Daniele Akemi Iwazawa Okino

Distorção de imagem corporal, ansiedade e depressão em pacientes ambulatoriais obesos.

Dissertação apresentada ao Curso de Pós Graduação da Faculdade de Ciências Médicas da Santa Casa de São Paulo para obtenção do Titulo de **Mestra** em **Medicina.**

SÃO PAULO
2016

Daniele Akemi Iwazawa Okino

Distorção de imagem corporal, ansiedade e depressão em pacientes ambulatoriais obesos.

Dissertação apresentada ao Curso de Pós Graduação da Faculdade de Ciências Médicas da Santa Casa de São Paulo para obtenção do Titulo de **Mestra** em **Medicina**.

Área de Concentração: **Ciências da Saúde**

Orientador: **Ricardo R. Uchida**

SÃO PAULO
2016

FICHA CATALOGRÁFICA

Preparada pela Biblioteca Central da
Faculdade de Ciências Médicas da Santa Casa de São Paulo

Okino, Daniele Akemi Iwazawa
Distorção de imagem corporal, ansiedade e depressão em pacientes ambulatoriais obesos./ Daniele Akemi Iwazawa Okino. São Paulo, 2016.
Dissertação de Mestrado. Faculdade de Ciências Médicas da Santa Casa de São Paulo – Curso de Pós-Graduação em Ciências da Saúde.
Área de Concentração: Ciências da Saúde
Orientador: Ricardo Riyoiti Uchida

1. Obesidade 2, Depressão 3. Ansiedade 4. Imagem corporal

BC-FCMSCSP/53-16

Ao meu filho Lucas e ao meu esposo Daniel, pelo apoio, compreensão e incentivo.

AGRADECIMENTOS

À Faculdade de Ciências Médicas da Santa Casa de São Paulo e à Irmandade da Santa Casa de Misericórdia de São Paulo, pelo incentivo a busca de conhecimento.

À Fundação CAPES pelo apoio financeiro.

Ao Prof. Dr. Ricardo Riyoiti Uchida, meu orientador, que acreditou e me motivou a realizar este trabalho.

Aos professores e residentes do Serviço de Endocrinologia da Irmandade da Santa Casa de Misericórdia de São Paulo, em especial ao Pr. Dr. João Eduardo Nunes Salles, pelos conhecimentos e pelo acolhimento.

Ao amigo Victor Henrique Oyamada Otani, pela amizade e incentivo.

Aos pacientes, sem os quais este estudo não seria possível.

À minha família, pelo investimento, companheirismo e apoio.

ABREVIATURAS E SÍMBOLOS

BAI- Inventário de Ansiedade de Beck

BDI- Inventário de Depressão de Beck

BSQ- Body Shape Questionnaire

IMC- Índice de Massa Corpórea

OMS- Organização Mundial da Saúde

SNC- Sistema Nervoso Central

TCAP- Transtorno da Compulsão Alimentar Periódica

SUMÁRIO

1 **INTRODUÇÃO** 1

2 **OBJETIVO** 6

3 **MÉTODOS** 7

4 **RESULTADOS** 9

5 **CONSIDERAÇÕES FINAIS** 25

6 **REFERÊNCIAS BIBLIOGRÁFICAS** 27

7 **APÊNDICES** 31

7.1 APROVAÇÃO NO COMITÊ DE ÉTICA 31

7.2 INVENTÁRIO DE ANSIEDADE DE BECK 32

7.3 INVENTARIO DE DEPRESSÃO DE BECK 33

7.4 BODY SHAPE QUESTIONNAIRE (BSQ) 37

7.5 NORMAS PARA SUBMISSÃO DO ARTIGO NA REVISTA *“BRAZILIAN JOURNAL OF MEDICAL AND BIOLOGICAL RESEARCH”* 39

7.6 CARTA DE SUBMISSÃO 47

1 INTRODUÇÃO

A obesidade é uma doença epidêmica cuja prevalência está aumentando em todo o mundo e está se tornando um dos maiores problemas de saúde pública, inclusive nos países em desenvolvimento. Ao longo das últimas quatro décadas, houve uma transição de um mundo em que a prevalência de indivíduos abaixo do peso era maior que o dobro de indivíduos com obesidade para um mundo em que há mais pessoas obesas do que abaixo do peso. Isso aconteceu globalmente, com exceção de parte da África subsaariana e da Ásia (1). Desde 1980, o número de obesos dobrou no mundo. Em 2014, de acordo com a Organização Mundial da Saúde (OMS), 600 milhões de adultos estavam obesos, o que corresponde a 13% da população adulta mundial (2).

No Brasil, durante o período de 2006 a 2012, a prevalência da obesidade na população adulta aumentou de 11,6% para 17,4%, representando um incremento médio de 0,89% ao ano. Aumentos significativos foram observados para homens e mulheres, em todas as faixas etárias (com exceção dos idosos, em que o aumento não foi regular ao longo do período) e em todos os níveis de escolaridade. O aumento na prevalência da obesidade foi ligeiramente maior para mulheres entre 25 e 44 anos de idade e com nível de escolaridade mais baixo (3). Em 2014, a prevalência de obesidade na população adulta foi de 17,9% (4).

O aumento da prevalência da obesidade na população mundial é comumente atribuído à ingestão alimentar excessiva, que é promovida pelo crescente acesso aos alimentos ricos em açúcar e gordura, com sabor apelativo e de elevada densidade energética. A combinação do sedentarismo com o acesso constante a alimentos de baixo custo e de elevada palatabilidade tornou o ambiente cada vez mais obesogênico (5,6).

Os fatores fisiológicos, além dos ambientais e sociais apresentados, estão também associados ao desenvolvimento da obesidade. O controle do balanço energético do organismo é realizado pelo sistema nervoso central (SNC) por meio de

conexões neuroendócrinas, em que hormônios periféricos circulantes, como a leptina e a insulina, sinalizam neurônios especializados do hipotálamo sobre os estoques de gordura do organismo e induzem respostas apropriadas para a manutenção da estabilidade desses estoques. A maioria dos casos de obesidade se associa a um quadro de resistência central à ação da leptina e da insulina. Estudos feitos com animais de experimentação evidenciaram que a dieta hiperlipídica é capaz de induzir um processo inflamatório no hipotálamo, que interfere com as vias intracelulares de sinalização por esses hormônios resultando em hiperfagia, diminuição do gasto de energia e, por fim, obesidade. Estudos de neuroimagem e avaliação de marcadores inflamatórios no líquido cefalorraquidiano de indivíduos obesos sugerem que alterações semelhantes podem estar presentes também em seres humanos (7).

Outro importante fator envolvido no desenvolvimento da obesidade é o psicológico. As emoções atuam como moduladores de apetite, a alegria e a raiva aumentam o apetite e levam a escolhas alimentares menos saudáveis do que o medo e a tristeza. Alguns estudos mostram que indivíduos obesos mudam o seu comportamento alimentar com a finalidade de modular suas emoções e que pessoas obesas têm dificuldade de reconhecer os sinais internos de fome e, por isso, não conseguem regular a ingestão alimentar adequadamente. O estresse também é conhecido por causar alterações no apetite e predispõe os indivíduos à obesidade e doenças cardiovasculares (7).

A associação da obesidade às doenças físicas está bem estabelecida. A obesidade está relacionada às doenças coronárias, provavelmente em virtude da sua associação aos fatores de risco, entre elas a hipertensão, dislipidemia, intolerância à glicose e diabetes tipo 2 (8). A literatura evidencia também que a obesidade está associada a alterações degenerativas osteoarticulares, em especial a artrose com maior risco em indivíduos do sexo feminino (9). A gota é mais comum na população obesa, sendo o seu risco proporcional ao grau de obesidade (10). A obesidade está também associada a complicações que afetam a função reprodutora. Nas mulheres, está associada a irregularidades menstruais, disfunção ovulatória e hiperandrogenismo. Na gravidez, a obesidade é um fator de risco para o desenvolvimento de diabetes mellitus gestacional, assim como complicações no

tubo neural no bebê (11,12). Alguns tipos de câncer estão associados à obesidade, incluindo o câncer de cólon, do endométrio, de mama em mulheres após a menopausa e de próstata (13-15).

A associação da obesidade a morbidades psiquiátricas ainda não está completamente esclarecida De acordo com Friedman e Brownell, muitos estudos a respeito dessa associação foram feitos, mas apresentaram resultados inconsistentes, o que eles atribuíram às limitações dos métodos utilizados e à falha em considerar a complexidade e a heterogeneidade da relação entre a obesidade e o funcionamento psicológico. Para melhorar o entendimento no que diz respeito aos problemas psicológicos dos obesos, eles consideraram importante identificar quais indivíduos desta população estão mais suscetíveis a tê-los e quais são os mecanismos que relacionam a obesidade e os distúrbios psiquiátricos e propõem uma segunda geração de estudos com metodologia mais rigorosa e com análise que ajudem a esclarecer como se estabelece a relação entre a obesidade e os transtornos psiquiátricos (16-19).

A relação entre a obesidade e transtornos psiquiátricos continuou sendo estudada nos últimos anos, mas a literatura é inconsistente em relação a esta associação com alguns estudos - mas não todos - sugerindo uma associação positiva. Um grande número de estudos transversais - a maioria focado na depressão - revelou uma associação significativa entre os transtornos psiquiátricos e a obesidade. Uma metanálise de 17 estudos transversais populacionais mostrou que a depressão está associada ao risco aumentado de se tornar obeso. A associação foi positiva entre as mulheres, mas não entre os homens (20). A relação entre a ansiedade e a obesidade foi investigada em uma metanálise que mostrou uma associação positiva com o transtorno do pânico, principalmente em mulheres com fobias específica e social. Entretanto, a associação entre os outros subtipos de ansiedade e a gravidade da obesidade ainda precisa ser melhor esclarecida (21,22). Da mesma forma, uma forte relação é reportada na literatura entre transtornos alimentares, particularmente TCAP, e a obesidade (23). Finalmente, algumas informações disponíveis de estudos transversais atuais mostram uma alta prevalência de transtornos de personalidade em indivíduos obesos (24,25).

A depressão e a ansiedade estão entre os transtornos psiquiátricos mais comuns e estão associados à incapacidade e à morbidade por longos períodos, além de um enorme custo econômico (26). A associação entre obesidade, depressão e ansiedade é bidirecional. A depressão e a ansiedade estão associadas a comportamentos pouco saudáveis, como o alto consumo calórico, abuso de álcool e sedentarismo, que são fatores de risco para a obesidade (27,28). Além disso, indivíduos obesos sofrem discriminação e são estigmatizados, o que geralmente compromete seu bem-estar psíquico (29). Assim, a obesidade leva ao aumento do risco de ansiedade e depressão ao longo da vida. Ademais, sabe-se que a maioria dos antidepressivos causa aumento de peso (30).

Existem evidências na literatura sugerindo que o efeito primário da obesidade nos transtornos psiquiátricos é indireto e não direto, isto é, a associação entre a obesidade e problemas psiquiátricos pode ser mediada por outros fatores. Um deles é a imagem corporal, em particular a percepção do próprio peso e a satisfação com seu corpo (19,31).

O conceito de imagem corporal como fenômeno psicológico foi inicialmente estabelecido em 1935 pelo psiquiatra austríaco Paul Schilder como sendo a figura de nosso próprio corpo que formamos em nossa mente, ou seja, o modo pelo qual o corpo aparece para nós mesmos. De acordo com o psiquiatra, a imagem mental a respeito do corpo é estabelecida por julgamentos, ideias e sentimentos que na maioria das vezes é inconsciente. Slade expandiu este conceito e definiu a imagem corporal como a imagem mental que temos do tamanho, forma e contorno do próprio corpo, assim como dos sentimentos em relação a estas características e as partes que constituem nosso corpo. A imagem corporal consiste em três componentes: percepção, cognição e comportamento (32).

