



Quality of Life One Year After Bariatric Surgery: the Moderator Role of Spirituality

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Published online: 21 January 2019
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Abstract

Background This study aimed to assess quality of life in obese patients 1 year after bariatric surgery taking into consideration the influence of socio-demographic, clinical, and psychological variables.

Methods A sample of 90 patients undergoing bariatric surgery was assessed in two moments: before surgery and 1 year after surgery.

Results Social support, problem-focused coping strategies, and quality of life increased after surgery, while eating disorder behaviour and impulsiveness decreased. The presence of eating disorder behaviour predicted worse physical and mental quality of life and higher satisfaction with social support predicted better physical and mental quality of life. In addition, higher impulsiveness predicted worse mental quality of life. Spirituality moderated the relationship between impulsiveness and mental/physical quality of life.

Conclusions Interventions should focus on promoting social support and coping strategies particularly spirituality since it played an important role in quality of life.

Keywords Obesity · Bariatric surgery · Spirituality · Quality of life

Introduction

Obesity is defined by the World Health Organization (WHO) as abnormal or excessive fat accumulation (body mass index equal or higher than 30) that may impair health [1]. Obesity may be considered a chronic disease, but also a risk factor for the development of other chronic diseases associated with the highest rates of morbidity and mortality [2]. It is a problem of public health that already reached epidemic proportions [1, 2] with WHO data indicating that, in 2016, there were more than 1.9 billion adults with overweight and 650 million with obesity [1]. Overweight and obesity are still responsible for roughly 2.8 million deaths per year [1]. Portugal is no

exception with more than half of the population, 5.9 million of people, being obese or pre-obese. The prevalence is higher in older adults, with eight in each ten being obese or pre-obese [3]. These facts illustrate the need to better understand obesity and psychological variables that may impair individuals' QoL.

Bariatric surgery is being increasingly recommended to treat patients with severe or morbid obesity (body mass index—BMI > 40 kg/m² and BMI > 35 kg/m², respectively) that have not succeeded in losing weight through non-surgical methods [4]. This surgery is also described as the best option for weight loss in terms of long-term effects [5]. Still, its success depends on socio-demographic variables, such as age and gender [6]. Therefore, younger patients tend to lose more weight, mainly due to lower associated comorbidities and greater physical mobility [7]. Moreover, there is a tendency for obese individuals since childhood/adolescence to lose more weight after surgery than for those whose obesity onset only occurred in adulthood [8]. Regarding gender, female patients tend to suffer more from negative social effects and weight loss, which leads to worse mental QoL, while male patients appear to be more concerned with medical problems than with weight loss itself [9].

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Obesity entails several problems for physical and mental health and, thus, directly and significantly affects QoL [10]. Patients with higher degrees of obesity reported worse QoL than those with lower degrees. Therefore, higher levels of obesity are associated with a decrease in QoL [11]. Bariatric surgery has been associated with a significant increase in health-related quality of life and physical QoL and is positively associated with a decrease in BMI [12]. This pattern of increased QoL after surgery often coincides with the phase of major weight loss, which generally takes place between 1 and 3 years after the surgery [13]. However, weight loss per se is not sufficient to explain the oscillations in QoL, after surgery. Other factors such as decreased medical comorbidities and maladaptive eating behaviors, as well as perceived social support, may contribute to this increase in QoL [14].

Eating disorder behaviors before the surgery may also persist after, leading to lower weight losses and poorer QoL [4] and playing an important role as a negative predictor of QoL, more evident on mental QoL [15, 16]. After surgery, eating disorders may develop as a compensatory behavior, such as inducing vomiting, to regulate weight loss and body image [17]. However, eating patterns may stabilize after surgery, decreasing eating disorder behavior present before the surgery [18]. For these reasons, it is sometimes difficult to predict which patients will progress positively over time [18].

Impulsiveness is the predisposition to react quickly and without planning to stimuli, not taking into account the negative consequences [19], and may also play a role in eating behavior, since impulsive individuals tend to eat uncontrollably more often, despite the fact that impulsiveness alone does not predict eating pathology [20]. Impulsiveness before bariatric surgery has been associated with the presence of eating disorders and is considered a positive predictor of post-surgery impulsiveness [21]. Higher impulsiveness assessed, at post-surgery, negatively predicted weight loss 1 year after surgery and was associated with higher rates of eating disorders and worse QoL [21].

