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Anguish and Strong Sensations of Chest Pain in the Psychiatric Diagnosis

Fernando Filipe Paulos Vieira*
PhD in Clinical Psychology, University of São Paulo, Brazil.

***Corresponding Author:** Fernando Filipe Paulos Vieira*
Email: fernandofpvieira@gmail.com

Abstract

Many depressed and anxious outpatients have reported chest tightness and anguish. The aims of this study is to investigate distinctions between patients with and without anguish in terms of symptomatology and comorbidities and find out whether patients with depression and with anxiety have more anguish than patients who do not have depression and anxiety. The sample included 100 patients, 69% being female and 29% being male. Anguish is more associated with depression than to anxiety, being more frequent in females. Most comorbidities among patients with anguish are somatization, fears, depressive mood, gastrointestinal and neurovegetative symptoms. The variables more related to anguish were gender, reduced HAM-A score, BSI somatization, BSI hostility, BSI obsession compulsion, age and MINI depression. Anguish is more near to depression than to anxiety.

Keywords: Anguish; Chest pain; Depression; Anxiety; Psychopathology.

Introduction

When traumatic life events are experienced, humans feel an intense and negative discomfort that triggers a physical feeling of tightness, pain or oppression in the chest [1]. The word anguish derived from the Latin Angustia which mean narrowing and can be defined as a feeling that causes discomfort in the chest region that translates into physical sensations or bodily manifestations such as tightness, pain, pain, hole, suffocation or compression in the chest [2].

Sigmund Freud introduced the word angst in the scientific sphere, but it was translated by James Strachey into anxiety [3]. The justification for such translation was that "angst" was a term commonly used in German and could be translated by some equally common English words, such as "fear", "fright", "alarm". Thus, he concluded that the adopted word "'anxiety' would also have a common meaning in everyday use, with only a remote connection with any of the uses of the German 'angst" and that it would be "impractical" to settle on a single English term as a translation. Exclusive, but that there would be a use already established by psychiatry that would justify the choice of the term "anxiety" [4].

Over the last few decades, conceptual confusion has been observed in the approach to concepts such as fear, panic, anxiety and anguish [5]. The feeling of anguish, which focuses on events occurring in the ormo f moment, is accompanied by sensations in the thoracic region that can ormo f themselves in the ormo f pain or tightness and, due to the fact that many patients with affective and anxiety disorders report this experience, anguish thus became the target of great clinical concern [6].

Method

Participants

A total of 100 psychiatric outpatients aged between 17 and 77 years were recruited between October 2019 and September 2021 through print sources.

Inclusion criteria involved: have Brazilian nationality and receive treatment for affective and anxious disorders at the Department and Institute of Psychiatry of University of São Paulo, Brazil.

Exclusion criteria included: being a national of a foreign country and receive treatment for other psychiatric disorders. The sample were divided into three groups: 50(n=50) partici-

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pants without anguish, 35(n=35) participants with anguish, and 15(n=15) participants with anguish but incorrect description of body sensations.

Procedures

The study protocol and the informed consent form received approval from the Research Ethics Committee of the Department and Institute of Psychiatry of University of Sao Paulo, Brazil (CAAE:37028419.2.0000.0068). Before participating in the study, all individuals were briefed about its objective, confidentiality, and option to withdraw from the study. Each participant provided written informed consent in compliance with the Declaration of Helsinki. Participants completed the required instruments and recorded a short interview about their experience of anguish.

Measures

Sociodemographic questionnaire

Participants reported on their demographics in the baseline survey, including age, gender, number of children, marital status, education level, people each participant live with.

Brief symptom inventory

The Brief Symptom Inventory (BSI; [7]) consists of 53 items covering nine symptom dimensions: Somatization, Obsession-Compulsion, Interpersonal Sensitivity, Depression, Anxiety, Hostility, Phobic anxiety, Paranoid ideation and Psychoticism; and three global indices of distress: Global Severity Index, Positive Symptom Distress Index, and Positive Symptom Total. The global indices measure current or past level of symptomatology, intensity of symptoms, and number of reported symptoms, respectively.

