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Gender roles and women's pain experience: a systematic review

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Systematic Review

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Abstract

Purpouse: This systematic review investigated the experience of chronic pain in women, considering biological, psychosocial, and sociocultural dimensions.

Methods: The review followed PRISMA 2020 guidelines and included qualitative, quantitative, and mixed-methods studies published between 2015 and 2025 in English and Portuguese.

Results: Searches were conducted in the PubMed and Virtual Health Library databases, resulting in the inclusion of 19 studies. The findings showed that women experience higher prevalence of chronic pain, greater emotional burden, increased functional impairment, and more frequent psychosocial comorbidities, such as anxiety, depression, and catastrophizing. Gender roles, caregiving responsibilities, stigma, and structural inequalities were associated with the perception and management of pain. Biological and hormonal factors, including reproductive transitions and hormonal fluctuations, also influenced pain intensity and persistence. The review highlights that women's chronic pain cannot be understood exclusively through biomedical perspectives, reinforcing the need for integrative and gender-sensitive approaches in research and clinical practice.

1. Introduction

Pain is defined by the International Association for the Study of Pain (IASP) as "a sensory and emotional unpleasant experience associated, or similar to that associated, with a real or potential tissue lesion" (Santana et al. 2020). When persistent or recurring for more than three months, it is classified as chronic pain (CP) (Treede et al. 2015). The ICD-11 recognizes chronic pain as a multifactorial condition with substantial public-health impact because of its social and economic costs (Treede et al. 2015).

Pain is more prevalent among women, who report greater sensitivity to multiple pain modalities and painful symptoms more frequently than men (Aguiar et al. 2021; Bartley and Fillingim 2013; Fillingim et al. 2009). Anxiety, depression, and catastrophizing can exacerbate pain and are also more prevalent among women (Mogil 2020; Meints and Edwards 2020). Women are less likely to receive adequate analgesia for abdominal pain in emergency services, while being more likely to be referred for psychological treatment (Fillingim et al. 2009; Guzikevits et al. 2024).

Cultural expectations influence how pain is expressed, described, and interpreted. Gender norms shape the expression of sensitivity, while differences attenuate in controlled experimental settings in which social pressure is reduced, suggesting an important role for sociocultural conditioning (Horton and Tschudi-Madsen 2022; Robinson and Wise 2004). The historical invisibility of women's experiences in research and clinical practice has contributed to diagnostic biases, inadequate treatment, and persistent inequalities in healthcare (Guzikevits et al. 2024; Samulowitz et al. 2017). This systematic review therefore investigates women's experience of chronic pain from a gender-based perspective.

2. Method

2.1 Study design

This systematic review followed PRISMA 2020 guidelines (Prospero 2025). The protocol was submitted to PROSPERO and is under review (submission ID: 1368368). The review focused on women's pain experience, adopting a gender-based approach to identify specific experiences.

2.2 Eligibility criteria

Qualitative, quantitative, or mixed-methods studies addressing the pain experience of adult women (≥ 18 years) were eligible if published in English or Portuguese between January 1, 2015 and January 31, 2025. Editorials, letters, books, autobiographies, institutional documents, duplicates, unavailable full texts, studies without a specific gender focus or without analysis of women, and studies conducted exclusively with adolescents or elderly adults were excluded. Eligibility followed PICO: Population—adult women with chronic pain; Exposure—experience or perception of chronic pain; Comparator—men with chronic pain or no comparator; Outcome—differences in pain experience, intensity, emotional impact, functionality, coping, perception, reporting, or response to pain.

2.3 Research strategies

Searches were conducted in PubMed and the Virtual Health Library (VHL). MeSH terms were used in PubMed and DeCS descriptors in VHL, combined with free-text terms in English and Portuguese. Search terms included "chronic pain," "fibromyalgia," "migraine," "women," "female," "gender differences," "pain experience," and "pain intensity."

2.4 Studies Selection Process

Records were exported to a spreadsheet and duplicates removed using Rayyan. Four reviewers independently screened titles and abstracts in pairs; disagreements were resolved by a third reviewer. Potentially relevant articles were then assessed in full, with remaining disagreements resolved by group consensus.

