

Nutritional aspects and lifestyle related to depressive symptoms: a case-control study

Aspectos nutricionais e estilo de vida relacionados com os sintomas depressivos: estudo caso-controlado

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Samara Marques Dos Reis

PhD student in Genetics and Molecular Biology

Institution: Universidade Federal do Rio Grande do Sul

Address: Av. Bento Gonçalves n. 9500, Campus do Vale, Prédio 43 323, Porto Alegre, RS -
Brasil, CEP: 91501-970

E-mail: nutrisamaramdr@gmail.com

Leandro Leal Galarça

Specialist in Hospital Pharmacy

Institution: Hospital Santa Casa de Caridade de Alegrete

Address: Rua General Sampaio, 88, Centro, Alegrete - RS, CEP: 97541-260

E-mail: leandrogalarca_farm@hotmail.com

Fabiane De Fátima Severo Santana

Graduated in Biological Sciences

Institution: Universidade da Região do Pampa

Address: Praça Getúlio Vargas, 47, Alegrete - RS, CEP: 97542-570

E-mail: fabiana.stana@hotmail.com

Clodoaldo Soares Rodrigues

Graduated in Physical Education

Institution: Centro de Apoio Psicossocial II

Address: Praça Dr. Alexandre Lisboa, 1679, Centro, Alegrete - RS, CEP: 97541-14

E-mail: clodoaldosrlindinho@gmail.com

José Artur Bogo Chies

PhD in Life Sciences - Immunology

Institution: Universidade Federal do Rio Grande do Sul

Address: Av. Bento Gonçalves n. 9500, Campus do Vale, Prédio 43 323, Porto Alegre, RS -
Brasil, CEP: 91501-970

E-mail: jabchies@terra.com.br

Andrés Delgado Cañedo

PhD in Genetics and Molecular Biology

Institution: Universidade Federal do Pampa

Address: Av. Bento Gonçalves n. 9500, Campus do Vale, Prédio 43 323, Porto Alegre, RS -
Brasil, CEP: 91501-970

E-mail: andrescanedo@unipampa.edu.br

ABSTRACT

Depression is a mental condition that affects more than 322 million people worldwide. The nutritional status of individuals diagnosed with depression may change. Individuals with depression may experience changes in eating habits and weight changes. The main objective of this study is to relate the nutritional aspect and lifestyle of depressive patients with the symptoms presented. Through a case-control study, nutritional status, depressive symptoms with the Beck II Inventory, physical activity, tobacco and alcohol consumption, and family history were investigated. The sample consisted of 389 individuals (217 depressive and 172 controls) with a mean age of 45.6 ± 15.6 years (range 16 to 83 years), most of them female (78.1%). In the results obtained, most patients with depression had severe symptoms of depression. Depression was associated with a higher body mass index (BMI) and obesity. Patients with depression were less likely to consume alcohol but more likely to smoke. It is concluded that individuals with depression have a higher prevalence of overweight, smoking, family history of depression and use of medications. A multidisciplinary approach is critical for treating depression and improving patients' quality of life.

Keywords: nutritional status, lifestyle, depression.

RESUMO

A depressão é uma condição mental que afeta mais de 322 milhões de pessoas em todo o mundo. O estado nutricional de indivíduos com diagnóstico de depressão pode sofrer alterações. Indivíduos com depressão podem apresentar mudanças nos hábitos alimentares e alteração de peso. O presente trabalho tem como principal objetivo, relacionar o aspecto nutricional e o estilo de vida de pacientes depressivos com os sintomas apresentados. Através de um estudo caso-controle, investigou-se o estado nutricional, sintomas depressivos com o Inventário de Beck II, atividade física, consumo de tabaco e álcool e história familiar. A amostra foi constituída por 389 indivíduos (217 depressivos e 172 controles) com média de idade de $45,6 \pm 15,6$ anos (intervalo de 16 a 83 anos), a maioria do gênero feminino (78,1%). Nos resultados obtidos a maioria dos pacientes com depressão tinha sintomas graves de depressão. A depressão estava associada a um índice de massa corporal (IMC) mais alto e obesidade. Pacientes com depressão eram menos propensos a consumir álcool, mas mais propensos a fumar. Conclui-se que os indivíduos com depressão têm maior prevalência de excesso de peso, tabagismo, histórico familiar de depressão e uso de medicamentos. Uma abordagem multidisciplinar é fundamental para o tratamento da depressão e para melhorar a qualidade de vida dos pacientes.

