

# Financial stress and pain, what follows an economic crisis? Integrative review

*Estresse financeiro e dor, o que surge após uma crise econômica? Revisão integrativa*

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## ABSTRACT

**BACKGROUND AND OBJECTIVES:** Numerous epidemiological studies have investigated the relationships of socioeconomic factors and pain perception. These studies mainly emphasize issues related to family income. The impact of specific economic issues on the individual and their relationship to pain has not been well studied. The purpose of this review is to evaluate the impact of financial stress on pain symptoms, considering how it interacts and contributes to pain experience, regardless of its type and chronicity.

**CONTENTS:** After pandemics, a global economic crisis often emerges, with relevant implications in populations' health. An integrative review was carried out, with searches developed in Medline (via Pubmed), LILACS (via BVS), Scielo and PsycINFO databases, limited to Portuguese, Spanish and English languages, and no restriction for publication year. The PICO methodology was used to select descriptors from the research question. Selection and eligibility criteria were also established according to this strategy. The final review sample consisted of nine articles.

**CONCLUSION:** This review identified that financial stress represents a risk factor for several pain-related parameters, such as the prevalence of chronic pain, intensity and frequency of pain, use of pain drugs and interference in daily activities. This is a fundamental issue, and its recognition can direct the professional to a broader and more effective treatment line.

**Keywords:** Chronic pain, Economics, Pain, Psychological stress.

## RESUMO

**JUSTIFICATIVA E OBJETIVOS:** Inúmeros estudos epidemiológicos têm investigado as relações entre fatores socioeconômicos e a percepção da dor. Esses estudos enfatizam principalmente questões relacionadas à renda familiar. O impacto de questões econômicas específicas sobre o indivíduo e sua relação com a dor não têm sido bem avaliados. O objetivo deste estudo foi avaliar se o estresse financeiro interfere nos sintomas da dor, considerando como ele interage e contribui para a experiência da dor, independentemente de seu tipo e cronicidade.

**CONTEÚDO:** Após pandemias, muitas vezes surge uma crise econômica global, com implicações relevantes para a saúde das populações. Realizou-se uma revisão integrativa, com pesquisas desenvolvidas nas bases de dados Medline (via Pubmed), LILACS (via BVS), Scielo e PsycINFO, limitadas às línguas portuguesa, espanhola e inglesa, e sem restrição para ano de publicação. A metodologia PICO foi utilizada para selecionar os descritores da questão da pesquisa. Também foram estabelecidos critérios de seleção e elegibilidade, de acordo com tal estratégia. A amostra final da revisão consistiu em nove artigos.

**CONCLUSÃO:** Identificou-se que o estresse financeiro representa um fator de risco para vários parâmetros relacionados à dor, como a prevalência de dor crônica, intensidade e frequência de dor, uso de fármacos para o controle da dor e interferência nas atividades diárias. Trata-se de uma questão fundamental, e seu reconhecimento pode direcionar o profissional a uma linha de tratamento mais ampla e eficaz.

**Descritores:** Dor, Dor crônica, Economia, Estresse psicológico.

## INTRODUCTION

The economic crisis caused by COVID-19 reached countries of all development ranges in many sectors of their economies. According to the World Trade Organization (WTO) and the Organization for Economic Cooperation and Development, this pandemic poses a huge threat to the global economy<sup>1</sup>. In times of economic difficulty, health may be suddenly affected by new demands. It is estimated that the cost of pain treatments may soon exceed the expenses related to heart disease or cancer<sup>2</sup>. In times of economic difficulty, the population's need for pain control is also increased<sup>3</sup>. Due to the temporal proximity of the current pandemic, its economic implications and health repercussions cannot be precisely determined. However, comparisons with past events can identify its potential harmful effects<sup>4</sup>. In the beginning of the decade, Europe was deeply affected by an economic crisis, producing a negative impact on people's painful behaviour<sup>5</sup>.

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Economic security is defined as the capability of individuals, households or communities to cover their essential needs in a sustainable and dignified manner<sup>6</sup>. Food, housing, clothing, hygiene products, health and education associated costs encompass items regarded as “essential needs”<sup>7</sup>. When these needs cannot be met, financial difficulties can become a form of stress on people’s lives.

Financial stress (FS) is a condition in which a company or individual cannot generate income because it is unable to meet or cannot pay its financial obligations. FS can be classified in two distinct forms: chronic FS, associated with a lower socioeconomic level, and acute FS, resulting from financial incidents<sup>8</sup>. The first is related to continuous tensions that do not present immediate resolution prospects, the latter refers to acute daily events<sup>9</sup>. Economic crisis can trigger one or both events.

