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ASSOCIATION BETWEEN TWO CLASSIFICATION MODELS OF CHRONIC PAINFUL LOW BACK DISORDERS, "BIOMEDICAL" AND "BIOPSYCHOSOCIAL"

ASSOCIAÇÃO ENTRE DOIS MODELOS DE CLASSIFICAÇÃO DE DISTÚRBIOS DOLOROSOS CRÔNICOS LOMBARES, "BIOMÉDICO" E "BIOPSICOSSOCIAL"

ASOCIACIÓN ENTRE DOS MODELOS DE CLASIFICACIÓN DE LOS TRASTORNOS LUMBARES DOLOROSOS CRÓNICOS, "BIOMÉDICO" Y "BIOPSICOSOCIAL"

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ABSTRACT: Introduction: Chronic low back pain (CLBP) represents a complex condition. Although, by the biomedical model, biological signals and symptoms use to be the guide to both the diagnostic and prognostic, those does not correspond to the CLBP biopsychosocial etiology by ignoring the patient's beliefs and convictions about their pain. **Objective:** To examine the association between CLBP classification based on the biomedical model and the biopsychosocial model. **Materials and methods:** A retrospective cross sectional observational study. The study analyzed physiotherapeutic screening records obtained from an institutional research group. The classification of CLBP was determined using both the biomedical model and the biopsychosocial model. The biomedical model classified cases as specific or non-specific, while the biopsychosocial model categorized them as low, medium, or high risk for developing poor prognosis. The association between the two models was assessed using the Chi-squared test. **Results:** A total of 98 physiotherapeutic screening records were evaluated and classified as follows: non-specific and low risk (n=18); non-specific and medium risk (n=22); non-specific and high risk (n=23); specific and low risk (n=7); specific and medium risk (n=15); specific and high risk (n=13). The analysis revealed no significant association between the classifications according to the two models. **Conclusion:** The findings of this study suggest that the CLBP classification based on the biomedical model does not appear to be associated with the biopsychosocial classification. Further research and exploration are needed to better understand the complexities and potential interplay between these classification systems.
DESCRIPTORS: Low back pain; Association measures; Biopsychosocial models.

RESUMO: Introdução: A dor lombar crônica (DLC) representa uma condição complexa. Embora, pelo modelo biomédico, os sinais e sintomas biológicos sejam o guia tanto para o diagnóstico quanto para o prognóstico, eles não correspondem à etiologia biopsicossocial da DLC por ignorar as crenças e convicções do paciente sobre sua dor. **Objetivo:** Examinar a associação entre a classificação da DLC baseada no modelo biomédico e no modelo biopsicossocial. **Materiais e métodos:** Estudo

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observacional retrospectivo transversal. O estudo analisou fichas de triagem fisioterapêutica obtidas de um grupo de pesquisa institucional. A classificação da DLC foi determinada usando o modelo biomédico e o modelo biopsicossocial. O modelo biomédico classificou os casos como específicos ou inespecíficos, enquanto o modelo biopsicossocial os categorizou como de baixo, médio ou alto risco para desenvolver mau prognóstico. A associação entre os dois modelos foi avaliada por meio do teste Qui-quadrado. **Resultados:** Foram avaliadas 98 fichas de triagem fisioterapêutica, classificadas em: inespecíficas e de baixo risco (n=18); inespecífico e de médio risco (n=22); inespecífico e de alto risco (n=23); específico e de baixo risco (n=7); específico e de médio risco (n=15); específicos e de alto risco (n=13). A análise não revelou associação significativa entre as classificações segundo os dois modelos. **Conclusão:** Os achados deste estudo sugerem que a classificação da DLC baseada no modelo biomédico parece não estar associada à classificação biopsicossocial. Mais pesquisas e exploração são necessárias para entender melhor as complexidades e potencial interação entre esses sistemas de classificação.
DESCRITORES: Dor lombar; Medidas de associação; Modelos biopsicossociais.

