Association between low back pain and common mental disorders in adults: systematic review

Associação entre dor lombar e transtornos mentais comuns em adultos: revisão sistemática

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ABSTRACT

BACKGROUND AND OBJECTIVES: Low back pain (LBP) is one of the leading causes of disability worldwide. Its etiology is multifactorial and results in losses for individuals and society. The biopsychosocial model of LBP offers a comprehensive approach to assessment and interventions. Researchers investigate the relationship between LBP and Common Mental Disorders (CMD) within this concept. This systematic review aimed to identify and analyze recent studies on the topic.

CONTENTS: The study was submitted to the International Prospective Register of Systematic Reviews (registration number CRD 42020210375). The 27 articles in the corpus were selected from the Medlin/PubMed and BVS (*Biblioteca Virtual em Saúde*) databases from 2015 to 2022. Only those that investigated a possible relationship between CMD (anxiety or depression) and LBP in adult populations were included. Most articles in the corpus confirmed the relationship between LBP and CMD, however, gaps were identified regarding the direction of causality between the two outcomes and why this relationship was established. Methodological limitations in relation to sample selection and LBP assessment instruments used were also identified.

CONCLUSION: This review highlights the need for studies on the topic with greater methodological criteria and with a design that allows causality to be assessed. Thus, it will be possible to guide clinical practice based on scientific evidence. Longitudinal studies with an emphasis on the biopsychosocial model can contribute to support specific therapeutic approaches.

Keywords: Anxiety, Common mental disorders, Depression, Low back pain.

RESUMO

JUSTIFICATIVA E OBJETIVOS: A dor lombar (DL) é uma das principais causas mundiais de incapacidade. Trata-se de um desfecho cuja etiologia é reconhecidamente multifatorial, com prejuízos para os indivíduos e a sociedade. O modelo biopsicossocial da DL apresenta uma abordagem ampla, tanto na avaliação quanto nas intervenções. A relação entre DL e Transtorno Mental Comum (TMC) é objeto de estudo dentro da concepção desse modelo. O presente estudo teve como objetivo identificar e analisar os estudos recentes sobre esse tema.

CONTEÚDO: O estudo foi submetido ao *International Prospective Register of Systematic Reviews* (número de registro CRD 42020210375). Os 27 artigos do corpus foram selecionados das bases de dados Medline/Pubmed e BVS (Biblioteca Virtual em Saúde) no período de 2015 a 2022. Foram incluídos apenas aqueles que investigaram possíveis relações entre TMC (ansiedade ou depressão) e DL em populações adultas. A maioria dos artigos do corpus confirmou a relação entre DL e TMC, no entanto foram identificadas lacunas sobre a direção de causalidade entre os dois desfechos e sobre os motivos pelos quais essa relação se estabeleceu. Também foram identificadas limitações metodológicas em relação à seleção da amostra e aos instrumentos de avaliação da dor lombar utilizados.

CONCLUSÃO: Esta revisão destacou a necessidade de estudos sobre o tópico com maiores critérios metodológicos e com um desenho que permita avaliar a causalidade. Assim, será possível orientar a prática clínica baseando-se em evidências científicas. Estudos longitudinais com ênfase no modelo biopsicossocial podem contribuir para embasar abordagens terapêuticas específicas.

Descritores: Ansiedade, Depressão, Dor lombar, Transtorno mental comum.

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HIGHLIGHTS
• The association between low back pain, depression and anxiety is a relevant issue for clinical practice.
• Longitudinal studies are necessary to research the causality between low back pain and common mental disorders.
• Studies with greater methodological criteria about the association of common mental disorders and low back pain allow for more directed clinical interventions.

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INTRODUCTION

Low back pain (LBP) is a phenomenon characterized by discomfort in the posterior part of the back that extends to the hips[1]. Its

intensity and duration may vary and eventually lead to chronic and disabling conditions[2]. Due to its high prevalence, LBP is known as one of the major global causes of disability[3,4], posing a public health problem which impairs the quality of life of populations and requires collective and individual coping measures[5,6]. In 2020, LBP affected an estimated 619 million people worldwide, with a projection of 843 million prevalent cases by 2050. A total of 38.8% of cases were attributed to occupational factors, smoking and high body mass index (BMI)[7].

