

Perceived Stress and Religious Coping in Morbidly Obese People

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Abstract

Objective: To assess religious/spiritual coping in morbidly obese people and to correlate its relation to Perceived Stress.

Method: Cross-sectional, non-experimental, quantitative study, with collection carried out between September 2020 and July 2021. The analyzes were based on absolute and relative frequency, central tendency, Shapiro-Wilk normality test and Spearman correlation coefficient.

Results: We obtained 41 participants, 29.27% men and 70.73% women. Utilization scores were high for Religious and Spiritual Coping Scale (SRCOPE), Total SRCOPE (TSRCOPE) (M = 3.6, SD = 0.4), medium for Positive SRCOPE (PSRCOPE) (M = 3.1, SD = 0.7) and low use of Negative SRCOPE (NSRCOPE) (M = 1.9, SD = 0.6). The correlation between the 14 questions of the Perceived Stress Scale (PSS) and the SRCOPE showed a positive association between TSRCOPE, PSRCOPE ($p = 0.031$ and $r = 0.337$) and NSRCOPE ($p = 0.002$ and $r = 0.477$), indicating that morbidly obese people believe in positive or negative influence of spirituality and religiosity in their lives. The correlations between factors PSRCOPE 1, 2, 3, 4, 5, 6 and 7 with the PSS items showed significant associations in practically all questions, especially in PSRCOPE 1, suggesting that participants use their religiosity and spirituality in coping everyday life.

Conclusion: Stress, whether chronic or acute, plays an important role in the maintenance of morbid obesity and the strategy of spiritual religious coping can be appropriate and beneficial to the population in question. Cross-sectional and longitudinal studies with a more robust sample are needed in order to obtain generalized data for the entire Brazilian population.

Keywords: morbid obesity, religious confrontation, spirituality, spiritual confrontation, psychological stress

1. Introduction

Considered a worldwide epidemic, obesity permeates clinical, scientific, ethical and aesthetic discussions. It is a chronic, multicausal and metabolic disease related to a nutritional and public health problem. The implications of such a diagnosis on the obese person and on the health system has become a worldwide concern in recent decades, mainly due to the substantial increase in global prevalence (Jastreboff, Kotz, Kahan, Kelly, & Heymsfield, 2019; Jaacks et al., 2019).

Due to the clinical and public severity, the World Health Organization (WHO) and other related organizations characterize obesity as a debilitating disease and worthy of attention by financial institutions, as it directly impacts public economic and organizational factors (Jastreboff et al., 2019).

Defined as a positive energy balance caused by excessive accumulation of adipose tissue in body composition, this health condition is directly related to reduced life expectancy. Its consequences last as a result of the diagnosis itself and it is estimated that obese people can lose 5 to 20 years in their life expectancy, depending on the related comorbidities (Blüher, 2019).

Obesity, as a relevant factor, due to the accumulation of comorbidities and changes in body composition, has an important impact during the aging process, being currently suggested as a risk factor for frailty in the elderly, which can lead to a sharp increase in health expenditures and population disability. In the elderly and obese population, conditions such as sarcopenic obesity, frailty, disability and problems in the social and psychological areas, for example, are observed. Such conditions directly impact health and quality of life during aging, mainly

because they have similar physiological functions and are associated with different comorbidities (Ghosh, Sinha, & Raghunath, 2019; Landré et al., 2020).

The comorbidities most associated with this non-communicable disease, described in the International Classification of Diseases and Related Health Problems (ICD-10) through the code E66.0 are: Type 2 Diabetes Mellitus (T2DM), systemic arterial hypertension, cardiovascular, hepatic, osteoarticular diseases, male and female infertility and different types of cancers. It is known that this chronic disease is directly related to early deaths worldwide, and obesity associated with the aforementioned comorbidities is considered one of the main causes of mortality and disability (Blüher, 2019).

Obesity is related to several etiological factors, which involve psychological, physical, social, environmental and cultural components. Such components are related to behavioral changes, difficulties in performing daily activities, binge eating, depression, anxiety, stress, among other psychological, emotional and social disorders. The fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 2014) highlights that, while not being a mental disorder, obesity also involves behavioral disorders. Clinical and public health attention is needed for disorders resulting from this health condition (American Psychiatric Association, 2014; Lima & Oliveira, 2016; Cotter & Kelly, 2018).

In the biological and physiological scope, stress directly interferes with cortisol levels and such activation is related to the hypothalamic-pituitary-adrenal axis. It is observed that, when in high concentration, this hormone causes alteration in the dietary pattern and reduces the brain's sensitivity to leptin, promoting an increase in caloric intake. Stress is considered, due to the aforementioned mechanism, a predictor of the increase in abdominal adiposity and body mass index (BMI), as it is directly related to weight gain with excess fat deposition, mainly central (Cotter & Kelly, 2018; Tomiyama, 2019).