Obese patients with a positive perception of social support tend to face the post-surgery treatment positively, since they feel supported. In fact, social support was found to be a mediator in the process of physical or mental health/illness [22] in obese patients and those with a positive perception of their social support showed a higher weight loss and better QoL [23]. Social support is considered crucial to cope with the several post-surgery psychosocial stressors and dietary changes [24]. Nevertheless, social support may also be a negative predictor of QoL since Canetti, Berry, and Elizur [25] found that patients who perceived more social support ingested more food in social events and, consequently, showed worse QoL.

Obese patients who seek treatment often use emotion-focused coping strategies, which in turn are associated with greater distress, since patients may try to regulate their negative emotions with excessive food intake [26]. Problem-

focused coping strategies, in turn (e.g., fighting spirit), are associated with less distress [27]. Individuals with emotion-focused coping show increased psychological distress, while problem-focused coping has been associated with improved mental health. Obese individuals report a greater use of emotion-focused coping strategies to deal with problems [28].

Spirituality has become increasingly important in chronic illness [29]. Patients with higher levels of spirituality, who attribute greater meaning to life, are less affected by negative emotional states, report greater well-being and better adjustment, as well as seeking out more social support, vital in post-surgery treatment [30]. Moreover, spirituality moderated the relationship between chronic illness and QoL [31, 32]. However, the role of spirituality as a moderator between impulsiveness and QoL, in post surgery, has not been analyzed.

Considering that the literature is not always consensual regarding the role of coping strategies, social support, and impulsiveness in obese patient's QoL post-surgery, this study focused on QoL 1 year after bariatric surgery. It is expected that (1) social support, spirituality, and emotion- and problem-focused coping strategies will be positively associated with both physical and mental QoL, while eating disorder behavior and impulsiveness will not; (2) spirituality, social support, problem-focused coping, and physical and mental QoL will increase, whereas eating disorder behavior and impulsiveness will not, from the pre-surgery moment to the post-surgery moment; (3) use of more spirituality, less eating disorder behavior, more use of coping strategies lower impulsiveness, and high social support will predict better physical and mental QoL; (4) spirituality will moderate the relationship between impulsiveness and QoL, post-surgery.

Methods

Participants

The sample included 90 patients submitted to bariatric surgery in a major public hospital in North of Portugal, 1 year after surgery. Participants were 18 or older, with a pre-surgery BMI > 40 kg/m², and cognitively able to answer questionnaires. Based on medical records, patients with a diagnosis of severe psychiatric disorders were excluded. There were 204 participants that underwent bariatric surgery. However, only 100 were in their first post-surgical year and were, therefore, invited to participate in the study. Only 90 participants were present the day of data collection.

Procedure

This study followed a prospective design with two assessment moments. Patients were identified and contacted by the psychologist of the Unit of Psychiatry and Mental Health.

Patients were invited by letter and all signed an informed consent. Participation was voluntary. Patients answered the instruments in a room provided by the hospital for that purpose. The research protocol complied with the ethical principles contained in the Helsinki Declaration and was approved by the Hospital's Ethics Committee.

Instruments

Clinical and Sociodemographic Questionnaire Consists of 36 items that assess the individuals' sociodemographic (gender, age, education, marital, and professional status) and clinical characteristics (weight, BMI, obesity onset, and physical activity practice). Patients' weight considered was the last weight recorded in the patient's chart before surgery.

