

Prevalence and Impact of Gastrointestinal Symptoms in Patients with Chronic Low Back Pain - Systematic Review

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Cite this paper as: Tamilarasi S, Soundararajan K, Antony Leo Aseer P, Subbiah K, Bala Murugan B, Prathibha D, Gajalakshmi C, (2025) Prevalence and Impact of Gastrointestinal Symptoms in Patients with Chronic Low Back Pain - Systematic Review. *Journal of Neonatal Surgery*, 14 (3), 126-129.

ABSTRACT

Introduction: Low back pain encompasses a variety of pain categories (e.g., nociceptive, neuropathic, neoplastic, or non-specific) that commonly overlap. Recent research suggests a link between gastrointestinal (GI) symptoms and musculoskeletal pain, specifically CLBP. However, the prevalence and nature of GI symptoms in CLBP patients are little characterized.

Objectives: This study examines the prevalence, severity, and impact of gastrointestinal symptoms among patients with chronic low back pain.

Methods: A complete search was undertaken across numerous databases, including PubMed, PEDro, and The Cochrane Database, until August 2024. The search yielded 4,065 results, with four research selected for qualitative and quantitative synthesis.

Results The searches retrieved 47 records, of which were selected for full-text screening, four reviews were included. The findings say that gastrointestinal (GI) symptoms in the chronic stage of low back pain. It occurs due to a convergence of viscerosomatic pathways and dysfunction in trunk muscles, which leads to reduced gastrointestinal motility.

Conclusions There is strong evidence indicating a connection between gastrointestinal (GI) symptoms and chronic lower back pain (CLBP). The results of this suggested study could aid physiotherapists in managing low back pain patients with GI discomfort. GI symptoms as part of CLBP therapy may improve patients' physical functioning and quality of life.

Keywords: *Gastrointestinal symptoms, chronic low Back pain, prevalence quality of life.*

1. INTRODUCTION

Low back pain encompasses a variety of pain categories (e.g., nociceptive, neuropathic, neoplastic, or non-specific) that commonly overlap⁽¹⁾. Chronic back pain is a prevalent issue in society, with an annual prevalence of 15% to 45% with an average of 30%. It affects 70-85% of people at some point in their lives, leading to activity limitations among individuals under 45 years old. Back pain is also the second most common reason for physician visits, hospital admissions, and surgical operations. Approximately 2% of the US workforce receives compensation for back injuries annually⁽²⁾ Gastrointestinal (GI) symptoms irritable bowel syndrome (IBS), and chronic constipation are prevalent functional gastrointestinal disorders worldwide. IBS is the most common, with a prevalence of 5-25%. Chronic constipation has a prevalence of 1.2-27%. Gastro-oesophageal reflux disease (GERD) is a chronic disorder where stomach contents leak into the oesophagus, causing heartburn. GERD prevalence is increasing globally due to factors like longevity, obesity, and drug usage. In the US, 7-10% of people experience heartburn daily, and 25-40% have symptomatic GERD⁽³⁾. Recent research has revealed an intriguing and complex relationship between gastrointestinal (GI) symptoms and musculoskeletal pain, with CLBP frequently associated with underlying gut-related diseases The most significant comorbidities associated with chronic low back pain are hypertension, heart disease, depression, and anxiety. The author found that patients with multiple comorbidities used less primary care and more specialized care, resulting in higher annual direct medical costs⁽⁴⁾. Despite rising knowledge of this link, the prevalence, intensity, and features of GI symptoms in people with CLBP have not been thoroughly investigated. This information gap affects physicians' capacity to effectively diagnose, understand, and manage comorbid diseases. Addressing this weakness is critical because early detection and action can improve pain management.

2. METHODS

Study environment A systematic review was done using the following established format, and the paper was registered in the open science framework DOI.

Identification of research question method SPIDER was employed in this systematic review to develop a search strategy.

- S - Subject with low back pain who had experienced GI symptom
- Pi - Correlated with Gastrointestinal symptoms
- D - Studies using qualitative and or mixed research methods
- E - Experience, perception, opinions, views
- R - Qualitative study

Search Strategy:

A comprehensive literature review was undertaken using the following databases: PubMed, PEDro, DOAJ, and The Cochrane Database of Systematic Reviews. The keywords include "physiotherapy," "chronic low back pain," and "gastro intestine." The Boolean search was executed when needed. The systematic review process also took into consideration obscure sources or hand-searching material.