Chronically elevated cortisol levels due to stressful conditions interfere with hippocampal structure and function. This process produces biological changes such as memory and cognition problems. It is also noteworthy that this situation is usually triggered when the subject does not have an arsenal of coping strategies in the face of stressful situations (Cotter & Kelly, 2018; Tomiyama, 2019).

Religious-spiritual coping is observed as a coping strategy, when subjects turn to their religion or spirituality in the face of difficult situations in order to seek meaning, control, spiritual comfort, intimacy with God or life transformation through pursuit of emotional, psychological and physical well-being (Panzini & Bandeira, 2007).

Studies suggest that this coping strategy, religious-spiritual coping, can be considered a protective factor for the physical and mental health of different populations. There is a relationship between weight and religiosity/spirituality in different cultures and age groups (Dunn et al., 2020; Bharmal, McCarthy, Gadgil, Kandula, & Kanaya, 2018).

Due to several factors, including the lack of behavioral or spiritual strategies, it is observed in the obese population, especially in people with morbid obesity, a behavioral pattern of increased intake of foods rich in fat and sugars. It is noteworthy that this can be a non-assertive and unhealthy reward strategy used by some people to deal with stressful events (Cotter & Kelly, 2018).

It is noteworthy that people with morbid obesity can use, as long as they have learned or had previous experience, several strategies for coping with stress, which are considered healthier practices than high levels of fat and sugar intake.

Specifically related to morbid obesity, we did not find studies in the literature that evaluated the relationship of this diagnosis with religiosity, spirituality and perceived stress, based on the selected instruments. Thus, the study in question aimed to correlate perceived stress and religious/spiritual coping with the hypothesis that morbidly obese people with higher predictive values of religiosity and spirituality had less perceived stress.

2. Methods

This is a cross-sectional, non-experimental study based on a quantitative methodological approach. Data collection was carried out at the participants' homes or at the Obesity Outpatient Clinic linked to the Clinical Hospital of the Federal University of Triângulo Mineiro (UFTM). This institution is located in the city of Uberaba - Minas Gerais. It is noteworthy that the data collection of this research took place from September 2020 to July 2021, concomitant with the COVID-19 pandemic. Due to social distancing needs, participants were able to choose between the Obesity Outpatient Clinic or their homes for data collection. It is worth noting that all safety criteria related to protection against COVID-19 and ethical criteria have been ensured.

For the patient who chose to carry out the collection at home, the appointment was made on days and times

previously established in person or by telephone.

The research population consisted of subjects with problems related to eating or endocrine disorders registered at the Obesity Outpatient Clinic and/or described in the service file books of professionals who worked in the sector in question. Research subjects were those with a BMI equal to or greater than 40kg/m².

As for the inclusion criteria, adult patients between 20 and 59 years of chronological age, attended at the UFTM Obesity Outpatient Clinic or being followed up by at least one of the health professionals based in the place, and people with of BMI greater than 40kg/m² who had not yet undergone bariatric surgery. Exclusion criteria were based on patients who had difficulties in understanding the collection instruments and who had diagnoses of Cushing's Syndrome. This criterion was adopted for the non-compromise of the Perceived Stress Scale (Arnaldi et al., 2003).

Three instruments were used for the collection, respecting the description sequence below for the order of application with the research participants.

Socioeconomic and Clinical Questionnaire to characterize the study population in demographic and socioeconomic data such as age, marital status, number of children, education level, professional activity, type of housing, composition and family income. Self-reported information was also collected on clinical health conditions such as obesity-associated comorbidities, medication use, and time since obesity was diagnosed. To quantify the anthropometric measurements, BMI and height were obtained using the height measurement technique according to the Frankfurt Plan (Ministério da Saúde, 2011).

The Perceived Stress Scale (PSS) was subsequently used, which aims to verify the existence of emotional states related to stress, measuring the degree to which individuals perceive situations as stressful. The instrument questions refer to feelings and thoughts, such as sadness, disability, stress, confidence and coping and controlling irritations, time and difficulties related to perceived stress observed in the last 30 days. It consists of 14 questions with responses on a Likert scale ranging from 0 to 4. The Likert scale has responses ranging from 0 (never) to 4 (always). It is noteworthy that there are negative questions that are added directly and others with a positive connotation that should have their scores inverted. The result of the scale is obtained from the sum of the 14 questions, the score can vary from 0 to 56, with the closer to 56 the greater the perceived stress. As for the validation of the instrument, there was a similar internal consistency ($r = 0.82$) to the reduced version ($r = 0.83$), which was verified using Cronbach's alpha coefficient (Luft, Sanches, Mazo, & Andrade, 2007).

