

Symptom attribution and stress level in patients with medically unexplained symptoms in a Mexican emergency department

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ABSTRACT

Background: Patients who come to the emergency department are different from those seen in outpatient clinics. The former suffer greater stress. **Aim:** Establish an association between the attribution of the symptoms (psychosocial or organic) by the patient and the level of perceived stress in patients with Medically Unexplained Physical Symptoms (MUS) in an emergency department. **Methods:** A correlational cross-sectional study was conducted in 138 patients with MUS in the emergency department of a 3rd level public hospital where the psychosocial or organic attribution of nonspecific symptom(s) by patients and the perceived stress were measured with validated scales. Bivariate analysis was performed with Chi square for categorical variables, and a Spearman correlation, $p < 0.05$. **Results:** 75% of patients with psychosocial attribution have higher stress compared to patients with organic symptom attribution (25%). In Spearman's correlation, a medium but statistically significant correlation was obtained. **Conclusions:** The psychosocial attribution of the patient's complaint might coexist in MUS patients with higher level of perceived stress by the patients. Health professionals might need to address both psychosocial attributions and stress in MUS patients.

Keywords: Attribution, hospital, medically unexplained symptoms, stress, symptoms

Introduction

In recent years, the great interest in diseases that predispose to stress and inadequate management of emotions has been underlined. This is particularly important in patients with Medically Unexplained Physical Symptoms (MUS), in which a demonstrable organic cause is not identified by interview, physical examination, and

complementary studies. In the literature, the term somatization disorder and other names are used to name this entity.^[1]

The prevalence of patients with MUS in the first level of care is estimated at 30% in outpatient clinics,^[2] while in an emergency service, they represent 18.5%, excluding patients with trauma.^[3]

The most common nonspecific physical symptoms described at the primary clinic level are fatigue, pain in the extremities, low back pain, headache, insomnia, dyspepsia, intestinal discomfort, dyspnea, abdominal pain, and dizziness,^[4] which can become

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disabling and have a severe impact on health and work activity.^[5] This also includes direct health costs for consultations, medications, hospital stays and many more indirect costs such as reduced labor productivity, early retirement, and absence due to acute illness.^[6]

Various theories have been proposed to explain the causes of MUS; one of them suggests that physical or psychological stress influences the regulation of the hypothalamic-pituitary-adrenal axis, increasing the production of cortisol and this, in turn, increases the sensitivity of physical reactions to nonspecific symptoms.^[7]

Psychological theories of stress highlight that individuals perceive and respond differently to stress depending on the cognitive interpretation they give to the event. Some patients do not know how to identify or perceive stress; therefore, they do not associate it with their symptoms. The comprehensive care model raises the importance of these factors. However, it is important to know what the patient thinks about the attribution of the symptom since this could make a difference as to whether or not they respond to a certain psychosocial intervention or could have different behaviors of coping, seeking support, and emotional response.^[8]

Factors that associate stress with MUS include assessing the situation, resources, and environmental support; however, the results are inconclusive. What has been documented is a higher prevalence of mood and anxiety disorders in patients with MUS.^[9] In addition, some evidence suggests that patients with MUS have a family risk associated with several factors, such as genetic, neurological, and psychological characteristics, without determining which of these factors has greater weight.^[10]

Patients with MUS have been widely studied in outpatient medicine; however, there is little literature on patient care in the hospital setting; what has been determined is the profile of patients with MUS in hospitals: generally middle-aged women with specific self-reported symptoms.^[11]

The diagnostic approach to patients with MUS at both the outpatient and hospital levels is difficult since the biomedical model of care predominates, favoring the organic attribution of symptoms, and relegating the role of psychosocial factors.

An effective approach requires a timely application of the biopsychosocial model that considers the contextual factors of the disease.^[12]

It is essential to establish a good doctor-patient relationship since it is a central axis to have a good medical practice; however, in hospitals and specifically in emergency services, this is difficult due to workload factors, the predominance of serious illnesses and the lack of protocols for patients with MUS that require time to address the psychological aspects.^[13]

Sometimes doctors have a negative attitude towards patients with MUS, considering them difficult, undesirable, and demanding

patients.^[14] Experts advise that the management of the patient with MUS should include: active listening, respect for the patient's feelings, the search for the meaning of the symptoms, among others.^[15]

There are not many well-established protocols for approaching patients with MUS in the emergency room,^[16] although some authors recommend a diagnostic strategy to investigate the symptoms of distress, depression, and anxiety for better management of patients with MUS.^[17]

According to a study carried out in primary care, patients with MUS at the outpatient level have a greater perception of stress than patients with an underlying organic pathology.^[18] Therefore, an appropriate approach needs to know what patients think about the attribution of the emotional or organic symptom. For this, a scale with good psychometric properties and reliability was designed to measure this psychological attribution.^[19]

In our environment, there is a lack of information about patients with MUS in the emergency ward, the association with stress and strategies to approach these patients considered the attribution of the symptom, and the need to implement care protocols, which justifies conducting this research. In addition, this could reduce the costs of hospital readmissions and the saturation of emergency rooms since most of these patients are hyper-frequenters of health services.