Palavras-chave: estado nutricional, estilo de vida, depressão.

1 INTRODUCTION

According to the World Health Organization (WHO) (2017), depression is a mental condition that affects more than 322 million people worldwide. Moreover, there were 34.2% more cases between 2013 and 2019 in Brazil, where it is predicted that 16.3 million adults over the age of 18 suffer this illness (BRAZILIAN INSTITUTE OF GEOGRAPHY AND STATISTICS, 2020). Depression may occur at any stage of life, but it becomes particularly common in middle age and in the transition from adolescence to adulthood. Women are the

group most susceptible for developing depressive states due to the hormonal changes to which they are exposed (MORSSINKHOF et al., 2020).

Stressful circumstances and biological alterations, such as a decline in monoaminergic neurotransmitters like noradrenaline, dopamine, and serotonin, are among the illnesses primary initiators (CHAVEZ-CASTILLO et al., 2019; IBANEZ et al., 2014).

The World Health Organization (WHO, 2022) describes depressive syndromes as psychiatric, chronic, recurrent diseases that reflect complex mental disorders, highlighting them as a global public health issue. The symptoms of these pathologies include irritability and intolerance in a variety of circumstances, as well as lack of motivation for performing routine daily tasks. Concomitantly, depressive individuals also exhibit changes in appetite, sleep, low self-esteem, exhaustion, and death-related thoughts, which frequently can result in suicide. The assertiveness of the disease diagnosis increases with the severity of the symptoms (PARK; ZARATE, 2002).

Changes in food habits may occur among individuals who have been diagnosed with depression. Because the disease creates emotional imbalance, the symptoms brought on by these changes may alter food intake, which might alter the patients' body weight. Additionally, due to the clinical condition and the aforementioned symptoms, it is more frequent that people seek for food options with low nutritional content that have an impact on the quality of the food items consumed (GIBSON-SMITH et al., 2020; LAZAREVICH et al., 2018; PAGLIAI et al., 2021).

Drug therapy is another element that may affect food intake and, as a result, how much people weigh. This is because antidepressants, which are frequently used to treat depression, can influence changes in body weight. There is more weight gain over time when these drugs are continuously taken, according to some studies (GAFOOR; BOOTH; GULLIFORD, 2018).

Therefore, it is crucial to manage a patient's diet when diagnosed as depressive in order to prevent undesirable weight gain and potential disorders linked to nutritional status (GAFOOR; BOOTH; GULLIFORD, 2018). However, it is important to take into account that some studies suggest that depressive patients may have a drop in appetite at the start of their treatments, which might result in unintentional weight loss (FERNSTROM; KUPFER, 1988).

For the reasons outlined above, a careful nutrition actively contributes to improving health by promoting a better standard of life through appropriate food choices. Tryptophan, zinc, copper, iron, magnesium, and B-complex vitamins are suggested as nutrients that will help the Central Nervous System operate properly since depression directly impacts this system.

According to some studies, a low intake of such nutrients can increase the risk of depression, mostly because fewer neurotransmitters are produced (LIEBERMAN; AGARWAL; FULGONI, 2016; QUAN et al., 2023).

As previously mentioned, mood swings, a decline or loss of interest in activities, low self-esteem, anxiety, and lack of focus are some of the key signs of depression (FRIED; NESSE; STOPA et al., 2015). Therefore, taking into account the reports of nutritional alterations in patients with depression and the importance of a balanced healthy diet and lifestyle (physical activity practice and no alcohol consume or smoking) for the treatment and/or prevention of depression (GENG et al., 2019; WANG et al., 2018), the main objective of this work is to evaluate nutritional aspects and lifestyle of depressive patients, correlating with the symptoms presented.

