

Introduction:

According to WHO, depression ranks fourth among the 20 most diseases that cause premature death and disability and it is expected that by 2020 depression will be the second among these diseases.¹ Several studies have shown that depression, stress and anxiety are directly related to changes in appetite and that these affect the food preferences, which in future may be reflected in the nutritional status.²

Obesity and depression are two diseases that have a high probability of being related and occur simultaneously.^{2,3,4,5} Among middle-aged women, depression was strongly and consistently associated with obesity, low physical activity and (among the obese) higher calories intake.⁴ Another study in the United States also found low physical activity in patients with depression.⁸

Regular physical exercise is beneficial for the preservation of cognitive function, the improvement of depressive symptoms and behavior as well as personal control and self efficacy. These improvements are due to psychological liberation of b-endorphin and dopamine during physical exercise, regular release of which translates into a calming effect and analgesic.^{15,16,17,18}

In studies on stress and its relationship with changes in diet was found that the periods of greatest stress are associated with higher intake of fat and calories, or with higher intake of fats, sugars and consequently higher total caloric intake in individuals that normally restrict their food.^{6,7}

During periods of stress, mood, anxiety and depression, sweets and chocolates were reported as most frequently consumed foods and, conversely fruit, vegetables, meat and fish, were mentioned as Foods eaten in smaller or equal amount by the individuals study.⁶

Objectives:

To evaluate the relationship between depression, anxiety and stress, eating habits, physical activity and nutritional status.

Methods:

This is a cross-sectional, correlational and descriptive study. The sample included 26 women and three men aged 55 ± 9 years who sought psychiatric consultations or were admitted to the psychiatric unit of a hospital in Portugal Northwest Coast.

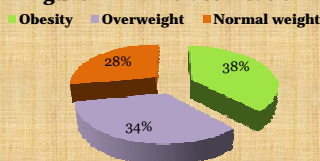
For data collection it was used a questionnaire comprising a first part to assess nutritional status through the collection of anthropometric data such as weight, height, waist and hip circumference; the second part contain the Depression Anxiety Stress Scales (DASS) developed by F. Lovibond and S. Lovibond (1995), translated and adapted by Ribeiro, Honored and Leal (2004); the third part involves a food frequency questionnaire developed by the authors; and, a final section that includes a physical activity questionnaire (IPAQ 8, short version).

SPSS 17.0 (Statistical Package for Social Sciences) was used to produce descriptive statistics and statistics tests outputs. Statistics tests included association tests like *Spearman* and localization tests like *Mann-Whitney-Wilcoxon*.

Results:

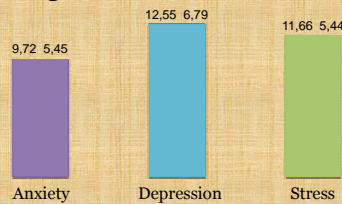
Studied individuals had an average weight of 73.82 ± 1.53 kg and a height of 1.60 ± 0.07 m, a BMI of 29 ± 5.55 kg/m², that means overweight is prevailing (Figure 1). The abdominal and hip circumference was $94 \text{ cm} \pm 13.62$ and 105.67 ± 11.35 cm, respectively. The relationship between them was 0.89 ± 0.08 cm.

Figure 1 - BMI Classification



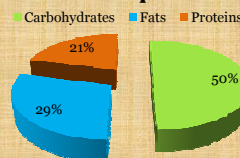
On DASS, for anxiety, the individuals had an average score of 9.72 ± 5.45 , 12.55 ± 6.79 to depression and 11.66 ± 5.44 to stress, on a 0 to 21 scale (Figure 2).

Figure 2 - DASS scores



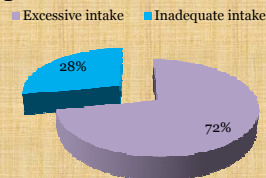
The energy consumption was 1877.11 ± 675.88 kcal, $21 \pm 3.32\%$ (97.28 ± 32.47 g) was from protein, $29 \pm 5.09\%$ ($61.03 \pm 26, 09$ g) from fat and $50 \pm 6.51\%$ (236.60 ± 89.28 g) from carbohydrates (Figure 3).

Figure 3 - Macronutrients consumption



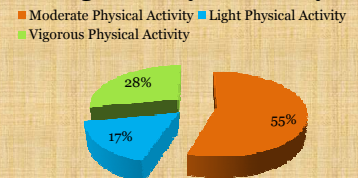
It was found that 72.4% had inadequate intake, while 27.6% had excessive intake (Figure 4).

Figure 4 - Intake Classification



Regarding physical activity, 17.2% had a light physical activity, 55.2% had a moderate physical activity and 27.6% a vigorous physical activity (Figure 5).

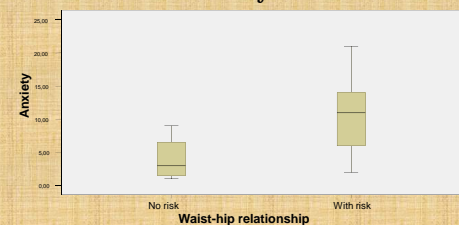
Figure 5 - Physical Activity



Using *Spearman* association test, was found that more anxious individuals consumed less tomato (*P-value* = 2.4%) with a -0.417 *Spearman* correlation coefficient; and, fewer fruits B (*P-value* = 3.15%) with a -0.193 *Spearman* correlation coefficient. Moreover, individuals with higher levels of depression consumed lower quantities of white meat with (*P-value* = 3.9%) with a -0.386 *Spearman* correlation coefficient. Finally, individuals with higher levels of stress eat fewer fruits B (*P-value* = 2.1%) with a -0.428 *Spearman* correlation coefficient.

Using *Mann-Whitney-Wilcoxon* localization test, was found that anxiety is influenced by the waist-hip relationship with a *P-value* = 1.9% for $\alpha = 5\%$. Individuals with risk had higher levels of anxiety (Figure 6).

Figure 6 - Waist-hip relationship and anxiety



Conclusion:

These results may show that an inadequate intake of fruits rich in protein and carbohydrates which are important to regulate serotonin levels is, possibly, contributing to individuals depression. Lower consumption of white meat, rich in monounsaturated fat that is important in weight control, may be contributing to the increase in BMI.

Further studies are needed involving a larger sample, to obtain more significant results.

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