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**The effects of body image impairment on the quality of life of non-operated  
Portuguese female IBD patients**

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## **Abstract**

**Objectives:** Inflammatory bowel diseases (IBD) and their treatment are known to negatively impact on patients' body image, especially female patients. However, although there are broad evidences of body image impairment in female IBD patients, its negative impact on the quality of life (QoL) of non-operated women is not clearly and specifically studied. The aim of the current study was therefore to analyse, in a sample of non-operated female IBD patients, the factors that contribute to body image impairment and its impact on QoL.

**Methods:** Ninety-six non-operated women (39.7 % with CD and 60.3 % with UC), aged between 18 and 40 years old, completed an online survey with validated self-report measures, which included the Body Image Scale and the WHO Brief Quality of Life Assessment Scale.

**Results:** Negative body image was correlated with lower psychological and physical QoL and increased corticosteroids use, associated medical complications, body mass index (BMI), and IBD symptomatology. Regression analyses revealed that BMI and IBD symptomatology significantly predicted body image impairment. Furthermore, results from path analyses indicated that BMI and IBD symptomatology's effect on psychological and physical QoL was mediated through the negative effects of body image impairment. This model explained 31 % of psychological QoL and 41 % of physical QoL.

**Conclusions:** These findings suggest that non-operated female patients are subject to pervasive and harmful effects of body image impairment on psychological and physical functioning. Therefore, psychological interventions aiming to target body dissatisfaction

should be implemented in the health care of IBD, independently of patients' operative status.

**Keywords:** Inflammatory bowel disease (IBD) Female patients Non-operated patients  
Body image Psychological quality of life Physical quality of life

## **Introduction**

Inflammatory bowel disease (IBD) encompasses a group of auto-immune illnesses characterized by chronic and relapsing inflammation of the intestinal system which results in severe symptoms like abdominal pain, bloating, diarrhoea, loss of appetite, severe weight loss, and malnutrition (Baumgart, Baumgart, Sandborn, & Sandborn, 2007). Crohn's disease (CD) and ulcerative colitis (UC) are the two main types of IBD, and in spite of several shared characteristics, these illnesses can be distinguished. CD may cause inflammation of the lining of any part of the gastrointestinal tract, while inflammation in UC is usually continuous and restricted to the colon's mucosal surface (Ordás, Eckmann, Talamini, Baumgart, & Sandborn, 2012). Due to inflammation and scar tissue, both diseases can cause temporary and lasting complications to the intestines (Farraye, Odze, Eaden, & Itzkowitz, 2010) and extra-intestinal complications, more often arthritis, osteoporosis, dermatological lesions, and ocular inflammation (Levine & Burakoff, 2011).

Treatment of IBD usually requires the patient to take daily oral medications. The 5-aminosalicylate-based compounds and corticosteroids are the first-line approach for the treatment of IBD (Blonski, Buchner, & Lichtenstein, 2011). Corticosteroids are used especially for management of clinical reoccurrences, having multiple side effects such as fluid retention, facial swelling, weight gain, loss in bone mass, and increase in facial and body hair (e.g., Hasselgren, Alamdari, Aversa, Gonnella, Smith, & Tizio, 2010). More potent treatments such as immunomodulators and biologic agents may also be used (Blonski et al., 2011). Surgery (e.g., bowel resection, stricturoplasty, colectomy, proctocolectomy) might be an option for some patients to prevent or treat severe intestinal complications.

Recent studies suggest that patients tend to perceive the impact of IBD on their well-being as more severe than the impact of the illness that is evident to the clinician (Muller, Prosser, & Bampton, 2010). One of the pointed reasons for this discrepancy may be related to issues concerning body image (Muller, Prosser, Bampton, & Andrews, 2010), described as the subjective perception of one's body and the cognitions and emotions associated with it (Kelsay, Hazel, & Wamboldt, 2005). In fact, since both IBD itself (through symptoms like weight loss and abdominal bloating) and its treatment (due to corticosteroids use; McDermott et al., 2015; Saha et al., 2015) impact on body shape and weight, the majority of patients present impaired body image (e.g., Casati et al., 2000; De Rooy et al., 2001; McDermott et al., 2015). This impairment does not seem to be determined by IBD type as literature reveals the same levels of body image impairment for CD and UC patients (Muller et al., 2008; Saha et al., 2015).