LBP is multidimensional, with neurobiological alterations, lifestyle, general physical and mental health conditions, and exposure to physical and psychosocial stressors[3,6,8-10]. Acknowledging this etiologic multiplicity has led to the development of biopsychosocial explanatory models of LBP. These models have contributed to a better understanding of causal factors as well as the diversity of pain expression, including severity, chronicity, and impairment[3]. Due to the association between psychological symptoms and outcomes of spinal disorders, currently, the biopsychosocial model approach should be the basis for initial assessment, decision-making and final evaluation of these conditions[11].

In the study of LBP, it is important to highlight some features such as: the lack of longitudinal and experimental studies; understudied population groups; and limited standardization regarding research methods and terminology for describing the phenomenon[12]. More specifically, it is worth noting that investigations into such associations are predominantly designed to investigate the presence of LBP as an exposure variable and CMD as an outcome variable. However, as suggested in biopsychosocial models[7,13], it is legitimate to consider whether mental disorders are also a potential predictor of LBP.

Depressive and anxious disorders, defined by the World Health Organization as Common Mental Disorders (CMD), are increasingly prevalent worldwide[14,15]. The high prevalence of CMD in the population and its recognized relationship with the perception of painful manifestations highlights its relevance as an associated outcome of LBP[16]. However, it is not clear how this relationship is established[10,16]. Moreover, it is not clear if there is also a reverse relationship, that is, if LBP is a good predictor of CMD. Studies emphasize the need for global recognition of dysfunctions caused by the association between LBP and CMD[17,18]. Symptoms of anxiety and depression are associated with chronic pain and are known to negatively impact the treatment of LBP, reduce the quality of life, and increase social costs[19]. A review on the topic showed that about 85% of patients diagnosed with depressive episodes also reported LBP[20]. The authors[21] indicate that mental-health related factors can be important prognostic elements, which should reflect in therapeutic changes. Ignoring this relationship can lead to unnecessary suffering, restriction of daily activities, loss of productivity, and the waste of healthcare resources[21]. The influence of exposure to occupational risks in triggering LBP and CMD must also be considered. Inadequate work environment and conditions, in addition to high demands, are associated with the physical and mental illness of workers[22,23,24].

In research and intervention models for LBP, the biomedical model still predominates over the biopsychosocial model. Exploring LBP through the biopsychosocial model involves considering more comprehensively some variables that can cause, influence, or exacerbate the intensity of pain[11,21]. In this regard, the study of the relationship between CMD and LBP is the focus of some research aiming to understand the direct or indirect associations between these variables and their influences[23,25,26].

Some studies address the possibility of this relationship being bidirectional when considering the direction of causality[19,23,27]. Knowledge of this relationship, the external influences it undergoes, and the direction of causality can provide a fresh perspective on the diagnosis and intervention in these variables. Considering this, the present study's objective was to conduct a systematic literature review on the relationship between LBP and symptoms of CMD. Given this, it is necessary to understand how research on the relationship between LBP and CMD and its main results are conducted. This knowledge can contribute to guiding behaviors that reduce the prevalence of LBP and CMD with their respective individual and collective impacts. Therefore, the present study sought to carry out a systematic review of the literature on this relationship.

CONTENTS

For this review, articles published in English, Portuguese, and Spanish between 2015 and 2022 were included, provided that an abstract was available. Quantitative observational studies, including cross-sectional, longitudinal, case-control, and prospective or retrospective cohort designs, were selected. Only studies that investigated possible relationships between CMD (anxiety or depression) and LBP in adult populations were included. Studies that solely investigated mental disorders not classified as anxiety or depression (cognitive deficits, personality disorders, among others) were excluded.

Search strategy

The present review was conducted from November 22, 2020, to January 22, 2023. The PRISMA method[28] was used to guide the entire review strategy. The study was submitted to the International Prospective Register of Systematic Reviews (registration number CRD 42020210375). The registration includes information about the review objectives, material search strategy, population of interest, outcomes, explanatory variables, and actions to analyze and avoid biases. The search was conducted in the Medline (via PubMed), LILACS, and Scielo (via BVS) databases. The descriptors used to investigate LBP and CMD were chosen according to each database, as well as the combination strategy between them, and are described in table 1.

The articles were selected by two independent examiners based on reading the title and abstract. Potentially eligible articles were read in full. The reference lists of eligible articles were checked to find other potential studies to include in this review.