Material and Methods

It is a prospective, cross-sectional, correlational study. Researchers carried it out in the emergency area of a tertiary hospital in Nuevo León, Mexico. This facility is a hospital-university school where a department of family medicine is in charge of outpatient services in the emergency ward. The study was conducted on patients with MUS from December 2019 to January 2020.

We included patients diagnosed with MUS, and adults of indistinct gender treated in the emergency room. Patients intoxicated by psychotropic substances and did not want to participate were excluded. We removed incomplete surveys. We calculate the sample size with the infinite proportions estimation formula; $P = 0.9$; $q = 0.1$, a 95% confidence interval and 5% precision, with a final n of 138. Sampling was non-probabilistic for convenience until the researchers completed the sample size.

An instrument consisting of 4 sections was applied: Demographic data, Characteristics of the main symptom, Symptom Attribution Scale (SAC) for MUS patients, and Perceived Stress Scale (SPS). In addition, we document the discharge diagnosis according to the ICD-10.

The SAC aims to identify when the patient considers that the origin of his symptom (s) is psychological or emotional. The scale has 12 items; 9 positives for psychological attribution and three negatives for physical or "organic" attribution. This scale

was validated in the Mexican population, with criterion and construct validity and reliability by Cronbach's Alpha of .841 and a one-month test-retest of .572 to .732. SAC is a Likert-type scale with three options coded: Yes = 3; I don't know = 2; and No = 1. In the three negative questions for organic attribution, the score is reversed. The maximum score is 36, and the minimum is 12. The score is a continuous variable; the higher the score, the higher the psychological attribution of the symptom.^[19]

On the other hand, the SPS is a 14-item instrument that assesses the perception of stress during the last month, measuring the degree to which life situations are stressful, and the individual finds life unpredictable, uncontrollable, or overloaded. Each question has a five-choice response pattern: "Never," "Rarely," "Occasionally," "Often," and "Very Often," which give scores from 0 to 4, respectively. The score range is 0 to 56; the higher the score, the greater the perceived stress. It has internal consistency ($\alpha = 0.83$) and was validated in the Mexican population.^[20]

This investigation was registered on an institutional ethics committee (code PR 19-0) before patients were recruited from the emergency department. Participants went through the tricolor (green, yellow, or red) triage service depending on the severity of their symptoms and signs. For example, patients classified in green had to go to the emergency room and were evaluated by the trained family medicine resident for the study. The researchers thoroughly examined and performed laboratory and imaging studies following the presumptive diagnosis.

Patients were classified as MUS when symptoms did not match a defined clinical picture and normal laboratory or imaging tests. After signing the informed consent, an assigned investigator (MSG) administered the survey.

The researchers captured, processed, and analyzed data using SPSS version 25 for Windows. We use descriptive statistics with relative frequency, percentages, and inferential statistics for symptoms attribution and stress levels, and demographic variables such as sex, marital status, age, education, and occupation using Chi-squared with a P -value $< .05$ as significant.

The categorical variable of symptom attribution was recoded using the median.

(Kolmogorov - Smirnov test (KS) with $P < .05$ equal to skewed distribution). The scale classified participants into two groups, those less than or equal to 9 were classified as organic or non-psychosocial attribution, and those with a score of 10 or more were categorized as patients with psychosocial attribution.

The total score of the PPS scale was divided into two variables (high-stress level and low-stress level) using the median (KS test with skewed distribution) as a cut-off point, which was 27, the low-stress level was a score 27 or less and 28 or more as a high-stress level).

We ran a Spearman correlation between the attribution category and the stress level using $P < .05$.

Results

In this study, 138 outpatients from the hospital emergency department were reviewed. A careful record was made to avoid missing data. The sociodemographic data of the study population is shown in Table 1.

Patients with MUS came to the emergency department predominantly with abdominal pain, chest pain, headache, and dyspnea; other symptoms accompanied more than 70% of the cases. Half of the patients reported that the symptom persisted throughout the day; more than half had previously received treatment. In most of them, the symptoms interrupted sleep [Table 2].

The mean of the stress scale was 26.6, the maximum score was 56, while the mean of the attribution scale was 9.1 in a range of 0 to 24 points as the maximum [Table 3].