Finally, the Religious/Spiritual Coping Scale (SRCOPE) was applied, used to assess Religious/Spiritual coping and positive or negative strategies in the face of stressful events (SRCOPE-Brief). It highlights that the CRE-Brief construct validation showed excellent levels of reliability in the positive dimension factors with internal consistency of 0.98 and negative of 0.86, both verified by Cronbach's alpha coefficient (Panzini & Bandeira, 2007).

The SRCOPE-Brief is based on 49 items grouped into 11 factors, 7 of which are positive and 4 are negative Religious/Spiritual Coping factors. It is noteworthy that the instrument, on a Likert scale with a score from 1 (not at all) to 5 (very much). The instrument must be answered taking into account the way in which the participant reacted to the previously mentioned stress situation.

The positive factors are related to: P1-Transformation of oneself and/or your life, P2-Actions in search of spiritual help, P3-Offering help to others, P4-Positive position towards God, P5-Actions in search of the other institutional, P6-Detachment through God/Religion/Spirituality and P7-Search for spiritual knowledge. The Negative Factors are based on N1-Negative reevaluation of God, N2-Negative positioning towards God, N3-Dissatisfaction with the other institutional and N4-Negative reevaluation of meaning.

The interpretation of the SRCOPE-Brief scale scores is analyzed based on the following parameters: values from 1.00 to 1.50: None or negligible; 1.51 to 2.50: Low; 2.51 to 3.50: Average and 4.51 to 5.00: Very High.

All ethical precepts were complied with and the participants received all explanations relevant to the study and signed the Free and Informed Consent Form. The research was approved by the Research Ethics Committee of the Federal University of Triângulo Mineiro under protocol number 4.026.569. Participant names were coded by ordinal numbers to ensure anonymity and confidentiality.

2.1 Statistical Analysis

The data referring to the instruments were individually described and analyzed from the creation of a database in the Excel for Windows software (Microsoft Inc.), in a double typing process to avoid inconsistency. Subsequently, the variables were submitted to statistical analyzes and tests in the Statistical Package for Social Science - SPSS

Statistics 21.0 software.

The analysis of categorical variables included absolute and relative frequency tables, while quantitative variables included measures of central tendency (mean and median) and variability (amplitudes and standard deviation).

To verify the behavior of the variables regarding normality, the Shapiro-Wilk normality test was applied. In the correlation analysis, the Spearman correlation coefficient was used. Significance was established with a p-value ≤ 0.05 .

3. Results

The study population consisted of 41 participants according to the inclusion and exclusion criteria recommended in the method.

For the research, 268 people registered at the Obesity Outpatient Clinic and/or included in the service file books of the professionals responsible for the sector were contacted. From the initial sample, 227 people were excluded, with the following reasons: 39 for living in other cities; 91 did not have update contact phone numbers; 21 no longer met the inclusion criteria due to age, weight loss, or previous diagnosis of COVID-19; 59 did not accept to participate in the research due to the need for isolation from COVID-19, withdrawal from outpatient follow-up or other reasons, and 17 did not attend the third appointment at the clinic or were not found at their homes after the second scheduled visit.

Patients included in the study were predominantly female ($n = 29$; 70.73%), aged 36.85 ± 8.94 years and BMI of 46.75 ± 6.43 kg/m². In Tables 1 and 2, additional demographic data were also represented.

Table 1. Socio-demographic characterization of morbidly obese patients included in the study

	Mean	Standard deviation	Minimum	Maximum
Age (Years)	36.8	8.9	20.0	53.0
Years of Formal Study	5.3	1.6	2.0	19.0
Weight (Kg)	129.4	24.6	96.0	199.3
Height (m)	1.7	0.9	1.49	1.94
BMI (Kg/m ²)	46.7	6.4	40.3	66.9
Follow-up time (Yrs-mo)	3.4	3.5	0	15.0

Table 2. Socio-demographic characterization regarding the percentage of variables gender, marital status, employment status, comorbidities and use of continuous medication associated with obesity of 41 participants followed up at the Obesity Outpatient Clinic of the Clinical Hospital of the Federal University of Triângulo Mineiro

	n	%
Gender		
Male	12	29.3
Female	29	70.7
Marital status		
Single	18	43.9
Married	10	24.4
Divorced	6	14.6
Cohabited /lives together	6	14.6
Widower	1	2.5
Work Status		
Working	30	73.2
Unemployed	6	14.6
Retired	5	12.2

