	53 (68.8)
Domestic Partnership	5 (0.9)	2 (1.2)	1 (0.7)	1 (0.7)	1 (1.3)
Separated	6 (1.1)	5 (2.9)	0	0	1 (1.3)
Divorced	86 (16.1)	32 (18.7)	27 (18.2)	24 (17.5)	3 (3.9)
Widowed	38 (7.1)	2 (1.2)	2 (1.4)	16 (11.7)	18 (23.4)
Employment Status					
Caregiver at Home	22 (4.1)	13 (7.7)	7 (4.8)	1 (0.7)	1 (1.3)
Work Part-Time	254 (47.7)	119 (70.0)	94 (63.5)	40 (29.0)	1 (1.3)
Work Full-Time	66 (12.4)	22 (12.9)	17 (11.5)	22 (15.9)	5 (6.6)
Retired	160 (30.1)	1 (0.6)	19 (12.8)	72 (52.2)	68 (89.5)
Other	30 (5.6)	15 (8.8)	11 (7.4)	3 (2.2)	1 (1.3)

Surgery Type					
Gastric By-Pass	511 (96.2)	162 (94.7)	143 (98.0)	132 (96.4)	74 (96.1)
Gastric Sleeve	4 (0.8)	3 (1.8)	0	1 (0.7)	0
Gastric Band	15 (2.8)	6 (3.5)	2 (1.4)	4 (2.92)	3 (3.9)
Biliopancreatic Diversion	1 (<0.01)	0	1 (0.7)	0	0

*Some characteristics are less due to non-response by some participants.

Table 1: Demographic Characteristics of Total Sample and by Age Group.

Body Mass Index (BMI)

As seen in Table 2, participants lost weight, and most experienced some weight regain regardless of age. The young adults had a significantly larger highest BMI with a mean > 50 kg/m2 com-

pared to a mean BMI of 46.3 kg/m2 for the oldest group (p=0.03). Although not significant, each mean milestone BMI was larger for the young group and progressed in chronological order with the oldest age group having the lowest milestone BMIs in all four areas.

BMI Milestone	Overall N=534 Mean ± SD*	Young n=171 Mean ± SD	Midlife n=148 Mean ± SD	Older n=138 Mean ± SD	Oldest n=77 Mean ± SD	P value
Highest	47.9 ± 8.2	49.1 ± 8.7	47.9 ± 8.5	47.7 ± 7.5	47.0 ± 8.0	0.03
Surgery Day	46.5 ± 7.7	47.5 ± 7.4	46.5 ± 8.3	46.3 ± 7.0	45.6 ± 8.0	0.28
Lowest	26.5 ± 5.1	26.4 ± 5.4	26.5 ± 5.5	26.7 ± 5.1	26.3 ± 4.2	0.93
Current	30.1 ± 6.1	30.5 ± 6.2	30.2 ± 6.1	30.2 ± 6.1	29.3 ± 5.8	0.51

* Standard Deviation

Table 2: Mean BMI Milestones Overall and by Age

Changes in Emotional Quality of Life

Depression improved by an average of 54.8% for all age groups. In regards to sense of well-being after surgery over 60% reported feeling better/much better with a range of 61.8% to 64.8%. Over three-fourths of the participants claimed a better outlook on life with the oldest group reporting 81.6% compared to 75.7% of the young group. Overall all groups were optimistic about the future, with the midlife group (79.9%), older (79.3%) and the oldest

group (78.7%) being similar, with the young group almost as high (73.2%). However, it should be noted while there are some minor differences among the groups, all of the participants showed a great deal of improvement in depression, outlook on life, and their future as they age. On the other hand, a very small percentage of respondents reported negative changes to well-being, outlook on life, the future as one ages, and perceived overall health. See Table 3 for specifics. Overall, perceived health increased the most at 85.1% .

	Overall	Young	Midlife	Older	Oldest
	Percent	Percent	Percent	Percent	Percent
Depression	N = 321	n = 117	n = 96	n = 68	n = 40
Worse/much worse	15.0	18.8	14.6	14.7	5.0
About the same	30.2	28.2	28.1	33.8	35.0
Better/much better	54.8	53.0	57.3	51.5	60.0
Sense of Well-being	N = 527	n = 170	n = 145	n = 135	n = 77
Worse/much worse	6.8	11.2	8.3	1.5	3.9
About the same	30.0	27.1	26.9	34.8	33.8
Better/much better	63.2	61.8	64.8	63.7	62.3
Outlook on Life	N = 528	n = 169	n = 146	n = 137	n = 76
Worse/much worse	3.0	4.1	4.8	1.5	0.0
About the same	19.3	20.1	17.1	21.2	18.4
Better/much better	77.7	75.7	78.1	77.4	81.6
Future as you Age	N = 522	n = 168	n = 144	n = 135	n = 75
Worse/much worse	4.4	6.5	4.9	3.0	1.3
About the same	18.2	20.2	15.3	17.8	20.0
Better/much better	77.4	73.2	79.9	79.3	78.7
Overall Health	N = 430	n = 171	n = 147	n = 137	n = 75
Worse/much worse	5.3	7.0	4.1	2.2	2.7
About the same	9.5	8.8	7.5	6.6	8.0
Better/much better	85.1	84.2	88.4	91.2	89.3

*Some characteristics may not add to total sample size due to non-response by some participants.