2 METHODS

This is a case-control study including patients with depression previously diagnosed according to the International Code for Depression (F32-33) (WHO, 1996) and based on the medical records of individuals assisted at the Psychosocial Support Center (*Centro de Apoio Psicossocial*, CAPS) in the municipality of Alegrete-RS, Brazil.

Patients diagnosed with depression and over 20 years old who sought care at the Psychosocial Care Centers (CAPSs) of municipality of Alegrete, were invited to participate at this study. Those accepting the invitation were included, composing the Depression Cases Group (DCG).

CAPSs are public units that serve as articulating structures in the health services network and have a multidisciplinary health team, due to the complexity of the services provided. They assist patients who suffer from severe and persistent mental disorders, offer clinical and psychosocial rehabilitation care, avoiding hospitalizations and favoring social inclusion of users and their families (BRAZIL, 2002). Depression is one important mental disorder that deserves attention in the public health field (PUSSETTI, 2009).

Patients who had some disability that prevented them from understanding the questionnaires and/or those with any condition of vulnerability or whose autonomy was potentially compromised by the psychopharmacological intervention were excluded from the study.

People without a depression diagnosis were selected for the Control Group (CG). Recruitment was carried out by means of invitations on the main sites in the municipality of Alegrete. To be included in the study, the participants should have no personal or family history

(first-degree relatives) of neuropsychiatric diseases such as depression, panic disorder, autism, obsessive-compulsive disorder, schizophrenia and alcoholism. The research protocol was approved by the Ethics Committee of the Federal University of Pampa (Protocol number 1,808,637).

For the nutritional status assessment, weight was measured using a Plenna® portable digital scale with a maximum capacity of 180 kg and a precision of 100 g; height was obtained using an Avanutri® portable stadiometer; and Body Mass Index (BMI) was calculated, where weight (in kilograms) was divided by height (in meters) squared, following the World Health Organization protocols (WHO, 1995). After calculating BMI, data was grouped according to participants age to classify nutritional diagnoses, as per the cutoff points established for adults (WHO, 1995) and older adults (LIPSCHITZ, 1994).

The Beck-II Inventory (BDI-II), translated into Brazilian Portuguese, was used to assess the depression levels [absence of symptoms (less than 12 points), mild depression (12-19 points), moderate depression (20-45 points), and severe depression (46-64 points)] (BECK; STEER; BROWN, 1996; GOMES-OLIVEIRA *et al.*, 2012). Family history of psychiatric diseases was also assessed during the interviews. Application of the questionnaire for the collection of sociodemographic variables, practice of physical activity, medication use and measurement of anthropometric parameters was carried out by trained and qualified individuals.

In the statistical analysis, normal distribution of the quantitative data was verified using the Kolmogorov-Smirnov test. The numerical variables were described using central tendency (mean and median) and dispersion (standard deviation and interquartile range) measures and the categorical variables, by means of absolute and relative frequencies. The comparison between groups, for quantitative measures, was performed using Student's t, Mann-Whitney, ANOVA and Kruskal-Whallis tests, and the association between the categorical variables was performed using Chi-square and Fisher's exact tests. The multivariate Poisson Regression model was applied to assess the effect of nutritional status and cofactors (with $p < 0.20$ in the univariate and bivariate analyses) on depression. The same analysis was used to assess the effect of depression on the cofactors. The results were considered significant with $p \leq 0.05$. The data were entered and stored in an Excel spreadsheet and analyzed using the Statistical Package for Social Sciences - SPSS 21.0.