Besides IBD symptomatology and corticosteroids use, other aspects have been found to predict decreased body image in patients. Namely, associated extra-intestinal manifestations, especially dermatologic and osteoarticular complaints, are linked to greater body image impairment (e.g., Saha et al., 2015). Furthermore, patients who had undergone IBD-related surgery typically express more incidence of body image impairment (Muller et al., 2010; Szczepkowski et al., 2002). Nonetheless, this relationship seems to depend on the type of operation (laparoscopic procedures cause less impairment in body image; Dunker et al., 1998), and on the time lapsed after the surgery (more lapsed time is associated with greater body image satisfaction; Gloeckner, 1984).

In addition, given that IBD presents its higher incidence in young adulthood (Andres & Friedman, 1999), a time when the construction of intimate relationships and

sexuality are particularly important, body image issues emerge with special relevance. Young women, in particular, tend to over evaluate physical appearance in the definition of their personal and social value (Ferreira, Pinto-Gouveia, & Duarte, 2013), especially in modern Western cultures where societies emphasize thinness and muscle tonification as crucial aspects for the definition of female attractiveness (Grogan, 2008; Thompson, Van Den Berg, Roehrig, Guarda, & Heinberg, 2004). In accordance, being a woman with IBD is considered a risk factor for developing negative body image (Muller et al., 2008; Muller et al., 2010; Szczepkowski et al., 2002), and approximately 70% of IBD female patients report body dissatisfaction (Muller et al., 2010).

Furthermore, it is acknowledged that a negative body image self-evaluation may result in psychosocial dysfunction (McDermott et al., 2015). It was indeed found that body image dissatisfaction in IBD patients is related with low levels of general QoL and increased anxiety and depression (McDermott et al., 2015). Nevertheless, although there are extensive data concerning body image dissatisfaction in operated patients (e.g., Szczepkowski et al., 2002), the predictors of body image dissatisfaction and its impact on non-operated patients' quality of life has not been clearly explored. Therefore, the aim of the present study was to analyse, in a sample of female IBD patients who had not undergone surgery, the factors that contribute to a negative perception of body image and its impact on psychological and physical QoL.

## **Materials and Methods**

### ***Procedures***

The current study is part of a larger research project that aims to clarify the role of maladaptive psychological variables in the physical and psychological functioning of IBD patients. Firstly, a request for collaboration was sent to the Portuguese Association

for IBD (APDI), which agreed to collaborate in this investigation and ethically approved the research procedures and protocol. The members of this association registered as patients that had provided their e-mail address (556) were electronically invited to participate in the research, while being informed about its nature and procedures. Members who accepted to participate (210) signed an informed consent and completed an internet survey with a test battery. For the purpose of the current study only females participants with ages between 18 and 40 years old who had not undergone IBD-related surgery were considered (96). Pregnant women and respondents diagnosed with other severe illnesses (breast cancer) or psychiatric disorders (depressive disorder, generalized anxiety disorder, and panic disorder) were also excluded from the study.

### ***Measures***

Participants reported demographic and medical data. The medical data comprised the type of illness (Crohn's Disease, Ulcerative Colitis, or IBD unknown), time since diagnosis, treatment protocol, current height and weight (to calculate BMI:  $Wt/Ht^2$ ), the presence of associated medical complications, and the frequency of IBD-related symptoms. This lastly referred variable, *IBD symptomatology*, was measured on a 7-point Likert scale (0: Never; 6: Always) with which the participant reported the frequency of 11 given IBD symptoms (e.g., abdominal pain, bloating, diarrhoea, flatulence, nausea, fatigue) during the preceding month. Participants also completed validated self-report measures of body image and QoL:

*Body Image Scale (BIS; Hopwood et al., 2001; Moreira, Silva, Marques, & Canavarro, 2010).* The BIS is a 10-item self-report measure that assesses affective (e.g., feeling self-conscious of the body), behavioural (e.g., difficulty at looking at the naked



body), and cognitive (e.g., dissatisfaction with appearance) dimensions of body image. It has been widely used in cancer patients and has been specifically validated for IBD patients (McDermott et al., 2015). Each item is rated on a 4-point Likert scale (0: not at all; 3: very much), with higher scores corresponding to increasing levels of body image-related distress or more body image concerns. The scale presented good psychometric properties both in the original ( $\alpha = .93$ ) and Portuguese versions ( $\alpha = .93$ ). In the present study, the BIS presented a Cronbach's alpha of .93.