Comorbidities associated with obesity

None	15	36.6
Type 2 Diabetes Mellitus	5	12.2
Arterial hypertension	16	39.0
Cardiovascular disease	4	9.8
Osteoarticular disease	11	26.8
Depression	7	17.1
Others	18	43.9

Number of drugs used /day

1	10	24.4
2	9	21.9
3	5	12.2
4	2	4.9
5	1	2.4
6 or more	3	7.3
None	11	26.8

Data referring to religious-spiritual coping used by morbidly obese people were collected according to use in terms of positive SRCOPE (PSRCOPE), negative SRCOPE (NSRCOPE), total SRCOPE (TSRCOPE); NSRCOPE/PSRCOPE ratio and description of all 7 positive and 4 negative factors from the instrument, as shown in Table 3.

Table 3. Results of the evaluation of religiosity and religious-spiritual coping of morbidly obese people

	Mean	Standard deviation	Median	Minimum	Maximum
PSRCOPE	3.1	0.8	3.1	1.4	4.7
NSRCOPE	1.9	0.6	1.9	0.1	3.2
TSRCOPE	3.6	0.4	3.7	2.7	4.4
NSRCOPE/PSRCOPE	0.6	0.2	0.6	0.3	1.3
PSRCOPE factors					
P1	3.1	1.0	3.1	1.0	4.8
P2	2.8	1.2	2.8	1.0	5.0
P3	3.1	1.0	3.2	1.0	4.8
P4	3.9	0.8	4.0	2.0	5.0
P5	2.7	1.2	2.5	1.0	5.0
P6	3.3	1.3	3.7	1.0	5.0
P7	2.0	1.0	1.7	1.0	4.7
NSRCOPE factors					
N1	1.5	0.9	1.2	1.0	4.4
N2	2.3	1.2	2.3	1.0	5.0
N3	1.6	0.8	1.5	1.0	4.3
N4	2.2	1.0	2.0	1.0	4.3

Note. PSRCOPE: positive religious-spiritual coping; NSRCOPE: negative religious-spiritual coping; TSRCOPE: total religious-spiritual coping; NSRCOPE/PSRCOPE: negative religious-spiritual coping/positive religious-spiritual coping ratio;

PSRCOPE Factors- Positive Factors: P1- Transformation of yourself and/or your life, P2-Actions in search of spiritual help, P3-Offering help to others, P4-Positive position towards God, P5-Actions in search of the other institutional, P6-Detachment through God/Religion/Spirituality and P7-Search for spiritual knowledge; NSRCOPE Factors - Negative Factors: N1-Negative reevaluation of God, N2-Negative positioning towards God, N3-Dissatisfaction with the institutional other and N4-Negative reevaluation of meaning.

Regarding religious-spiritual coping, scores of high use were observed for TSRCOPE (3.6 ± 0.4), medium for PSRCOPE (3.1 ± 0.7) and, on the other hand, low use of NSRCOPE (1.9 ± 0.6). The PSRCOPE4 factor, referring to the Positive Position towards God, presented a high average use score (3.9 ± 0.8). Regarding perceived stress, the data were described in Table 4.

Table 4. Results of the Perceived Stress Scale (PSS) assessment in morbidly obese people

	Mean	Standard deviation	Median	Minimum	Maximum
PSSTotal	3.1	0.8	2.0	1.4	4.0
PSS1	2.3	1.3	1.9	0.0	4.0
PSS2	2.2	1.5	2.0	0.0	4.0
PSS3	3.3	3.2	3.0	0.0	4.0
PSS4	1.9	1.1	2.0	0.0	4.0
PSS5	1.7	1.0	2.0	0.0	4.0
PSS6	2.0	1.0	2.0	0.0	4.0
PSS7	2.4	1.2	2.0	0.0	4.0
PSS8	2.0	1.1	2.0	0.0	4.0
PSS9	2.2	1.0	2.0	0.0	4.0
PSS10	2.0	1.1	2.0	0.0	4.0
PSS11	2.2	1.1	2.0	0.0	4.0
PSS12	3.2	1.0	4.0	1.0	4.0
PSS13	2.4	1.0	2.0	0.0	4.0
PSS14	2.1	1.3	2.0	0.0	4.0

As for the correlation between the 14 questions of the PSS and the SRCOPE and the results from the TSRCOPE, PSRCOPE and NSRCOPE, we obtained the following data described below and presented in the Table 5. It was found a positive association between question 11 of the PSS related to irritations due to situations that happen and that are out of control (PSS11) and TSRCOPE ($p = 0.001$). The PSRCOPE ($p = 0.031$) was correlated with PSS7, which refers to the feeling that things are happening according to the subject's will.