2.5 Data extractions

Extracted information included study identification, authorship, year, title, country, population, sample size, design, qualitative methods, main findings, quantitative instruments and findings, limitations, and database source. This process supported comparative organization and thematic synthesis.

2.6 Data Analysis

Because the included studies varied substantially in design, samples, instruments, and outcomes, no meta-analysis was performed. Instead, a narrative and thematic synthesis integrated quantitative and qualitative findings. Six areas were identified inductively: (1) scientific literature on chronic pain in women; (2) psychosocial dimensions, gender roles, and inequalities; (3) gender comparisons and androcentrism; (4) clinical impacts and implications for management; (5) biological and hormonal aspects; and (6) intersectionalities.

Figure 1. Flowchart of the process for identifying, screening, assessing eligibility, and including studies (PRISMA 2020)

IDENTIFICATION

Records removed before screening (duplicates) = 5

Records identified through database searching

PuBMED = 1,193

BVS = 58

Total: 1,261

Record excluded based on title and abstract = 1,153

Reasons: Focus on other topics related to women; Studies focused on therapeutic or pharmacological evaluation; Studies without a gender-specific focus

Record screened = 1,256

SCREENING

ELIGIBILITY

Full-text articles excluded = 85

Reasons: Full text not available; Publications primarily focused on interventions; Lack of analysis of female or male pain experience

Full-text articles assessed for elegibility = 103

INCLUDED

Studies included in the meta-analysis = 19

Flowchart created by the authors based on PRISMA 2020 model

3. Results

At the end of screening and eligibility assessment, 20 studies were identified, 19 through electronic databases and one through manual reference searching. One study was subsequently excluded because the full text was unavailable, resulting in 19 included studies. Publications ranged from 2015 to 2025 and predominantly originated in North America and Europe, particularly the United States, Canada, Italy, Belgium, and Sweden, with few studies from Latin America.

The studies included narrative and systematic reviews, observational, cross-sectional, and cohort studies, predominantly quantitative, with limited qualitative research directly addressing subjective pain experience. This methodological heterogeneity prevented meta-analysis and supported interpretive thematic synthesis across six areas.

3.1. Scientific literature on the experience of chronic pain in women

Research on chronic pain in women remains strongly concentrated on migraine, with emphasis on epidemiology, clinical manifestations, and biological factors (Ahmad and Rosendale 2022; Rossi et al. 2022). Although extensive, this literature focuses primarily on prevalence, disability, and hormonal factors, leaving gaps concerning subjective experience and gender constructions. Women show higher migraine prevalence, more frequent attacks, greater functional impairment, greater medication use, and more intense symptoms, including nausea, photo- and phonophobia, longer attacks, and greater post-attack impairment (Rossi et al. 2022). Menstrual migraine remains insufficiently standardized, with limited diagnostic criteria (Ahmad and Rosendale 2022).

3.2. Psychosocial dimensions—suffering, gender roles, and inequalities in the experience of pain

Studies addressing stigma, gender, social roles, psychological comorbidities, inequalities in care, and chronic pain in women indicate that women's pain is frequently underdiagnosed, undertreated, and interpreted through gendered assumptions (Rossi et al. 2022; Friedman et al. 2024; Al-Hassany 2020; Keogh 2025; Godoi et al. 2019; Conversano et al. 2021; Souza et al. 2017; Madsen et al. 2018). Migraine is two to three times more common in women than men, and its association with femininity may contribute to its social perception as a "women's disease," undermining its legitimacy and reinforcing stigma (Buse et al. 2020). Chronic pelvic pain is a major source of morbidity and impairment, yet an organic diagnosis is often absent, contributing to the underestimation of pain and judgments about its credibility. Studies describe emotional representations involving loneliness, injury, darkness, abandonment, and helplessness; these experiences may foster catastrophizing, which is associated with greater pain perception, anxiety, and depression.

3.3. Gender comparisons and androcentrism in research and clinical practice

The reviewed studies distinguish sex from gender: sex refers to biological characteristics, whereas gender concerns culturally associated attitudes, feelings, and behaviors (Ahmad 2022; Cormier, Lavigne and Dionne 2016; Lin et al. 2018; Slack et al. 2018). Nevertheless, medical research frequently conflates these categories. Clinical practice also shows gender-related differences in treatment. Women receive lower mean equivalent daily doses of morphine and fewer high-dose opioids than men, while being more

likely to receive physical therapy, psychotherapy, rehabilitation, and medication reconciliation (Lin et al. 2018). These patterns suggest that gender can shape both interpretation and management of pain.