A imagem corporal é uma construção dinâmica e multidimensional que envolve fatores biológicos e psicológicos internos, assim como fatores externos culturais e sociais (33). A insatisfação com a imagem corporal é uma saliente discrepância psicológica entre a percepção do corpo e o corpo ideal. Isso se refere a avaliações negativas de partes particulares do corpo, tal como a figura, peso, estômago, nádegas e cintura (34). Os problemas com a imagem corporal variam em

um contínuo de leve insatisfação com a sua imagem ou sentimentos de ser pouco atraente a uma preocupação extrema com a aparência física, o que prejudica o funcionamento do indivíduo (35).

A insatisfação com a imagem corporal entre as pessoas obesas está relacionada às pressões sociais da cultura ocidental quanto ao ideal de beleza de um corpo magro e esbelto (36). Além disso, existe um forte preconceito contra pessoas obesas presente na mídia, nas escolas, empresas e nos discursos do cotidiano. Os obesos são julgados como fracos, preguiçosos, incompetentes, emocionalmente instáveis e portadores de uma deficiência. Como consequência deste preconceito, os obesos têm desvantagens na educação, para conseguir empregos, nos serviços de saúde e até para a adoção de crianças (37).

As pessoas obesas têm mais problemas com a imagem corporal. Elas exageram ou distorcem o tamanho do corpo mais do que as pessoas com peso normal. Os obesos estão mais insatisfeitos e preocupados com a aparência física e evitam com maior frequência situações sociais por causa da aparência (38,39). Indivíduos que têm uma percepção do corpo mais negativa ou estão mais insatisfeitos com a imagem corporal podem ter menor autoestima, menos satisfação na vida e sentimento de inferioridade, além de apresentar maiores riscos de depressão, ansiedade e transtornos alimentares (36). Neste artigo, exploraremos a hipótese de que a relação entre a obesidade e o sofrimento psíquico é mediada pela insatisfação com a imagem corporal dos indivíduos.

2 OBJETIVO

O objetivo deste estudo é avaliar se o índice de massa corporal e a imagem corporal estão associados a ansiedade e a depressão em pessoas obesas.

3 MÉTODOS

Foram entrevistados cinquenta pacientes de ambos os sexos, com idade superior a 18 anos e índice de massa corporal (IMC) superior a 30 Kg/m^2 do Ambulatório de Obesidade do Serviço de Endocrinologia da Irmandade da Santa Casa de Misericórdia de São Paulo. Os pacientes foram entrevistados na primeira consulta e aqueles em uso de medicamentos psicotrópicos foram excluídos.

O estudo foi aprovado pelo Comitê de Ética da Irmandade da Santa Casa de Misericórdia de São Paulo e todos os participantes assinaram o termo de consentimento livre e esclarecido.

Os participantes responderam a um questionário sociodemográfico sobre gênero, idade, estado civil, raça, naturalidade, número de filhos, profissão, escolaridade, história familiar de obesidade, peso, IMC (peso em quilogramas dividido pelo altura elevada ao quadrado - Kg/m^2), tempo de obesidade, comorbidades e medicações em uso. Outros três questionários também foram respondidos:

1- Inventário de Depressão de Beck (BDI)
2- Inventário de Ansiedade de Beck (BAI)
3- Body Shape Questionnaire (BSQ)

Os sintomas depressivos foram avaliados pelo BDI, um questionário estruturado de auto-avaliação composto por 21 questões sobre os sintomas e as atitudes que descrevem as manifestações comportamentais da depressão e acessa a intensidade dos sintomas depressivos. O questionário foi traduzido para o português e validado para a população brasileira. A pontuação varia de zero a 63 e as categorias de intensidade variam de ausente ou normal (0 a 11), leve (12 a 19), moderado (20 a 35) e grave (36 a 63) (40).

O BDI é a escala de auto-avaliação mais utilizada na investigação da intensidade dos sintomas depressivos, tanto em clínica como em pesquisas. Este

instrumento que permite ao avaliador identificar se há tendência à depressão, servindo para a construção de um diagnóstico. Os itens foram criados com base na descrição de sintomas comuns da depressão e na observação de atitudes e comportamentos de pacientes com esse quadro. Ele consegue identificar 77% dos casos com depressão corretamente (sensibilidade) e 95% dos casos negativos corretamente (especificidade) (41).

Os sintomas de ansiedade foram avaliados pelo BAI, um questionário estruturado e composto por 21 itens que avaliam a intensidade dos sintomas ansiosos. Pontuações maiores indicam maior gravidade. Este questionário foi traduzido para o português e validado para a população brasileira. A pontuação varia de zero a 63. Os indivíduos são classificados de acordo com as categorias: ausente (0 a 10), leve (11 a 19), moderado (20 a 30) e grave (31 a 63) (40).

A imagem corporal foi avaliada pelo BSQ, que mede a preocupação excessiva com o formato do corpo, a autodepreciação em virtude da aparência física e a sensação de estar gordo. Ele é composto por 34 questões. A pontuação varia de zero a 204 e as categorias de intensidade variam de ausente (0 a 80), leve (81 a 110), moderado (111 a 140), grave (141 a 204). O BSQ foi traduzido para o português e validado para a população brasileira(42). O BSQ é um questionário de auto aplicação que apresenta uma validade bastante elevada comparada com outros instrumentos como o *Multidimensional Body Self-Relations Questionnaire* (MBSRQ) e a subescala de insatisfação corporal do *Eating Disorders Inventory* (EDI) (43).

Para as análises estatísticas foram utilizados os softwares SPSS 20.0 e STATA12.

As associações entre duas variáveis categóricas foram analisadas utilizando-se o teste exato de Fisher.

4 RESULTADOS

Body image dissatisfaction, but not body mass index, is associated to anxiety in obese patients

Running Title: Body image is associated to anxiety in obese patients

DAI Okino[1], M Sanches[2], YC Komatsu and JEN Salles[3], RR Uchida[1]

[1]Department of psychiatry - Irmandade da Santa Casa de Misericórdia de São Paulo, São Paulo, SP, Brazil.

[2]Department of Psychiatry and Behavioral Sciences - University of Texas Medical School at Houston, Houston, TX, EUA.

[3]Department of Internal Medicine / Discipline of Endocrinology – Santa Casa de Sao Paulo School of Medical Sciences, São Paulo, SP, Brazil.

Corresponding Author

Daniele A I Okino

Rua: Major Maragliano, 241 – Vila Mariana - CEP 04017030

São Paulo, SP, Brasil

Fone: +5511 991868356

E-mail: danieleiwazawa@gmail.com

Abstract

The association between obesity and mental illnesses is not well established and the effect of obesity in psychological disorders can be indirect rather than direct, also this association may be mediated by other factors such as body image dissatisfaction (BID). The objective of this study is to evaluate whether body mass index (BMI) and body image affect anxiety and depression in obese patients. We assessed demographic and clinical characteristics, BMI, depression, anxiety and BID in 50 obese patients. High scores of psychopathology were found. BID scores were statistically significant associated to anxiety scores (p=0.039) and a tendency to statistical significance was found with depression scores (p= 0.056). Interestingly, no correlation was found between depression and anxiety with BMI. The results of this study suggest that BID is a mediator of the association between psychological distress and obesity. Future studies will be necessary to examine additional factors that might link obesity and psychological distress.

Keywords: Anxiety; Body Image; Body Mass Index; Depression; Obesity.

Introduction

Obesity is an increasingly prevalent disease and it is becoming one of the main public health problems including in developing countries. Over the past four decades, we have transitioned from a world in which underweight prevalence was more than double of obesity to one in which more people are obese than underweight, both globally and in all regions, except parts of sub-Saharan Africa and Asia (1). Since 1980, obesity doubled worldwide. According to World Health Organization (WHO), in 2014, 600 million adults were obese. That means 13% of adults in the world were obese (2).

Obesity is a complex and multifactorial condition linked to environmental, hereditary, psychological and physiologic factors. The physical consequences of obesity are well known; obesity is associated to cardiovascular diseases, diabetes and cancer (3,4). However, the association with psychological morbidity remains unclear. The literature on the association between obesity and psychiatry illnesses has been inconsistent, with some, but not all, studies suggesting a positive association (5-7).

According to Friedman and Brownell, the inconsistence of the studies results that associate psychiatric problems and obesity is attributed to methodological limitations and a failure to consider the complexity and heterogeneity of the relationship between obesity and psychological functioning. They suggest that, in order to improve our understanding of psychological problems among obese individuals, it is important to identify who among the obese population is likely to experience psychological problems and, ultimately, to identify the mechanisms that link obesity and psychiatric disorders (8).

Depression and anxiety are two of the most common psychiatric disorders and they are associated with long-term disability, morbidity and enormous economic costs (9). Some studies point to a correlation between obesity and depression as well as between obesity and anxiety in adults. The association among obesity, depression

and anxiety is bidirectional. Depression and anxiety are associated with unhealthy behaviors including higher caloric intake, alcohol abuse and physical inactivity, which are risk factors for obesity (10-12). Furthermore, obese individuals face stigmatization and discrimination in many domains of their lives, and their psychological well-being is usually compromised (13). Conversely, obesity leads to an increased lifetime risk of both depression and anxiety and it is well known that most of antidepressant treatments can induce weight gain (14).

There is evidence from the literature suggesting that the primary effect of obesity in psychological disorders is indirect rather than direct. That is, the association between obesity and psychological problems may be mediated by other factors. One of these factors is body image, in particular perceived weight and body satisfaction (8,15).

Body image is defined as the mental image we have of the size, shape and contour of our own bodies as well as our feelings regarding these characteristics and the parts that constitute our bodies, according to Slade (16). Therefore, the body image has three main components: perception, cognition and behavior (17). Problems of body image range in a continuum from mild body dissatisfaction or feelings of unattractiveness to an extreme preoccupation with physical appearance that impairs functioning (18).

Obese people have more problems with body image and they overestimate or distort their body size more than normal-weight individuals. They are more dissatisfied and preoccupied with their physical appearance and avoid more social situations due to their appearance. Moreover, those disturbances of body image can be associated to a high psychiatric morbidity (19,20).

The aim of this study is to evaluate whether body mass index and body image affect anxiety and depression in obese people.

Methods

Fifty patients of both genders, aging more than 18 years-old with body mass

index (BMI)≥30 Kg/m^2 from the Ambulatory of Obesity of Irmandade da Santa Casa de São Paulo Endocrinology Service were interviewed. The patients were interviewed in the first session and those in use of psychotropic medications were excluded.

The protocol of this study was approved by the Ethical Committee of the Irmandade da Santa Casa de Misericórdia de São Paulo, and all patients agreed to participate and signed an informed consent.

Participants answered a socio-demographic questionnaire about gender, age, marital status, race, place of birth, number of children, profession, schooling, history of obesity in the family, weight, BMI, duration of obesity, comorbidities, and current medication. Then they answered 3 more questionnaires as follows:

1-Beck Depression Inventory (BDI)

2-Beck Anxiety Inventory (BAI)

3-Body Shape Questionnaire (BSQ)

Depressive symptoms were assessed by BDI, which is a structured instrument composed by 21 categories of symptoms and attitudes that describe behavioral manifestation of depression. It assesses the intensity of depressive symptoms. It has been translated into Portuguese and validated for the Brazilian population. Scores range from zero to 63, and intensity categories vary from absent or normal (0 to 11), mild (12 to 19), moderate (20 to 35), and severe (36 to 63) (21).

The symptoms of anxiety were assessed by BAI, which is a structured instrument composed by 21 items assessing the intensity of anxiety symptoms. Higher scores indicate more severe anxiety. It has been translated into Portuguese and validated for the Brazilian population. Scores range from 0 to 63. Subjects are classified into the following categories: no concern (0-10), mild (11-19), moderate (20-30), and severe (31-63) (21).