Data extraction

For data extraction, a pre-established form was developed and reviewed by the other authors. This form collected the following data: country where the study was conducted, year of data collection, year of study publication, type of data collection ins-

Table 1. Combination of descriptors used in the search strategy according to the databases

Databases	Descriptors	Descriptors combination
Pubmed	Low back pain; mental disorders; anxiety; depression	(«Low Back Pain") AND ("Mental Disorders" OR Anxiety OR Depression)
BVS	*Dor lombar*; low back pain; *dolor de la región lumbar*; *lombalgie*; *lombalgia*; lumbago; *transtornos mentais*; mental disorders; *transtornos mentales*; *troubles mentaux*; *ansiedade*; anxiety; *ansiedad*; *anxiété*; *depressão*; depression; *depresión*; *dépression*; *sintomas depressivos*	(«*Dor Lombar*» OR "Low Back Pain" OR *"Dolor de la Región Lumbar"* OR *lombalgie* OR *lombalgia* OR *lumbago*) AND ("Transtornos Mentais" OR "Mental Disorders" OR "Trastornos Mentales" OR "Troubles mentaux" OR *ansiedade* OR anxiety OR *ansiedad* OR *anxiété* OR *depressão* OR depression OR *depresión* OR *dépression* OR "Sintomas Depressivos") AND (db:("LILACS" OR "IBECS" OR "BDENF" OR "CUMED" OR "MTYCI" OR "BBO" OR "HomeoIndex" OR "INDEXPSI"))).

trument for LBP and CMD variables, information about the population and study sample, study objectives, inclusion and exclusion criteria for participants, descriptive results of the studied variables, and results related to the association between variables.

Assessment of selected articles quality

To assess the quality and risk of bias in the studies, methodological criteria from the instrument developed by the authos[2] and recommendations from the study[29] for observational studies were used. The instrument[2] was designed to analyze studies of prevalence of LBP but can be adapted to other study designs. Thus, 11 criteria were analyzed: 1) Were the study objectives clearly stated? 2) Were the inclusion and exclusion criteria for participants presented? 3) Were the study population characteristics clearly presented? 4) Was the sampling method a true or close representation of the target population? 5) Was random selection or a census conducted to select the sample? 6) Was the non-response bias probability minimal? 7) Were the data collected directly from individuals (rather than from a representative)? 8) Did the study instrument measuring the parameter of interest demonstrate reliability and validity (if necessary)? 9) Was the same type of data collection used for all subjects? 10) Were the outcome assessment measures clearly presented? 11) Were the data analysis procedures clearly presented?

RESULTS

The flowchart constructed based on the PRISMA recommendation[28] (Figure 1) shows that the initial search in the databases resulted in 2648 articles. After removing duplicates (n=3), 2645 articles were evaluated according to the previously established inclusion and exclusion criteria, resulting in the exclusion of 1485 studies. Another 1071 articles were excluded based on the abstract reading, resulting in 89 eligible articles for full-text reading. After the full-text reading, 62 articles were excluded because their main focus was not studying the relationship between LBP and CMD. In the end, the selection and analysis strategy resulted in 27 articles for the study corpus.

Table 2 presents the characteristics of the articles in the corpus. The distribution of articles according to the year of publication showed a greater number of publications (n=5) in the years 2016, 2017 and 2022, and a smaller number for the year 2015, when one publication on the subject was identified. Regarding the study locations, the theme was addressed in different coun-
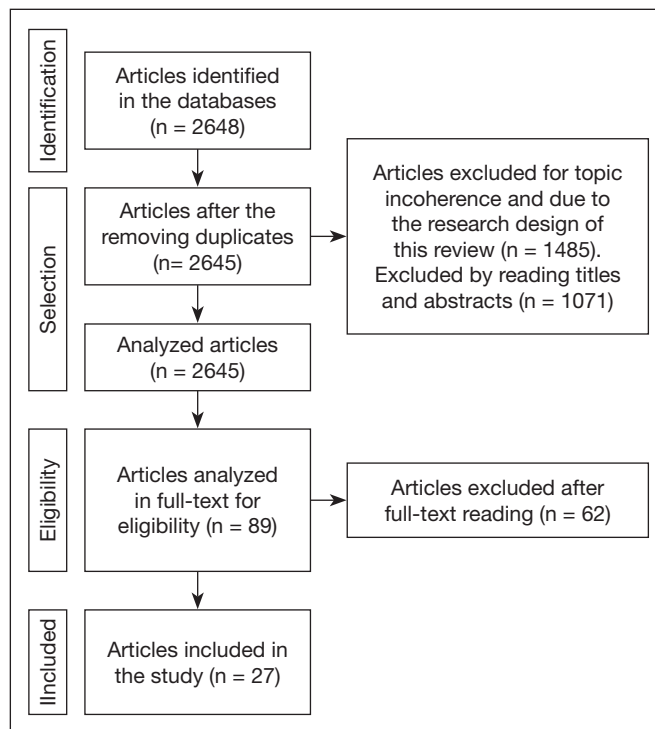