Defensive style questionnaire-40

The Defense Style Questionnaire--40 (DSQ-40; [12]) is a modification of the original Defense Style Questionnaire, and was developed to create a psychometrically acceptable instrument in which the heterogeneity of defenses measured in the original DSQ was preserved in factor scores, while aiming for internal consistency at the level of the individual defenses. There are two items for each of 20 defenses. Items are rated on a 9-point Likert-style scale (1=strongly disagree; 9=strongly agree). Eight criteria were used to assess the validity and the reliability of each item. The DSQ 40 can yield both individual defense scores and three higher-order factor scores (mature, neurotic, and immature). Psychometric analyses indicated that the instrument possesses reasonable internal consistency and temporal stability appropriate in a trait measure. Correlations among the mature, neurotic, and immature factors derived from the DSQ and the DSQ-40 were .97, .93, and .95, respectively, evidence of the construct validity of the revised instrument. Although very comparable to the 72-item DSQ, the DSQ 40 has yet to be validated against the ratings of skilled clinicians or against other instruments, such as the Defense Mechanism Inventory or the Defense Mechanism Rating Scale (Saint-Martin et al., 2013), as has been done with the original DSQ.

Hospital anxiety and depression scale

The Hospital Anxiety and Depression Scale (HADS; [8]) is commonly used to determine the levels of anxiety and depression that a person is experiencing. The HADS is a 14-item scale, with seven items relating to anxiety and seven relating to depression. The authors created this outcome measure specifically to avoid reliance on aspects of these conditions that are also common somatic symptoms. This, it was hoped, would create a tool for the detection of anxiety and depression in people with physical health problems Twelve studies assessed the psychometric properties of the HADS-Total and its subscales HADS-Anxiety and HADS-Depression. High-quality evidence supported the structural and criterion validity of the HADS-A, the internal consistency of the HADS-T, HADS-A, and HADS-D with Cronbach's alpha values of 0.73-0.87, and before-after treatment responsiveness of HADS-T and its subscales (minimal clinically important difference = 1.4-2; effect size = 0.45-1.40). Moderate quality evidence supported the test retest reliability of the HADS-A and HADS-D with excellent coefficient values of 0.86-0.90.

Hamiton anxiety rating scale

The Hamilton Anxiety Rating Scale (HAM-A; [9]) was developed to be a rating system for assessing anxiety states. It was intended for use with patients already diagnosed as suffering from neurotic anxiety states, not for assessing anxiety in patients suffering from other disorders. The usual methods for scale design were used. A series of symptoms were assembled which were considered to cover the condition adequately. These were then grouped together according to their nature, or where clinical experiences indicated that they were associated. In order to determine the reliability of the final 14-item scale, a sample of anxiety patients were seen by two interviewers simultaneously. Product-moment correlations were calculated between each pair of physicians. The weighted mean of these correlations, using the z transformation, was 0.89. A general and one bipolar factor were extracted. The general factor was clearly a general factor of Anxiety and the bipolar divided the symptoms into two groups: Psychic (7 items) and Somatic (7 items).

State-trait anxiety inventory

The State-Trait Anxiety Inventory (STAI; [10]) is a psychological inventory consisting of 40 self-report items on a 4-point Likert scale. The STAI measures two types of anxiety – state anxiety and trait anxiety. Higher scores are positively correlated with higher levels of anxiety. Its most current revision is Form Y and it is offered in more than 40 languages. For diagnoses of anxiety disorders, the STAI-T demonstrated the best psychometric properties for a cutoff score ≥52 with sensitivity of 81.3%, specificity of 77.5%, Positive Predictive Value (PPV) of 41.9%, and Negative Predictive Value (NPV) of 95.4%.

Mini-international neuropsychiatric interview

The Mini-International Neuropsychiatric Interview (MINI; [11]) 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. 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. The authors describe the development of the M.I.N.I. and its family of interviews: the M.I.N.I.-Screen, the M.I.N.I.-Plus, and the M.I.N.I.-Kid. They report on validation of the M.I.N.I. in relation to the Structured Clinical Interview for DSM-III-R, Patient Version, the Composite International Diagnostic Interview, and expert professional opinion, and they comment on potential applications for this interview.