Body shape was assessed by the BSQ, which measures the excessive concerns with the body shape, the self-depreciation due to the physical appearance

and the feeling of being fat. It is composed by 34 questions. The scores range from 0 to 204 and intensity categories range from absent (0 to 80), mild (81 to 110), moderate (111 to 140) up to severe (141 to 204). The BSQ has been translated into Portuguese and validated for the Brazilian population (22).

The statistical analyses were performed by the Statistical Package for the Social Sciences (SPSS) software for Windows 20.0 and STATA12.

The association between two categorical variables was analyzed using Fisher's Exact Test.

Results

The sample had 50 patients (42 female – 84% and 8 male – 16%). The age ranged from 18 to 63 years-old, mean of 39.2 (±12.1) years. The BMI varied from 30.16Kg/m^2 up to 62.41 Kg/m^2, mean of 41.4 (±8.4) Kg/m^2 (Table 1).

Depressive symptoms were present in 36% of patients, 30% had moderate symptoms and 6% severe symptoms. Thirty-six percent of patients presented minimal anxiety symptoms, 26% mild anxiety symptoms, 24% moderate symptoms, and 14% severe anxiety symptoms. Body image dissatisfaction was absent in 34% of patients, 26% had mild body image dissatisfaction, 34% had moderate BID, and 6% severe BID (table 2 and 3).

According to table 3, a correlation between body image and anxiety (p=0.039) was found. Thus, we observe that there was a higher percentage of severe body image dissatisfaction in patients with severe anxiety (28.6%). In contrast, we observe that in patients with minimal anxiety, we found a higher percentage (83.3%) of mild body image dissatisfaction compared to other anxiety levels. Furthermore, there was a tendency to statistical significance of the correlation between body image and depression (p= 0.056).

According to table 4, there was no association between obesity and depression and between obesity and anxiety.

Discussion

The main result of the study is: Body image dissatisfaction is associated to anxiety and there is a tendency to statistical significance between BID and depression. However, BMI was not correlated to depression, anxiety and BID.

These results are very interesting as they help to clarify the relationship between obesity and psychological distress (anxiety and depression).

These results suggest that BID is a mediator of the association between psychological distress and obesity. A similar study was carried out by Friedman et al. (15) they investigated the relationship between BID and depression in a treatment-seeking sample of 110 obese men and women. According to this study, BID is a mediator of the association between obesity and depression. However, differently from our study, they did not investigate the relationship between anxiety and BID in obese patients; they evaluated the relationship between obesity and self-esteem and used the Multidimensional Body-Self Relations Questionnaire to measure body image satisfaction (15).

Our study demonstrates that psychological distress is associated to BID in obese patients, but the direction of that relationship is unknown yet. Research has to determine whether depressed and anxious individuals evaluate their bodies more negatively than people without depressive or anxiety symptoms, whether dissatisfaction with their appearance increases vulnerability to depression and anxiety, or whether one or more other factors simultaneously increase the risk of both depression/anxiety and body image dissatisfaction.

One factor that can be related to psychological distress and BID in obese people is low self-esteem. Obese individuals are more likely to be dissatisfied with their body shape and size, and through the pathway of low self-esteem, they may be more likely to experience depression. According to the literature, there is a relationship between BID, low self-esteem and obesity (15,23).

The relationship between BMI and depression is still unclear in the literature.

This study did not find any association between BMI and depression and it is consistent with the results found in some studies (24-26). However, obesity has conferred significant associations with depressive symptoms for adults in other studies (27,28), the association was positive for men but not women (29) and some studies found association for women but not men (30,31). Those inconsistent findings may be partly due to methodological heterogeneity between studies.

BMI and anxiety were not associated in this study. This relationship is less investigated than depression and obesity and presents inconsistent results (32). Recent investigations found positive association between BMI and anxiety (33,34), but other studies found no relationship (35,36).

This study did not find any correlation between BMI and BID. Sarwer et al. (37) and Foster et al. (38). investigated the relationship between BMI and BID and there was no correlation in their samples of obese women enrolled in nonresidential clinical weight-loss trials (37,38). It appears that body image dissatisfaction in obese individuals may be affected by factors other than weight. This view is consistent with theories of body image that have suggested that what one thinks about the body may be more important than the objective reality of one’s appearance. Excessive body weight, per se, does not appear to be a singular determinant of the degree of body image dissatisfaction (37).

The importance of the results found in this study is that the target of obesity treatment programs should be not only weight loss, but given the strong relationship between BID and psychological distress, body image therapy must be included in these programs in order to improve depression and anxiety symptoms in obese subjects. Rosen et al. (39) found that treatment for body image (which neither encouraged nor discouraged weight loss and diet) produced significant improvements in body image in the absence of weight loss (39). Foster et al. (38) found that improvement in body image was not related to weight loss. They concluded that smaller weight loss, at least when combined with cognitive-behavioral treatment, may give patients the improvements in body image they seek (37).

It is important to mention that the treatment of depression and anxiety in obese

individuals must be considered either to improve BID because the direction of the relationship between BID and psychiatric disorders is not established yet.

This study evaluated a specific population of obese subjects seeking treatment for weight reduction and presented a high prevalence of psychopathology; depressive symptoms were present in 36% of the sample, 64% of sample presented anxiety symptoms and 66% of sample presented BID. According to the literature, the prevalence of depressive disorders ranged from 9.2 to 47.5% in studies of individuals seeking weight reduction (40). Nevertheless, our study had no group control and a small sample size. These are important limitations of this study that hinder a more detailed analysis of these results.

Conclusion

Our results highlight the significant role that BID plays in the association between obesity and psychological distress among obese people seeking treatment for weight reduction. However, future studies are needed to examine additional factors that might link obesity and psychological distress as well as to examine the direction of the relationship between BID and anxiety/depression.

References

1. CD Risk Factor Collaboration. Trends in adult body-mass index in 200 countries from 1975 to 2014: a pooled analysis of 1698 population-based measurement studies with 19·2 million participants. *The Lancet* 2016; 387: 1377–1396.

2. World Health Organization. Global Health Observatory (GHO) data, 2014. http://www.who.int/gho/ncd/risk_factors/overweight_text/en/ Accessed May 10, 2016.

3. Li TY, Rana JS, Manson JE, Willett WC, Stampfer MJ, Colditz GA, et al. Obesity as compared with physical activity in predicting risk of coronary heart disease in women. *Circulation* 2006; 113: 499–506.

4. Hu G, Tuomilehto J, Silventoinen K, Barengo NC, Peltonen M, Jousilahti P. The effects of physical activity and body mass index on cardiovascular, cancer and all-cause mortality among 47 212 middle-aged Finnish men and women. *Int J Obes* 2005; 29: 894–902.

5. Stunkard AJ, Faith MS, Allison KC. Depression and obesity. *Biol Psychiatry* 2003; 54: 330–337.

6. McElroy SL, Kotwal R, Malhotra S, Nelson EB, Keck PE, Nemeroff CB. Are mood disorders and obesity related? A review for the mental health professional. *J Clin Psychiatry* 2004; 65: 634–651.

7. Nigatu YT, Reijneveld SA, de Jonge P, van Rossum E, Bültmann U. The Combined Effects of Obesity, Abdominal Obesity and Major Depression/ Anxiety on Health-Related Quality of Life: the LifeLines Cohort Study. *PLoS ONE* 2016; 11: e0148871.

8. Friedman M, Brownell K. Psychological correlates of obesity: moving to the next research generation. *Psychol Bull* 1995; 117:3–20.

9. Kelly T, Yang W, Chen CS, Reynolds K, He J. Global burden of obesity in 2005 and projections to 2030. *Int J Obes (Lond)* 2008; 32:1431–1437.

10. de Wit LM, Fokkema M, van Straten A, Lamers F, Cuijpers P, Penninx BW. Depressive and anxiety disorders and the association with obesity, physical, and social activities. *Depress Anxiety* 2010; 27:1057–1065.

11. Luppino FS, de Wit LM, Bouvy PF, Stijnen T, Cuijpers P, Penninx BW, et al. Overweight, obesity, and depression: a systematic review and meta-analysis of longitudinal studies. Arch Gen Psychiatry 2010; 67:220–229.

12. Strine TW, Mokdad AH, Dube SR, Balluz LS, Gonzalez O, Berry JT, et al. The association of depression and anxiety with obesity and unhealthy behaviors among community-dwelling U.S. adults. *Gen Hosp Psychiatry* 2008; 30: 127–137.

13. Puhl R, Heuer CA. The stigma of obesity: A review and update. *Obesity* 2009; 17: 941–964.

14. Schwartz TL, Nihalani N, Jindal S, Nihalani N, Jones N. Psychiatric medication-induced obesity: an aetiological review. *Obes Rev* 2004; 5: 115–121.

15. Friedman KE, Simona KR, Philip RC, Gerard JM. Body image partially mediates the relationship between obesity and psychological distress. *Obes Res.* 2002;10: 33–41.

16. Slade PD. What is body image? *Behav Res Ther* 1994; 32: 497-502.

17. Rosen JC. Body image disturbance in eating disorders. In: Cash TF, Pruzinsky T (Editors) *Body images: Development, deviance and change.* New York: Guilford Press; 1990. p 190-214.

18. Rosen JC, Orosan P, Reiter J. Cognitive behavior therapy for negative body image in obese women. *Behav Ther* 1995; 26: 25-42.

19. Cash TF. The psychology of physical appearance: Aesthetics, attributes and images. In: Cash TF, Pruzinsky T (Editors), *Body images: Development, deviance and change.* New York: Guilford Press; 1990. p 51-79.

20. Collins JK, Beumont PJV, Touyz SW, Krass J, Thompson P, Philips T. Variability in body shape perception in anorexic, bulimic, obese and control subjects. *Int J Eat Disorder* 1987. 6: 633-638

21. Cunha JA. *Manual da versão em português das Escalas Beck.* São Paulo: Casa do Psicólogo; 2001.

22. Di Pietro M, Silveira DX. Internal validity, dimensionality and performance of the Body Shape Questionnaire in a group of Brazilian college students. *Rev Bras Psiquiatr* 2009; 31: 21-4.

23. Sarwer DB, Thompson JK. Obesity and body image disturbance. In: Wadden TA, Stunkard AJ (Editors), *Handbook of Obesity Treatment.* New York: Guilford Press; 2002. p. 447–464.

24. Ladwig K-H, Marten-Mittag B, Lowel H, Doring A, Koenig W. Influence of depressive mood on the association of CRP and obesity in 3205 middle aged healthy men. *Brain Behav Immun* 2003; 17: 268–275.

25. Turley M, Tobias M, Paul S. Non-fatal disease burden associated with excess body mass index and waist circumference in New Zealand adults. *Aust N Z J Public Health* 2006; 30: 231–237.

26. Roberts RE, Strawbridge WJ, Deleger S, Kaplan GA. Are the fat more jolly? *Ann Behav Med* 2002; 24: 169–180.

27. Simon GE, Von Korff M, Saunders K, Miglioretti DL, Crane PK, van Belle G, et al. Association between obesity and psychiatric disorders in the US adult population.

Arch Gen Psychiatry 2006; 63: 824–830.

28. Johnston E, Johnson S, McLeod P, Johnston M. The relation of body mass index to depressive symptoms*.* *Can J Public Health* 2004; 95: 179–183.

29. Herva A, Laitinen J, Miettunen J, Veijola J, Karvonen JT, Laksy K, et al. Obesity and depression: results from the longitudinal Northern Finland 1966 Birth Cohort Study. *Int J Obes* 2006; 30: 520–527.

30. Heo M, Pietrobelli A, Fontaine KR, Sirey JA, Faith MS. Depressive mood and obesity in US adults: comparison and moderation by sex, age, and race. *Int J Obes* 2006; 30: 513–519.