The mean of the 12 items on the symptom attribution scale ranged from 1.55 to 2.07. Item 1, which was related to *the temporal association of the onset of symptoms with a personal concern, in the family, at work, among others, registered the highest percentage and average*. The overall average score was 21.1 [Table 4].

Of the 138 patients surveyed, 70 (51%) attributed the cause of their symptom to a non-psychosocial (organic) origin, and

Table 1: Sociodemographic and family data

Variable	f	%
Sex		
Male	61	44.2
Female	77	55.8
Marital Status		
With partner	89	64.5
No partner	49	35.5
Occupation		
Home	38	27.5
Employee	27	19.5
Student	19	13.7
Trader	17	12.3
Others	37	27.0
Education		
Complete High School	42	30.4
Technical School	41	29.7
Professional	22	15.9
Other	33	24.0
Live with his family		
Yes	123	89.1
No	15	10.9
Numeric variables	Mean	Standard deviation
Family Members	4.99	2.1
Age	36.2	13.1

Table 2: Characteristics of nonspecific symptoms

Variable	f _x	%
The Most frequent symptom		
Abdominal pain	54	39.1
Precordial pain	23	16.7
Headache	16	11.6
Dyspnea	14	10.1
Chest pain	13	9.4
Others	18	13.1
Accompanying symptoms		
One symptom	38	27.5
Various symptoms	100	72.5
Symptom schedule		
Morning	23	16.7
Afternoon	16	11.6
Evening	31	22.5
All day	68	49.2
The symptom is treatable		
Yes	80	58.0
No	58	42.0
Symptom subsides with medicine		
Yes	52	65.0
No	28	35.0
Symptom interrupts sleep		
Yes	92	66.7
No	46	33.3

Table 3: Parameters of principal variables

Principal variables	Mean±SD	95% CI	Median	Range
Stress	26.6±7.6	25.6-27.8	27.5	0-54
Psychosocial attribution	9.1±7.0	7.9-10.2	9.0	0-24

Table 4: Frequency, percentage and mean of the items of the Symptom Attribution Scale

Items	No		Do not know		Yes		Mean ± SD	
	F _x	%	F _x	%	F _x	%	Mean	SD
1. My complaint is psychological because my symptoms started when I had a personal concern, in my family, at work, etc.	58	42.0	13	9.4	67	48.6	2.07	0.95
2. My complaint is psychological because this is what some doctors told me before.	88	63.4	15	10.9	35	25.4	1.62	0.86
3. My complaint is psychological because his is what one or more of my parents, other relatives, or friends told me.	91	65.9	18	13.0	29	21.0	1.55	0.82
4. My complaint is organic because the symptoms cause me difficulties in the functioning of my daily activities.	69	50.0	23	16.7	46	33.3	1.83	0.90
5. My complaint is psychological because I had a traumatic emotional experience.	85	61.6	16	11.6	37	26.8	1.65	0.87
6. My symptom is psychological because they have carried out many studies and they have not found me anything.	81	58.7	21	15.2	36	26.1	1.67	0.86
7. My complaint is psychological because they have given me many treatments and I have not improved.	86	62.3	25	18.1	27	19.6	1.87	0.80
8. My complaint is organic because my symptoms are very intense	68	49.3	22	15.9	48	34.8	1.86	0.90
9. My complaint is psychological because it only appears or is more intense when I am in a certain place with certain people or on certain dates.	76	55.1	12	8.7	50	36.2	1.81	0.94
10. My complaint is psychological because my thoughts and emotions influence my body.	66	47.8	29	21.0	43	31.2	1.83	0.87
11. My complaint is psychological, because I had already presented it before when I have problems, like now.	80	58.0	24	17.4	34	24.6	1.67	0.84
12. My complaint is organic because is constant (it does not go away).	57	41.3	27	19.6	54	39.3	1.98	0.90
Total psychological score*							21.1*	7.0

*95% CI=95% Confidence Interval - 19.9-22.2. SD=Standard Deviation

68 (49%) related it to an emotional or psychological cause. Patients with psychosocial attribution had a high stress level contrary to those with organic attribution. The Spearman correlation between the type of attribution and the level of stress gave a “Rho” value corresponding to a moderate correlation ($P=0.0001$) [Table 5].

Discussion

Slightly more than half of those participants attributed their symptoms to an organic cause and less to a psychosocial cause. This result is not surprising since patients come to a hospital where organic illnesses, accidents, and not psychiatric illnesses are treated, in addition to the negative connotation of recognizing that they have emotional problems.^[21]

It is noteworthy that patients who came to the emergency hospital with MUS did not have a higher score on the stress scale (median of 27.5 out of a maximum of 54), as was expected, since logically, it is an emergency condition that. This finding could be explained because there were selected the least seriously-ill patients by triage. Nevertheless, these results suggest new avenues of research.

