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When Psychiatric Outpatients Feel Non-Thoracic Chest Pain: A Study on the Relevance of Anguish

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ABSTRACT

Anguish is understood as a negative feeling causing intense discomfort in the thoracic region that translates into physical sensations of pain, tightness, pain, hole or compression.

Objectives: This study investigated whether anguish contributes to psychopathological field by identificating symptoms and comorbidities and by relationship between the feeling and the psychiatric diagnosis of depression and anxiety.

Method: The eligible 100 participants treated at a large psychiatric institution in Brazil were assigned to the experimental groups (with anguish + without anguish + doubt) by an interview about experiences of anguish. The BSI, DSQ-40, HADS, HAM-A, STAI and MINI were used to investigate the objetives of the study.

Results: Patients who experienced anguish showed significant diferences in the groups related to symptoms and comorbidities, somatization, fears, depressed mood, gastrointestinal symptoms and neurovegetative symptoms scored higher in the anguish group than in the other groups. Regarding to the second hypothesis inferential analysis found that depression had 3.64 more times to have a relationship with anguish than anxiety.

Conclusions: The present study supports existing evidence that feelings of anguish have relevance to the field of psychiatry. The results presented point to this relevance.

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Introduction

Within the scope of an investigation about brain function, researchers have debated on the possibility of anguish having clinical and neurobiological relevance [1, 2].

Roman philosopher Cicero first coined the word anguish (106-43 BC), whose derivation comes from the Greek Angor and from the Latin Angustia, mening narrowness, limit, restriction, reduction [3,4]. In this way, anguish correspond to a strong psychological sensation, characterized by suffocation, insecurity, lack of mood, resentment and pain [5, 6]. Anguish is also an emotion that precedes something (an event, an occasion, circumstance). The strong psychological sensation can also be experienced through traumatic memories that have torn or fragmented the ego [7,8].

In recent times, patients with depression and anxiety have claimed of anguish in psychiatric interview contexts. Furthermore, a global survey conducted by Gallup World showed an increase from 25% to 31% of people with anguish [9-11]. Considering such circunstancies, the present study aims to investigate psychopathological symptoms for anguish and the relationship between anguish and diagnoses of depression and anxiety.

Methods

Participants

A total of 100 outpatients treated at the general, anxiety and adult affective disorders outpatient clinics of the Departmen and Institute of Psychiatry, Faculty of Medicine, University of São Paulo, with 35 patients belonging to the group with anguish, 50 to the group without anguish and 15 to the doubt group, that is, to the group of patients who declared the experience of anguish, but were unable to describe it precisely. They were aged from 17 to 77 years ($M = 44.54$), of which 69 (69.0%) were female, 29 (29.0%) male, and 2 (2.0%) transexuuls, 47 (47.0%) single, 32 (32.0%) married, 13 (13.0%) divorced, and 7 (7.0%) widowers. 47 (47.0%) completed higher education and 21 (21.0%) did not complete higher education, 19 (19.0%) completed high school and 2(2.0%) did not complete high school, 2(2.0%) completed elementary school and 9(9.0%) did not complete elementar school.

Measures

In this study, a sociodemographic questionnaire was applied to collect relevant information from the participation (e.g., age, sex, marital status, educational qualifiations, whether, or not experienced anguish) in conjuntion with Brief Symptom Inventory (BSI), Defense Style Questionnaire (DSQ-40), Hospital Anxiety and Depression Scale (HADS), Hamilton Anxiety Rating Scale (HAM-A), State-Trait Anxiety Inventory (STAI) and Mini International Neuropsychiatric Interview (M.I.N.I.).

The BSI is a 53-item self-report scale, measuring nine dimensions that can be summed up to reflect three global indices, including the General Severity Index (GSI) [12-16]. Each question is scored on a four-point scaale, ranging from never to almost always.

The DSQ-40 is a 40-item instrument designed to identify defense mechanisms [17-19]. It consists of three dimensions: mature, neurotic and imature. Participants rate the extent to which thay identify with each statement on a scale from 1 to 9.

The HADS is a 14-question instrument that measures anxiety and depression. Each question is scored between 0 (no impairment) and 3 (severe impairment), with a maximum score of 21 for anxiety or depression [20,21].

The HAM-A is a 14-item questionnaire that assesses symptoms of anxiety [22,23]. Each question is scored on a four-point scale, ranging from absent to maximum intensity.

The STAI is a 40-item instrument that measures state and trait anxiety, consisting of two self-response scales consisting of 20 items each [24,25]. Questions are scored on a four-point scaale, ranging from no way and almost never to very and almost always.