Short Form Health Survey–SF 36 [33, 34] The SF 36 assesses QoL through eight subscales: physical functioning ($\alpha = .93$), physical role functioning ($\alpha = .82$), bodily pain ($\alpha = .95$), general health perceptions ($\alpha = .82$), emotional role functioning ($\alpha = .83$), social role functioning ($\alpha = .90$), vitality ($\alpha = .82$), and mental health ($\alpha = .80$). Higher scores indicate better perceptions of health status. In the Portuguese validation [34], these subscales are grouped into two main domains: physical QoL and mental QoL. In this study, the Cronbach alpha for physical QoL was .93 and .95 for mental QoL. In the Portuguese version, only convergent validity was assessed with the Dartmouth Cooperative Functional Assessment Charts (COOP) that measures functional health and the correlations between the physical and mental dimensions of SF-36 and COOP ranged between .24 e .69 showing good convergent validity.

Barratt Impulsiveness Scale (BIS-11) [35, 36] Comprises 30 items assessing attention, motor, and nonplanning impulsiveness. Higher results indicate higher impulsiveness. The original version showed a Cronbach alpha of .62 for the total scale, whereas in this study was .59. The Portuguese version presents good convergent validity ($r = .307$) with the Neuroticism Scale from Eysenck Personality Questionnaire- Revised (EPQ–R). The divergent validity was assessed with the Social Desirable Scale and EPQ–R (with $r = .01$ and $r = -.30$, respectively) showing good divergent validity.

Satisfaction with Social Support Scale [37] Composed of 15 items that assess satisfaction with social support organized into four subscales: “satisfaction with friendships”, “intimacy”, “family satisfaction”, and “social activities”. Higher scores correspond with higher levels of satisfaction with social support. In this study, only the total scale was used, with a Cronbach alpha of .89 while in the original version was .85. The instrument presented good convergent validity with the Mental Health Inventory ($r = .55$) and the correlation

between the item and the scales showed good discriminant validity.

Ways of Coping Questionnaire [38, 39] Consists of 48 items and analyzes the strategies that the individual uses to deal with several specific situations of stress. The items are organized into eight subscales: confrontive coping, self-controlling, seeking social support, accepting responsibility, planful problem-solving, distancing, escape-avoidance, and positive reappraisal. These subscales are grouped into two dimensions: emotion-focused and problem-focused coping. Higher scores in each dimension indicate greater use of the respective coping strategies. The Cronbach alphas of the eight subscales ranged from .65 to .80. In this study, the Cronbach alphas were .86 for problem-focused coping and .71 for emotion-focused coping. The Portuguese version presents moderate convergent validity for emotion-focused coping dimension ($.24 < r < .31$) with all dimensions of the Zung Anxiety Scale, whereas the problem-focusing coping dimension did not show significant correlations, revealing good discriminant validity.

Spiritual and Religious Attitudes in Dealing with Illness (SpREUK) [40, 41] This questionnaire consists of 15 items divided into three subscales: “search (for support/access)”, “trust (in a higher guidance/source)”, and “reflection (positive interpretation of the disease)”. The total scale was used in this study, with a Cronbach alpha of .93 while in the original version was of .94. Higher scores indicate higher levels of spirituality. The Portuguese version showed good convergent validity with the Revised Dyadic Adjustment scale ($r = .125$, $p < .001$).

Eating Disorder Examination-Questionnaire (EDE-Q) [42, 43] The instrument includes 28 items that assess behavior, attitudes, and feelings associated with eating disorders. A global score of eating disorder behavior is the average score of the four subscales: “restraint”, “eating concern”, “shape concern”, and “weight concern”. Cronbach alpha for the total scale in the original study was .85 and in this study was .91. The Portuguese version used the ROC analysis to assess whether EDE-Q could discriminate if a participant presented or not an eating disorder. The ROC analysis showed that EDE-Q had a good discriminant power.

Data Analysis

Statistical analyses were made using version 22.0 of IBM's SPSS® software for Windows. Parametric tests were used when the corollaries for their use were present. The presence of multicollinearity was also tested with the VIF (≤ 5) and tolerance value ($> .20$) [44]. The Pearson/Spearman correlation test was used to assess the relationship between continuous variables and the Point-Bisserial between continuous and

categorical variables. In order to analyze differences between pre- and post-surgery, *t* tests for paired samples were used and MANOVA for repeated measures. A hierarchical regression (enter method) was performed to analyze predictors of QoL. The regression model only included variables associated with physical and/or mental QoL. Finally, a moderation analysis was performed using the macro command process version 2.16.1 for SPSS [45].