31. Carpenter KM, Hasin DS, Allison DB, Faith MS. Relationships between obesity and DSM-IV major depressive disorder, suicide ideation, and suicide attempts: results from a general population study. *Am J Public Health* 2000; 90: 251–257.

32. Scott K, McGee M, Wells E, Oakley Browne MA. Obesity and mental disorders in the adult general population. *J Psychosom Res* 2008; *64:* 97-105.

33. Jorm AF, Korten EE, Christensen H, Jacomb PA, Rodgers B, Parslow RA. Association of obesity with anxiety, depression and emotional well-being: a community survey. *Aust N Z J Public Health* 2003; *27:* 434-440.

34. Pickering RP, Grant BF, Chou SP. Are overweight, obesity, and extreme obesity associated with psychopathology? Results from the National Epidemiologic Survey on Alcohol and Related Conditions. *J Clin Psychiatry* 2007; *68:* 998-1009.

35. Crisp AH, McGuiness B. Jolly fat: relation between obesity and psychoneurosis in general population. *Br Med J* 1976; 1: 7-9.

36. Stewart AL, Brook RH. Effects of being overweight. *Am J Public Health* 1983; 73*:* 171-178.

37. Sarwer DB, Wadden TA, Foster GD. Assessment of body image dissatisfaction in obese women: specificity, severity, and clinical significance. *J Consult Clin Psychol* 1998; 66: 651–654.

38. Foster GD, Wadden TA, Vogt RA. Body image in obese women before, during, and after weight loss treatment. *Health Psychol* 1997; 16: 226–9.

39. Rosen JC, Orosan P, Reiter J. Cognitive behavior therapy for negative body image in obese women. *Behav Ther* 1995; 26: 25–42.

40. Fabricatore AN, Wadden TA. Psychological functioning of obese individuals. *Diabetes Spectr* 2003; 16: 245-252.

Table 1. Socio-demographic characteristics

	N	%
Gender	**50**	**100.0**
Female	41	82.0
Male	9	18.0
Age	**50**	**100.0**
Up to 30 years-old	12	24.0
From 31 to 50 years-old	28	56.0
Above 50 years-old	10	20.0
Years of education	**50**	**100.0**
Up to 4 years	7	14.0
From 5 to 8 years	10	20.0
From 9 to 12 years	27	54.0
13 years and more	6	12.0
Marital status	**50**	**100.0**
Single	21	42.0
Married	20	40.0
Divorced/Widow(er)	9	18.0

Table 2. Clinical characteristics.

	N	%
Depression	**50**	**100.0**
Absent	23	46
Mild	9	18
Moderate	15	30
Severe	3	6
Anxiety	**50**	**100.0**
Minimal	18	36
Mild	13	26
Moderate	12	24
Severe	7	14
BSQ	**50**	**100.0**
Mild	30	60.0
Moderate	17	34.0
Severe	3	6.0
BMI	**50**	**100.0**
Class I	10	20.0
Class II	17	34.0
Class III	23	46.0

BSQ: Body Shape Questionnaire
BMI: Body Mass Index

Table 3. Correlation between body image and clinical characteristics.

	Body Image						Total		p
	BSQ Mild		BSQ Moderate		BSQ Severe				
	N	%	N	%	N	%	N	%	
Depression	**30**	**60.0%**	**17**	**34.0%**	**3**	**6.0%**	**50**	**100.0%**	**0.056**
Absent	18	78.3%	5	21.7%	0	0.0%	23	100.0%	
Mild	5	55.6%	4	44.4%	0	0.0%	9	100.0%	
Moderate	6	40.0%	7	46.7%	2	13.3%	15	100.0%	
Severe	1	33.3%	1	33.3%	1	33.3%	3	100.0%	
Anxiety	**30**	**60.0%**	**17**	**34.0%**	**3**	**6.0%**	**50**	**100.0%**	**0.039**
Minimal	15	83.3%	3	16.7%	0	0.0%	18	100.0%	
Mild	6	46.2%	6	46.2%	1	7.7%	13	100.0%	
Moderate	7	58.3%	5	41.7%	0	0.0%	12	100.0%	
Severe	2	28.6%	3	42.9%	2	28.6%	7	100.0%	
Obesity	**30**	**60.0%**	**17**	**34.0%**	**3**	**6.0%**	**50**	**100.0%**	**0.138**
Class I	9	90.0%	1	10.0%	0	0.0%	10	100.0%	
Class II	11	64.7%	5	29.4%	1	5.9%	17	100.0%	
Class III	10	43.5%	11	47.8%	2	8.7%	23	100.0%	

p – descriptive test to Fisher's Exact Test
BSQ: Body Shape Questionnaire

Table 4. Correlation between BMI and clinical characteristics.

	Obesity						Total		p
	Class I		Class II		Class III				
	N	%	N	%	N	%	N	%	
Depression	**10**	**20.0%**	**17**	**34.0%**	**23**	**46.0%**	**50**	**100.0%**	**0.597**
Absent	7	30.4%	6	26.1%	10	43.5%	23	100.0%	
Mild	2	22.2%	4	44.4%	3	33.3%	9	100.0%	
Moderate	1	6.7%	6	40.0%	8	53.3%	15	100.0%	
Severe	0	0.0%	1	33.3%	2	66.7%	3	100.0%	
Anxiety	**10**	**20.0%**	**17**	**34.0%**	**23**	**46.0%**	**50**	**100.0%**	**0.677**
Minimal	4	22.2%	7	38.9%	7	38.9%	18	100.0%	
Mild	3	23.1%	3	23.1%	7	53.8%	13	100.0%	
Moderate	3	25.0%	5	41.7%	4	33.3%	12	100.0%	
Severe	0	0.0%	2	28.6%	5	71.4%	7	100.0%	

p – descriptive test to Fisher's Exact Test

5 CONSIDERAÇÕES FINAIS

O artigo ***Body image dissatisfaction, but not body mass index, is associated to anxiety in obese patients*** contribui para esclarecer a relação entre a obesidade e o sofrimento psíquico (ansiedade e depressão). O resultado do estudo sugere que essa relação é intermediada pela insatisfação com a imagem corporal. Entretanto, o IMC não foi associado a ansiedade, depressão e insatisfação com a imagem corporal. Estes resultados nos permitem concluir que a ansiedade e a depressão estão relacionadas ao que o individuo pensa sobre o próprio corpo, ou seja, a ideia subjetiva a respeito de sua aparência, mas não a realidade objetiva do excesso de peso.

A importância dos resultados encontrados no estudo é que o objetivo do tratamento da obesidade não deve ser apenas a perda de peso e deve incluir terapias para a melhora da insatisfação com a imagem corporal com consequente redução dos sintomas de ansiedade e depressão nos indivíduos obesos. Além disso é importante mencionar que a relação entre a insatisfação com a imagem corporal e os transtornos psiquiátricos ainda não tem uma direção estabelecida, não se sabe o que é causa ou consequência, então o tratamento da ansiedade e da depressão também deve ser considerado para que a insatisfação com a imagem corporal seja reduzida nestes indivíduos (44-46).

A correlação entre a insatisfação com a imagem corporal e gênero, idade, estado civil, raça, escolaridade, tempo de obesidade não teve resultados estatisticamente significantes assim como a correlação entre o IMC e estes dados sociodemográfico.

Este estudo destaca a o importante papel que a insatisfação com a imagem corporal desempenha na associação entre a obesidade e o sofrimento psíquico na população de obesos que procuram por tratamento para redução de peso. Entretanto, apresenta limitações importantes como a ausência de grupo controle, o numero pequeno da amostra que impossibilita análises mais detalhadas sobre os

dados do estudo. Encontramos também um desequilíbrio entre a proporção de homens e mulheres na amostra, mas a análise da população feminina isoladamente não foi possível devido ao tamanho da amostra. Estudos futuros serão necessários para confirmar estes resultados e para avaliar outros fatores que podem estar associados aos transtornos psiquiátricos em pessoas obesas.

6 REFERÊNCIAS BIBLIOGRÁFICAS

1. CD Risk Factor Collaboration. Trends in adult body-mass index in 200 countries from 1975 to 2014: a pooled analysis of 1698 population-based measurement studies with 19·2 million participants. The Lancet 2016; 387: 1377–1396.

2. World Health Organization. Global Health Observatory (GHO) data, 2014. http://www.who.int/gho/ncd/risk_factors/overweight_text/en/ Accessed May 10, 2016.

3. Malta DC, Andrade SC, Claro RM, Bernal RTI, Monteiro CA. Evolução anual da prevalência de excesso de peso e obesidade em adultos nas capitais dos 26 estados brasileiros e no Distrito Federal entre 2006 e 2012. Rev. bras. epidemiol., São Paulo , v. 17, supl. 1, p. 267-276, 2014 .

4. Vigitel Brasil 2014 Saúde Suplementar : vigilância de fatores de risco e proteção para doenças crônicas por inquérito telefônico / Ministério da Saúde, Agência Nacional de Saúde Suplementar. – Brasília : Ministério da Saúde, 2015. 165 p.

5. Hill JO, Peters JC. Environmental contributions to the obesity epidemic. Science. 1998;280(5368):1371–4.

6.Nestle M, Jacobson MF. Halting the obesity epidemic: A public health policy approach. Public Health Rep. 2000:115.

7. Farr OM, Li CR, Mantzoros CS. "Central nervous system regulation of eating: Insights from human brain imaging." Metabolism 65.5 (2016): 699-713.

8. National Task Force on the Prevention and Treatment of Obesity (2000). Overweight, obesity, and health risk. Archives of International Medicine, 160, 898-904.

9. Manninen P, Riihimaki H, Heliovaara M, Makela P. Overweight, gender and knee osteoarthritis. International Journal of Obesity and the Related Metabolic Disorders 1996; 20: 595-597.

10. Kumanyika SK, Obarzanek E, Stettler N, Bell R, Field A, et al. Population-Based Prevention of Obesity. The need for comprehensive promotion of healthful eating, physical activity, and energy balence: a scientific statment from American Hearth Association Council on Epidemiology and Prevention, Interdisciplinary Committee for Prevention (Formely the Expert Panel on Population and Prevention Science). American Hearth Association, Circulation 2008; 118: 428-464.

11. Grodstein F, Goldman MB, Cramer DW. Body mass índex and ovulatory infertility. Epidemiology 1994; 5: 247-250.

12. Shaw GM, Velie EM, Schaffer D. Risk for neural tube defect-affected pregnancies among obese women. Journal of the American Medical Association 1994; 275: 1093-1096.

13. Lee IM, Paffenbarger RS. Quetelet's index and risk of colon cancer in college alumni. Journal of the National Cancer Institute 1992; 84:1326-1331.

14. Garfinkel. Overweight and cancer. Annals Internal Medicine 1985, 103: 1034-1036.

15. Cerhan JR, Torner JC, Lynch CF, Rubenstein LM, Lemke JH. Association of smoking, body mass, and physical activity with risk of prostate cancer in the Iowa 65+ Rural Health Study (United States). Cancer Causes Control 1997; 8: 229-238.

16. Stunkard AJ, Faith MS, Allison KC. Depression and obesity. Biol Psychiatry 2003; 54: 330–337.

17. McElroy SL, Kotwal R, Malhotra S, Nelson EB, Keck PE, Nemeroff CB. Are mood disorders and obesity related? A review for the mental health professional. J Clin Psychiatry 2004; 65: 634–651.

18. Nigatu YT, Reijneveld SA, de Jonge P, van Rossum E, Bültmann U. The Combined Effects of Obesity, Abdominal Obesity and Major Depression/ Anxiety on Health-Related Quality of Life: the LifeLines Cohort Study. PLoS ONE 2016; 11: e0148871.

19. Friedman M, Brownell K. Psychological correlates of obesity: moving to the next research generation. Psychol Bull 1995; 117:3–20.