Analyses

The statistical analysis was computed with RStudio Integrated Development Environment (IDE) and got two phases: descriptive analysis and inferential analysis. 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 sociodemographic variables. The third stage included the comparison of the anxiety and depression symptoms most associated with anguish. The fourth 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

Comparison of the groups with and without anguish

The first step of descriptive analysis consists of comparing anguish and non-anguish groups with numerical and categorical variables. The Wilcoxon Mann-Whitney test revealed that among the numerical variables, somatization was the one that was significant (p=0.02). Regarding the analysis of categorical variables, the Chi-Square test showed that the variables gender (p=0.041), education (p=0.048), fears (p=0.003), depressive Mood (p=0.049), gastrointestinal symptoms (p=0.025) and neurovegetative symptoms (p=0.018) were the ones that showed significance in the comparison between the groups with and without anguish.

Demographics

The study sample consisted of 100 participants, 69(69.0%) women, 29(29.0%) men, and 2(2.0%) of the group LGBT. The participants' average age was 44.54. Regarding education level, 47(47.0%) participants had completed higher education and 21(21.0%) did not complete higher education, 19(19.0%) had completed high education and 2(2.0%) were unable to complete high school, 2(2.0%) had completed elementar school and 9(9.0%) didn't even get elementary education. As regards marital status, 47(47.0%) were single, 33(33.0%) were married, 13(13.0%) were divorced, and 7(7.0%) were widowed.

Comparison of the anxiety and depression symptoms most associated with anguish

An analysis to compare the symptoms of anxiety and depression (using the MINI as a diagnosis) most associated with anguish was also performed to discover which symptoms the two disorders have in common with anguish. The Wilcoxon Mann-Whitney and Chi-square tests show the association between the other variables with each of the three mentioned. Between anguish and depression, the variables omatization and neurovegetative symptoms were considered significant, and between anguish and anxiety, only the variable fears was significant.

Sensibility analysis

A sensitivity analysis was performed by reallocating the doubt group as having anguish, in order to investigate changes in the interpretations of the results of the comparison of the anguish variable with the MINI Anxiety and MINI Depression. Table 4 shows comparisons of the reallocation distribution with the original distribution for MINI Anxiety and MINI Depression and the respective p-values of the Chi-square test. It is notable that there are no differences in the interpretations, that is, there was no impact of the reallocation of the doubt group on the results of the investigation of the relationship between anguish and anxiety or depression.

The same reallocation of the doubt group was done to verify if there are changes in the main symptoms associated with anguish. Table 5 shows that the symptom depressive mood is no longer significant, and the variable cardiovascular symptoms becomes significant.

Inferential analysis

The inferential analysis consists of three stages. The first stage focuses on reducing the size of some questionnaires and constructing latent variables, possibly more discriminatory regarding the groups without aguish and anguish, and for this purpose the Item Response Theory was used. The second stage aims to identify which variables have the greatest predictive power for anguish. To this end, a binomial logistic regression model was adjusted using the stepwise method for variable selection, adopting the lowest AIC criterion. The third stage consisted of selecting variables through the Item Response Theory for questionnaires associated with psychiatric disorders.

IRT analysis

Item Response Theory (IRT) was used to reduce the size of the HAM-A and DSQ-40 questionnaires. IRT is a technique that allows the construction of variables, which can present more interesting properties when compared to the simple sum of correct answers in a test or even the simple counting of symptoms in a health assessment questionnaire. This is because the latent variable of IRT measures the coherence in the responses to the items in questionnaires, thus being able to generate scores with greater discriminatory power. The explanation for the application of IRT in HAM-A and DSQ-40 was due to the fact that both questionnaires had a sufficient number of variables for the purpose. However, the BSI had a sufficient number of variables for the application of the technique, but what made the application of the technique impossible was the fact that the questionnaire evaluated many different variables, which in this case would not make sense.

For the HAM-A, two scores were generated through the IRT. The first (Hamilton IRT Score) was applied to all 13 variables, the second (Reduced Hamilton IRT Score) was applied only to the variables most significant for anguish in the Chi-square tests and also of interest to the researcher, namely: HAM-A Fears, HAM-A Depressive Mood, HAM-A Gastrointestinal Symptoms and HAM-A Neurovegetative Symptoms. Two scores were also constructed by simple sum: HAM-A Sum Score and Reduced HAM-A Sum Score, the latter being constructed by the variables mentioned above.