Study selection

The references were imported into Mendeley Desktop version 1.19.4 to check for duplication after the database searches were finished. Two reviewers evaluated each article's abstract and title independently throughout the first round. A full-text evaluation is part of stage two, and additional papers that fit the study's goals were found. A third expert reviewed the scoping review's included articles and confirmed their consistency and consensus. A careful hand search was conducted to guarantee thoroughness. The names of the authors, the year, the country, the samples, the intervention, the study design, and the main conclusions were gathered from a few chosen studies using a data extraction table. To guarantee that the data entries were valid, the reviewers cross-checked them. Finally, an expert reviewer examined the data table. Following the collection of papers, a descriptive synthesis was conducted.

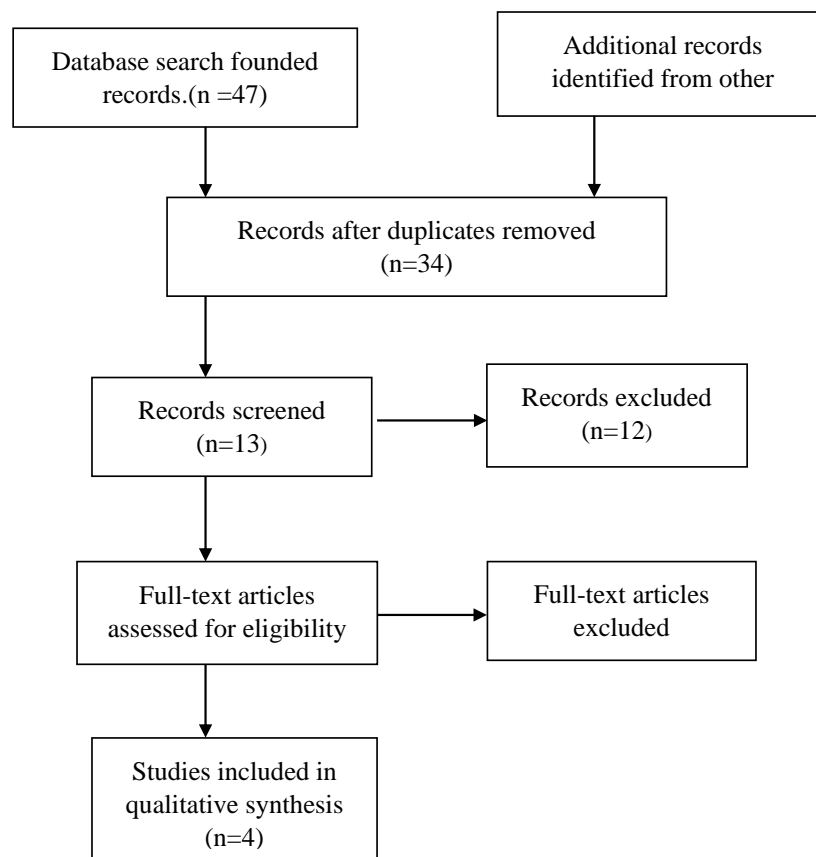


Figure 1: The PRISMA Flowchart for the process of the study

3. RESULT

The features of the studies considered in this systematic review. Following the study selection, six publications were selected for the systematic review: one survey analysis and four reviews.

Table 1 includes the most relevant studies. We developed an algorithm based on the reviews to determine GI symptoms in patients by looking at a number of attributes.

Author	Highlights
Michelle D. Smith et al., 2009	In almost every case, the presence and development of GI symptoms were linked to the development of back pain.
Michelle D. Smith et al., 2014	After accounting for confounding variables, the amount of GI symptoms was highly correlated with back pain across all age groups.
Nuria Eguaras et.al., 2019	Based on these data, the osteopathic visceral approach for GERD improves GERD symptoms, C4 spinous process PPT, and cervical mobility. Furthermore, a link has been discovered between increased GERD symptomatology and decreased C4 spinous process PPT.
Wafa kaynaat et al., 2023	This study showed that the motility restriction of many visceral organs, including the stomach, small intestine, liver, kidneys, and colon, is associated with the prevalence of non-specific back pain.

4. DISCUSSION

The debate focuses on the complicated interaction between chronic low back pain (CLBP) and gastrointestinal (GI) symptoms, indicating a multifaceted link impacted by physiological, biomechanical, and psychological causes. CLBP, a common musculoskeletal illness, is connected to GI symptoms via pathways such as the gut-brain axis and viscerosomatic convergence. The central nervous system (CNS) is composed of afferents, such as vagus and splanchnic nerves, which maintain close contact with somatic sensibility pathways. Studies have shown that neurons are responsive to both somatic and visceral stimulation.