3 RESULTS

The sample consisted of 389 individuals (217 depressed and 172 controls) with a mean age of 45.6±15.6 years (range: 16 to 83). Sex distribution indicated mostly female (78.1%). As shown in Table 1, there was a higher proportion of young adults (79.4%), white individuals (82.0%), individuals under medication (52.4%), individuals who did not participate in physical activity (56.8%), nonsmokers (85.1%), and individuals who did not consume alcohol (73.0%).

Compared to individuals in the CG, depressive individuals had a higher BMI (p=0.002), were more likely to smoke (p<0.001), not being an alcohol consumer (p=0.039), to be under medication (p<0.001), and have a higher incidence of a family history of depression (p<0.001). Regarding age, gender, weight, and physical activity, there was no statistically significant differences between groups (Table 1).

Table 1. Socio-demographic characteristics of the sample grouped and divided according to the control and depression groups, corresponding to individuals treated in the Psychosocial Support Center (CAPS) from the city of Alegrete-RS (n=389).

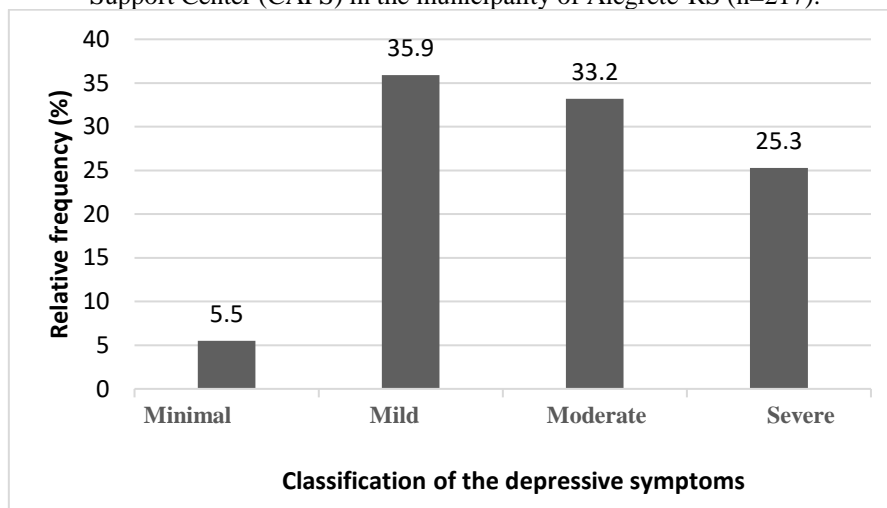
Variables	Total Sample N (%)	Controls N=172 N (%)	Depression N=217 N (%)	p
<i>Age group</i>				0.549 ^a
Up to 59 years old	309 (79.4)	139 (80.8)	170 (78.3)	
60 years old or more	80 (20.6)	33 (19.2)	47 (21.7)	
<i>Gender</i>				0.275 ^a
Female	304 (78.1)	130 (75.6)	174 (80.2)	
Male	85 (21.9)	42 (24.4)	43 (19.8)	
<i>Ethnicity</i>				0.271 ^b
White	310 (82.0)	147 (85.5)	163 (79.1)	
Black	64 (16.9)	24 (14.0)	40 (19.4)	
Amerindian	4 (1.1)	1 (0.6)	3 (1.5)	
<i>Weight</i>	73.6±12.5	72.5±12.1	74.5±12.7	0.121 ^c
<i>Body Mass Index</i>	27.6±4.4	26.9±3.8	28.2±4.7	0.002^c
<i>Physical activity</i>				0.072 ^a
Yes	168 (43.2)	83 (48.3)	85 (39.2)	
No	221 (56.8)	89 (51.7)	132 (60.8)	
<i>Smoker</i>				<0.001^a
Yes	58 (14.9)	10 (5.8)	48 (22.1)	
No	331 (85.1)	162 (94.2)	169 (77.9)	
<i>Alcohol consumption</i>				0.039^b
Yes	102 (26.2)	54 (31.4)	48 (22.1)	
No	287 (73.8)	118 (68.6)	169 (77.9)	
<i>Under medication</i>				<0.001^a
Yes	204 (52.4)	39 (22.7)	165 (76.0)	
No	185 (47.6)	133 (77.3)	52 (24.0)	
<i>Family history of depression</i>				<0.001^a
Yes	169 (43.4)	42 (24.4)	127 (58.5)	
No	220 (56.6)	130 (75.6)	90 (41.5)	
<i>BDI-II (Median)</i>	14.0 (3.0-22.0)	3.0 (1.0-4.8)	21.0 (15.0-29.0)	<0.001^d