20. de Wit L, Luppino M, van Straten A, Penninx B, Zitman F, Cui- jpers P. Depression and obesity: a meta-analysis of community- based studies. Psychiatry Res 2010; 178: 230-5.

21 Gariepy G, Nitka D, Schmitz N. The association between obesity and anxiety disorders in the population: a systematic review and meta-analysis. Int J Obes (Lond) 2010; 34: 407-19.

22. Lykouras L, Michopoulos J. Anxiety disorders and obesity. Psy- chiatrike 2011; 22: 307-1

23. Fandiño J, Moreira RO, Preissler C, et al. Impact of binge eating disorder in the psychopathological profile of obese women. Compr Psychiatry 2010; 51: 110-4.

24.Sutin AR, Ferrucci L, Zonderman AB, Terracciano A. Personali- ty and obesity across the adult life span. J Pers Soc Psychol 2011; 101: 579-92.

25.Mather AA, Cox BJ, Enns MW, Sareen J. Associations between body weight and personality disorders in a nationally represen- tative sample. Psychosom Med 2008; 70: 1012-9

26. de Wit LM, Fokkema M, van Straten A, Lamers F, Cuijpers P, Penninx BW.

Depressive and anxiety disorders and the association with obesity, physical, and social activities. Depress Anxiety 2010; 27:1057–1065.

27. Luppino FS, de Wit LM, Bouvy PF, Stijnen T, Cuijpers P, Penninx BW, et al. Overweight, obesity, and depression: a systematic review and meta-analysis of longitudinal studies. Arch Gen Psychiatry 2010; 67:220–229.

28. Strine TW, Mokdad AH, Dube SR, Balluz LS, Gonzalez O, Berry JT, et al. The association of depression and anxiety with obesity and unhealthy behaviors among community-dwelling U.S. adults. Gen Hosp Psychiatry 2008; 30: 127–137.

29. Puhl R, Heuer CA. The stigma of obesity: A review and update. Obesity 2009; 17: 941–964

30. Schwartz TL, Nihalani N, Jindal S, Nihalani N, Jones N. Psychiatric medication-induced obesity: an aetiological review. Obes Rev 2004; 5: 115–121.

31. Friedman KE, Simona KR, Philip RC, Gerard JM. Body image partially mediates the relationship between obesity and psychological distress. Obes Res. 2002;10: 33–41.

32. Slade PD. What is body image? Behav Res Ther 1994; 32: 497-502.

33. Goswami S, Sachdeva S, Sachdeva R. Body image satisfaction among female college students. Industrial Psychiatry Journal 2012; 21(2): 168–172.

34. Myers T, Crowther J. Sociocultural pressures, thin-ideal internalization, self objectivation, and body dissatisfaction: Could feminist beliefs be a moderating factor? Body Image 2007; 4: 296-308.

35. Crisp AH, McGuiness B. Jolly fat: relation between obesity and psychoneurosis in general population. Br Med J 1976; 1: 7-9.

36. Schwartz MB, Brownell KD. Obesity and body image. Body Image 2004;1: 43–56.

37. Puhl R, Brownell KD. Bias, discrimination, and obesity. Obesity Research 2001; 9: 788–805.

38 Rosen JC, Orosan P, Reiter J. Cognitive behavior therapy for negative body image in obese women. Behav Ther 1995; 26: 25-42.

39. Cash TF. The psychology of physical appearance: Aesthetics, attributes and images. In: Cash TF, Pruzinsky T (Editors), Body images: Development, deviance and change. New York: Guilford Press; 1990. p 51-79.

40. Cunha JA. Manual da versão em português das Escalas Beck. São Paulo: Casa do Psicólogo; 2001.

41. Rangé B. Psicoterapia comportamental e cognitiva de transtornos psiquiátricos 2001, Vol. II. Campinas: Editora Livro Pleno.

42. Di Pietro M, Silveira DX. Internal validity, dimensionality and performance of the Body Shape Questionnaire in a group of Brazilian college students. Rev Bras Psiquiatr 2009; 31: 21-4.

43. RAICH RM, TORRAS J, FIGUERAS M. Estudio de la imagen corporal y su relación con el deporte en una muestra de estudiantes universitarios. Análisis y Modificación de Conducta, v. 22, n. 85, p. 603-626, 1996.

44. Sarwer DB, Wadden TA, Foster GD. Assessment of body image dissatisfaction in obese women: specificity, severity, and clinical significance. *J Consult Clin Psychol* 1998; 66: 651–654.

45. Foster GD, Wadden TA, Vogt RA. Body image in obese women before, during, and after weight loss treatment. *Health Psychol* 1997; 16: 226–9.

46. Rosen JC, Orosan P, Reiter J. Cognitive behavior therapy for negative body image in obese women. *Behav Ther* 1995; 26: 25–42.

7 APÊNDICES

7.1 Aprovação no Comitê de Ética

IRMANDADE DA SANTA CASA DE MISERICÓRDIA DE S PAULO
COMITÊ DE ÉTICA EM PESQUISA EM SERES HUMANOS
Rua Santa Isabel, 305 4º Santa Cecília CEP 01221-010 São Paulo –SP
PABX: 21767000 Ramal: 8061-Telefax-33370188 E-mail: eticamed@santacasasp.org.br

São Paulo, 28 de junho de 2007.

Projeto nº209/07 Informe este número para identificar seu projeto no CEP

Ilmo.(a).Sr.(a).
Dr.(a).Ricardo Uchida
Centro de Atenção Integrada à Saúde Mental

O Comitê de Ética em Pesquisa da ISCMSP, em reunião ordinária, dia **27/06/2007** e no cumprimento de suas atribuições, após revisão do seu projeto de pesquisa**: "Distorção de imagem corporal, ansiedade e depressão em pacientes ambulatoriais obesos"**, emitiu parecer enquadrando-o na seguinte categoria:

[x] **Aprovado (inclusive TCLE);**

[ ] **Com pendências** há modificações ou informações relevantes a serem atendidas em 60 dias, (enviar as alterações em duas cópias);

[ ] **Retirado**, (por não ser reapresentado no prazo determinado);

[ ] **Não aprovado:** e

[ ] **Aprovado (**inclusive os TCLE- Termo de Consentimento Livre e Esclarecido versão), e encaminhado para apreciação da Comissão Nacional de Ética em Pesquisa – MS -CONEP, a qual deverá emitir parecer no prazo de 60 dias. **Informamos, outrossim, que, segundo os termos da Resolução 196/96 do Ministério da Saúde a pesquisa só poderá ser iniciada após o recebimento do parecer de aprovação da CONEP.**

Prof. Dr. Daniel R. Muñoz
Presidente do Comitê de Ética em Pesquisa –ISCMSP

7.2 Inventário de Ansiedade de Beck

Inventário de Ansiedade de Beck

Abaixo temos uma lista de sintomas de ansiedade. Leia cuidadosamente e assinale a coluna que mais se aplica, considerando-se a última semana.

	0	1	2	3
	Ausente	**Suave**, não me incomoda muito	**Moderado**, é desagradável mas consigo suportar	**Severo,** quase não consigo suportar
Dormência ou formigamento				
Sensações de calor				
Tremor nas pernas				
Incapaz de relaxar				
Medo de acontecimentos ruins				
Confuso				
Coração batendo forte e rápido				
Inseguro				
Apavorado				
Nervoso				
Sensação de sufocamento				
Tremor nas mãos				
Trêmulo				
Medo de perder o controle				
Dificuldade de respirar				
Medo de morrer				
Assustado				
Indigestão/desconforto abdominal				
Desmaio				
Rubor facial				
Sudorese (não devido ao calor)				

7.3 Inventario de depressão de Beck

Inventario de depressão de Beck

Este questionário consiste em 21 grupos de afirmações. Depois de ler cuidadosamente cada grupo, faça um circulo em torno do numero (1, 2, 3 ou 4) diante da afirmação, em cada grupo, que descreve melhor a maneira como você tem se sentido nesta semana, incluindo hoje. Se varias afirmações num grupo parecerem se aplicar igualmente bem, faça um circulo em cada uma. Tome o cuidado de ler todas as afirmações, em cada grupo, antes de fazer a sua escolha.

1.
0 Não me sinto triste.
1 Eu me sinto triste.
2 Estou sempre triste e não consigo sair disso.
3 Estou tão triste ou infeliz que não consigo suportar.

2.
0 Não estou especialmente desanimado quanto ao future.
1 Eu me sinto desanimada quanto ao future.
2 Acho que nada tenho a esperar
3Acho o future sem esperança e tenho a impressão de que as coisas não podem melhorar.

3.
0 Não me sinto um fracasso.
1 Acho que fracassei mais do que uma pessoa comum.
2 quando olho para trás, na minha vida, tudo o que posso ver é um monte de fracassos.
3 Acho que, como pessoa, sou um complete fracasso.

4.
0. Tenho tanto prazer em tudo como antes.
1 Não sinto mais prazer nas coisas como antes.
2 Não encontro um prazer real em mais nada.
3 Estou insatisfeito ou aborrecido com tudo.

5.
0 Não me sinto especialmente culpado.
1 Eu me sinto culpado às vezes
2 Eu me sinto culpado na maior parte do tempo.
3 Eu me sinto sempre culpado

6.
0 Não acho que esteja sendo punido.
1 Acho que posso ser punido.
2 Creio que vou ser punido.
3 Acho que estou sendo punido.

7.
0 Não me sinto decepcionado comigo mesmo.
1 Estou decepcionado comigo mesmo.
2 Estou enojado de mim.
3 Eu me odeio.

8.
1 Não me sinto de qualquer modo pior que os outros.
2 Sou crítico em relação a mim devido a minhas fraquezas ou meus erros.
3 Eu me culpo sempre por minhas falhas.
4 Eu me culpo por tudo de mal que acontece.

9.
0 Não tenho quaisquer ideias de me matar.
1 Tenho ideias de me matar, mas não as executaria
2. Gostaria de me matar.
3. Eu me mataria se tivesse oportunidade.

10.
0 Não choro mais que o habitual.
1 Choro mais agora do que costumava.
2 Agora, choro o tempo todo.
3 Costumava ser capaz de chorar, mas agora não consigo mesmo que o queira.

11.
0 Não sou mais irritado agora do que já fui.
1 Fico molestado ou irritado mais facilmente do que costumava.
2 Atualmente me sinto irritado o tempo todo.
3 Absolutamente não me irrito com as coisas que costumavam irritar-me.

12.
0 Não perdi o interesse nas outras pessoas.
1 Interesso-me menos do que costumava pelas outras pessoas.
2 Perdi a maior parte do meu interesse nas outras pessoas.
3 Perdi todo o meu interesse nas outras pessoas.

13.
0 Tomo decisões mais ou menos tão bem como em outra época.
1 Adio minhas decisões mais do que costumava.
2 Tenho maior dificuldade em tomar decisões do que antes.
3 Não consigo mais tomar decisões.

14.
0 Não sinto que minha aparência seja pior do que costumava ser.
1 Preocupo-me por estar parecendo velho e sem atrativos.
2 Sinto que há mudanças permanentes em minha aparência que me fazem parecer sem atrativos.
3 Considero-me feio.

15.
0 Posso trabalhar mais ou menos tão bem quanto antes.
1 Preciso se um esforço extra para começar qualquer coisa.
2 Tenho de me esforçar muito até fazer qualquer coisa.
3 Não consigo fazer nenhum trabalho.

16.
0 Durmo tão bem quanto de hábito.
1 Não durmo tão bem quanto costumava.
2 Acordo uma ou duas horas mais cedo do que de hábito e tenho dificuldade para voltar a dormir.
3 Acordo várias horas mais cedo do que costumava e tenho dificuldade para voltar a dormir.

17.
0 Não fico mais cansado que de hábito.
1 Fico cansado com mais facilidade do que costumava.
2 Sinto-me cansado ao fazer quase qualquer coisa.
3 Estou cansado demais para fazer qualquer coisa.