Results

Sample Characteristics

This study included 90 patients 1 year after bariatric surgery. Of the total sample, 87.8% were women aged 24 to 68 years old ($M = 45.14$, $SD = 10.13$). A gastric bypass was performed in 85.6% of participants and gastric sleeve in the remaining 14.4%. Regarding marital status, 22.2% were single, 67.8% were married, 6.7% were separated/divorced, and 3.3% were widowers. Ninety percent had no difficulties in following the recommended diet and 12% reported the habit of vomiting after meals. The mean BMI was 29.2 kg/m^2 ($SD = 3.89$), which falls within the overweight category, ranging between 21.36 and 38.46 kg/m^2 . Specifically, 15.6% showed normal weight, 37.8% were overweight, 38.9% had moderate obesity, and 7.8% still fell within the severe obesity category. The mean percentage of weight lost was 33.86% ($SD = 6.88\%$), and the mean percentage of excess weight lost was 80.83% ($SD = 17.50\%$).

Relationship Between Sociodemographic, Clinical, and Psychological Variables

A negative association between mental QoL and eating disorder behavior ($r = -.39$, $p < .001$) and impulsiveness ($r = -.62$, $p < .001$) was found. There was also a significant negative association between physical QoL and eating disorder behavior ($r = -.36$, $p < .001$) and impulsiveness ($r = -.42$, $p < .001$). Thus, greater eating disorder behavior and impulsiveness were associated with worse mental and physical QoL. There was a significant positive association between mental QoL and social support ($r = .71$, $p < .001$) and physical QoL ($r = .77$, $p < .001$) and between physical QoL and social support ($r = .53$, $p < .001$). Therefore, better mental QoL was associated with better physical QoL, and higher levels of satisfaction with social support were associated with better mental and physical QoL. The Point-Biserial correlation test revealed a significant positive association between marital status and social support ($r_{pb} = .23$, $p = .03$), physical QoL ($r_{pb} = .23$, $p = .01$), and mental QoL ($r_{pb} = .21$, $p = .04$) and a negative association between marital status and spirituality ($r_{pb} = -.31$, $p = .01$). The Spearman correlation test showed a significant positive association between the onset of obesity and eating disorder behavior ($r_s = .25$, $p = .02$), and education level and problem-focused coping ($r_s = .21$, $p = .05$), as well as a significant negative association between education level and spirituality ($r_s = -.40$, $p < .001$), and eating disorder behavior ($r_s = -.23$, $p = .03$). The Chi-square test revealed a significant positive association between gender and education level ($\chi^2 = 12.54$, $p = .01$) and between education level and the onset of obesity ($\chi^2 = 16.32$, $p = .01$), (Table 1).

Table 1 Correlations between socio-demographic, clinical and psychological variables

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Mental QoL	–													
2. Physical QoL	.76***	–												
3. Eating disorder behavior	-.38***	-.36***	–											
4. Problem-focused coping	.005	-.027	.16	–										
5. Emotion-focused coping	-.10	-.19	.24*	.58***	–									
6. Impulsiveness	-.62***	-.41***	.23*	-.12	.01	–								
7. Satisfaction with social support	.70***	.52***	-.33**	.12	-.26*	-.51***	–							
8. Spirituality	-.07	.21*	.074	.50	.25*	.14	-.13	–						
9. Marital status	.22*	-.31**	-.177	.02	-.09	-.04	.21*	.28**	–					
10. Gender	-.02	.13	.167	-.13	.14	.16	-.19	-.15	.14	–				
11. Education level	.03	-.40***	-.22*	.21*	-.08	-.29**	-.01	.20	5.7	12.54*	–			
12. Obesity onset	-.13	.18	.25*	-.004	.19	.23*	-.13	-.20	1.8	1.15	16.32*	–		
13. Obesity degree	.14	.13	-.018	.03	.06	-.05	.13	-.06	2.5	2.72	4.31	6.64	–	
14. Professional status	-.17	-.24*	.038	.14	.16	.21*	-.29**	.18	.01	.03	6.10	4.18	3.83	–