It is possible to see two points by observing the graphs. The first is that the HAM-A questionnaire does indeed have a relationship with the variable of anguish, the second is that the difference between the two methods is clear, in which the IRT proved to be superior to the simple sum in terms of the discriminatory power of the 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 via sum and via IRT, appears to have no relationship between the groups with and without anguish.

Binomial logistic regression model

To investigate whether distress is more related to depression than to anxiety, a logistic regression model was adjusted in which the response variable (dependent) was defined as having or not anguish as a function of many independent variables considered in the study. The model was adjusted without the doubt group, therefore, for 85 observations, with the variable anguish as the response variable and the following 23 explanatory variables: DSQ-40 mature TRI score; DSQ-40 immature TRI score; DSQ-40 neurotic TRI score; Hamilton reduced TRI score; STAI State; STAI Trait; MINI depression; MINI anxiety; MINI other diagnosis; BSI somatization; BSI obsession compulsion; BSI depression; BSI anxiety; BSI hostility; BSI phobic anxiety; BSI paranoid ideation; BSI psychoticism; BSI interpersonal sensitivity; HADS anxiety; Age; Gender; Level of education; Marital status. The selected variables were as follows: Gender, Reduced Hamilton Score, BSI Somatization, BSI Hostility, BSI Obsession Compulsion, Age and MINI Depression. Tables 7 present the estimates of the coefficients of the logistic regression model and the corresponding odds ratios, respectively.

Higher BSI Somatization scores are also associated with greater chances of experiencing anguish, whereby each increase of one point in this domain increases the chance of experiencing anguish by 9.4%, keeping the other variables fixed. An increase of 1 year in age decreases the expected chance of experiencing anguish by 4.6%, keeping the other variables constant. The higher the HAM-A Score, the greater the expected chance of experiencing anguish, that is, each increase of one point in this Score increases the expected chance of experiencing anguish by 185%, considering the other variables in the model constant. For BSI Hostility, each increase of 1 point decreases the expected chance of experiencing anguish by 15.5%, keeping the other variables fixed. For BSI Obsession Compulsion, each increase of 1 point decreases the chance of experiencing anguish by 12.6%, keeping the other variables fixed. The expected chance of women experiencing anguish is higher than that of men (the chance for women is 2.76 times higher than that for men), considering the other variables constant. The estimates obtained indicate that the expected chance of people with depression experiencing distress is higher than that of those who do not present this symptom (the chance for people with depression is 3.64 times higher than that of people without depression), keeping the other variables fixed.

Discussion

This study foccused on finding differences in symptomatology and comorbidities regarding the experience of anguish, and comproving that anguish is more linked to depression than to anxiety. Based on the first hypothesis, it was concluded that the symptoms that are most linked to anxiety are: 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 distress, while of the 69 patients with anxiety, 69.2% had distress, indicating a higher frequency of distress among patients with depression.

Regarding the hypothesis of differences in symptoms and comorbidities between patients with distress and patients without distress, we can verify that the experience of distress 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 distress, chest pain was the most frequent somatic symptom. Regarding the variables of the Hamilton Anxiety Scale that showed significance, a significant relationship was noted between the variable HAM-A depressed mood and the variables HAM-A gastrointestinal symptoms and HAM-A neurovegetative symptoms with regard to the experience of anguish. Another variable from the Hamilton Anxiety Scale that proved to be significant between patients with anguish and patients without anguish was the HAM-A fear variable. Since patients who reported the experience of anxiety complained of pain or tightness in the chest region, 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. Anguish is more related to the fear of sudden death. 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 distress 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 distress. 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, crises 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, concluding 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.

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 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.

Limitations

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 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

With this investigation, we intended to show that anguish is more related to depression than to anxiety, as the feeling of anguish consists of a psychological perception that is characterized by changes in mood, loss of inner peace, pain, insecurity, guilt, discomfort and sadness, that is, anguish is the combination of emotional and physical issues that can prevent the individual from carrying out their day-to-day tasks and trigger isolation. Chest tightness, which is the main physical symptom of anguish, can also be present in cases of anxiety, however in anxiety, chest tightness is linked to the feeling of escape and the thought of worry.

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