In the NSRCOPE, which is related to a negative view of spirituality, we observed the following positive associations question PSS 1 ($r = 0.409$; $p = 0.008$) which refers to the feeling of sadness due to unexpected events, PSS6 associated with the feeling of confidence in the ability to resolve of problems ($r = 0.385$; $p = 0.013$); PSS7 referring to feeling that events are in accordance with your will ($r = 0.477$; $p = 0.002$). In this research, both positive and negative results were obtained, which may indicate that people believe that spirituality can both positively and negatively influence life events. And the PSS11, about the participant feeling irritated for not having control of the events ($r = 0.388$; $p = 0.012$), indicates that the participants can see the lack of control as directly associated with spirituality (Table 5).

Table 5. Correlation between Total SRCOPE, Positive SRCOPE and Negative SRCOPE of the SRCOPE Scale and questions from 1 to 14 and Total score of the Perceived Stress Scale (PSS)

	TSRCOPE		PSRCOPE		NSRCOPE	
	r	p	r	p	r	p
PSS1	-0.006	0.969	0.250	0.115	0.409	0.008*
PSS2	-0.216	0.174	-0.075	0.642	0.281	0.750
PSS3	-0.610	0.703	0.097	0.547	0.148	0.357
PSS4	-0.870	0.587	0.053	0.743	0.250	0.114
PSS5	-0.980	0.540	0.071	0.661	0.214	0.180
PSS6	-0.210	0.188	0.069	0.670	0.385	0.013*
PSS7	0.038	0.814	0.337	0.031*	0.477	0.002*
PSS8	-0.056	0.730	-0.006	0.970	0.136	0.396
PSS9	-0.021	0.894	0.104	0.519	0.115	0.474
PSS10	-0.054	0.737	0.133	0.519	0.137	0.393
PSS11	-0.493	0.001*	-0.276	0.081	0.388	0.012*
PSS12	-0.154	0.336	-0.028	0.860	0.159	0.320
PSS13	-0.173	0.278	-0.073	0.652	0.127	0.430
PSS14	-0.119	0.459	-0.069	0.668	0.264	0.095
TOTAL SCORE	-0.105	0.515	-0.222	0.162	-0.152	0.342

In Table 6, correlations between the PSRCOPE factors 1, 2, 3, 4, 5, 6 and 7 from the SRCOPE with the items of the PSS were represented, and significant associations were observed in practically all the PSS questions and the PSRCOPE 1, which suggest that many of the changes that the participant perceives in themselves are associated with their spirituality. The exceptions observed were questions 10, 11 and 13. Question 10 refers to feeling control over things, while question 11 refers to being irritated by not having situations under control and question 13 about being able to control the way time is spent.

Table 6. Correlation between the Positive SRCOPE factors 1, 2, 3, 4, 5, 6 and 7 and questions from 1 to 14 and Total Score of the Perceived Stress Scale

	PSRCOPE 1		PSRCOPE 2		PSRCOPE 3		PSRCOPE 4		PSRCOPE 5		PSRCOPE 6		PSRCOPE 7	
	r	p	r	p	r	p	r	p	r	p	r	p	r	p
PSS1	0.474	0.002*	0.128	0.427	0.159	0.322	0.182	0.255	0.134	0.402	0.193	0.226	-0.007	0.964
PSS2	0.315	0.045*	-0.196	0.219	-0.300	0.057	-0.212	0.184	-0.191	0.232	0.059	0.715	-0.285	0.071
PSS3	0.400	0.010*	0.016	0.919	-0.271	0.086	-0.260	0.873	0.020	0.900	0.178	0.264	-0.159	0.321
PSS4	0.354	0.023*	-0.078	0.327	-0.148	0.357	-0.186	0.243	0.036	0.822	0.079	0.623	0.077	0.631
PSS5	0.314	0.045*	0.124	0.441	-0.228	0.152	-0.109	0.498	0.037	0.819	0.129	0.422	-0.055	0.734
PSS6	0.434	0.005*	-0.058	0.717	-0.288	0.068	-0.128	0.426	-0.042	0.795	0.143	0.374	-0.020	0.903
PSS7	0.581	0.0001*	0.243	0.125	-0.007	0.966	0.080	0.619	0.318	0.042*	0.168	0.293	0.228	0.152
PSS8	0.316	0.044*	0.009	0.953	-0.249	0.117	-0.006	0.972	-0.076	0.635	0.022	0.892	-0.231	0.145
PSS9	0.374	0.016*	-0.080	0.620	-0.014	0.932	0.028	0.861	-0.034	0.832	0.156	0.331	0.069	0.670
PSS10	0.278	0.079	0.050	0.757	-0.009	0.955	-0.005	0.976	0.015	0.925	0.069	0.669	-0.039	0.807
PSS11	0.218	0.171	-0.358	0.021*	-0.544	0.0001*	-0.400	0.010*	-0.248	0.117	-0.190	0.235	-0.400	0.009*
PSS12	0.389	0.012*	-0.152	0.344	-0.254	0.109	-0.074	0.643	-0.164	0.307	0.034	0.834	-0.215	0.177
PSS13	0.208	0.191	-0.049	0.760	-0.218	0.170	-0.159	0.320	-0.084	0.600	-0.098	0.542	-0.274	0.278
PSS14	0.371	0.017*	-0.194	0.223	-0.399	0.010*	-0.099	0.536	-0.206	0.0196*	0.013	0.938	-0.235	0.139