a: Pearson's Chi-square test; b: Fisher's Exact test; c: Student's t test; d: Mann-Whitney Test. Note: The missing data were as follows: 11 did not answer about ethnicity. The significant p-values were highlighted in bold type.

Source: Authors

Using the Beck-II Inventory (BDI-II) score to evaluate the depressive symptoms of patients treated at the CAPS, the majority of depressive patients (58.5%) were classified as having moderate to severe depressive symptoms (Figure 1).

Figure 1. Frequency of depression according to the Beck-II Inventory of individuals treated at the Psychosocial Support Center (CAPS) in the municipality of Alegrete-RS (n=217).



Source: Authors

The majority of the group with moderate or severe depression symptoms were smokers, whereas the CG participants were mainly non-smokers ($p < 0.001$). A status under medication and family history of depression were both features more frequent among individuals with depression as compared to controls ($p < 0.001$). There was a statistically significant difference between the median BDI-II scores of subjects with minimal or mild depression (15.00) and those with moderate or severe depression (28.0) ($p < 0.001$). Individuals with a moderate to severe depression (severe depressive symptoms) had a BMI of 28.6 kg/m², which was higher than the BMI of 26.9 kg/m² in the CG ($p = 0.003$). Participants who had little or mild depressed symptoms had similar BMIs to the other categories (Table 2). Other comparisons showed no statistically significant differences (Table 2).

Table 2. Sociodemographic, anthropometric, health and lifestyle variables associated with depression, corresponding to individuals assisted at the Psychosocial Support Center (CAPS) in the municipality of Alegrete-RS (n=389).

Variables	No depression		With depression		p
	CG N=172 N (%)		Minimal+Mild N=90 N (%)	Moderate+Severe N=127 N (%)	
Age group					0.732 ^A
Up to 59 years old	139 (80.8)		69 (76.7)	101 (79.5)	