FS due to pandemics’ economic crisis has an impact on individual’s health, markedly in the more vulnerable countries. Given that the literature has been recently focusing on this topic, the present review aims to evaluate FS impact on pain symptoms, considering how it interacts and contributes to pain experience, regardless of its type and chronicity.

## CONTENTS

This integrative review followed the recommended steps: 1. elaboration of the guiding question, 2. establishment of inclusion and exclusion criteria, 3. critical analysis of the included studies, and 4. extraction, synthesis and presentation of data<sup>10,11</sup>. The research question was: “Is there any effect of FS or financial difficulties on pain?”. A comprehensive search was conducted using the following databases: Medline, (via Pubmed), LILACS (via BVS), Scielo and PsycINFO until May 2020.

Search terms were defined according to the PICO methodology (Patient, Intervention, Comparison and Outcomes) and included, primarily: FS, over-indebtedness and pain, with related terms in all fields. Limits were set to include only quantitative studies of adults written in the English, Portuguese or Spanish languages, with no publication period limits. Reference lists of retrieved sources were also searched. The search was performed with the following keywords: ‘financial stress’, ‘financial difficulties’, ‘financial burden’, ‘financial strain’, ‘financial hardships’, ‘over-indebtedness’ and ‘pain’ combined by Boolean operators OR/AND (pain), OR (pain perception), OR (acute pain), OR (chronic pain), AND “financial stress”, OR “financial burden”, OR “financial strain”, OR “financial hardships”, OR “financial difficulties”, OR “over-indebtedness”.

In order to be included in the final review, each article was screened for the following inclusion criteria: original papers investigating FS among young or older adults and its effect on pain. Literature reviews, dissertations, thesis, studies where the results were not well established, or articles not related to the theme were excluded. The search strategy process is presented on figure 1.

The final search yielded 9 studies. Regarding the publication years, most studies had been carried out in the last 5 years. The distribution was one article for the years of 2009, 2011, 2016, 2020, two for 2018 and three for 2019. Regarding countries

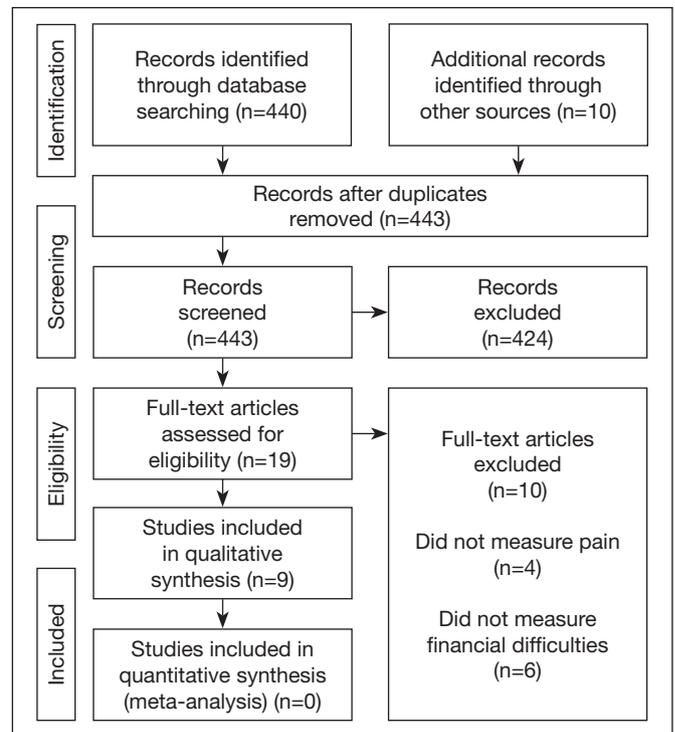


Figure 1. PRISMA flow diagram for inclusion of articles<sup>10</sup>

where studies were developed, the distribution was: United States (4), Germany (2), Singapore (1), Japan (1) and Greece (1). Studies samples ranged from 200 to 7560 participants.

Among the selected articles, the majority was cross-sectional eight, the remaining study was a cohort (1). Six different FS instruments were identified. Most studies applied specific surveys to participants (4). The retrieved studies evaluated a diverse range of financial difficulties. Among them, resources for daily expenses and necessities, over-indebtedness, subjective economic hardship, and ability to afford basic needs. One study did not specify the type of financial difficulty studied. To assess exposure to FS, the most frequent instrument was studies-specific surveys, developed by the authors. In some studies, FS exposure was collected through databases of debt advisory agencies.