RESUMEN: Introducción: El dolor lumbar crónico (DLC) representa una condición compleja. Si bien, según el modelo biomédico, las señales y síntomas biológicos suelen ser la guía tanto para el diagnóstico como para el pronóstico, éstos no se corresponden con la etiología biopsicosocial del DLC al ignorar las creencias y convicciones del paciente sobre su dolor. **Objetivo:** Examinar la asociación entre la clasificación DLC basada en el modelos biomédicos y biopsicosocial. **Materiales y métodos:** Estudio observacional transversal retrospectivo. Fue analizado registros de tamizaje fisioterapéutico obtenidos de un grupo de investigación. La clasificación de DLC se determinó utilizando tanto el modelo biomédico como el biopsicosocial. El modelo biomédico clasificó los casos en específicos o no específicos, mientras que el modelo biopsicosocial los categorizó como de bajo, medio o alto riesgo de desarrollar mal pronóstico. La asociación entre los dos modelos se evaluó mediante la prueba de Chi-cuadrado. **Resultados:** En total, se evaluó 98 registros y se clasificaron de la siguiente manera: inespecíficos y de bajo riesgo (n=18); inespecífico y de riesgo medio (n=22); inespecífica y de alto riesgo (n=23); específico y de bajo riesgo (n=7); específico y de médio riesgo (n=15); específicos y de alto riesgo (n=13). No hubo asociación significativa entre las clasificaciones según los dos modelos. **Conclusión:** Se sugiere que la clasificación DLC basada en el modelo biomédico no parece estar asociada con la clasificación biopsicosocial. Se necesita más investigación y exploración para comprender mejor las complejidades y la posible interacción entre estos sistemas de clasificación.
DESCRIPTORES: Dolor lumbar; Medidas de asociación; Modelos biopsicosociales.

INTRODUCTION

Low back pain is a well-defined condition characterized by pain and discomfort in the region below the costal margin and above the upper gluteal line, with or without referred lower limb pain[1]. This condition leads to functional disability and is associated with high rates of work absenteeism and substantial healthcare costs. In Brazil, low back pain ranks as one of the primary causes of sickness benefits for spinal disorders and disability retirement[2]. According to the World Health Organization, approximately 80% of the population experiences or will experience low back pain at some point in their lives. On a global scale, approximately 5 to 15% of these cases become chronic, while in Brazil, the prevalence of chronic low back pain (CLBP) ranges from 3.9 to 25.4%[2].

Lumbar disorders are multifactorial, with anatomopathological, psychological, social, and other factors having varying impacts on individuals. Consequently, different classification models, such as the biomedical and biopsychosocial models,[3] have been employed to label these conditions differently based on specific criteria. The biomedical model seeks to identify structural sources of pain, often relying on imaging tests for such identification[4]. However, for cases of

CLBP, the biomedical model often categorizes them as non-specific, as the anatomical cause of pain may not always be evident. Specific classification is reserved for cases where the cause of pain or involvement of the peripheral nervous system is identifiable[5–7].

Conversely, guidelines for the evaluation and treatment of CLBP recommend the use of the biopsychosocial model, which considers physical, psychological, and social factors that contribute to pain and disability. The biopsychosocial model, proposed by Engel in 1977, has been widely utilized as the primary approach for assessing and selecting treatment for musculoskeletal pain[4]. This model aims to complement the biomedical approach by considering biological, psychological, and social influences on health.

Despite the prominence of the biopsychosocial model in the literature, most studies on CLBP still use the biomedical model for participant selection, leading to the question of whether there is an association between the two models. The hypothesis of this study is that an association exists between the two classification models, and patients classified as having non-specific disorders are likely to have a lower risk of developing a poor prognosis compared to those classified as having specific disorders due to the stronger influence of psychosocial aspects on the latter group. This study aimed to examine the association between CLBP classification based on the biomedical model and the biopsychosocial model.

MATERIALS AND METHOD

Characterization and ethics of the study

This observational, cross-sectional, retrospective quantitative research used data extracted from a database generated by a research group registered with the National Council for Scientific and Technological Development CNPq in Brazil. The use of the database was approved by an institutional human research ethics committee with opinion number: 5.986.829.

Participants

The study involved volunteers aged between 18 and 59 years with persistent low back pain for over three months, meeting mechanical etiology criteria proposed by the American College of Physicians and the American Pain Society[7].