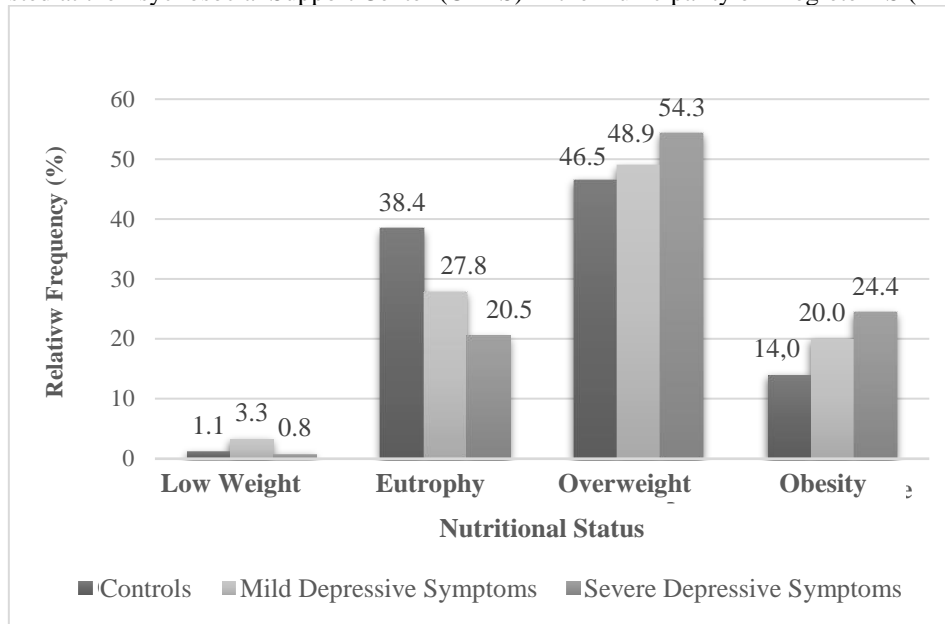
60 years old or more	33 (19.2)	21 (23.3)	26 (20.5)	
Gender				0.316 ^A
Female	130 (75.6)	69 (76.7)	105 (82.7)	
Male	42 (24.4)	21 (23.3)	22 (17.3)	
Ethnicity				0.264 ^B
White	147 (85.5)	67 (79.8)	96 (78.7)	
Black	24 (14.0)	17 (20.2)	23 (18.9)	
Amerindian	1 (0.6)	0 (0.0)	3 (2.5)	
Weight	72.5±12.1	73.6±12.4	75.0±12.9	0.217 ^C
Body Mass Index		27.6 ^{ab} ±4.5	28.6 ^a ±4.8	0.003^C
Nutritional status				0.011^B
Underweight	2 (1.2)	3 (3.3)	1 (0.8)	
Eutrophy	66 (38.4)	25 (27.8)	26 (20.5)	
Overweight	80 (46.5)	44 (48.9)	69 (54.3)	
Obesity	24 (14.0)	18 (20.0)	31 (24.4)	
Physical activity				0.083 ^A
Yes	83 (48.3)	40 (44.4)	45 (35.4)	
No	89 (51.7)	50 (55.6)	82 (64.6)	
Smoker				<0.001^A
Yes	10 (5.8)	19 (21.1)	29 (22.8)	
No	162 (94.2)	71 (78.9)	98 (77.2)	
Alcohol consumption				0.096 ^A
Yes	54 (31.4)	22 (24.4)	26 (20.5)	
No	118 (68.6)	68 (75.6)	101 (79.5)	
Under medication				<0.001^A
Yes	39 (22.7)	54 (60.0)	111 (87.4)	
No	133 (77.3)	36 (40.0)	16 (12.6)	
Family history of depression				<0.001^A
Yes	42 (24.4)	44 (48.9)	83 (65.4)	
No	130 (75.6)	46 (51.1)	44 (34.6)	
BDI (Median-II)	3.0 ^c	15.0 ^b	28.0 ^a	<0.001^D
	(1.0-4.8)	(14.0-17.0)	(23.0-35.0)	

CG: Control Group; p=^A: Pearson's Chi-square test; ^B: Fisher's Exact test; ^C: ANOVA and Bonferroni's *Post-Hoc*; ^D: Kruskal-Wallis and Dunn's *Post-Hoc*. For the *Post-Hoc* tests, different superscript lowercase letters indicate statistically significant differences and equal superscript lowercase letters, differences without statistically significant differences. Note: The missing data were as follows: 11 did not answer about ethnicity. The significant p-values were highlighted in bold type.

Source: Authors

Moderate or severe depression (severe depressive symptoms) was more common in obese people (24.4%), whereas non-depressive subjects (p=0.011) presented the higher frequency of eutrophy (38.4%) (Figure 2).

Figure 2. Nutritional profile according to presence or absence of depression symptoms, among individuals assisted at the Psychosocial Support Center (CAPS) in the municipality of Alegrete-RS (n=389).



p=Fisher's Exact test.
Source: Authors

The independent variables with $p < 0.2$, non-collinear (age, BMI, physical activity, smoker, consumption of alcoholic beverages and family history), in the univariate and bivariate analyses, were included in the multivariate model (Poisson Regression) to assess their association with the outcome of depression (dependent variable), as shown in Table 3.

Following the multivariate analysis, the following variables were still associated to depression. Depression was 26.4% more prevalent in smokers (PR: 1.264; 95% CI: 1.090-1.467; $p = 0.002$). Individuals under medication had a 143.3% higher prevalence of depression (PR: 2.433; 95% CI: 1.868-3.168; $p < 0.001$). A family history of depression raised the prevalence of depression in participants by 31.9% (PR: 1.319; 95% CI: 1.117-1.557; $p < 0.001$) (Table 3).