18.
0 Meu apetite não está pior do que de hábito.
1 Meu apetite não é tão bom quanto costumava ser.
2 Meu apetite está muito pior agora.
3 Não tenho mais nenhum apetite.

19.
0 Não perdi muito peso, se é que perdi algum ultimamente.
1 Perdi mais de 2,5Kg.
2 Perdi mais de 5 Kg.
3 Perdi mais de 7,5Kg.

Estou deliberadamente tentando perder peso, comendo menos: ( ) Sim ( ) Não

20.
0 Não me preocupo mais do que de hábito com minha saúde.
1 Preocupo-me com problemas físicos como dores e aflições ou peturbações no estômago ou prisão de ventre.
2 Estou muito preocupado com problemas fisicos e é dificil pensar em outra coisa que não isso.
3 Estou tão preocupado com meus problemas fisicos que não consigo pensar em outra coisa.

21.
0 Não tenho observado qualquer mudança recente em meu interesse sexual.
1 Estou menos interessado por sexo do que costumava
2 Estou bem menos interessado em sexo atualmente.
3 Perdi completamente o interesse por sexo.

7.4 Body Shape Questionnaire (BSQ)

Body Shape Questionnaire (BSQ)

Gostaríamos de saber como você vem se sentindo em relação à sua aparência nas últimas quatro semanas. Por favor leia cada questão e faça um círculo apropriado. Use a legenda abaixo:

1. Nunca
2. Raramente
3. Às vezes
4. Frequentemente
5. Muito frequentemente
6. Sempre

Por favor, responda a todas as questões.

Nas últimas 4 semanas:

1. Sentir-se entediado (a) faz você se preocupar com sua forma física?	1	2	3	4	5	6
2. Você tem estado tão preocupado com sua forma física a ponto de sentir que deveria fazer dieta?	1	2	3	4	5	6
3. Você acha que sua barriga, coxas, quadril ou nádegas são grandes demais para o restante de seu corpo?	1	2	3	4	5	6
4. Você tem sentido medo de ficar gordo(a) (ou mais gordo(a))?	1	2	3	4	5	6
5. Você se preocupa com o fato de seu corpo não ser suficientemente firme?	1	2	3	4	5	6
6. Sentir-se satisfeito(a) (por exemplo após ingerir uma grande refeição) faz você sentir-se gordo(a)?	1	2	3	4	5	6
7. Você já se sentiu tão mal a respeito do seu corpo que chegou a chorar?	1	2	3	4	5	6
8. Você já evitou correr pelo fato de que seu corpo poderia balançar?	1	2	3	4	5	6
9. Estar com pessoas magras do mesmo sexo que você faz com que você se sinta preocupado em relação ao seu físico?	1	2	3	4	5	6
10. Você já se preocupou com o fato de suas coxas poderem espalhar-se quando se senta?	1	2	3	4	5	6
11. Você já se sentiu gordo(a), mesmo comendo uma quantidade menor de comida?	1	2	3	4	5	6
12. Você tem reparado no físico de outras pessoas do mesmo sexo que você e, ao se comparar, sente-se em desvantagem?	1	2	3	4	5	6
13. Pensar no seu físico interfere em sua capacidade de se concentrar em outras atividades (como por exemplo, enquanto assiste à televisão, lê ou participa de uma conversa)?	1	2	3	4	5	6
14. Estar nu(a), por exemplo, durante o banho, faz você se sentir gordo(a)?	1	2	3	4	5	6

15. Você tem evitado usar roupas que o (a) fazem notar as formas do seu corpo?	1	2	3	4	5	6
16. Você se imagina cortando fora porções de seu corpo?	1	2	3	4	5	6
17. Comer doce, bolos ou outros alimentos ricos em calorias faz você se sentir gordo(a)?	1	2	3	4	5	6
18. Você deixou de participar de eventos sociais (como, por exemplo, festas) por sentir-se mal em relação ao seu físico?	1	2	3	4	5	6
19. Você se sente excessivamente grande e arredondado?	1	2	3	4	5	6
20. Você já teve vergonha do seu corpo?	1	2	3	4	5	6
21. A preocupação diante do seu físico leva-lhe a fazer dieta?	1	2	3	4	5	6
22. Você se sente mais contente em relação ao seu físico quando de estômago vazio (por exemplo pela manhã)?	1	2	3	4	5	6
23. Você acha que seu físico atual decorre de uma falta de autocontrole?	1	2	3	4	5	6
24. Você se reocupa que outras pessoas possam estar vendo dobras na sua cintura ou estômago?	1	2	3	4	5	6
25. Você acha injusto que as outras (os) homens/mulheres sejam mais magros(as) que você?	1	2	3	4	5	6
26. Você já vomitou para se sentir mais magro(a)?	1	2	3	4	5	6
27. Quando acompanhado(a), você fica preocupado(a) em estar ocupando muito espaço (por exemplo, sentado num sofá ou no banco de um ônibus)?	1	2	3	4	5	6
28. Você se preocupa com o fato de estarem surgindo dobrinhas em seu corpo?	1	2	3	4	5	6
29. Ver seu reflexo (por exemplo, num espelho ou na vitrine de uma loja) faz você sentir-se mal em relação ao seu físico?	1	2	3	4	5	6
30. Você belisca áreas de seu corpo para ver o quanto há de gordura?	1	2	3	4	5	6
31. Você evita situações nas quais as pessoas possam ver seu corpo (por exemplo, vestiários ou banhos de piscina)?	1	2	3	4	5	6
32. Você toma laxantes para se sentir magro(a)?	1	2	3	4	5	6
33. Você fica particularmente consciente do seu físico quando em companhia de outras pessoas?	1	2	3	4	5	6
34. A preocupação com seu físico faz-lhe sentir que deveria fazer exercícios?	1	2	3	4	5	6

Obrigado pela sua participação.

7.5 Normas para submissão do artigo na revista *“Brazilian Journal of Medical and Biological Research”*

Normas para publicação da revista de submissão

Scope and policy
The purpose of the Brazilian Journal of Medical and Biological Research is to publish the results of original experimental research that contribute significantly to knowledge in medical and biological sciences. Major criteria for acceptance are scientific quality, originality, and conciseness. Preference will be given to manuscripts that develop new concepts or experimental approaches and are not merely repositories of data. Papers that report negative results require special justification for publication. Methodological papers shall be considered for publication provided they describe new principles or a significant improvement of an existing method.

The following papers will not be accepted for publication
- Studies on people not approved by an accredited Ethics Committee or without written informed consent from the subject or legal guardian.
- Studies on animals not approved by an accredited Ethics and Animal Care Committee. Manuscripts that report preliminary results or only confirm previously reported results.
- Manuscripts that describe the pharmacokinetics, bioavailability and toxicity of drugs in people or animals. Manuscripts that deal with transcultural adaptation and validation of instruments of measurements.
- Manuscripts that translate a text published in another language and validate it on local patients.
- Manuscripts that use questionnaires translated from the language of another country and their validation in local patients.
- Manuscripts that present only *in silico* analysis.

Publication charges
- The authors are responsible for "publication charges" of all accepted papers. Publication charges will be billed to the Corresponding Author when the paper is accepted. The charge is R$3.000,00/paper for Brazilian authors and US$1400.00/paper for authors outside Brazil and is independent of the length of the paper.
- The Journal does not provide reprints to corresponding authors. They will receive a CD containing the issue in which their article is published. There is no charge for figures in color. Please contact Reinaldo de Souza (bjournal@terra.com.br) if you have any questions.

Preparation of Research Manuscripts
The *Brazilian Journal of Medical and Biological Research* publishes original research articles of outstanding scientific significance. Manuscripts must be submitted in English. We will consider manuscripts of any length; we encourage the submission of both substantial full-length bodies of work and shorter manuscripts that report novel findings that might be based on a limited number of experiments. The key criteria are that the research clearly demonstrates its novelty, its importance to a particular field as well as its interest to those outside that discipline, and conclusions that are justified by the data.

Authorship requirements
Only those persons who contributed directly to the intellectual content of the paper should be listed as authors. Authors should meet all of the following criteria, thereby allowing persons named as authors to take public responsibility for the content of the paper.
- Conceived, planned and carried out the experiments that led to the paper or interpreted the data it presents, or both.
- Wrote the paper, or reviewed successive versions.
- Approved the final version.

Holding positions of administrative leadership, contributing patients, and collecting and assembling data, however important to the research, are not by themselves criteria for authorship. Other persons who have made substantial, direct contributions to the work but cannot be considered authors should be cited in the Acknowledgment section, with their permission, and a description of their specific contributions to the research should be given.

Cover Letter
It is important that you include a cover letter with your manuscript. Take the time to consider why this manuscript is suitable for publication in the*Brazilian Journal of Medical and Biological Research*. Why will your paper inspire the other members of your field, and how will it drive research forward? Please explain this in your cover letter.

The cover letter should also contain the following information:
- Title of article.
- Name(s) of all author(s).
- Name, complete mailing address, including zip code, telephone number, fax number and e-mail of author to whom correspondence should be sent.
- If a version of the manuscript has been previously submitted for publication to another journal, include comments from the peer reviewers and indicate how the authors have responded to these comments.
- Papers in the area of Clinical Investigation should include a statement indicating that the protocol has been approved by the Hospital Ethics Committee (Hospital with which at least one of the authors is associated) and that written informed consent was obtained from all participants. This information must also be cited in the Material and Methods section of the manuscript.

Text format
The text of a manuscript can only be accepted as a Microsoft Word file created with MS Word as a "doc", "docx" or "rtf" document.
Each page should contain the page number in the upper right-hand corner starting with the title page as page 1.
Report all measurements in Système International, SI (http://physics.nist.gov/cuu/Units) and standard units where applicable (see below).
Do not use abbreviations in the title and limit their use in the abstract and text.
The length of the manuscript and the number of tables and figures must be kept to a minimum.
Ensure that all references are cited in the text.
Generic names must be used for all drugs. Instruments may be referred to by proprietary name; the name and country or electronic address of the manufacturer should be given in parentheses in the text.

Guidance on grammar, punctuation, and scientific writing can be found in the following sources:
Scientific Style and Format: The CSE Manual for Authors, Editors, and Publishers. 8th edn. Rockefeller University Press, Reston, 2006. http://www.scientificstyleandformat.org/Home.html
Medical Style and Format. Huth EJ (Editor). ISI Press, Philadelphia, 1987, Marketed by Williams & Wilkins, Baltimore, MD.
Writing scientific articles like a native English speaker: top ten tips for Portuguese speakers.Clinics (Sao Paulo). Mar 2014; 69(3): 153-157. doi: 10.6061/clinics/2014(03)01. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3935133/
The *Brazilian Journal of Medical and Biological Research* follows the reference format of the Uniform Requirements for Manuscripts Submitted to Biomedical Journals, which can be found on the website of the National Library of Medicine (http://www.icmje.org/).
The writing style should be concise and accessible. Editors will make suggestions for how to achieve this, as well as suggestions for cuts or additions that could be made to the article to strengthen the argument. Our aim is to make the editorial process rigorous and consistent, but not intrusive or overbearing. Authors are encouraged to use their own voice and to decide how best to present their ideas, results, and conclusions.
Although we encourage submissions from around the globe, we require that manuscripts be submitted in American English. As a step towards overcoming language barriers, we encourage authors to seek the assistance of professional services available on the site.

Footnotes
Text footnotes, if unavoidable, should be numbered consecutively in superscript in the manuscript and written on a separate page following the abstract.

Abbreviations
Abbreviations should be kept to a minimum. Define all abbreviations upon first use in the abstract and the text. Non-standard abbreviations should not be used unless they appear at least three times in the text.
Explain all abbreviations in the abstract, text, figure and table legends **when they first appear**. Keep the number of abbreviations to a minimum.
Do not explain abbreviations for units of measurement [3 mL, not 3 milliliters (mL)] or standard scientific symbols [Na, not sodium (Na)].
Abbreviate long names of chemical substances and terms for therapeutic combinations. Abbreviate names of tests and procedures that are better known by their abbreviations than by the full name (VDRL test, SMA-12).
Use abbreviations in figures and tables to save space, but they**must be defined in the legend**.