*World Health Organization Brief Quality of Life Assessment Scale (WHOQOL-BREF; WHOQOL Group, 1998; Canavarro et al., 2007).* The WHOQOL-BREF is a self-report measure of subjective QoL in four domains (physical, psychological, social relationships, and environment) and two additional items that assess general QoL. For each of the 26 items, the participant is asked to select on a 5-point response scale the number that best translates her perception of her QoL. Higher scores reveal a higher subjective perception of QoL. For the purpose of this study, only the Physical and Psychological domains were considered. The WHOQOL-BREF presented adequate psychometric characteristics in its original study (with  $\alpha$ s varying from .66 to .84) and Portuguese version (with  $\alpha$ s between .67 and .87). In the present study, the psychological and physical QoL domains presented Cronbach's alphas of .83 and .86, respectively.

### ***Analytic Strategy***

To analyse the adequacy of the data, *preliminary data analyses* were performed. *Descriptive statistics and student's T-tests* were conducted to analyse the sample's demographic and medical characteristics. Additionally, *Pearson correlation coefficients*

were conducted to calculate the associations between study variables (Cohen, Cohen, West & Aiken, 2003).

Furthermore, a *hierarchical multiple regression* was carried out to analyse the impact of corticosteroids use, BMI and IBD symptomatology on body image. The analyses described so far were conducted using IBM SPSS Statistics 20 (IBM Corp, 2011).

It was also explored whether a negative perception of body image mediates the relationship of BMI and IBD symptomatology with psychological and physical QoL. This analysis was performed using the software Amos (Version 7.0; Arbuckle, 2006) to conduct *path analyses*, a form of structural equation modelling (SEM) (MacKinnon, 2008). These analyses explored the associations between variables according to the theoretical model, while simultaneously analysing structural relationships and direct and indirect paths (Schumacker & Lomax, 2004). The Maximum Likelihood method was used to estimate model path coefficients and to compute fit statistics. Moreover, the following goodness-of-fit indices were considered in the analysis of the model's adequacy: Chi-Square ( $\chi^2$ ), Comparative Fit Index (CFI), Tucker Lewis Index (TLI), and the Root-Mean Square Error of Approximation (RMSEA) with 95% confidence interval. The bootstrap procedure (with 2000 resamples) was used to create 95% bias-corrected confidence intervals around the standardized estimates of total, direct and indirect effects. The mediational effect is statistically significant ( $p < .05$ ) if zero is not included in the interval between the lower and the upper bound of the 95% bias-corrected confidence interval (Kline, 2005).

## **Results**

### ***Participants' demographic data***

This study's sample comprised 96 non-operated female IBD patients, aged between 18 and 40 years old ( $M = 31.12$ ;  $SD = 5.59$ ). Their completed years of education varied between 7 and 22 ( $M = 14.76$ ;  $SD = 2.77$ ). Regarding socio-economic status, 7.30% of the participants reported having jobs reflecting a low status, 47.90% a medium status, and 28.10% a high socio-economic status (Simões, 1994). Additionally, 14.60% of the participants were college students and 2.10% were unemployed. Concerning marital status, 49% of the sample were single, 49% were married (or living together with a partner), and 2% were divorced.

### ***Preliminary Analyses***

Univariate and multivariate normality was tested through the examination of the skewness and kurtosis values of all variables in study. The skewness values were comprised between -0.63 and 0.13 and kurtosis values between -0.72 and 0.24. Results thus indicated a normal distribution of the data (Kline, 2005).