Table 3 Multivariate analysis of sociodemographic, anthropometric, health and lifestyle variables associated with depression, corresponding to individuals treated at the Psychosocial Support Center (CAPS) in the municipality of Alegrete-RS (n=389).

Variables	B	PR	95% Confidence Interval		P
			Lower	Upper	
(Ordered at origin)	-1.624	0.197	0.120	0.325	0.000
Smoker	0.235	1.264	1.090	1.467	0.002
Consumption of alcoholic beverages	0.010	1.011	0.817	1.250	0.923
Physical activity	-0.094	0.910	0.781	1.061	0.228
Under medication	0.889	2.433	1.868	3.168	0.000
Family history of depression	0.277	1.319	1.117	1.557	0.001

Age in years old	0.000	1.000	0.994	1.006	0.925
Body Mass Index (Scale)	0.011	1.011	0.998	1.024	0.107

P=Poisson Regression. The significant p-values were highlighted in bold type.
Source: Authors

The following factors were examined as dependent ones while taking depression into account as an independent variable: smoking, drinking alcohol, physical activity, medication use, and BMI. Age and family history are not factors that can be changed depending on the presence or absence of depression.

It was found that depression decreased alcohol intake by 70.5% (PR: 0.705; 95%CI: 0.505-0.983; p=0.040) and increased cigarette usage by 380.4% (PR: 3.805; 95%CI: 1.984-7.297; p0.001). It was associated to increased consumption of medications by 235.3% (PR: 3.353; 95%CI: 2.520-4.463; p0.001) and was not significantly associated with physical activity (PR: 0.812; 95%CI: 0.647-1.018; p=0.071).

4 DISCUSSION

In comparison to individuals who did not report depression, patients with depressive symptoms exhibited alterations in their diet and lifestyle, according to the collected data. As a multifactorial disease, depression can be triggered by several distinct factors, including those related to lifestyle. For instance, it has been demonstrated that poor eating practices can explain an increase in depressive symptoms (SARRIS et al., 2014).

Analyzing the prevalence of depression according to the BDI-II in the present study, 58.5% of the depressive patients treated at the CAPS exhibited severe depressive symptoms, highlighting the need of multi-professional and multidisciplinary surveillance in the treatment of this pathology.

Women are more likely to develop depression than men due to biological and sociocultural differences. Also, a higher frequency of women diagnosed with depression can be related to the ability to recognize signs and symptoms of psychiatric disorders, particularly depressive symptoms, and to seek help (BRITO et al., 2022; KUEHNER, 2017).

In our comparison between individuals with and without depressive symptoms, it was observed that participants with moderate and severe depression symptoms had higher BMI values and a higher prevalence of obesity; conversely, the Control Group participants were more frequently eutrophic. Obesity is associated with an increased prevalence of mental disorders, including depression (BLAINE, 2008; WEISS et al., 2020). This relationship

between BMI and depression is corroborated by other studies (BLAINE, 2008; WEISS et al., 2020).

The relationship between BMI and depression is complex and multifactorial; some studies have shown an association between depression and low food consumption, weight loss, and malnutrition (SMOLINER et al., 2009; YOSHIMURA et al., 2013), which was not observed in the participants of these studies. In addition, other studies suggested that individuals with a high BMI have an increased risk of developing depression, as obesity can result in neurological and hormonal changes that can affect mood and behavior, as demonstrated by Eik-Nes et al. (2022). In this case, the explanation is that obesity can result in low self-esteem, a negative body image, and social stigma, all of which can increase the risk of depression. According to Luppino et al. (2010), the most plausible hypothesis is the existence of a bidirectional relationship between obesity and depression; in this process, depression can lead to obesity and obesity can lead to depression. The authors argue that early interventions to cure depression and obesity are advantageous for both conditions. (FAULCONBRIDGE et al., 2018; PENNINX et al., 2013). In order to determine the relationship between BMI and depression, it is necessary to evaluate each case separately, taking into account biological, environmental, and psychological factors. Physical and mental health care is essential for preventing and treating obesity and melancholy. (KONTTINEN, 2020; FULTON et al., 2022).