Regarding the investigation of painful conditions, most studies addressed musculoskeletal pain, both acute and chronic. One study evaluated specifically cervical pain and two investigated oncological pain. Pain-related outcomes included daily intensity and/or by period, impact of pain on function, frequency of pain and use of pain control drugs. To measure the painful condition, the studies used several instruments and scales. The McGill questionnaire was reported in 2 studies. The Brief Pain Inventory was also cited by two studies. Two other studies used numerical scales. The remained studies analysed data from different databases, however they were not specified.

All studies included in the present review found an association between FS, financial difficulties, or indebtedness with higher pain scores, regardless of pain type or population studied. The results are presented in table 1.

**Table 1.** Studies distribution according to authors, design, measurements, and pain-related outcomes

Authors	Design	FS	Pain	FS assessment	Pain assessment	Pain Outcomes
Evans et al. <sup>12</sup>	Cross-sectional	Resources for basic necessities	Chronic pain	Specific survey	McGill Questionnaire	Financial difficulties were associated with chronic pain ( $r=0.29^{**}$ $p=0.000$ )
Evans et al. <sup>13</sup>	Cross-sectional	Resources for basic necessities	Pain intensity	Specific survey	McGill Questionnaire	Financial difficulties were correlated with pain intensity. Individuals with higher financial difficulties reported more pain intensity ( $p<0.01$ ).
Warth et al. <sup>3</sup>	Comparative cross-sectional	Over-indebtedness	Several pain criteria	Debt advisory centres	OID-survey DEGS1	Over-indebtedness significantly increased the odds of pain after adjustment (aOR 1.30; 95%-CI1.07–1.59). The over-indebted were significantly less likely to use pain drug compared to the general population after adjustment (aOR 0.76; 95%-CI0.58–0.99).
Malhotra et al. <sup>14</sup>	Cross-sectional	Resources for daily expenses	Pain interference in daily activities	Americans Resources and Services questionnaire	Brief Pain Inventory	A higher financial difficulties score was associated with worse physical outcome (i.e. greater total pain and suffering) ( $p<0.05$ ).
Batistaki et al. <sup>5</sup>	Prospective cross-sectional	Self-perception of the crisis intensity	Pain intensity	Specific survey	Numeric Scale	Most patients (97.5%) believed that the intensity of their pain would have been improved if their financial status had been better.
Sekiguchi et al. <sup>15</sup>	Cohort	Financial difficulty self-perception	New-onset neck pain	Survey of Living Conditions	Comprehensive Survey of Living Conditions	A significantly higher rate of new-onset neck pain was observed in participants who considered their subjective economic hardship to be “hard” (OR 1/4 2.10, 95% CI 1/4 1.34-3.30) or “very hard” (OR 1/4 3.26, 95% CI 1/4 1.83-5.46; $p<0.001$ ) compared to those who considered their hardship to be “normal”.
Lathan et al. <sup>16</sup>	Retrospective cross-sectional	Financial reserves in months	Pain severity	Quality of Life Questionnaire	Brief Pain Inventory	Compared to patients with more than 12 months of financial reserves, those with limited financial reserves reported significantly increased pain (adjusted mean difference, 5.03 [95% CI, 3.29 to 7.22] and 3.45 [95% CI, 1.25 to 5.66])
Rios and Zautra <sup>17</sup>	Prospective cross-sectional	Ability to afford basic needs	Daily pain intensity	Specific survey	Numeric Scale	The interaction between daily financial worry and economic hardship was significant. This effect was statistically significant after controlling for the influence of level 2 control variables (economic hardship, age, neuroticism, diagnostic group and working status). ( $\beta = .47$ , SE .23, $p .04$ ).
Ochsmann et al. <sup>18</sup>	Cross-sectional	Over-indebtedness	Presence of back pain	Debt counseling agencies	OID-survey	Being overindebted was identified as an independent effect modifier and was associated with higher odds of suffering from back pain (aOR:10.92, 95%CI: 8.96 - 13.46).

aOR = adjusted odds ratios; CI = confidence intervals; FS = financial stress; DEGS1: Germany (2008–2011); OID-survey: Germany (2017).

## DISCUSSION

To the authors, this review is the first to comprehensively synthesize the published evidence on painful conditions and exposure to FS. All studies included in this review have established a relationship between socioeconomic status and pain. Family income is an assessment that commonly reflects the socioeconomic condition of an individual or a group of individuals. On the other hand, the FS construct is a subjective measure of how the

individual perceives his/her economic condition<sup>16</sup>. In the consulted literature, only 9 articles reporting association or correlation between FS and pain experience were found. These studies have consistently demonstrated that this type of stress is associated with several pain conditions.