There were associations between getting angry because things are out of control (question 11) with PSRCOPE 2 ($r = -0.358$; $p = 0.021$), which is related to seeking spiritual help, and PSRCOPE 3 ($r = -0.544$; $p \leq 0.0001$), a factor related to offering help to others. It is worth mentioning that the PSRCOPE 3 also showed statistical relevance with question 14 of the PSS ($r = -0.399$; $p = 0.010$), which is linked to the feeling of failure in the face of accumulated difficulties.

Question 11 was also correlated with PSRCOPE 4 ($r = -0.400$; $p = 0.010$), indicating a relationship between this situation and the participant's positive positioning before God. There was also an association between experiencing difficulty due to the accumulation of tasks and PSRCOPE 3 ($r = -0.544$; $p = 0.0001$), related to offering help to others.

The data point to a relationship between feeling that things are happening according to the participant's will (PSS7) with actions in search of the other institutional (PSRCOPE 5 $r = 0.318$; $p = 0.042$). Just as there was an association between feeling difficulty due to the accumulation of tasks (PSS14) and actions in search of the other institutional (PSRCOPE 5 $r = -0.206$; $p = 0.019$) and between being irritated by things that were out of control (PSS11) with the personal search for spiritual knowledge (PSRCOPE 7 $r = -0.400$; $p = 0.009$).

In the analysis between NSRCOPE factors 1, 2 3 and 4 from the SRCOPE with the PSS items, (Table 7) we obtained a correlation between NSRCOPE 1, which corresponds to a negative reassessment of God, with the following PSS questions: feeling nervous and stressed ($r = 0.3336$; $p = 0.032$), successfully dealing with difficult life problems ($r = 0.280$; $p = 0.007$) and being irritated by things that are out of control and NSRCOPE 1 ($r = 0.456$; $p = 0.003$).

Table 7. Correlation between Negative SRCOPE factors 1, 2 3 and 4 and questions from 1 to 14 and Total Score of the Perceived Stress Scale

	NSRCOPE 1		NSRCOPE 2		NSRCOPE 3		NSRCOPE 4	
	r	p	r	p	r	p	r	p
PSS1	0.292	0.064	0.255	0.108	0.072	0.654	0.378	0.015*
PSS2	0.265	0.094	0.212	0.184	-0.192	0.229	0.306	0.051
PSS3	0.336	0.032*	0.227	0.153	-0.257	0.104	0.231	0.147
PSS4	0.280	0.007*	0.226	0.154	-0.111	0.490	0.231	0.146
PSS5	0.227	0.154	0.176	0.270	0.069	0.666	0.180	0.261
PSS6	0.308	0.050	0.328	0.036*	0.119	0.457	0.428	0.005*
PSS7	0.323	0.040	0.294	0.063	0.109	0.499	0.484	0.001*
PSS8	0.199	0.212	-0.018	0.910	0.062	0.702	0.328	0.036*
PSS9	0.231	0.146	-0.020	0.899	-0.113	0.483	0.192	0.230
PSS10	0.135	0.400	-0.054	0.736	-0.001	0.996	0.103	0.523
PSS11	0.456	0.003*	0.155	0.332	0.028	0.862	0.467	0.002*
PSS12	0.070	0.666	0.093	0.562	-0.144	0.368	0.414	0.007*
PSS13	0.129	0.420	-0.069	0.666	-0.084	0.602	0.203	0.203
PSS14	0.193	0.228	0.161	0.313	-0.022	0.892	0.428	0.005*

Still referring to these factors, we observed a relationship between self-confidence to solve problems with NSRCOPE 2 ($r = 0.328$; $p = 0.036$), which is related to negative positioning towards God. On the other hand, the NSRCOPE 4, referring to the subject's dissatisfaction with the other institutional, was correlated with several PSS issues, namely: sadness with unexpected events ($r = 0.378$; $p = 0.015$), confidence to solve personal problems ($r = 0.428$; $p = 0.005$), feeling that things are not happening according to your will ($r = 0.484$; $p = 0.001$), thinking that you have not been able to deal with all the things you need to do ($r = 0.328$; $p = 0.036$), feeling being irritated by things that are out of control ($r = 0.467$; $p = 0.002$), finding themselves thinking about the things they should do ($r = 0.414$; $p = 0.007$) and having difficulty due to the accumulation of tasks ($r = 0.428$; $p = 0.005$).