Complementary to the findings of Tsujita et al. (2020), who investigated physical activity in adults with and without depressive symptoms and found a decline in physical activity in patients with depression, the majority of individuals with depressive symptoms and controls did not engage in physical activity in our study.

Regarding alcohol consumption, the majority of individuals addressed by our study did not consume alcohol (73.8%), and when comparing the depressed and non-depressed groups, depressed patients consumed less alcohol ($p=0.039$). This result was validated by the multivariate analysis, which revealed that the depression factor decreased alcohol consumption by 70.5%. Interestingly, this result goes against the findings of several other studies which observed a correlation between an increase in alcohol consumption and the severity of depressive symptoms. For example, Grant et al. (2015) observed that individuals with depressive disorders are more likely to develop alcoholism, and vice versa. In fact, these apparently contradictory results can be easily explained by the use of alcohol-prohibiting medications to depression treatment. Excessive alcohol consumption can be associated with the onset or exacerbation of depressive symptoms. Boden et al. (2013) discovered a correlation between alcohol consumption and melancholy in a sample of young adults. In addition, alcohol

abuse is associated with an increased risk of suicide in people with mental disorders, such as depression (HAWTON et al., 2016). Future research should evaluate the hypothesis that individuals who view alcohol as a solution to their problems would not seek help at a CAPS, which may be related to the fact that the sample was obtained from a treatment center.

An increase in tobacco consumption was associated with an increase in melancholy (26.4%), and depression was also related to smoking, with a 380.4% increase in the prevalence of tobacco use among depressed subjects. Our data corroborate the study of Warren et al. (2008), which also found a reciprocal relationship between smoking and melancholy.

Not surprisingly, when evaluating medication consumption, it was found that individuals with depressive symptoms consumed more medication than controls ($p < 0.001$). In the multivariate analysis, the use of medication was associated to an increased prevalence of depression by 143.3%, while depression increased the use of medication by 235.3%. This can be explained by the use of antidepressants as well as by the existence of other chronic diseases, as reported by the research participants.

Depression was also associated with family history, with participants having a 31.3% higher prevalence of depression if they had depressive relatives. According to Sullivan et al. (2000), patients with depressed first-degree relatives are nearly three times more likely to develop depressive disorders, and those with a family history of depression are more likely to develop depression during their lifetime (MONROE; SLAVICH; GOTLIB, 2014). Such studies corroborate findings from the scientific literature that patients with depressed first-degree relatives are nearly three times more likely to develop depressive disorders.

In Brazil, the mental health care model has evolved a lot, but there are still points to be improved, such as professional training, coverage of health care and dissemination of information (BOAVENTURA *et al.*, 2021).

The results of the present study indicate that nutritional aspects and lifestyle factors such as tobacco and medication use are related to depression. In addition, these findings highlight the need for additional research on this topic in an attempt to approach those parameters among both depressive patients treated at CAPS as well as depressive patients who do not seek treatment at these centers.

5 CONCLUSION

On the basis of the results presented, it can be concluded that depressive individuals had a higher prevalence of overweight, obesity, smoking habit, and depressive relatives, as compared to controls.

These results demonstrate the importance of also addressing melancholy risk factors. These demographic and behavioral characteristics can aid in the early diagnosis and formulation of more effective prevention and treatment strategies for depression.

In addition, the majority of depressive patients exhibited moderate to severe depressive symptoms according to the BDI-II assessment of depressive symptoms. These findings highlight the need of a multidisciplinary team in the monitoring and treatment of depressive patients, aimed at an individualized therapeutic approach to treat depressive symptoms and enhance the life quality of these patients.

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