The MINI is a short structured diagnostic interview, developed jointly by psychiatrists and clinicians in the United States and Europe, for DSM-IV and ICD-10 psychiatric disorders [26,27]. With an administration time of approximately 15 minutes, it was designed to meet the need for a short but accurate structured psychiatric interview for multicenter clinical trials and epidemiology studies and to be used as a first step in outcome tracking in nonresearch clinical settings.

Procedures

While waiting for care, patients were invited to participate in the research, received an explanation about its objective and signed the Free and Informed Consent Form. Patients responded to a Mini International Neuropsychiatric Interview (MINI) diagnostic instrument containing the DSM-5 diagnostic criteria for anxiety disorders and affective disorders and a questionnaire to identify the presence of distress. In addition, patients were asked to respond to the Brief Symptom Inventory (BSI), Defensive Style Questionnaire (DSQ-40), Hospital Anxiety and Depression Scale (HADS), Hamilton Anxiety Rating Scale (HAM-A), and the Health Inventory. state-trait anxiety (STAI). Patients were also asked to record a statement regarding the experience of anguish. This recording was listened to and analyzed to determine whether or not the patients were experiencing anguish.

Data Analysis

The statistical analysis involved the modality descriptive and inferential. In the descriptive analysis, the first step consisted of comparing the groups with and without anguish with numerical and categorical variables. The second stage consisted of examining the variables of the questionnaires. In the third stage, a correspondence analysis was carried out to visually investigate possible associations between anguish, depression and anxiety. The fourth stage included the comparison of the anxiety and depression symptoms most associated with anguish. The fifth stage of the descriptive analysis focused on a sensitivity analysis, which consisted of relocating the doubt group to the anguish group to investigate changes in the interpretations of the results of the comparison of the anguish variable with the MINI Anxiety and the MINI Depression. The inferential analysis consisted of two stages. The first stage focused on reducing the size of some questionnaires and constructing more discriminative latent variables

in relation to groups with and without anguish. In the second stage, the variables with the greatest predictive power for discomfort were identified.

Results

In the first stage of the descriptive analysis, it was concluded that the variables BSI Somatization, gender, level of education, HAM-A Fears, HAM-A Depressive Mood, HAM-A Gastrointestinal Symptoms and HAM-A Neurovegetative Symptoms were the variables that presented the greatest difference in the comparison between groups with anguish and without anguish in terms of numerical and categorical variables. From the examination of the questionnaire variables, it was observed that anxiety affects women more than men. The descriptive level of the Chi-Square test ($p=0.041$) also contributes to the evidence of this association between anguish and gender. Regarding the level of education, there was an indication of difference between the groups ($p = 0.048$), since the group without anguish had a higher percentage of people with completed higher education. Regarding the BSI questionnaire, only the distribution of the somatization variable was notably different between the groups. The median of the group with anguish was higher, in addition, the p value of the Wilcoxon Mann Whitney test was significant ($p = 0.020$). Regarding the HAM-A, the variables fear, depressed mood, gastrointestinal symptoms and neurovegetative symptoms showed significant differences for the anxiety variable (individual significance level, Cronbach's α of 0.05), with the group with anguish being the one that presented higher values. of punctuation. An analysis was also conducted to compare the symptoms of anguish and depression (using the MINI as a diagnosis) most associated with anguish to discover what symptoms both disorders have in common with anguish. The Wilcoxon Mann Wtihney and Chi-square tests show the association between the other variables and each of the three mentioned. Between anguish and depression, the BSI variables Somatization and HAM-A neurovegetative symptoms were considered significant, and between anguish and anxiety only the HAM-A variable fears was significant.

Table 1: Table Comparing the Significance (Wilcoxon Mann Whitney Test) of the Symptoms and Defense Mechanisms of Anguish with those of Anxiety and Depression

Variable	Anguish	Anxiety	Depression
BSI Somatization	0.02*	0.826	0.001*
BSI Obsession-Compulsion	0.926	0.02*	0.001*
BSI Interpersonal Sensitivity	0.828	0.023*	0.008*
BSI Depression	0.724	0.407	0.001*
BSI Anxiety	0.72	0.032*	<0.001*
BSI Hostility	0.571	0.208	<0.001*
BSI Phobic Anxiety	0.684	0.024*	0.001*
BSI Paranoide Ideation	0.621	0.321	0.001*
BSI Psicoticism	0.71	0.126	0.004*
DSQ-40 Passive Agression	0.341	0.069	0.049*
DSQ-40 Acting Out	0.775	0.313	0.019*
DSQ-40 Dissociation	0.539	0.02*	0.949
DSQ-40 Somatization	0.693	0.015*	0.04*
HADS Anxiety	0.828	0.03*	0.015*
HADS Depression	0.504	0.224	0.005*
STAI	0.761	0.002*	0.002*
HAM-A	0.129	0.065	0.003*

Table 2: Comparative Table of the Significance (Chi-Square Test) of Symptoms and Defense Mechanisms of Anguish with those of Anxiety and Depression.