* $p < .05$; ** $p < .01$; *** $p < .001$

Differences Between Pre- and Post-surgery on Psychological Variables

There were significant differences from pre-surgery to post-surgery on physical QoL ($F = 208.42, p < .001, \eta^2 = .70$), mental QoL ($F = 21.13, p < .001, \eta^2 = .21$), problem-focused coping ($F = 33.93, p < .001, \eta^2 = .276$), eating disorder behavior ($t = 2.25, p < .001, f^2 = .29$), and social support ($t = -8.68, p < .001, f^2 = .92$). After surgery, mental and physical QoL was higher, more problem-focused coping strategies were used, satisfaction with social support was higher, and the presence of eating disorders decreased (see Table 2).

Predictors of Mental and Physical QoL

The linear regression model was significant ($F = 6.78, p < .001$), explaining 31.3% of the variance of physical QoL. Eating disorder behavior negatively predicted physical QoL ($\beta = -.20, t = -2.09, p = .04$), whereas satisfaction with social support positively predicted physical QoL ($\beta = .34, t = 3.07, p = .01$). Thus, the presence of eating disorder behavior predicted worse physical QoL and higher satisfaction with social support predicted better physical QoL.

The linear regression model was significant ($F = 18.44, p = .001$), explaining 57.8% of the variance of mental QoL. Eating disorder behavior ($\beta = -.16, t = -2.13, p = .04$) and impulsiveness ($\beta = -.33, t = -3.88, p < .001$) were negative predictors of mental QoL, while social support was a positive predictor ($\beta = .510, t = 5.83, p < .001$). Thus, the presence of eating disorder behavior and higher impulsiveness predicted worse mental QoL and higher satisfaction with social support predicted better QoL (see Table 3).

Post-surgery Spirituality as a Moderator of the Relationship Between Impulsiveness Before Surgery and QoL Post-Surgery

Spirituality after surgery moderated the relationship between pre-surgery impulsiveness and mental QoL post-surgery, i.e., the negative relationship between impulsiveness and mental

QoL was stronger when post-surgery spirituality was lower ($t = -2.57, p = .01$; see Fig. 1). Post-surgery spirituality also moderated the relationship between pre-surgery impulsiveness and physical QoL post-surgery, i.e., the negative relationship between impulsiveness and physical QoL was stronger when post-surgery spirituality was lower ($t = -2.04, p = .04$; see Fig. 2).

Discussion

This study aimed to assess QoL in obese patients 1 year after bariatric surgery taking into consideration the influence of socio-demographic, clinical, and psychological variables.

Physical and mental QoL were positively associated with satisfaction with social support, indicating that individuals satisfied with their social support showed a positive perception of their QoL [23, 46]. The presence of eating disorder behavior and high impulsiveness were negatively associated with QoL, indicating that eating disorder behavior may interfere with several physical, emotional, and social aspects of the individual’s life [47]. Moreover, impulsive patients showed lower QoL, and this result makes intuitive sense since these patients may have difficulty accepting the dietary patterns after surgery [47], required to maintain less weight and, consequently, report worse QoL [48]. Eating disorder behavior was positively associated with impulsiveness and the literature reported that impulsiveness is considered a prominent factor in the onset of eating disorders [49]. Satisfaction with social support was negatively associated with emotion-focused coping, eating disorder behavior, and impulsiveness. In fact, patients who are more satisfied with their social support may adopt less emotion-focused coping strategies, since they have access to their support network to help them deal with their problems [50]. Additionally, more impulsive individuals tend to have smaller support networks and, consequently, perceive less social support [51] and may compensate social isolation with food, which may contribute to the development of eating disorder behavior [52]. Emotion-focused coping was positively associated with spirituality and eating disorder behavior.