The classification of patients was based on the anamnesis form developed by the study group in Physiotherapeutic Rehabilitation with Emphasis on Integrative Biodynamics, and the STarT Back Screening Tool (SBST) questionnaire was also used. Patients were classified using the biomedical model as specific or non-specific, and the SBST questionnaire categorized them into low, medium, or high risk for developing poor prognosis.

Incomplete records were not included. The presence of red flags, which suggest non-mechanical causes for CLBP, and which was part of the assessment form, was also adopted as a reason for exclusion.

Biomedical model

The categorization of low back pain as either specific or non-specific was established following the principles of the biomedical model. This classification was based on a segment of the anamnesis form, wherein diffuse pain without identifiable structural changes was labeled as non-specific. Conversely, pain localized to a well-defined region, with or without radiation to the lower limb, and a clinical diagnosis of structural alteration, were categorized as specific.

Biopsychosocial model

The SBST is a questionnaire designed to stratify patients suffering from low back pain into three subgroups, namely low, medium, and high risk, based on their likelihood of experiencing long-term disability. This tool is also valuable for guiding the decision-making process in

primary care, as it enables patients to receive tailored treatment based on their subgroup[8-11].

The SBST comprises nine questions that assess both modifiable physical and psychosocial factors related to persistent and worsening symptoms. The first four questions pertain to physical factors, such as the presence of referred leg pain, disability, comorbidity with shoulder or neck pain, difficulty in dressing, and pain-induced walking avoidance. The remaining five items constitute a psychosocial subscale (items 5 to 9) and investigate discomfort, pain catastrophizing, fear, anxiety, and depression (PILZ et al., 2017)[10,11].

To score and classify the questionnaire, patients respond with either "Agree" or "Disagree" for the first eight items, with "Agree" assigned one point and "Disagree" assigned zero points. The ninth item offers five response options: "Not at all, Little, Moderate, Very, Extremely," with the first three options valued as zero and the last two as one point each.[10,11] Patients who score between 0 and 3 points on the total scale are categorized as low risk, whereas those scoring 4 or 5 points on the psychosocial subscale are classified as high risk. Individuals scoring above 3 on the total scale and below 4 on the psychosocial subscale are labeled as medium risk[8].

Statistical analysis

Statistical analysis was performed using SPSS 20 software, applying the Chi-square test with a 2x3 contingency table.[12]

RESULTS

Initially, data were collected from 103 physiotherapeutic screening records, 5 of them were excluded due to lack of the necessary information, totaling 98 records. The presentation of the classification of each volunteer can be seen in table 1.

Table 1: Individual presentation of the classifications obtained by two classification models of chronic painful low back disorders, being them the signs and symptoms and the biopsychosocial by StartBack Tool.

ID	BIOPSY	BIOMED	ID	BIOPSY	BIOMED	ID	BIOPSY	BIOMED
1	Lr	NonSpec	34	Mr	Spec	67	Mr	NonSpec
2	Hr	NonSpec	35	Lr	Spec	68	Hr	NonSpec
3	Mr	Spec	36	Hr	NonSpec	69	Hr	NonSpec
4	Mr	NonSpec	37	Mr	Spec	70	Hr	NonSpec
5	Mr	NonSpec	38	Hr	NonSpec	71	Hr	Spec
6	Mr	Spec	39	Mr	Spec	72	Mr	NonSpec
7	Mr	NonSpec	40	Mr	Spec	73	Hr	Spec
8	Lr	Spec	41	Hr	Spec	74	Lr	NonSpec
9	Lr	NonSpec	42	Mr	NonSpec	75	Mr	Spec
10	Hr	Spec	43	Hr	Spec	76	Lr	NonSpec
11	Lr	NonSpec	44	Hr	NonSpec	77	Lr	NonSpec
12	Lr	NonSpec	45	Lr	NonSpec	78	Hr	NonSpec
13	Hr	NonSpec	46	Lr	Spec	79	Lr	Spec
14	Mr	Spec	47	Hr	Spec	80	Hr	NonSpec
15	Mr	NonSpec	48	Hr	Spec	81	Mr	Spec
16	Mr	NonSpec	49	Hr	NonSpec	82	Mr	NonSpec
17	Lr	NonSpec	50	Mr	Spec	83	Mr	NonSpec
18	Mr	NonSpec	51	Mr	NonSpec	84	Hr	Spec
19	Mr	NonSpec	52	Hr	Spec	85	Mr	NonSpec
20	Hr	NonSpec	53	Hr	NonSpec	86	Lr	NonSpec
21	Lr	NonSpec	54	Lr	NonSpec	87	Mr	NonSpec
22	Mr	NonSpec	55	Hr	NonSpec	88	Hr	Spec
23	Lr	Spec	56	Hr	NonSpec	89	Hr	Spec
24	Lr	NonSpec	57	Mr	Spec	90	Hr	NonSpec
25	Mr	NonSpec	58	Mr	NonSpec	91	Hr	Spec
26	Mr	Spec	59	Lr	NonSpec	92	Lr	Spec
27	Lr	NonSpec	60	Hr	NonSpec	93	Hr	NonSpec
28	Mr	NonSpec	61	Hr	NonSpec	94	Mr	NonSpec
29	Lr	NonSpec	62	Hr	NonSpec	95	Lr	NonSpec
30	Lr	Spec	63	Hr	NonSpec	96	Lr	NonSpec
31	Mr	Spec	64	Hr	NonSpec	97	Mr	NonSpec
32	Mr	NonSpec	65	Mr	Spec	98	Hr	NonSpec
33	Mr	Spec	66	Hr	NonSpec			