Viscerosomatic convergence is common for CNS neurons, with some indicating that neurons located more rostrally are more responsive to visceral stimulation. The CNS controls and coordinates internal organs, including higher levels covering the entire body and local input-output systems for dynamic management of particular organs. With little noticeable effects, these internal control systems are effective and well-structured⁽⁶⁾.

In Gut brain axis psychological elements such as anxiety and sadness play an important role in this association because they are common in both diseases. Furthermore, the gut microbiota emerges as a critical mediator, with abnormalities leading to systemic inflammation, muscle fatigue, and GI disturbances, thereby influencing pain perception and musculoskeletal health⁽⁵⁾. Despite the convincing linkages, the study highlights key limitations, such as variability in study designs, small sample numbers, and low regional variety. Furthermore, excluding non-English research decreases the generalizability of the findings. These gaps highlight the need for additional rigorous, multidisciplinary research to investigate effective therapies and get a better understanding of this link. Clinically, the results are consistent with a holistic approach to treating CLBP that includes standard physical therapies along with assessments of psychological well-being and GI symptoms.

REFERENCES

- [1] Smith MD, Russell A, Hodges PW. How common is back pain in women with gastrointestinal problems? The Clinical journal of pain. 2008 Mar 1;24(3):199-203.
- [2] Andersson GB. Epidemiological features of chronic low-back pain. The lancet. 1999 Aug 14;354(9178):581-5.
- [3] Moses-Hampton MK, Povieng B, Ghorayeb JH, Zhang Y, Wu H. Chronic low back pain comorbidity count

and its impact on exacerbating opioid and non-opioid prescribing behavior. *Pain Practice*. 2023 Mar;23(3):252-63.

- [4] Angus K, Asgharifar S, Gleberzon B. What effect does chiropractic treatment have on gastrointestinal (GI) disorders: a narrative review of the literature. *The Journal of the Canadian Chiropractic Association*. 2015 Jun;59(2):122
 - [5] Góralczyk-Bińkowska A, Szmajda-Krygier D, Kozłowska E. The microbiota–gut–brain Axis in psychiatric disorders. *International journal of molecular sciences*. 2022 Sep 24;23(19):11245.
 - [6] Berkley KJ. On the significance of viscerosomatic convergence. *APS Journal*. 1993 Dec 1;2(4):239-47.
 - [7] Drouin JS, Pfalzer L, Shim JM, Kim SJ. Comparisons between manual lymph drainage, abdominal massage, and electrical stimulation on functional constipation outcomes: a randomized, controlled trial. *International Journal of environmental research and public health*. 2020 Jun;17(11):3924.
 - [8] Kaynaat W, Waqqar S, Ahmad U, Razia ET, Sajjad AG, Rehman M. Association of Visceral Organ Involvement in Back Pain: a Cross-Sectional Study. *Medical Rehabilitation*. 2023 Nov 24;27(4):4-9
 - [9] Jørgensen LS, Fossgreen J. Back pain and spinal pathology in patients with functional upper abdominal pain. *Scandinavian journal of gastroenterology*. 1990 Jan 1;25(12):1235-41.
 - [10] Smith MD, Russell A, Hodges PW. Do incontinence, breathing difficulties, and gastrointestinal symptoms increase the risk of future back pain?. *The Journal of Pain*. 2009 Aug 1;10(8):876-86.
 - [11] Arendt-Nielsen L, Drewes AM, Hansen JB, Tage-Jensen U. Gut pain reactions in man: an experimental investigation using short and long duration transmucosal electrical stimulation. *Pain*. 1997 Feb 1;69(3):255-62.
 - [12] De Troyer A. Mechanical role of the abdominal muscles in relation to posture. *Respiration physiology*. 1983 Sep 1;53(3):341-53.
 - [13] Smith MD, Russell A, Hodges PW. The relationship between incontinence, breathing disorders, gastrointestinal symptoms, and back pain in women: a longitudinal cohort study. *The Clinical journal of pain*. 2014 Feb 1;30(2):162-
 - [14] Su M, Tang Y, Kong W, Zhang S, Zhu T. Genetically supported causality between gut microbiota, gut metabolites and low back pain: a two-sample Mendelian randomization study. *Frontiers in microbiology*. 2023 Apr 14;14:1157451.
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