### ***Descriptive Statistics – participants' medical data***

Results from descriptive analyses (Table 1) showed that 39.60% of the participants had been diagnosed with CD and 60.40% with UC. No significant differences were found concerning body image (BIS) according to IBD type ( $t_{(90)} = -.42$ ;  $p = .673$ ).

Results also demonstrated that time since the diagnosis of IBD varied between one month and 18 years ( $M = 6.42$ ;  $SD = 4.57$ ). The percentage of patients with reported active disease was 32% while 68% reported being in remission. Concerning medication status, 12.50% of the participants were under a treatment protocol that included

corticosteroids. Furthermore, 41% of the participants presented medical complications associated with IBD (mainly osteoarticular problems).

Regarding body mass index (BMI), results showed that participants reported having BMIs between 16.23 and 40.01 ( $M = 21.88$ ;  $SD = 4.09$ ). More specifically, 15.60% of the sample was underweight ( $BMI < 18.5$ ), 69.80% revealed normal BMIs (between 18.5 and 24.9), 10.40% were overweight (with BMIs comprised between 25 and 29.9), and 4.20% of the participants presented obesity ( $BMI > 30$ ) (WHO, 1995).

----- Insert Table 1 around here -----

### ***Correlations***

Results from correlation analyses (Table 2) showed that a negative perception of body image (BIS) was positively associated with corticosteroids use, associated medical complications, BMI and IBD symptomatology (in this increasing order of correlation magnitudes). Furthermore, a tendency towards statistical significance was verified in the association between BIS and reported active disease. It is also interesting to observe that a negative perception of body image was highly associated with decreased psychological and physical QoL.

----- Insert Table 2 around here -----

### ***The effects of corticosteroids use, associated medical complications, BMI and IBD symptomatology on body image***

To examine the impact of corticosteroids use, associated medical complications, BMI and IBD symptomatology on body image (BIS), a multiple linear regression was conducted. The independent variables (corticosteroids use, associated complications,

BMI and IBD symptomatology) were entered according to their correlation magnitude with the dependent variable (BIS).

Results revealed that the model was significant [ $F_{(4,91)} = 7.21; p < .001$ ], explaining 24% of the variance of BIS. As may be seen in Table 3, in this model, corticosteroids use and associated medical complications did not predict BIS; the only significant independent variables of the model were BMI and IBD symptomatology.

----- Insert Table 3 around here -----

### ***Path analyses – the role of body image on IBD non-operated female patients' QoL***

In order to demonstrate whether a negative perception of body image (BIS) mediates the relationship of BMI and IBD symptomatology (S) with psychological and physical QoL, a series of path analyses were conducted. This model was first explored through a fully saturated model (i.e., with zero degrees of freedom), consisting of 23 parameters. This saturated model explained 20% of BIS, 34% of psychological QoL and 44% of physical QoL. However, as some path coefficients were not statistically significant, these were progressively removed: BMI  $\rightarrow$  physical QoL ( $b_{BMI} = -.13; S.E. = .36; Z = -.04; p = .971$ ); BMI  $\leftrightarrow$  IBD symptomatology ( $b = 3.18; S.E. = 4.84; Z = .66; p = .511$ ); BMI  $\rightarrow$  psychological QoL ( $b_{BMI} = .26; S.E. = .34; Z = .77; p = .444$ ); IBD symptomatology  $\rightarrow$  psychological QoL ( $b_S = -.24; S.E. = .14; Z = -1.67; p = .094$ ).

The respecified and final model was then tested (Figure 1) and results revealed that it explained 20% of BIS, 31% of psychological QoL and 41% of physical QoL. Furthermore, the model presented an excellent fit to empirical data, with a nonsignificant chi-square of  $\chi^2(4) = 3.78, p = .437$ , and excellent goodness-of-fit indices (CFI = 1.00; TLI = 1.00; RMSEA = .00,  $p = .554$ ; Kline, 2005).

----- Insert Figure 1 around here -----

All individual path coefficients were statistically significant and presented the expected theoretical directions. BMI directly predicted negative body image (BIS) with an effect of .22 ( $b_{BMI} = .42$ ;  $S.E. = .17$ ;  $Z = 2.44$ ;  $p = .015$ ) and BIS, in turn, mediated the effects of BMI on psychological and physical QoL. Indeed, BMI presented a total effect of .13 on psychological QoL, mediated by the mechanisms of BIS (95% C.I. = -.24 to -.004;  $p = .045$ ). The total effect of BMI on physical QoL ( $\beta = -.08$ ) was also mediated by BIS (95% C.I. = -.16 to -.002;  $p = .045$ ).