Table 2 Differences between pre-surgery and post-surgery on BMI and psychological variables

	Pre-surgery mean (SD)	Post-surgery mean (SD)	t (89)/F(89)	f ² /η ²
Spirituality	40.05 (11.44)	40.29 (15.54)	-.177	.02
Eating disorder behavior	10.14 (3.98)	7.63 (11.24)	2.24***	.29
Impulsiveness	60.61 (7.64)	55.46 (8.03)	5.46	.57
Satisfaction with social support	52.58 (11.52)	64.47(10.84)	-8.67***	.91
Problem-focused coping	46.42 (13.45)	57.60 (14.622)	33.93***	.27
Emotion-focused coping	25.11 (7.91)	25.91 (8.499)	.473	.01
Mental QoL	49.92 (12.01)	56.80 (11.65)	21.12***	.21
Physical QoL	52.36 (13.03)	73.06 (11.90)	208.41***	.70

*** $p < .001$

Table 3 Final model of the predictors of post-surgery physical and mental QoL

Predictors	Physical QoL						Mental QoL					
	R^2 (Adj. R^2)	F	β	t	p	f^2	R^2 (Adj. R^2)	F	β	T	P	f^2
Step 1	.058 (.048)	5.44			< .001		.032 (.021)	2.91			< .001	
Professional status			-.241	-2.33	.022				-.179	-1.706	.091	
Step 2	.367 (.313)	6.78			< .001	.057	.612 (.578)	18.4			.001	1.58
Professional status			-.070	-.73	.462				.028	.369	.713	
Spirituality			-.111	-1.20	.233				.034	.464	.644	
Eating disorder behavior			-.200	-2.09	.040				-.160	-2.130	.036	
Problem-focused coping			.069	.62	.532				.028	.319	.751	
Emotion-focused coping			-.055	-.46	.646				.044	.477	.635	
Impulsiveness			-.149	-1.39	.168				-.325	-3.879	< .001	
Satisfaction with social support			.343	3.07	.003				.510	5.827	< .001	

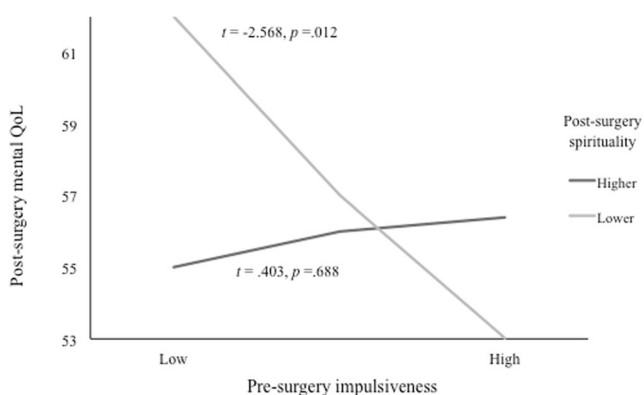
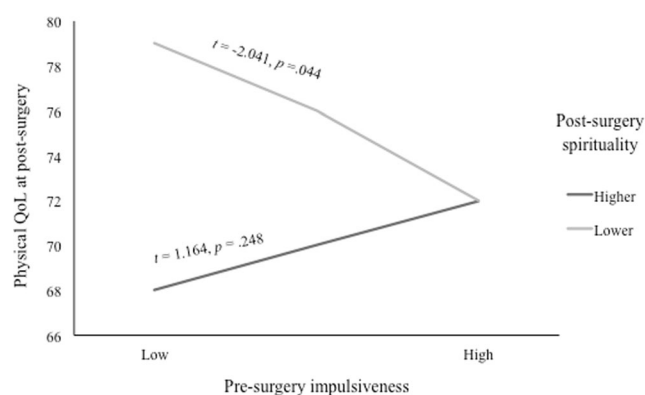
These results may be explained by the fact that spirituality is perceived as a coping strategy *per se* [53]. On the other hand, emotion-focused coping was associated with eating disorder behavior, and that result may indicate that food could be perceived as a strategy of emotional regulation [54].