Figure 1. Flowchart of the systematic review stages on the relationship between common mental disorders and low back pain.

tries and continents, with Spain having 4 studies. In terms of study design, most of the articles (n=16) were cross-sectional studies. Longitudinal, case-control, and prospective cohort study designs were also part of the corpus. Cross-sectional studies are more common in epidemiological studies; they aim to estimate prevalence, describe risk factors, and investigate possible associations between outcomes and exposures. The costs for developing cross-sectional studies are lower, and the results they provide are more immediate.

However, the possible inferences are limited by the design itself, characterized by the measurement of exposures and outcomes at a single moment[30]. Longitudinal studies, on the other hand, require more resources and time to develop. As an advantage, they allow for dynamic investigation of the relationships between exposure and outcome, enabling broader inferences about causality, especially when performing analyzes based on incidence values[31]. In this regard, of the few longitudinal studies in the present review, only one carried out analyzes based on incidence

Table 2. Characteristics of observational studies on mental disorders (anxiety and depression) and low back pain

Authors	Country	Sample		Instruments		Study Design	Outcomes	Significant association
		n	Clinical group	Anxiety and depression	Low back pain			
Kim et al.[36]	Korea	24209	No	Center for Epidemiologic Studies-Depression scale (CES-D-K)	Self-designed instrument developed for the national survey	Cross-sectional	Depression	Yes
Salt et al.[33]	USA	42	Yes	Center for Epidemiological Studies-Depression	Hospitalization due to low back pain (no mention to standardized instrument)	Cross-sectional	Depression	Yes
Calvo Lobo et al.[51]	Spain	332	Yes	BDI	Quebec Task Force on Spinal	Case-control	Depression	Yes
Donatti et al.[43]	Brazil	46	Yes	GDS	Multidimensional Pain Evaluation Scale (EMA-DOR)	Cross-sectional	Depression	Yes
Araújo et al.[10]	Brazil	1857	Yes	HAD	Doctor's diagnosis (no mention to standardized instrument)	Cross-sectional	Anxiety Depression	Yes
Santiago-Bazan and Espinoza-Ventura[38]	Peru	110	No	Zung Test	Non-standardized instrument (self-designed instrument)	Cross-sectional	Anxiety Depression	Yes
Singhal et al.[41]	India	50	Yes	PHQ-9 and GAD-7	VAS	Cross-sectional	Anxiety Depression	No
Hu et al.[55]	China	838	Yes	PHQ-9	BPI-OS Pain intensity subscale	Cross-sectional	Depression	Yes
Xu et al.[56]	China	80	Yes	State-Trait Anxiety	Hospitalization due to low back pain (no mention to standardized instrument)	Cross-sectional	Anxiety	Yes
Ge et al.[57]	Singapore	1941	No	PHQ-9	Self-designed instrument developed for the national survey	Cross-sectional	Depression	Yes
Hu et al.[58]	China	1172	Sim	GAD-7	BPI-OS Pain intensity subscale	Cross-sectional	Anxiety	Yes
Jiang et al.[59]	China	60	Yes	SAS – Anxiety self-rating scale	VAS	Cross-sectional	Anxiety	Yes
Kao et al.[60]	Taiwan	83.748	Yes	Doctor's diagnosis (no mention to standardized instrument)	Doctor's diagnosis (no mention to standardized instrument)	Retrospective cohort	Depression	Yes
Kayhan et al.[50]	Not mentioned	209	Yes	The Hamilton Anxiety and Depression Scales	VAS	Case-control	Anxiety Depression	Yes
Calvo Lobo et al.[51]	Not mentioned	152	Yes	BDI	The Quebec Task Force on Spinal Disorders	Case-control	Depression	Yes
Ranger et al.[17]	Denmark	952	Yes	Danish SpineData registry	Danish Spine Data registry	Prospective cohort	Anxiety Depression	Yes
Park et al.[18]	Korea	2732	No	PHQ-9	Korea National Health and Nutrition Examination Survey (KNHANES)	Cross-sectional	Depression	Yes
Hübscher et al.[26]	Denmark	2446	No	Cambridge Mental Disorders of the Elderly Examination (CAMDEX)	Longitudinal Study of Aging Danish Twins (LSADT)	Case-control	Depression	Yes