Likewise, IBD symptomatology positively predicted BIS with a direct effect of .39 ( $b_S = -.26$ ;  $S.E. = .06$ ;  $Z = -4.20$ ;  $p < .001$ ). Also as expected, IBD symptomatology presented a total effect of -.56 on physical QoL, with a direct effect of -.43 ( $b_S = -.66$ ;  $S.E. = .12$ ;  $Z = -5.48$ ;  $p < .001$ ) and an indirect effect of -.13 (95% C.I. = -.21 to -.06;  $p = .001$ ), partially operated through BIS. Furthermore, regarding the impact of IBD symptomatology on psychological QoL, results revealed that this negative effect ( $\beta = -.22$ ) was mediated by BIS (95% C.I. = -.33 to -.09;  $p = .001$ ).

Finally, results showed that BIS directly predicted lower levels of psychological QoL ( $b_{BIS} = -1.29$ ;  $S.E. = .19$ ;  $Z = -6.58$ ;  $p < .001$ ) and physical QoL ( $b_{BIS} = -.80$ ;  $S.E. = .20$ ;  $Z = -4.03$ ;  $p < .001$ ), with effects of -.56 and -.34 respectively.

## **Discussion**

Although there are broad evidences of body image impairment in female IBD patients (e.g., Szczepkowski et al., 2002), the negative impact of body dissatisfaction on the well-being of non-operated women is not clearly and specifically studied. This may

translate into a considerable gap in literature given that body image might specifically result in distress, emotional suffering and psychosocial dysfunction in IBD patients (McDermott et al., 2015). The conducted study thus aimed to fill this gap by examining the variables that contribute to a negative perception of body image and its impact on psychological and physical QoL, in a sample of non-operated female IBD patients.

Therefore, 96 Portuguese female IBD patients, who had not undergone an IBD-related surgery, participated in the present study by completing an online survey. Results showed that the perception of body image in IBD patients (measured by the Body Image Scale - BIS) does not differ between CD and UC patients, corroborating previous findings (McDermott et al., 2015; Muller et al., 2008; Saha et al., 2015). Additionally, a negative perception of body image was linked to lower psychological and physical QoL, which goes in line with other studies (McDermott et al., 2015; Saha et al., 2015). Body image concerns were also associated with increased corticosteroids use, which may present side-effects such as facial swelling, stretch marks, and hair loss, and associated medical complications that may include osteoarticular, respiratory, and dermatological problems. Further, greater BMI and IBD symptomatology were also linked to more body image impairment (e.g., McDermott et al., 2015; Saha et al., 2015). These data are in accordance with previous literature and extend it by demonstrating the pervasiveness of these associations in a specific sample of non-operated female patients. Moreover, it was also verified that BMI and IBD symptomatology were not significantly associated, which may be considered unexpected but may open a new avenue for research in this field. Report of symptomatology during inactive stages of the disease may have influenced this finding and therefore future research should analyse this relationship taking into consideration objective activity indices.

Aiming to better understand these found relationships, a regression analysis was conducted to explore which variables impact on the body image of non-operated female patients. It was revealed that corticosteroids use and associated medical complications did not impact on body image. Only higher BMI and more severe IBD symptomatology presented a role in the definition of body image impairment in female non-operated patients. These findings seem to indicate that body image may depend on one's weight (as also verified in healthy female samples; e.g., Swami et al., 2010) and as well on symptomatology severity. Indeed, this novel finding points that the experience of typical IBD symptoms, such as abdominal pain and bloating, diarrhoea, and fatigue seem to negatively influence female non-operated patients' perception of their physical appearance. It thus seems that physical symptomatology may lead to heightened perceptions that one's body is significantly different from the one that is socially desired, possibly due to body disfigurement and loss of function (McDermott et al., 2015).