Variable	Anguish	Anxiety	Depression
HAM-A Anxious Mood	0.953	0.054*	0.625
HAM-A Tension	0.417	0.15	0.043*
HAM-A Fears	0.003*	0.03*	0.184
HAM-A Depressed Mood	0.049*	0.231	0.084
HAM-A Respiratory Symptoms	0.323	0.132	0.029*
HAM-A Gastrointestinal Symptoms	0.025*	0.444	0.946
HAM-A Neurovegetativa Symptoms	0.018*	0.494	0.023*
MINI Depression	0.305	0.28	_____
MINI Anxiety	>0.999	_____	0.28
MINI Other Diagnosis	0.228	>0.999	0.588

A sensitivity analysis was also performed, reassigning the doubt group as with anguish, to investigate changes in the interpretations of the results of the comparison of the anxiety variable with the MINI Anxiety and the MINI Depression. It is noteworthy that there are no differences in interpretations, that is, there was no impact of the relocation of the doubt group on the results of the investigation of the relationship between anguish and anxiety or depression. The same relocation of the doubt group was carried out to check if there were changes in the main symptoms associated with anxiety. In the inferential analysis, item response theory (IRT) was used to reduce the size of the HAM-A and DSQ-40 questionnaires. For HAM-A, two scores were generated using IRT. The first (Hamilton TRI Score) was applied to all 13 variables, the second (Reduced Hamilton TRI Score) was applied only to the variables most significant for distress in the Chi-square tests and also of interest to the researcher, namely: HAM - A Fears, Depressed Mood HAM-A, Gastrointestinal Symptoms HAM-A and Neurovegetative Symptoms HAM-A. Two Scores were also constructed by simple sum: HAM-A Sum Score and HAM-A Reduced Sum Score, the latter being constructed by the variables mentioned above. It is possible to see two points by observing. The first is that the HAM-A questionnaire does have a relationship with the anxiety variable, the second is that the difference between the two methods is clear, in which the IRT proved to be superior to simple addition in terms of discriminatory power groups. The DSQ-40 has 3 latent variables according to the literature: Neurotic DSQ, Immature DSQ and Mature DSQ, which are described in the section dedicated to the description of the variables. The DSQ, both through the sum and the IRT, appears to have no relationship between the anguished and non-anguished groups.

Table 3: Wilcoxon-Mann Whitney Test of Scores Created for the HAM-A and DSQ Questionnaires

Variable	P-Value
Score HAM-A Sum	0.129
Score HAM-A IRT	0.034
Score HAM-A Sum Reduced	0.028
Score HAM-A IRT Reduced	0.004
Score HAM-A Mature Sum	0.361
Score HAM-A Mature IRT	0.361
Score HAM-A Imature Sum	0.448
Score HAM-A Imature IRT	0.572
Score HAM-A Neurotic Sum	0.613
Score HAM-A Neurotic IRT	0.709

To investigate whether anguish is more related to depression than to anxiety, a logistic regression model was fitted in which the response (dependent) variable was defined as having or not having anguish depending on many independent variables considered in the study. The model was therefore adjusted to the no doubt group, for 85 observations, with the discomfort variable being the response variable and the following 23 explanatory variables: TRI mature DSQ-40 score; immature DSQ-40 TRI score; DSQ-40 neurotic TRI score; reduced Hamilton TRI score; IDATE State; IDATE Trait; MINI Depression; MINI anxiety; MINI other diagnosis; BSI somatization; BSI obsession compulsion; BSI depression; BSI anxiety; hostility from BSI; BSI phobic anxiety; BSI paranoid ideation; BSI psychoticism; BSI interpersonal sensitivity; HADS anxiety; Age; Gender; School grade; Civil status. The variables selected were the following: Gender, Reduced Hamilton Score, BSI Somatization, BSI Hostility, BSI Obsession Compulsion, Age, and MINI Depression. Higher BSI somatization scores are also associated with greater odds of distress; With each one-point increase in this domain, the probability of anguish increases by 9.4%, holding the other variables fixed. A 1-year increase in age reduces the expected probability of experiencing anguish by 4.6%, holding other variables constant. The higher the HAM-A score, the greater the expected probability of having discomfort, that is, with each increase of one point in this score there is an increase in the expected probability of suffering from discomfort of 185%, considering the other variables in the model. constant. For BSI Hostility, for every increase of 1 point, the expected probability of experiencing anguish decreases by 15.5%, holding the other variables fixed. For BSI Obsession Compulsion, with each increase of 1 point, the probability of having anguish decreases by 12.6%, keeping the other variables fixed. The expected probability of women experiencing anguish is higher compared to men (women's probability is 2.76 times greater than men's), holding other variables constant. The estimates obtained indicate that the expected probability that people with depression experience discomfort is greater in relation to those who do not present this symptom (the probability that people with depression are 3.64 times greater in relation to people without depression), keeping the rest of the variables fixed.