Patients who were submitted to bariatric surgery showed high QoL, eating disorder behavior, satisfaction with social support, and problem-focused coping, 1 year after the surgery. Previous studies found that QoL increased significantly after bariatric surgery [55], particularly physical QoL, since it was associated with weight loss [12]. As expected, the presence of eating disorder behavior decreased. In fact, after surgery, eating patterns tend to stabilize and the physiological nature of the surgery also attenuates the compulsive food intake [14]. Satisfaction with social support and problem-focused coping were also higher, after surgery. Patients who succeed in losing weight perceive greater social support [24], and problem-focused coping strategies have been associated with better mental QoL [28]. Spirituality and impulsiveness did not differ between the two moments (pre and post-surgery), which may suggest that these variables are more related to personality

traits and, therefore, less vulnerable to changes in short periods of time, such as 1 year [56]. Future studies should confirm these results with longer periods of assessment, after surgery.

Satisfaction with social support was a positive predictor of both physical and mental QoL. This result is congruent with the literature that shows social support as a positive predictor of health-related QoL [57]. In fact, perceived social support, both pre- and post-surgery, is important in weight loss and increased QoL [23]. Therefore, one may hypothesize that satisfaction with social support may also facilitate adherence to the new diet patterns, since patients' perception of the received support may indicate approval from their social network predicting, as a result, better QoL. Future studies should also test the moderating role of adherence to diet between social support and QoL.

The presence of an eating disorder behavior was a negative predictor of both physical and mental QoL corroborating previous studies [15, 16]. Patients with eating disorder behavior, after surgery, tend to lose less weight when compared to patients without these disorders, suggesting that deregulated

**Fig. 1** Post-surgery spirituality as a moderator of the relationship between pre-surgery impulsiveness and post-surgery mental QoL**Fig. 2** Post-surgery spirituality as a moderator of the relationship between pre-surgery impulsiveness and post-surgery physical QoL

eating behaviors may persist after surgery and have a negative influence on QoL [58]. This result also may indicate that an eating disorder may be more associated with inadequate psychological patterns than eating needs. Moreover, impulsiveness was a negative predictor of mental QoL. Loss of control and high levels of impulsiveness after surgery have been negatively associated with BMI mental QoL [59]. However, this result needs to be interpreted with caution since impulsiveness was assessed as a general trait in life's decisions and not specific to food choices. However, impulsiveness was not a predictor of physical QoL, indicating that the post-surgery physical improvements were not easily influenced by the subjective perception of loss of control [21].

In this study, work status did not predict QoL, probably due to the low number of participants that were employed. However, previous findings have shown that being employed is an important predictor of both physical and mental QoL [28]. Future studies with bigger samples need to test this result.

Post-surgery spirituality was a moderator between pre-surgery impulsiveness and post-surgery physical and mental QoL. The negative relationships was stronger when spirituality was lower showing that when impulsive individuals used less spirituality, as a coping mechanism, they reported worse QoL. Impulsive patients that reported better QoL were, those who used more often spirituality as a coping mechanism. Therefore, one may assume that patients between the pre- and post-surgery moments became more aware of their internal resources such as spirituality with a positive impact on their QoL. This result emphasizes the importance of spirituality as a coping mechanism, in obese patients. Spirituality may help patients face adversity in dealing with stressful events [60]. It would be important, in future studies, to assess and analyze whether locus of control also changed between the pre-post-surgery since that indicator may be associated with spirituality post-surgery.

Limitations

This study has some limitations that should be taken into account in future studies such as gender, since the majority were females, as well as the exclusive use of the self-report measures. In addition, this study only included two assessment moments and future studies, using a longitudinal design, should assess changes over longer periods of time in QoL and include adherence to lifestyle changes in both the patient and their partners.

Conclusion

According to the results, intervention in multidisciplinary teams should focus on support networks to increase QoL,

while at the same time assess eating disorder behavior that may compromise treatment success. In addition, interventions with this population should include coping strategies, with particular attention to spirituality, since this variable was a moderator in the relationship between impulsiveness and QoL.

Compliance with Ethical Standards

This study followed a prospective design with two assessment moments. Patients were identified and contacted by the psychologist of the Unit of Psychiatry and Mental Health. Patients were invited by letter and all signed an informed consent. Participation was voluntary. Patients answered the instruments in a room provided by the hospital for that purpose. The research protocol complied with the ethical principles contained in the Helsinki Declaration and was approved by the Hospital's Ethics Committee.

Conflict of Interests The authors declare that they have no conflicts of interest.

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