In order to expand literature and to explore the role of body image in patients' well-being, path analyses were conducted aiming to test the mediational effect of body image on the associations of BMI and IBD symptomatology with psychological and physical QoL. Results revealed that the tested model presented an excellent fit to the empirical data and accounted for a total of 31% of psychological QoL and 41% of physical QoL's variance. Furthermore, results showed that BMI's effect on psychological and physical QoL was mediated through the mechanisms of body image. That is, BMI's effect on non-operated female patients' QoL seems to be explained by the negative perception of physical appearance associated with increased BMI. Also, although IBD symptomatology directly impacted on physical QoL (as expected by previous studies; e.g., Graff et al., 2006), our data add to literature by demonstrating



that this impact seems to be partially explained by body image concerns. Moreover, the known pernicious link between IBD symptoms on psychological QoL (e.g., Graff, Walker, & Bernstein, 2009), was also explained by the level of body image impairment. These findings highlight the pervasive and pernicious effect of negative body image on the QoL of IBD patients, specifically non-operated women. Our data indeed suggest that even female patients that had not undergone IBD-related surgery are subject to significant and harmful effects of body image impairment on psychological and physical functioning. The present study thus highlights the pertinence of body image for the definition of non-operated women's health, especially psychological health, even in the context of severe symptomatology.

Some limitations should be considered in the interpretations of these findings. Firstly, the cross-sectional nature of the study does not allow the inference of causality. It is necessary to develop longitudinal studies to better clarify the mediator impact of body image on the QoL of IBD patients, including on the quality of patients' social relationships. Furthermore, the limited sample size might explain some unimpressive results (e.g., the weak correlation between corticosteroids use and the BIS, and the tendency towards correlation verified between reported active disease and the BIS). Also, larger samples would allow future investigations to explore whether levels of body image impairment differ by BMI category. The internet-based and self-report nature of this study may represent another limitation, given that only patients with access to the internet and registered to APDI could be selected. This study might also be biased since it is possible that the patients that chose to participate are the ones more concerned about the illness' psychosocial impact, that have experienced more IBD-related complications, or that presented more symptomatology at the time of the recruitment. Future studies should thus be population-based and use different

assessment methods (e.g., clinical interviews and laboratorial medical data). Indeed, we suggest that forthcoming studies include validated disease activity indices in the examination of the impact of body image impairment on the QoL of IBD patients. Moreover, the study of other psychological processes, namely emotion regulation processes (e.g., body image-related psychological inflexibility), that might be involved in the studied relationships is also of much pertinence.

Nevertheless, the present study seems to provide an important contribution for research and clinical care of IBD patients, due to its novel findings concerning the determinants of body image impairment in female non-operated patients, as well as the pernicious impact of body image on psychological and physical QoL of these patients. Indeed, the findings of the current study suggest that more focus should be given to the investigation of body image and its impact on IBD patients and that psychological interventions aiming to assess and target body dissatisfaction should be developed and implemented in the health care of IBD, independently of patients' operative status.

### **Compliance with Ethical Standards:**

### **Funding**

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### **Conflict of Interest**

The authors declare no conflict of interest.

### **Ethical approval**

All procedures involving human participants were in accordance with the ethical standards of the international research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

### **Informed Consent**

Informed consent was obtained from all individual participants included in the study.

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**Table 1***Sample's self-reported medical characteristics (N = 96)*

		<i>n</i>	%
Type of IBD	Crohn's Disease	38	39.60
	Ulcerative Colitis	58	60.40
Disease activity	Active disease	31	32.30
	Inactive disease	65	67.70
Corticosteroids use	Yes	12	12.50
	No	84	87.50
Time since diagnosis	Less than 6 months	8	4
	6 months to a year	15	7.5
	1-5 years	70	35
	6-10 years	57	28.5
	> 10 years	50	25
Associated medical complications	osteoarticular complaints	21	21.88
	respiratory complaints	6	6.25
	dermatological complaints	5	5.21
	anorectal pathology	4	4.17
	gingival complaints	3	3.13
	autoimmune thyroiditis	3	3.13
	anaemia	2	2.08
	optical problems	2	2.08
	hepatic problems	1	1.04
BMI	underweight	15	15.60
	normal-weight	67	69.80
	overweight	10	10.40
	obese	4	4.20