Table 4: Odds Ratios of the Logistic Regression Model with their Respective 95% Confidence Intervals

Variable	Reference	Estimative (RC)	Confiance (95%)
MINI	Without depression	3,640	[0,843; 18,363]
BSI Somatization	More 1 point	1,094	[0,989; 1,219]
Age	More 1 point	0,956	[0.921; 0.989]
Score HAM-A TRI			
Reduced	More 1 point	2,849	[1.297; 6.856]
BSI Hostility	More 1 point	0,866	[0.753; 0.982]
BSI Obsession Compulsion	More 1 point	0,888	[0.776; 1.001]
Sex	Male	2,763	[0,897; 9,165]

Discussion

This study investigated differences psychopathological symptoms regarding the experience of anguish, and psychopathological diagnosis more linked to the feeling of anguish. Based on the first hypothesis, it was concluded that the symptoms most relatives

to anguish were: BSI somatization, HAM-A fears, HAM-A depressed mood, HAM-A gastrointestinal symptoms and HAM-A neurovegetative symptoms. Regarding the second hypothesis, it appears that of the 82 patients with depression, 87.2% had anguish, while of the 69 patients with anxiety, 69.2% had anguish, indicating a higher frequency of anguish among patients with depression.

Regarding the hypothesis of differences in symptoms and comorbidities between patients with anguish and patients without anguish, we can verify that the experience of anguish is related to somatic symptoms that include thoughts and emotional states in conflict and that cause pain in the body such as aches and pains. head, back and chest, stiffening of the limbs, tachycardia, among others. Among patients who experienced anguish, chest pain was the most frequent somatic symptom. Regarding the variables of the Hamilton Anxiety Scale that showed significance, was noted that the variables with most significance were the variable HAM-A depressed mood, HAM-A fears, HAM-A gastrointestinal symptoms and HAM-A neurovegetative symptoms with regard to the experience of anguish. Since patients who reported the experience of anxiety complained of pain or tightness in the chest region, main characteristics of anguish, fear in this context is not fear of a specific object, such as an animal, natural environment or specific situation., but rather the fear of dying due to the experience of anguish. According to anguish is more related to the fear of sudden death [28]. In relation to the gastrointestinal and neurovegetative symptoms which, together with the depressed mood symptom which proved to be significant in the context of the experience of anguish, the first involve problems that are related to the anguish, namely the burning sensation or heartburn, abdominal fullness, nausea and vomiting, while among the neurovegetative symptoms, the problems that are more related to anguish include pain, malaise, discomfort, burning, heaviness, tightness, swelling or distension in a specific organ, which in this case is the chest region. The Hamilton Anxiety Scale was also subjected, based on the application of Item Response Theory to dimensionality reduction to find more interesting properties than the simple sum of correct answers and it was concluded that, after dimensionality reduction, i.e. after selecting the HAM-A variables that are most related to anguish, these appear to be more significant compared to the simple sum of correct answers, indicating that, especially the variables HAM-A depressed mood, HAM-A fears, HAM -A gastrointestinal symptoms and HAM-A neurovegetative symptoms have significance regarding the experience of anguish. The greater significance of the Hamilton Anxiety Scale variables, as well as the BSI somatization variable, is also proven with the application of the Binomial Logistic Regression Model, which serves to select the independent variables and predict which group a patient is more likely to belong to. based on the independent variables.