4. Discussion

Literature studies indicate that psychosocial factors play an important role in the pathogenesis of different metabolic and inflammatory mechanisms. Elevated stress, as a process related to physiological and behavioral consequences, is directly associated with increased adiposity, risk of morbid obesity and prevalence of chronic diseases in adults (Cotter & Kelly, 2018).

Bruce, Beech, Griffith and Thorpe Jr (2016) highlight religion and spirituality as important determinants of health in adults. Obesity, especially morbid obesity, presents numerous biological, psychological, social and religious/spiritual variables. Among them, we have religious and spiritual confrontation as a possible strategy used as a protective factor against stress, as presented in this study.

The sociodemographic data showed agreement with the literature regarding a temporal analysis of food consumption, overweight and obesity in Brazil, in which the study population was composed mostly of women, and in people under 45 years of age and under 11 years of schooling (Silva, Caldeira, & Claro, 2021).

In Brazil, the age group most affected by obesity is people aged 40 to 59 years, which corroborates the findings of the research in question. Women represent the majority of people with obesity in the national reality, reaching 30.2% compared to 22.8% of men. Such results are justified due to sociocultural and gender aspects, since women normally perform different work activities from most Brazilian men, which also interferes with daily energy expenditure. There are also different patterns of consumption, food routine and relevant cultural issues such as the search for health care more evident in women, for example (Instituto Brasileiro de Geografia e Estatística, 2020; Malta, Silva, Tonaco, Freitas, & Velasquez-Melendez, 2019; Malveira, Santos, Mesquita, Rodrigues, & Guedine, 2021).

As for the associations found between the PSS and the SRCOPE-Brief, it was observed that the instruments were correlated in several questions. We obtained correlations both in the values of Total, Positive and Negative coping, which represent how these coping measures can be beneficial and adaptive, or not, to the individual; and in reference to the values of the Positive and Negative SRCOPE factors related to the organization of the instrument's dimensions into protective or negative factors of religious/spiritual coping strategies.

As for the values of the TSRCOPE and the PSRCOPE, we observed the outcome of these with the feeling that things are happening according to the subjects' wishes and the irritation for situations that are out of control, demonstrating that religiosity and spirituality are directly linked to a variety of behaviors, cognition and emotions (Panzini & Bandeira, 2007).

The data in question directs us to the fact that morbidly obese people who have positive scores for religiosity and spirituality use such coping as adequate adaptive strategies to mediate the relationship between the subject and the environment. It is observed that religious/spiritual coping, when used to deal with stress in a positive way, is associated with better results in physical and mental health and quality of life (Panzini & Bandeira, 2007).

On the other hand, the NSRCOPE, related to a negative view of spirituality, presented associations related to different feelings such as sadness due to unexpected events, confidence in the ability to solve personal problems and irritation due to lack of control. Such confrontation involves harmful strategies for the subject, such as delegating to God the resolution of problems, feeling dissatisfaction/discontent in relation to God, and to other people or to their religious institution; questioning the existence of God or even considering the stressful event as the performance of divine forces, punishment and chastisement (Panzini & Bandeira, 2007).

The associations listed above are justified by the non-beneficial coping used by the research subjects in the face of feelings and situations that are difficult to control and require well-defined and adaptive personal strategies to be successfully resolved. Morbidly obese people usually use food refuge as an extremely harmful coping strategy, especially in stressful situations, due to biological satiation mechanisms and conditioned behavioral patterns (Stutzer & Meier, 2016; Cotter & Kelly, 2018).

In addition to emotional issues, such associations are also revealed due to socio-cultural issues, which justify the results regarding the Positive and Negative SRCOPE with PSS7, which addresses issues related to the feeling of control over events. The correlation with beneficial or not beneficial coping strategies for the subject may be associated with beliefs and feelings in the face of everyday life events. Studies point to the perception of illness in the form of "blessings" or "punishments". Such a magical-religious conception, which justifies the negative correlation found, is based on the understanding that the actions we perform in the environment in which we are inserted, when not adequate, can be sinful and generate "curses". It is therefore considered that the positive association involves subjects who use coping styles based on the self-perception that they themselves are responsible for controlling their lives and that God acts in them, but discreetly granting them resources so that their

desires can actually be carried out in partnership, each one doing their own part (Panzini & Bandeira, 2007).