**Table 2**

*Means (M), Standard Deviations (SD), Cronbach's alphas and Intercorrelation scores on self-report measures and self-reported medical data (N = 96)*

	<i>M</i>	<i>SD</i>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
<b>1.</b> Age	31.12	5.59	1							
<b>2.</b> BMI	21.88	4.09	.04	1						
<b>3.</b> Corticosteroids use	-	-	.20*	-.05	1					
<b>4.</b> Active disease	-	-	.13	.10	.41***	1				
<b>5.</b> IBD symptoms	24.77	11.64	.06	.07	.30**	.27**	1			
<b>6.</b> As. complications	-	-	.11	.19	.14	.11	.17	1		
<b>7.</b> BIS	10.10	7.73	-.06	.25*	.22*	.18	.40***	.24*	1	
<b>8.</b> Psychol. QoL	58.51	17.85	.01	-.08	-.16	-.24*	-.35***	-.11	-.56***	1
<b>9.</b> Physical QoL	59.38	18.63	-.13	-.11	-.37***	-.30**	-.60***	-.26*	-.50***	.61***

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

BMI = reported body mass index; As. complications = associated medical complications; BIS = Body Image Scale; Psychol. and Physical QoL = Physical and Psychological subscales of the WHOQOL-BREF.

**Table 3**

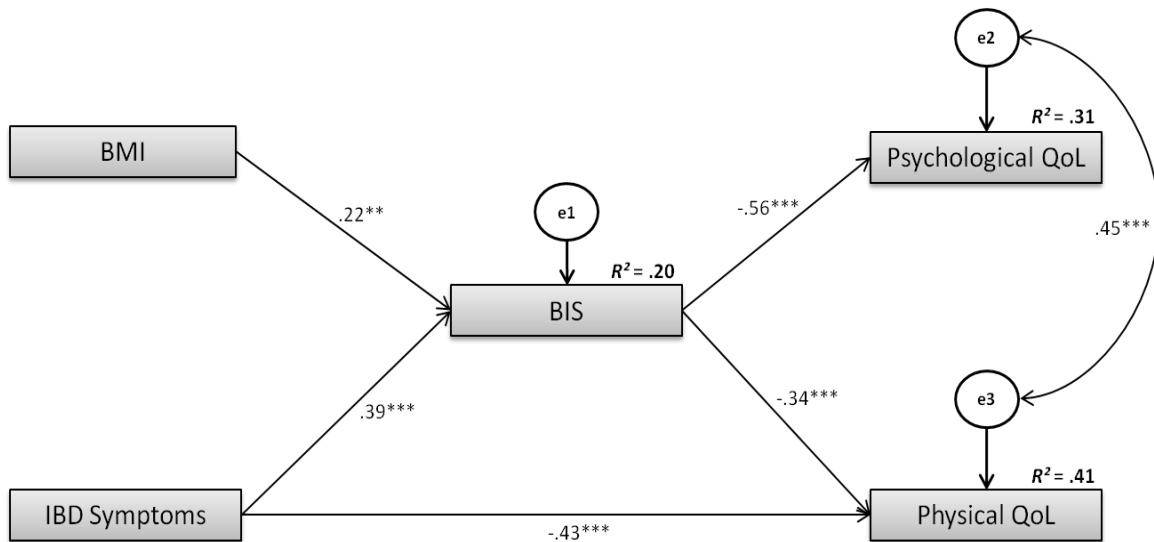
*The effects of corticosteroids use, associated medical complications, BMI and IBD symptomatology on body image*

Predictors	Body Image Scale	
	$R^2$	$\beta$
Corticosteroids use		.12 n.s.
Associated complications		.13 n.s.
BMI		.21*
IBD symptomatology		.33***
Model	.24	

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

**Figure 1**

*Final Path Model*



*Note.* Standardized path coefficients among variables are presented.

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ ; BMI = Body Mass Index; BIS = perception of a negative body image; Physical QoL, Psychological QoL = subscales of the WHOQOL-BREF.