As for the second hypothesis, which concerns the greater frequency of anguish among patients with depression compared to patients with anxiety, this can be proven based on the statements given by patients, which refer more to depression than to anxiety. Anxiety is a feeling that causes bodily sensations such as tightness in the chest in situations that occur in the present moment, and the vast majority of patients declared having experienced anguish in present moments, such as loneliness, death of relatives, divorce, unemployment, high workload. work, difficulties in carrying out a task, sadness and thoughts about suicide, fear and insecurity, hopelessness, loss of control, problems related to work, family differences, despair, difficulty crying, physical illnesses, depression, travel, lack of emotional control, sad news,

disappointments, bullying, parental rejection, political problems, feelings of oppression, impairment due to psychiatric illnesses, stress, emotional pressure, accidents in the family, among others. Another result that reinforces the relationship between anguish and depression is given by the comparative analysis of significance, whose objective was to verify which variables are in common between anguish and depression and between anguish and anxiety, in which it was found that between anguish and depression, the common variables were BSI somatization and HAM-A neurovegetative symptoms, while between anguish and anxiety, only the HAM-A fear variable was common. This result reinforces the theory that anguish is more related to depression than to anxiety, since anguish is a feeling that encompasses somatic manifestations, reaching the conclusion that it is a visceral and physical feeling, while anxiety is a more psychic feeling. Based on the binomial logistic regression model, it is also possible to verify the greater significance among patients with depression compared to patients with anxiety regarding the experience of anguish, in which it can be concluded that, after applying the model, patients with depression have 3.64 more likely to experience anguish than patients with anxiety. The biblical accounts also follow the direction of the relationship between anguish and depression, since the characters mentioned in the introduction to this research experienced, in addition to anguish, loneliness, fear, the desire to die and psychological suffering, that is, symptoms linked to depression.

Another result indicating a greater relationship between anguish and depression than between anguish and anxiety concerns gender, in which it is found that anguish has a greater presence in females, despite the sample being made up mostly of women. However, judging by the proportion of women and men who experienced anguish, it can be concluded that anguish exerts greater force among women. The relationship between the higher prevalence of anguish among females and depression is justified by the higher prevalence of depressive symptoms among women, since data indicates that women have twice as much depression as men and try twice as much to suicide. According to data from the Brazilian Ministry of Health, depression affects 14.7% of women, while men are affected by 7.3%.

Future research can also stimulate conceptual analysis in the areas of psychiatry, psychology and other areas that are related to psychopathology, particularly that related to neurosciences, since the use of complex concepts in basic research, without their prior analysis, becomes sterile, which may be one of the causes for the scarce results in translational studies in psychopathology/ neurosciences. It is also recommended that research be carried out with a larger database, as well as using more accurate strategies for diagnosing anguish that provide greater precision in analyzes and greater discrimination of groups with and without anguish and respective predictors.

In summary, the present study suggests that the variables that were most related to anxiety were: gender, reduced HAM-A score, BSI somatization, BSI hostility, BSI, obsession- compulsion, age and MINI depression. The inferential analysis showed evidence towards the main hypothesis of the investigation: "Depression is more related to anguish than anxiety". It is worth highlighting the selection of the variable MINI depression using the stepwise method, which showed a significant association (at a level of 10%), with the interpretation that people with depression are more likely to experience distress compared to people who do not have depression. However, in the selection of variables

most associated with distress, no variable related to anxiety was statistically associated with distress, with the exception of the domains of the Hamilton Anxiety Scale.

The variables that showed the most relationships with anxiety are the following: Gender, Reduced HAM-A Score, BSI Somatization, BSI Hostility, BSI Obsession Compulsion, Age and MINI Depression.

The inferential analysis showed evidence towards the main hypothesis of the study: “Depression is more related to anguish than anxiety”. It is worth highlighting the selection of the MINI Depression variable using the stepwise method, which showed a significant association (at a level of 10%), with the interpretation that people with depression are more likely to experience anguish compared to people who do not have depression. However, in the selection of variables most associated with anguish, no variable related to anxiety was statistically associated with anguish, with the exception of domains from the HAM-A questionnaire.

The present study suffers from some limitations. First, socioeconomic status or ethnicity are not measured, but to our knowledge, they have not previously been associated with the experience of anguish. Secondly, the portuguese version of the Psychopathological Symptom Inventory was used to the detriment of the lack of validation of this scale for the Brazilian population.

Conclusion

The variables that showed the most relationships with anxiety are the following: Gender, Reduced HAM-A Score, BSI Somatization, BSI Hostility, BSI Obsession Compulsion, Age and MINI Depression.

The inferential analysis showed evidence towards the main hypothesis of the study: “Depression is more related to anguish than anxiety”. It is worth highlighting the selection of the MINI Depression variable using the stepwise method, which showed a significant association (at a level of 10%), with the interpretation that people with depression are more likely to experience anguish compared to people who do not have depression. However, in the selection of variables most associated with anguish, no variable related to anxiety was statistically associated with anguish, with the exception of domains from the HAM-A questionnaire.

Future studies are recommended with a larger database as well as a more accurate strategy for diagnosing anguish, which could bring greater precision to the analyzes and allow greater discrimination of groups with and without anguish and their predictors.

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