In the correlation between the PSRCOPE factors 1, 2, 3, 4, 5, 6 and 7 with the PSS items, the PSRCOPE 1 stands out, which was associated with practically all issues related to perceived stress. It is believed that the correlations found with the PSRCOPE factors occurred due to altruism arising from the offer of help to the other and actions in approaching places, members or religious institutions, personal transformation through adaptive, internal or environmental individual actions, in addition to the approach to God (Panzini & Bandeira, 2007).

Other research has shown close data, demonstrating that in the face of stressful situations, people seek religion and spirituality in order to find solutions to the circumstances experienced, using coping to understand the situation and have more adaptive behaviors based on changing different perspectives. It is observed that people with morbid obesity, when in situations of stress due to the feeling of lack of control, tend to look for support in the other; whether family, religious institution or other people in your social life. Such actions demonstrate that the feeling of lack of control caused by stressful situations can be minimized by acts that aim at an intimate relationship with God and the search for spirituality, altruism, empathy, compassion, improvement in emotional self-regulation behavior, self-acceptance and greater transcendental connection. (Kristeller & Jordan, 2018, Bernard, Riedel-Heller, & Luck-Sikorski, 2019; Puhl, Telke, Larson, Eisenberg, & Neumark-Stzainer, 2020).

With regard to PSS issues that generate situations such as nervousness, stress, inability to solve problems, sadness, lack of self-confidence; and the relationship with the NSRCOPE Factors, pertinent to the negative position towards God and blaming him for the problems and dissatisfaction with religious institutions, we consider that such data were obtained due to the subject's feeling that he will never be able to carry out his own designs. This feeling can come from the inability to face difficult problems, vulnerability associated with stigma and social discrimination due to being obese and the possible perception that these feelings are due to punishments or punishments from God. In this perspective, God is the culprit and the subject exempted from his responsibilities (Schwartzmann, 2018, Puhl et al., 2020).

God's accountability and the perception of "punishment" or "punishment" was also observed in the correlation between feelings of sadness in the face of unexpected events, lack of confidence, feelings of frustration, incapacity, irritation, task overload, intrusive thoughts, physical overload or emotional and dissatisfaction with the other institutional. Dissatisfaction with the other institutional can be represented both by religious institutions and by the symbolism of the set of beliefs that make up the religion itself. Other studies also point out that the relationship between food and religion is historical and point to evidence of the relationship between spiritually oriented groups and binge eating (Borges, Lucchetti, Leão, Vallada, & Peres, 2021).

As for the feeling of impotence arising from the will or the fulfillment of desires, it was noticed the difficulty of obese people in making changes in lifestyle, diet and behaviors related mainly to healthier eating habits, even with clinically sustained weight loss to patients own health benefits. This difficulty may be related to the poor adaptive repertoire for problem solving and the fact that obese people tend to have troubled relationships resulting from the stigma of obesity and the association of this diagnosis with psychological disorders, such as depression, low self-esteem and anxiety (Wu & Zhang, 2021).

5. Conclusion

Stress plays an important role in the development and maintenance of obesity through multiple pathways that affect each other and interfere with metabolic processes. This process includes psychological stressors related to the daily lives of people with morbid obesity, such as daily activities, interpersonal, cultural, work and leisure relationships. It is then observed that stress, an acute or chronic event, together with obesity, which in itself is a stressful event wrapped in prejudice and social stigma, is harmful to the subject (Tomiyama, 2019).

However, collected data showed that the spiritual religious coping strategy used by people with morbid obesity, as an adaptive tool, can be adequate and beneficial to the subject. Turning to one's religion or spirituality in the face of difficult situations in order to seek meaning, spiritual comfort, intimacy with God or life transformation through the pursuit of emotional, psychological and physical well-being, has been shown to reduce the perceived stress levels of population studied.

In short, the personal search for spiritual knowledge proved to be significant as a protective factor against negative behaviors and emotions, such as self-perceived stress for the population studied. The more the subject connects with God, regardless of religious limits, and exposes their personal positions, the more understanding the subject has that there are things that are out of his control and that this cannot affect his physical, emotional health and social participation.

However, it is emerging to carry out cross-sectional and longitudinal studies, with larger and generalized samples

in other locations to understand the relationship of spirituality in various contexts and health conditions.

Competing Interests Statement

The authors declare that there are no competing or potential conflicts of interest.

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