Table 2. Characteristics of observational studies on mental disorders (anxiety and depression) and low back pain – continuation

Authors	Country	Sample		Instruments		Study Design	Outcomes	Significant association
		n	Clinical group	Anxiety and depression	Low back pain			
Farajirad, Tohidi and Farajirad[52]	Iran	150	Yes	Symptom Checklist 90-R (SCL-90-R) Questionnaire	Hospitalization due to low back pain (no mention to standardized instrument)	Case-control	Anxiety Depression	Yes
Fernadez et al.[19]	Spain	1269	No	Depression or Anxiety dimension of the EQ-5D	Spanish National Health Survey	Nested case-control	Anxiety Depression	No
Trocoli et al.[35]	Not mentioned	65	Yes	BDI and BAI	Non-standardized instrument (graphic representation of the pain)	Cross-sectional	Anxiety Depression	Yes
Adilay et al.[47]	Turkey	150	Yes	Symptom Checklist-90-R (SCL-90-R)	Hospitalization due to low back pain (no mention to standardized instrument)	Cross-sectional	Anxiety Depression	No
Tsuji et al.[48]	Japan	425	Yes	PHQ-9	Japan National Health and Wellness Survey (NHWS)	Cross-sectional	Depression	Yes
Robertson et al.[49]	Canada	1013	No	Modified Zung Depression Index	Non-standardized instrument (self-designed instrument)	Cross-sectional	Depression	Yes
Pinheiro et al.[27]	Spain	1098	No	Depression or Anxiety dimension of the EQ-5D	Spanish National Health Survey	Nested case-control	Low Back Pain	No
Watrous et al.[37]	USA	4397	No	Center for Epidemiologic Studies Depression Scale (CES-D)	Doctor's diagnosis (no mention to standardized instrument)	Longitudinal	Depression	Yes
Lopez-Lopez et al.[5]	Spain	164	Yes	BDI	Non identified instrument (not described in the article)	Case-control	Depression	Yes

BDI = Beck Depression Inventory; GDS = Geriatric Depression Scale; HAD = Hospital Anxiety Inventory and BAI = Beck Anxiety Scale, PHQ-9 = Patient Health Questionnaire; VAS = visual analogue scale.

values. The others worked with time cuts in the study itself (cross-sectional or nested case-control). It is necessary to advance a research agenda that allows for investigating the central hypotheses outlined by biopsychosocial models[11,21].

The largest identified sample (n=83748) was obtained from a national survey conducted in Taiwan, whose reference population covered a cohort of 1000000 individuals[32]. The smallest sample refers to a clinical study with 42 patients treated at a US hospital[33]. Furthermore, the characteristics of the samples described in the articles indicate methodological limitations. Only 13 out of 27 articles provided adequate information about the reference population and 10 out of 27 about sampling procedures. In general, the samples were not representative of the reference populations, or the information described in the articles did not allow for any conclusion on the matter. The absence of characterization of the reference population, description of the sampling process, and information on response rates are limitations for a proper evaluation of sample representativeness in epidemiological studies[34]. The articles analyzed in the corpus indicate a risk of participant selection bias and, consequently, threats the internal and external validity of the studies. Positive examples were presented by the studies[17,35,36].

Regarding the sample type, it was identified that about two-thirds of the articles (18/27) analyzed studied clinical samples, i.e., patients from ambulatory care or hospitals who were admitted due to complaints of LBP. Clinical samples consist of individuals with chronic conditions and functional limitations resulting from pain perception. In this sense, the predominance of clinical studies on the relationship between CMD and LBP limits inferences to the general population.

There are restrictions on causal inferences, as participants enter the studies after the onset of LBP. It is notable that samples of workers were studied in only three articles[36-38]; occupational risk factors were not explored in neither of them as possible determinants of CMD or LBP. This omission is noteworthy, especially considering that they are epidemiological surveys. It is an important limitation since exposure to physical and psychosocial risks at work are risk factors for both outcomes[39,40,41].