A multilevel analysis study found that daily financial worry was associated with daily pain, and also that economic hardship moderates the effects of daily financial worry on daily pain. Financial worry led to significantly more pain among those who rated their

financial situations as more stressful. Those with high economic hardship experienced the most pain on days with high financial worry, those with a mid-range level of economic hardship experienced more moderate effects of daily financial worry on pain, and those with low economic hardship appeared not to experience any impact of daily financial worry on pain. These findings indicated there was evidence of considerable variation between individuals in the relation between daily financial worry and pain<sup>17</sup>.

It's important to notice that "family income", frequently employed in studies to evaluate socioeconomic status and pain, may not be adequate to assess an individual's real economic difficulties, since it does not reflect financial obligations or debts. One particular study found a daily temporal association between FS and higher pain perception during that day<sup>13</sup>. It's important to highlight that individuals with family income related to the lower social stratum may have reduced levels of FS. On the other hand, individuals with family income associated with higher social stratum may exhibit a high level of FS due to the presence of excessive debts.

From this perspective, financial debts are reported as related to various health problems, particularly those related to mental health<sup>14</sup>. Pain is likewise a more frequent experience in individuals with debts<sup>3</sup> and even small debts can amplify pain perception<sup>15</sup>. In accordance to that, two studies found that economic crisis are associated with an increase in pain prevalence<sup>5,16</sup>. Therefore, after a global economic crisis, a phenomenon of indebtedness may occur<sup>18</sup>, where higher pain scores should be expected in individuals financially impacted by pandemics.

The studies included in this review analysed FS in different ways. Some of them reported information about the financial reserve in the past year<sup>16</sup>, conditions available for health treatments, housing and other obligations<sup>5</sup>, resources for basic needs such as food or public accounts<sup>12,13,17</sup>, level of indebtedness<sup>3,18</sup>, assessment of chronic financial difficulties<sup>15</sup>, and questionnaires developed by the authors<sup>5,12,13,17</sup>. Regardless, all pain parameters were associated with FS exposure.

In 2016, one study developed among a sample of 5343 cancer patients found that a large number of individuals were prone to report their FS, suggesting that this variable can be used as a routine during clinical evaluation<sup>16</sup>. Questioning about FS seems to be less inconvenient than the inquiry of family income, as FS is found in all social strata, thus causing less embarrassment in the provision of information. Identifying this group of vulnerable patients may be relevant when the objective is to provide a therapeutic approach that addresses broader aspects of pain<sup>14</sup>.

In this regard, financial debts intensify several pain related parameters<sup>3</sup>, consequently, they can increase the costs of population's health. During economic crisis, policies that reduce the financial burden on patients with high levels of FS can reduce the final costs for the health systems. With the same objective, orientation for family expenses control can be an important tool in individual care. In addition, the health professional should be cautious and consider the direct and indirect treatment costs, pondering the patient's financial condition. As a

form of prevention, school curricula should introduce content related to financial education.

This review has some limitations. Firstly, most studies were cross-sectional. However, even if causality may not be assumed between FS and pain, they provide an overall representation of the characteristics or frequency of the targeted data point, at any given time, which makes them a useful opportunity when determining the allocation of resources to the population. Secondly, because FS was determined in a variety of ways, its prevalence may be underestimated, and it becomes difficult to extrapolate these findings to the general population. Finally, unrelieved or chronic pain is a disabling condition and it also can alter family dynamics and increase FS or the number of health-care visits. Therefore, longitudinal studies are recommended to identify the temporal relation between exposure to FS and pain, preventing misconceptions.

Future studies should identify different types of FS, establishing a score for standardization of new research, as well as include drawings that may allow to understand how FS interferes in psychological, social, and physiological variables, altering the perception of pain. One of the strengths of this review was the use of the rigorous methodology provided by study<sup>11</sup> for conducting an integrative review. Also, multiple re-checks of the source articles were performed at several stages of the analysis process to avoid erroneous premature conclusions.

## CONCLUSION

This review identified that FS represents a risk factor for several pain related parameters, such as prevalence of chronic pain, pain intensity, frequency of pain, pain drugs usage and pain interference in daily activities. Whereas pain is a multifactorial phenomenon, there must be comprehensive knowledge of a patient's economic status, including over-indebtedness and difficulty of paying essential monthly items. This is a fundamental issue and its recognition can extend the professional awareness to a broader and more effective treatment line.

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