Legend: (**ID)** coded identification of the volunteer; **(Lr)** low risk for developing poor prognosis; **(Mr)** medium risk for developing poor prognosis; **(Hr)** high risk for developing poor prognosis; **(NonSpec)** non-specific; **(Spec)** specific.

There was no significant association between the two classification models of chronic painful low back disorders, χ^2 = 1.026; p >0.005. In table 2 we can visualize the 2x3 contingency table.

Table 2: Distribution of frequencies (number of cases) obtained for each combination of categories between the two classification models of chronic painful low back disorders, being them the signs and symptoms and the biopsychosocial by StartBack Tool.

		BIOPSYCHOSOCIAL MODEL			
		LOW RISK	MEDIUM RISK	HIGH RISK	**TOTAL**
BIOMEDICAL	NON-SPECIFIC	18	22	23	**63**
	SPECIFIC	7	15	13	**35**
TOTAL		**25**	**37**	**36**	**98**

DISCUSSION

The hypothesis of this study that there would be an association between the two models was refuted. The study findings indicate that the two classification models do not exhibit a significant association, each having its individual characteristics and utilities.

The biomedical model is still widely used for selecting clinical approaches, particularly in more conservative and medical models[13]. However, the biopsychosocial model is gaining prominence, especially in physical therapy interventions, as it considers a broader range of components, including physical factors and psychosocial aspects.

While the biomedical model may overlook or underestimate the influence of psychosocial aspects, the biopsychosocial model recognizes the importance of considering beliefs, lifestyle, and psychological factors in the evaluation and treatment of patients with CLBP[14]. Patient education about pain and addressing psychosocial factors can significantly impact their prognosis and functional limitations[15].

Despite the lack of association observed between the two models in this study, patients classified under the biomedical model as specific or non-specific may still fall into different risk categories under the biopsychosocial model. Hence, considering the biopsychosocial aspects in treatment is crucial, particularly in cases of non-specific pain[16].

Professionals still exhibit reluctance in acquiring more knowledge about the biopsychosocial model and its associated treatment approaches. This hesitancy results in detrimental effects on patients seeking care, as crucial factors such as psychological stress, quality of life, job dissatisfaction, depression, and catastrophizing, among others, are overlooked, leading to inadequate treatment provision[14].

Moreover, it is of paramount importance to educate patients about their pain, as they often lack understanding of the neurophysiology of pain. Consequently, patients perceive their condition as highly threatening, leading to reduced pain tolerance, catastrophic thoughts, maladaptive behaviors and attitudes, and poorer coping strategies[15]. The combination of these factors contributes to the perpetuation of chronic pain and further limitations in daily activities[17].

CONCLUSION

In conclusion, this study did not find a significant association between the two classification models. Further investigations are needed to explore this relationship. Nevertheless, the utilization of the biopsychosocial model for treatment appears more effective, especially for cases of non-specific pain, as it considers a broader range of factors that influence the patients' experience and prognosis.

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