Nomenclature
The use of standardized nomenclature in all fields of science and medicine is an essential step toward the integration and linking of scientific information reported in published literature. We will enforce the use of correct and established nomenclature wherever possible: We strongly encourage the use of SI units.
- s for second min for minute
- h for hour
- L for liter m for meter

- kDa for mass in kilodaltons
- 5 mM rather than 5×10^{-3} M or 0.005 M

Species names (e.g., *Homo sapiens*), genes, mutations, genotypes, and alleles should be italicized. Use the recommended name by consulting the appropriate genetic nomenclature database, e.g., HUGO for human genes. It is sometimes advisable to indicate the synonyms for the gene the first time it appears in the text.
The Recommended International Non-Proprietary Name (rINN) of drugs should be provided.

Manuscript categories
Authors should state in the cover letter that the manuscript is intended to be a Full-length Paper, Short Communication, Review Article, Overview, Concepts and Comments, or Case Report.

Full-length paper
Each manuscript should clearly state its objective or hypothesis; the experimental design and methods used (including the study setting and time period, patients or participants with inclusion and exclusion criteria, or data sources and how these were selected for the study); the essential features of any interventions; the main outcome measures; the main results of the study; and a discussion placing the results in the context of published literature.
The manuscript should contain:
- abstract of no more than 250 words
- no more than 6 key words
- a running title to be used as a page heading, which should not exceed 60 letters and spaces
- the text should be divided into separate sections (Introduction, Material and Methods, Results, Discussion), without a separate section for conclusions
- no more than 40 references (without exceptions)

Short communication
A short communication is **a report on a single subject**, which should be concise but definitive. The scope of this section is intended to be wide and to encompass methodology and experimental data on subjects of interest to the readers of the Journal.
The manuscript should contain:
abstract of no more than 250 words
no more than 6 key words
a running title to be used as a page heading, which should not exceed 60 letters and spaces
the text should be divided into separate sections (Introduction, Material and Methods, Results, Discussion), without a separate section for conclusions
no more than 20 references (without exceptions)
no more than three illustrations (figures and/or tables)

Review article
A review article should provide a synthetic and critical analysis of a relevant area and should not be merely a chronological description of the literature. A review article by investigators who have made substantial contributions to a specific area in medical and biological sciences will be published by invitation of the Editors. However, an outline of a review article may be submitted to the Editors without prior consultation. If it is judged appropriate for the Journal, the author(s) will be invited to prepare the article for peer review. A minireview is focused on a restricted part of a subject normally covered in a review article.
The manuscript should contain:
abstract of no more than 250 words
no more than 6 key words
a running title to be used as a page heading, which should not exceed 60 letters and spaces
the text should be divided into sections with appropriate titles and subtitles
no more than 90 references (without exceptions)

Overview
An overview does not contain unpublished data. It presents the point of view of the author(s) in a less rigorous form than in a regular review or minireview and is of interest to the general reader.
The manuscript should contain:
abstract of no more than 250 words
no more than 6 key words
a running title to be used as a page heading, which should not exceed 60 letters and spaces
the text may be divided into sections with appropriate titles and subtitles
no more than 90 references (without exceptions)

Concepts and Comments
The Concepts and Comments section provides a platform for readers to present ideas, theories and views. The manuscript should contain:
abstract of no more than 250 words

no more than 6 key words
a running title to be used as a page heading, which should not exceed 60 letters and spaces
the text may be divided into sections with appropriate titles and subtitles
no more than 40 references (without exceptions)

Case report
A case report should have at least one of the following characteristics to be published in the Journal:
special interest to the clinical research community
no more than 6 key words a rare case that is particularly useful to demonstrate a mechanism or a difficulty in diagnosis
new diagnostic method
new or modified treatment
a text that demonstrates relevant findings and is well documented and without ambiguity
The manuscript should contain:
abstract of no more than 250 words
no more than 6 key words
a running title to be used as a page heading, which should not exceed 60 letters and spaces
the text may be divided into sections with appropriate titles and subtitles
no more than 20 references (without exceptions)
no more than three illustrations (figures and/or tables)

Organization of the Manuscript
Most articles published in the *Brazilian Journal of Medical and Biological Research* will be organized into the following sections: Title, Authors, Affiliations, Abstract, Key words, Running Title, Author for Correspondence and email address
Introduction Material and Methods Results Discussion Acknowledgments References Tables with a short descriptive title and footnote legends Figures with a short descriptive title, descriptive legends and uniformity in format
Continuous page numbers are required for all pages including figures. There are no specific length restrictions for the overall manuscript or individual sections. However, we urge authors to present and discuss their findings concisely. We recognize that some articles will not be best presented in our research article format. If you have a manuscript that would benefit from a different format, please contact the editors to discuss this further.

Title Page
Title - The title should be as short and informative as possible, should not contain non-standard acronyms or abbreviations, and should not exceed two printed lines. Example: **Single-step purification of crotapotin and crotactine from *Crotalus durissus terrificus* venom using preparative isoelectric focusing**
Authors and Affiliations
Initials and last name(s) of author(s) (matched with superscript numbers identifying institutions). Institution(s) (Department, Faculty, University, City, State, Country) of each author (in Portuguese if authors are from Brazil). Example:

A.S. Aguiar[1], A.R. Melgarejo[1], C.R. Alves[2] and S. Giovanni-De-Simone[2,3] [1]Divisão de Animais Peçonhentos, Instituto Vital Brazil, Niterói, RJ, Brasil

[2]Laboratório de Microsequenciamento de Proteínas, Departamento de Bioquímica e Biologia Molecular, Instituto Oswaldo Cruz, FIOCRUZ, Rio de Janeiro, RJ, Brasil

[3]Departamento de Biologia Celular e Molecular, Universidade Federal Fluminense, Niterói, RJ, Brasil
Abstract
Since abstracts are published separately by Information Services, they should contain sufficient hard data, to be appreciated by the reader. The *Brazilian Journal* publishes **unstructured abstracts** in a single paragraph. The abstract should not exceed 250 words.
The abstract should briefly and clearly present the objective, experimental approach, new results as quantitative data if possible, and conclusions. It should mention the techniques used without going into methodological detail and mention the most important results.
Abbreviations should be kept to a minimum and should be defined in both the Abstract and text. Please do not include any reference citations in the abstract. If the use of a reference is unavoidable, the full citation should be given within the abstract.
Please see <http://www.bjournal.com.br/writing_a_good_abstract.html> for suggestions on writing a good abstract
Key Words
A list of key words or indexing terms (no more than 6) should be included. A capital letter should be used for the first letter of each key word, separated by a semicolon. The Journal recommends the use of medical subject headings of Index Medicus for key words to avoid the use of several synonyms as entry terms in the index for different papers on the same subject. Remember, key words are used by the Scielo Database (see http://www.scielo.br/bjmbr;articles search/subject) to index published articles.

Running title
This short title, to be used as a page heading, should not exceed 60 letters and spaces.
Corresponding author
One of the authors should be designated as the corresponding author. It is the corresponding author's responsibility to ensure that the author list is accurate and complete. If the article has been submitted on behalf of a consortium, all consortium members and affiliations should be listed in the Acknowledgments section.
Provide the name and email address of the author to whom correspondence should be sent.

Introduction
The Introduction should put the focus of the manuscript into a broader context. As you compose the Introduction, think of readers who are not experts in this field. This should state the purpose of the investigation and justification for undertaking the research and relationship to other work in the field. An extensive listing or review of the literature should not be used. If there are relevant controversies or disagreements in the field, they should be mentioned so that a non-expert reader can delve into these issues further. The Introduction should conclude with a brief statement of the overall aim of the experiments and a comment about what was achieved.

Material and Methods
Sufficient information should be provided in the text or by referring to papers in generally available journals to permit the work to be repeated. This section should provide enough detail for reproduction of the findings. Protocols for new methods should be included, but well-established protocols may simply be referenced. We encourage authors to submit, as separate files, detailed protocols for newer or less well-established methods. These will be linked to the article and will be fully accessable.

Results
The results should be presented clearly and concisely. Tables and figures should be used only when necessary for effective comprehension of the data. The Results section should provide results of all of the experiments that are required to support the conclusions of the paper. There is no specific word limit for this section, but a description of experiments that are peripheral to the main message of the article and that detract from the focus of the article should not be included. The section may be divided into subsections, each with a concise subheading. Large datasets, including raw data, should be submitted as supplementary files; these are published online linked to the article. The Results section should be written in past tense. In some situations, it may be desirable to combine Results and Discussion into a single section.

Discussion
The purpose of the Discussion is to identify new and relevant results and relate them to existing knowledge. Information given elsewhere in the text, especially in Results, may be cited but all of the results should not be repeated in detail in the Discussion. The Discussion should spell out the major conclusions and interpretations of the work including some explanation of the significance of these conclusions. How do the conclusions affect the existing assumptions and models in the field? How can future research build on these observations? What are the key experiments that must be done? The Discussion should be concise and tightly argued. If warranted, the Results and Discussion may be combined into one section.

Acknowledgments
When appropriate, briefly acknowledge technical assistance, advice and contributions from colleagues. People who contributed to the work, but do not fit the criteria for authors should be listed in the Acknowledgments section, along with their contributions. Donations of animals, cells, or reagents should also be acknowledged You must also ensure that anyone named in the Acknowledgments agrees to being so named. Financial support for the research and fellowships should be acknowledged in this section (agency and grant number).

Figures
Figures must be submitted in high-resolution version (600 dpi). Please ensure that the files conform to our Guidelines for Figure Preparation when preparing your figures for production.
Preparing figure files for submission
The *Brazilian Journal of Medical and Biological Research* encourages authors to use figures where this will increase the clarity of an article. The use of color figures in articles is free of charge. The following guidelines must be observed when preparing figures. Failure to do so is likely to delay acceptance and publication of the article.
Each figure of a manuscript should be submitted as a single file.
Figures should be numbered in the order they are first mentioned in the text, and uploaded in this order.
Figure titles and legends should be provided in the main manuscript, not in the graphic file. The aim of the figure legend should be to describe the key messages of the figure, but the figure should also be discussed in the text.
An enlarged version of the figure and its full legend will often be viewed in a separate window online, and it should be possible for a reader to understand the figure without moving back and forth between this window and the relevant parts of the text.

Each legend should have a concise title of no more than 15 words. The legend itself should be succinct, while still explaining all symbols and abbreviations. Avoid lengthy descriptions of methods. Statistical information should be given as well as the statistical tests used.
Arrows or letters should be used in the figure and explained in the legend to identify important structures.
Figures with multiple panels should use capital letters A, B, C, etc. to identify the panels.
Each figure should be closely cropped to minimize the amount of white space surrounding the illustration. Cropping figures improves accuracy when placing the figure in combination with other elements, when the accepted manuscript is prepared for publication. For more information on individual figure file formats, see
Individual figure files should not exceed 5 MB. If a suitable format is chosen, this file size is adequate for extremely high quality figures.
Please note that it is the responsibility of the author(s) to obtain permission from the copyright holder to reproduce figures (or tables) that have previously been published elsewhere. In order for all figures to be open-access, authors must have permission from the rights holder if they wish to include images that have been published elsewhere in non-open-access journals. Permission should be indicated in the figure legend, and the original source included in the reference list.
Supported file type
The following file format can be accepted: TIFF (suitable for images) – with 600 dpi.
Micrographs should be treated like photographs with the following additional guidelines
Electron micrographs **must contain a magnification bar** with its equivalence in micrometers. This information can be found on all micrographs together with the magnification size.
Details of any stains used and the method of preparation the sample should be given in the figure legend or in the Material and Methods section.
Detailed information about the microscope used should be included in the Material and Methods section.
The type of camera, photographic software and details of any subsequent image manipulation should be included in the Material and Methods section.