However, the psychosocial attribution of the symptom is related to a higher level of stress experienced. For example, in a study in New Jersey in 91 veterans with MUS, where authors studied their association with the severity of physical symptoms and Post Traumatic Stress Syndrome (PTSS), they observed that patients with PTSD and more severe symptoms attributed their MUS to higher stress than those with less severe symptoms.^[22]

Table 5: Relationship between symptoms attribution and level of stress

Variable	Level of stress		Total
	High (≥ 28 points)	Low (≤ 27 points)	
Symptom attribution			
Psychosocial	51 (75.0%)	17 (25.0%)	68.0 (100%)
Organic	18 (25.7%)	52 (74.3%)	70.0 (100%)

$P=0.0001$ Chi square; Spearman Rho Correlation=0.493

McAndrew *et al.*^[23] showed that health beliefs about the disease that will last long will not yield and will have serious consequences, which predict greater disability in patients with MUS through a decrease in activity and a greater search for practical support.

But patients with MUS also experience greater severity and discomfort in symptoms, which has implications for the perpetuation of symptoms.^[24] On the other hand, there is evidence in the literature that the correlation between the high level of stress and the psychosocial attribution of the symptom occurs in patients who can establish a connection between stressful events in their daily life and nonspecific symptoms. For example, Neng B^[25] found that people with high general anxiety attribute psychological causes to their symptoms. Furthermore, a previous study found similar findings when comparing groups with MUS versus groups with proven organic disease.^[18] This result has implications for the approach to these patients, in whom the level of psychosocial stress could be measured before trying a non-pharmacological treatment. However, more research studies are necessary to clarify this.

On the other hand, using the symptom attribution scale can help the patient identify with the psychosocial attribution of the symptom when answering the EAS items that deal with why their condition may be psychosocial.^[19] The profile of the patient diagnosed with MUS in this study is a woman, a housewife, in the fourth decade of life, of secondary education that lives with a family of five. These findings are similar to those to those by Poloni *et al.*,^[1] whose population with MUS was 45 years on average, married, but in hospitalized patients of the second level. The present study showed a slight predominance of the female gender, similar to that observed in another multicenter outpatient study (58% women)^[26]; however, the difference was not so marked in our study. The most common nonspecific symptoms in our study are similar to those reported in the literature^[4] and those in the hospital environment, except perhaps for vertigo^[27]. Poloni *et al.*^[1] found headache, pain, vertigo, and syncope in hospitalized patients with MUS.

Patients attending the emergency room are likely to present greater intensity and duration of symptoms than patients seen in outpatient clinics, although this must be demonstrated through more specific studies. Patients with MUS but but organic attribution of the symptom might show little capacity to relate the cognitive and emotional sphere to the disease. This represents a challenge for the practicing physician due to the need to

normalize the symptom, and the patient can more easily accept alternative treatments in stress management such as mindfulness, physical activity, yoga, speech therapy, among others.^[28] This study has implications for the design of intervention studies to teach how to normalize and help the patient build the “bridge” between the stressful event and the nonspecific symptom.

On the other hand, the stress level should be evaluated since intervention is required per se regardless of the problem or source that generated it.

Limitations

One of the limitations of our study is that the sample was not a probabilistic one. Furthermore, the symptom perception scale has the option of answering I don't know, which some experts suggest that having this type of answer as an option makes the participant lean towards avoiding a psychosocial or organic answer.

Conclusion

We documented that patients who attend the hospital emergency room have much more self-reported stress, but the attribution of the symptom to psychosocial and organic causes was almost similar. We found a significant association between the psychosocial attribution of the symptom and the level of perceived stress and even a medium statistical correlation. Attribution of symptoms to psychosocial origin can alert the health professional to measure stress and undertake strategies to alleviate it. More research is needed in this area, especially in defining effective interventions.

Summarize the key points towards the end of the manuscript.

- 1.- A high stress level was demonstrated in patients with MUS
- 2.- A new scale was used to measure Symptom Attribution by the patient with MUS, either psychosocial or organic attribution.

Highlight key take-home messages from this manuscript

- 1.- It is important in patients with MUS to measure the level of stress; it may be a critical component of the complete therapeutic approach
- 2.- It is necessary to implement a non- pharmacological treatment of patients with MUS in primary care

Highlight any novelty or new knowledge emerging from this manuscript

Patients with MUS have a strong stress component that could influence the response to their treatment.

Declaration of patient consent

The authors certify that they obtained appropriate patient consent.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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