All articles in the corpus used questionnaires and scales as data collection instruments. Different instruments were determined for identifying LBP and CMD. Regarding data collection for LBP, it should be noted that some studies did not use instruments and relied only on non-standardized items constructed for the respective surveys or on hospital records for LBP complaints. On the other hand, the instruments used to identify

CMD were more specific, with significant variation in the type of instrument.

The use of non-validated instruments negatively influences the quality, comparison, and continuity of the obtained results[39]. There is a variety of instruments for LBP assessment and there is no consensus among researchers regarding their use. Despite the recognition of the biopsychosocial model for LBP and the studies addressing its relationship with CMD, the articles in the corpus did not use an assessment instrument with that specific approach, as presented in table 2. Such a model requires psychometric evaluation instruments that determine the psychological state of the assessed individual, such as the Distress Risk Assessment Method (DRAM), an instrument originally developed to measure psychological states in individuals with LBP[42].

The standardization and validation of instruments are important criteria for analyzing the methodological quality of studies, but there are others that were considered in the present review (Table 3). In this regard, it is worth noting that only one article met all the quality criteria[17]. The criteria that were least frequently met were those related to the sample (criteria 3, 4 and 5) and those that dealt with the sample selection and description (Table 3). Criterion 6, regarding the response rate, was also poorly met, either due to low response rates or not being mentioned in the study. Among those which reported response rates, one study[35] presented 81.2%, another study[17] presented 66.4%, and another[36] presented 81.0%. Regarding the instruments used (criterion 8), it is worth noting the contrast between instruments frequently validated for CMD and rarely standardized or validated for LBP. In some studies, the assessment of LBP did not even involve or mention the use of instruments (studies with clinical samples, where the criterion for identifying LBP was ambulatory care or hospitalization without specification).

Table 3. Assessment of quality and risk of bias in the studies included in the study

Authors	Criteria for analysis of study quality and risk of bias										
	1	2	3	4	5	6	7	8	9	10	11
Fernadez et al.[19]	+	+	-	-	-	-	+	+	+	+	+
Trocoli et al.[35]	+	+	-	-	+	+	+	+	+	+	+
Adilay et al.[47]	+	+	-	-	-	-	+	-	+	-	-
Tsuji et al.[48]	+	+	+	+	-	-	+	+	+	+	+
Robertson et al.[49]	+	+	-	-	-	-	+	+	+	+	+
Pinheiro et al.[27]	+	+	+	+	-	-	+	+	+	+	+
Watrous et al.[37]	+	-	-	-	-	-	+	-	+	+	+
Kayhan et al.[50]	+	+	-	-	-	-	+	+	+	+	+
Lopez-Lopez et al.[5]	+	+	-	-	-	-	+	-	+	+	+
Calvo Lobo et al.[51]	+	+	-	-	-	-	+	+	+	+	-
Ranger et al.[17]	+	+	+	+	+	+	+	+	+	+	+
Park et al.[18]	+	+	+	+	-	-	+	+	+	+	+
Hübscher et al.[26]	+	-	+	+	-	-	+	+	+	+	+
Farajirad, Tohidi and Farajirad[52]	+	+	-	-	-	-	+	-	+	+	-
Kim et al.[36]	+	-	+	+	-	+	+	+	+	+	+
Salt et al.[33]	+	+	-	-	-	-	+	-	+	+	+
Calvo Lobo et al.[51]	+	+	-	-	-	-	+	+	+	+	-
Donatti et al.[43]	+	-	-	-	-	-	+	+	+	+	+
Araújo et al.[10]	+	+	-	-	-	-	+	+	+	+	+
Santiago-Bazan and Espinoza-Ventura[38]	+	+	+	-	-	-	+	-	+	+	+
Kao et al.[60]	+	+	+	+	-	-	-	-	+	+	+
Singhal et al.[41]	+	+	+	-	-	+	+	+	+	+	+
Hu et al.[55]	+	+	+	+	-	+	+	+	+	+	+
Xu et al.[56]	+	+	-	-	-	-	+	+	+	+	-
Hu et al.[58]	+	+	+	-	-	+	+	+	+	+	+
Ge et al.[57]	+	+	+	+	-	+	+	-	+	+	+
Jiang et al.[59]	+	+	+	+	-	-	+	+	+	+	+

+ Fully meets the criterion
- Partially meets or does not meet the criterion

DISCUSSION

Significant associations between CMD and LBP were found in 25 out of 27 articles and non-significant in 5 out of 27 articles (Table 1). These data are justified by the fact that 3 articles present more than one analysis strategy in the same publication. The authors used twins as a sample and carried out a cross-sectional analysis of the total sample, and another research with a case-control design with co-twins. Results from some studies[19,27] show a significant association in the cross-sectional design and not significant in the case-control design.