Tables
Tables must be submitted in Word (.doc) or Excel (.xls), not as an image.
Tables must be numbered consecutively with Arabic numerals in the text.
Tables must have a
All explanatory information should be given in a footnote below the table.
All abbreviations must be defined in this footnote, even if they are explained in the text.
Tables must be understandable without referring to the text.
Tables occupying more than one printed page should be avoided, if possible.
Vertical and diagonal lines should not be used in tables; instead, indentation and vertical or horizontal space should be used to group data.
Tables in Excel must be cell-based; do not use picture elements, text boxes, tabs, or returns in tables.

References
Only published or accepted manuscripts should be included in the reference list. Meeting abstracts, conference talks, or papers that have been submitted but not yet accepted should not be cited. Limited citation of unpublished work should be included in the body of the text only. All personal communications should be supported by a letter from the relevant authors. Authors are responsible for the accuracy and completeness of their references and for correct text citation. When possible, references which are easily available in English should be cited.
The BJMBR uses the numbered citation (citation-sequence) method. References are listed and numbered in the order that they appear in the text. In the text, citations should be indicated by the reference number in parentheses. Multiple citations within a single set of parentheses should be separated by commas without a space (1,5,7) . Where there are 3 or more sequential citations, they should be given as a range (4-9).
Because all references will be linked electronically (doi), if possible, to the papers they cite, proper formatting of the references is crucial. For all references, **list the first 6 authors** followed by et al., Title of article, Journal (abbreviation), Year, Volume, Complete Pages, The *Brazilian Journal of Medical and Biological Research* follows the reference format of the Uniform Requirements for Manuscripts Submitted to Biomedical Journals, which can be found on the website of the National Library of Medicine (http://www.nlm.nih.gov/bsd/uniform_requirements.html). Use the Medline journal abbreviations and follow the reference style shown on the Website noted above, with several exceptions. See below for details. If the author uses the program "Reference Manager", copy the file containing the style of the Brazilian Journal of Medical and Biological Research and place it in the folder of "Styles". When submiting the manuscript, send the file produced in Reference Manager (".rmd" and ".rmx") as an attachment.
Please use the following style for the reference list:
Published Papers. First 6 authors followed by et al., Title, Journal (abbreviation in italics), Year, Volume, Complete Pages. Lammers AE, Hislop AA, Flynn Y, Haworth SG. The 6-minute walk test: normal values for children of 4-11 years of age. *Arch Dis Child* 2008; 93: 464-468.
Zhang Q, Malik P, Pandey D, Gupta S, Jagnandan D, Belin de CE, et al. Paradoxical activation of endothelial nitric oxide synthase by NADPH oxidase. *Arterioscler Thromb Vasc Biol* 2008; 28: 1627-1633.
Article accepted for publication but not yet published. First 6 authors followed by et al., Title, Journal

(abbreviation), Year of expected publication, (in press) at the end of the citation. Janiszewski M, Lopes LR, Carmo AO, Pedro MA, Brandes RP, Santos CXC, et al. Regulation of NAD(P)H oxidase by associated protein disulfide isomerase in vascular smooth muscle cells. *J Biol Chem* 2005 (in press).
Internet Communication. Ensure that URLs are active and available. Provide DOI, if available.
Developmental toxicology. http://www.devtox.org/nomenclature/organ.php. Accessed April 10, 2015.
CAPES Statistics. http://www.capes.gov.br/capes/portal. Accessed March 16, 2006.
CNPq Plataforma Lattes, "Investimentos do CNPq em CT&I". http://fomentonacional.cnpq.br/dmfomento/home/index.jsp. Accessed March 16, 2006.
Audiovisual Material
Physician's Desk Reference (PDR). Release 2003.1AX. [CD-ROM]. Montvale: Thomson PDR; 2003.
Computer Program
Dean AG, Dean JA, Coulombier D, Brendel KA, Smith DC, Burton AH, et al. *Epi info, version 6.04: a word processing database and statistics program for public health on IBM-compatible microcomputers*. [Computer program]. Atlanta: Centers of Disease Control and Prevention; 1998.
Patent
Larsen CE, Trip R, Johnson CR. Methods for procedures related to the electrophysiology of the heart. Patent No. 5.529.067. Novoste Corporation; 1995.
Book, Whole. Authors, Book title, Edition, City, Publisher, Year. American College of Sports Medicine. *Diretrizes do ACSM para os testes de esforço e sua prescrição*. Rio de Janeiro: Guanabara Koogan; 2007.
Book, Chapter. Authors, Chapter Title, Editors, Book title, Edition, City, Publisher, Year, Pages of citation. Kronfol A. Behavioral effects of cytokines: a psychiatrist's perspective. In: Plotnikoff NP, Faith RE, Murgo AJ, Good RA (Editors), *Cytokines, stress and immunity*. London: CRC Press; 2007. p 1-16. Kintzios SE. What do we know about cancer and its therapy? In: Kintzios SE, Barberaki MG
(Editors), *Plants that fight cancer*. New York: CRC Press; 2004. p 1-14.
Report
WHO (World Health Organization), IPCS (International Program in Chemical Safety). *Environmental health criteria: 118 Inorganic mercury*. Geneva: World Health Organization; 1991. National Commission on Sleep Disorders Research. *Wake up America: a national sleep alert*. Washington: Government Printing Office; 1993.
National Heart Lung and Blood Institute. Global Initiative for Asthma (GINA). *Global strategy for asthma management and prevention: NHLBI/WHO Workshop Report*. Bethesda: National Institute of Health. National Heart, Lung and Blood Institute publication No. 02-3659; 2006.
Thesis
Joselevitch C. Visão no ultravioleta em Carassius auratus (Ostariophysi, Cypriformes, Cyprinidae): estudo eletrofisiológico do sistema cone - células horizontais. [Master's thesis]. São Paulo: Instituto de Psicologia, USP; 1999.
Conference, Symposium Proceedings. Cite papers only from published proceedings. Hejzlar RM, Diogo PA. The use of water quality modelling for optimising operation of a drinking water reservoir. *Proceedings of the International Conference Fluid Mechanics and Hydrology*. 1999 Jun 23-26; Prague. Prague: Institute of Hydrodynamics AS CR; 1999. p 475-482.
"**Unpublished results", "Personal communication" and "Submitted papers"**. Reference should appear in the text with the individual name(s) and initials and not in the reference list. (Santos CS, da-Silva GB, Martins LT, unpublished results).
It is assumed that the author has obtained permission from the source when "personal communication" is cited.

How to submit a manuscript to the BJMBR

Author Instructions

Please make sure you have read through these instructions carefully before beginning the submission process. Please go to www.bjournal.com.br at the right-hand corner of the home page and click on SUBMIT A MANUSCRIPT and follow the directions. If you need further assistance, please contact the Journal Staff directly (bjournal@terra.com.br">bjournal@terra.com.br). Manuscript preparation instructions can be found at http://www.bjournal.com.br.

Submission Process

The seven steps of the submission process are: Type, Title & Abstract; Attributes; Authors & Institutions; Recommended reviewers; Details & Comments; File upload; Review & Submit. The steps each contain sub-steps that can be accessed by clicking on their respective tabs.

Manuscript criteria and information

The Brazilian Journal of Medical and Biological Research is a peer-reviewed electronic journal published monthly by the Associação Brasileira de Divulgação Científica (ABDC). Submission of a manuscript to the Brazilian Journal implies that the data have not been published previously and will not be submitted for publication elsewhere while the manuscript is under review. The following represent "prior publication": any printed material in excess of 500 words describing results or methods of a submitted/in press manuscript; published tables or illustrations that duplicate the content of a manuscript; electronic manuscripts or posters available via the Internet.

When part of the material in a manuscript has been presented as a preliminary communication or in an unrefereed symposium, this should be cited as a footnote on the title page and a copy should accompany the submitted manuscript.

Copyright

The Brazilian Journal of Medical and Biological Research (BJMBR) applies the Creative Commons Attribution License (CCAL) to all works published (read the human-readable summary or the full license legal code). Under the CCAL, authors retain ownership of the copyright for their article and can allow anyone to download, reuse, reprint, modify, distribute, and/or copy articles published in the BJMBR, as long as the original authors and source are cited. **No permission is required from the publishers.**

Cell Biology

The main characteristic of research papers in the area of Cell Biology is the emphasis on the integration at the cellular level of biochemical, molecular, genetic, physiological, and pathological information. This section considers manuscripts dealing with either prokaryotic or eukaryotic biological systems at any developmental stage. Papers on all aspects of cellular structure and function are considered to be within the scope of Cell Biology by the BJMBR. The Editors encourage submission of manuscripts defining cell biology as an area of convergence of several other research fields, especially manuscripts providing insights into the cellular basis of immunology, neurobiology, microbial pathology, developmental biology, and disease. Manuscripts containing purely descriptive observations will not be published. Manuscripts reporting new techniques will be published only when adequately validated and judged by the Editors to represent a significant advance.

Biological activity of natural products

The Journal will consider papers for publication which describe the activity of substances of biological origin only if they satisfy all of the following criteria:

Papers should describe the separation of the crude material into fractions (not necessarily into homogeneous materials) with the fractions containing biological activity identified clearly in the separation scheme. Phytochemical studies should be accompanied by biological tests. A survey of pharmacological activity of plant extracts or teas will not be considered for publication.

In addition to the demonstration of activity in one or more biological system, experiments must be performed attempting to provide information concerning the mechanism(s) of action of the substance(s) being tested.

Sufficient experimental information must be provided to permit repetition of the preparation of fractions and the bioassay used.

Sources should be identified completely, and, if plant material, a specimen should be classified by an expert and deposited in a local botanical garden, university or research institute. The name and institution of the person who classified the plant and the number of the voucher under which it was deposited should be provided in the Material and Methods section.

The Journal does not publish toxicological studies.

Editorial review and processing

The receipt of manuscripts is acknowledged immediately. Once a paper has been evaluated by peer review, the authors will be notified of the editorial decision. Galley proofs will be sent to authors for the correction of errors. Authors are responsible for all statements made in their article, including changes made by the copy editor and authorized by the corresponding author. The dates of receipt and acceptance will be published for each article. Authors are expected to return manuscripts to the Journal within 15 calendar days after they are sent to them for modifications or for style and copy editing, and to return galley proofs within 72 hours. The total number of "late" days will be added to the submission date at the time of publication

7.6 Carta de Submissão

FACULDADE DE CIÊNCIAS MÉDICAS DA SANTA CASA DE SÃO PAULO
FUNDAÇÃO ARNALDO VIEIRA DE CARVALHO
NÚCLEO DE APOIO À PUBLICÃO - NAP

Submissão de artigo

Aluno: Daniele Akemi Iwazawa Okino

Autores: Ricardo Riyoiti Uchida; Marsal Sanches; Yumi Cristina Komatsu; João Eduardo Nunes Salles

O artigo intitulado **"Body image dissatisfaction, but not body mass index, is associated to anxiety in obese patients"** foi submetido na revista Brazilian Journal of Medical and Biological Research, no dia 20 de junho de 2016 pelo NAP-Núcleo de Apoio a Publicação da Faculdade de Ciências Médicas da Santa Casa de São Paulo.

classificação da revista:

- Qualis capes Med. I: 2014 – B2

- Fator de Impacto – 2015: 1.146

Atenciosamente.

Aparecida Suely Orlandeli
NAP - Núcleo de Apoio à Publicação

Rua Dr. Cesário Motta Junior, 61 – CEP 01221-020 – São Paulo – SP
Telefone: (55 11) 3367-7700 – www.fcmscsp.edu.br