Table 3: Percentage of Participants Reporting Changes in the Emotional Quality of Life.

	Overall	Young	Midlife	Older	Oldest
	Percent	Percent	Percent	Percent	Percent
Are you satisfied with your weight loss since surgery?	N = 516*	n = 167	n = 144	n = 132	n = 73
Very dissatisfied/dissatisfied	12.4	10.8	10.4	14.4	16.4
Neutral	7.8	11.4	8.3	6.1	1.4
Satisfied/very satisfied	79.8	77.8	81.3	79.5	82.2
Are you happy with your bariatric surgery	N = 530	n = 171	n = 148	n = 135	n = 76
Very unhappy/unhappy	8.3	8.8	7.4	8.9	7.9
Neither happy or unhappy	6.4	9.9	6.1	3.7	3.9
Happy/very happy	85.3	81.3	86.5	87.4	88.2
Are you happy with how you look and feel since the surgery?	N = 532	n = 170	n = 148	n = 137	n = 77
Very unhappy/unhappy	8.5	11.8	6.8	6.6	7.8
Neither happy or unhappy	10.7	13.5	12.8	7.3	6.5
Happy/very happy	80.8	74.7	80.4	86.1	85.7

Do you feel healthier?	N = 531	n = 173	n = 152	n = 146	n = 75
Never/rarely	5.5	8.7	7.2	8.2	8.0
Sometimes	18.1	24.9	13.2	15.1	14.7
Often /all the time	76.5	66.5	79.6	76.7	77.3
Has your self-esteem changed since you lost weight?	N = 530	n = 170	n = 148	n = 137	n = 75
Much lower/slightly lower	3.6	4.1	3.4	2.9	4.0
About the same	18.3	21.8	16.2	16.8	17.3
Much higher/higher	78.1	74.1	80.4	80.3	78.7

*some characteristics may not add to total sample size due to non-response by some participants.

Table 4: Satisfaction and Happiness with Bariatric Surgery.

Satisfaction with Surgery

Almost 80% were satisfied with the weight loss they had experienced after bariatric surgery, there were no differences among age groups. Over an average of 85.3% of the patients stated they were happy with the bariatric surgery itself. When it comes to happiness with how they look and feel since bariatric surgery, the happiest age group is the older group (86.1%) compared to the young group (74.7%). In regards to feeling healthier, the young group (66.5%) of patients feel healthier compared with the midlife group (79.3%) the older group (76.7%) and the oldest group (77.3%).

Discussion

All age groups lost weight after bariatric surgery and all groups experienced some weight regain as indicated by increased current BMI. The older and oldest age groups were as successful at losing weight and keeping off as the young and midlife age groups.

There were significant improvements in depression among all age groups. While all the age groups improved greatly, it was interesting to note that the oldest age group, those ages 70 or greater were the most satisfied with the weight loss (82.2%). The midlife (ages 50-59) and older (ages 60-69) groups were very similar on most questions and were either closely ahead or behind the oldest age group. The central theme seems to be that the young group is slightly albeit not significant less happy and less satisfied than any other age group.

Limitations

One limitation is the sample was limited from only one Mid-western hospital in the United States so there will not be a large diversity of ethnicity within the group so generalizability could be affected. Another is the fact that the survey is self-reported and while the response rate was good, it is unclear if their outcomes

necessarily represent the entire sample. Perhaps participants that did not have as good of outcomes failed to return the survey.

Conclusion

There are many positive outcomes in this study which indicates adults of all ages seem to benefit from the weight loss that accompanies bariatric surgery. Besides the obvious decrease in BMI across all age groups, there is a significant improvement in the participant's mental health outlook now and in their perception of their future. From improved self-esteem, happiness, to better self-concept and overall satisfaction with how they look and feel. This improves their general outlook on life and future as they age as well. There does not appear to be any worse outcomes for weight loss or quality of life for older and oldest adults compared to midlife and young age groups. Bariatric surgery should be considered for older adults for disease management and for improvement in mental health as much as it is for younger adults. Of course a patient must be healthy enough to sustain such a surgery and surgery should be the method of last resort, with reduced diet and exercise program being implemented first.

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