One study[26], however, presents a significant association both in the general analysis (cross-sectional) and in the co-twins' case-control model. The first authors attribute the negative association results to family or genetic environmental influences, but consider limitations related to the sample.

The corpus analyzed in the present review presents, for the most part, the hypothesis of a positive association between CMD and LBP. This aspect should be emphasized as it has practical implications for healthcare services and the development of public health strategies. In clinical settings, extra attention should be given to the broader repercussions in health and well-being for patients with LBP, including the possibility of triggering or worsening mental disorders [10,43]. In non-clinical contexts, including those where active workers are involved, it is necessary to adopt disease prevention and health promotion strategies that equally address the management of physical and psychosocial risks[36,37].

Different statistical analysis strategies (regression analysis, bivariate corrections, comparison of means, among others) were used to study the relationship between LBP and CMD. In general, among the articles that found a significant association, one can consider the strength of association between these variables from low to medium. A more precise statement in this sense must be made with caution, as each study model chosen and the limitation of clinical samples present in most studies must be considered.

A second aspect that deserves attention based on the findings is the scarcity of studies which focus on LBP as a possible consequence of CMD (n=3). If there is an effort to develop theoretical biopsychosocial models, there should be an empirical research

agenda that considers one of the basic premises of such models: health is multidimensional and, therefore, bidirectional relationships are an important part of explaining outcomes. Why is there little interest in investigating hypothesis of bidirectional associations between CMD and LBP?

One possible answer to this question includes the theoretical and practical challenges that educational institutions face in incorporating the broader concept of health into the training of healthcare professionals. Furthermore, truly multidisciplinary healthcare services are rare, contributing to the theme being minimized or overlooked in clinical practice[21,42]. It is also necessary to understand why research interests are currently limited to the hypothesis of CMD as a consequence of LBP, that is, studies that analyze LBP as a dependent variable.

The literature on mental disorders reinforces the importance of bidirectional investigations, which analyze the LBP and CMD variables either as a cause or as an outcome. Depression (depressive episodes, major depression, among others) and anxiety disorders (generalized anxiety, phobia, obsessive-compulsive disorder, among others) are psychiatric disorders with complex etiology and are associated with limitations in the individual's daily life[44]. Individual factors (biological and psychological) and macro-environmental factors (socioeconomic and cultural) should be considered to identify the etiology and development of these conditions[16,45]. On one hand, the presence of non-communicable chronic diseases (NCDs) and the imminent risk of complications can generate psychological distress[45]. On the other hand, anxiety and depression can act as risk factors for NCD, leading to the onset of physical illnesses[46].

A limit of this review was not having the objective to evaluate the association strength between the variables, which could have brought more robust results. In summary, the current review suggests that it is necessary to advance the agenda of research on the theme. Longitudinal designs, attention to the listed methodological aspects, and biopsychosocial models approached with causality analysis are needed. More attention to the exposure to risk factors to CMD and LBP is also recommended, especially those present in the work environment.

CONCLUSION

The current review presents many studies with significant association between CMD and LBP and the prevalent analysis of LBP as an independent variable. Longitudinal studies were scarce and did not aim to evaluate causality. From the methodological point of view, investigations presented insufficient information about the reference population and, consequently, the sample representativeness. Most studies focused on patients with LBP clinical condition and highlighted the lack of standardization regarding the LBP assessment instruments.

AUTHORS' CONTRIBUTIONS

Tatiana Gobbi Mendes de Castro
Data Collection, Conceptualization, Research, Methodology, Writing - Preparation of the original, Writing - Review and Editing

Eduardo de Paula Lima
Conceptualization, Methodology, Writing - Preparation of the original, Writing - Review and Editing
Alina Gomide Vasconcelos
Methodology, Writing - Preparation of the original, Writing - Review and Editing
Elizabeth do Nascimento
Conceptualization, Project Management, Methodology, Writing - Preparation of the original Writing - Review and Editing, Supervision

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