3.4. Clinical impacts and implications for pain management

Some studies found no statistically significant differences between men and women in pain intensity, functional impairment, medication use, or management strategies (Slack et al. 2018; Delaruelle et al. 2018). Among women, insomnia was not associated with different pain intensity but was associated with greater interference in daily activities and more severe menopausal symptoms (Delaruelle et al. 2018). Women may nevertheless experience greater functional consequences because unpaid domestic work and caregiving responsibilities can overload daily life and hinder pain management (Horta-Baas and Romero-Figueroa 2019). Overlapping family responsibilities are associated with greater functional disability (Rossi et al. 2022).

3.5. Biological and hormonal aspects of chronic pain in women

Women show lower pain thresholds and tolerance for experimentally induced pain, greater temporal summation, and reduced conditioned pain modulation (Keogh 2025). Studies also indicate sex-related differences in brain areas involved in pain, sensory, and affective processing (Delaruelle et al. 2018; Malfliet et al. 2019). Chronic pain and dyspareunia may persist after childbirth and interfere substantially with daily activities (Molin 2020). Hormonal influences are complex: estrogen may be associated with increased or decreased pain sensitivity, whereas testosterone tends to have protective effects (Keogh 2025). Fluctuations in estrogen and progesterone influence migraine frequency and intensity (Al-Hassany et al. 2020). After puberty, migraine becomes more frequent and less stable among girls (Ahmad and Rosendale 2022; Delaruelle et al. 2018). Pregnancy and menstruation may also affect headache patterns, although menstrual-cycle effects remain incompletely addressed (Malfliet 2019). Iron deficiency associated with menstrual bleeding may increase migraine frequency, while the concept of “menstrual migraine” still lacks fully objective conceptualization and standardized treatment (Ahmad and Rosendale 2022; Delaruelle et al. 2018).

3.6. Intersectionalities

Evidence also points to intersectional dimensions. Migraine prevalence among trans women receiving affirmative hormone therapy tends to resemble that observed among cis women, suggesting an important role for sex hormones (Ahmad and Rosendale 2022). Black/non-Hispanic individuals were less likely to receive opioids in one study (Madsen et al. 2018). Although no clinically relevant gender differences were found in worsening health status among people with chronic widespread pain, men were associated with better long-term health status in one cohort (Sylwander et al. 2020). In another study, 49% of participants were dissatisfied with clinical pain management (Souza et al. 2017).

Table 2
– Distribution of the included articles by thematic area

Thematic area	Articles included	Descriptive summary of the studies
3.2.1 Scientific literature on the experience of chronic pain in women	Ahmad et al. (2022), Rossi et al. (2022)	Studies that map the scientific literature on chronic pain in women, identifying the most commonly studied types of pain
3.2.2 Psychosocial dimensions, gender roles, and inequalities in the experience of pain	Friedman et al. (2024), Al-Hassany et al. (2020), Rossi et al. (2022), Keogh (2025), Godoi et al. (2019), Horta-Baas et al. (2019), Conversano et al. (2021), Souza et al. (2017), Madsen et al. (2018)	Research addressing subjective suffering, stigma, social roles, gender inequalities, and emotional impact.
3.2.3 Gender comparisons and androcentrism in research and clinical practice	Cormier et al. (2016), Bjornsdóttir et al. (2018), Ahmand et al. (2022)	Studies comparing men and women in terms of pain perception and treatment.
3.2.4 Clinical impacts and implications for pain management	Slack et al. (2018), Edmond et al. (2018), Frange et al. (2017), Rossi et al., 2022, Horta-Baas et al. (2019),	Articles discussing the need for interdisciplinary approaches and gender-sensitive professional training.
3.2.5 Biological and hormonal aspects of chronic pain in women	Ahmad et al. (2022), Al-Hassany et al. (2020), Delaisse et al. (2018), Keogh (2025), Malfiet et al. (2019), Molin et al. (2020)	Studies that examine the influence of biological factors, focusing on variations associated with the menstrual cycle, pregnancy, the postpartum period, and menopause.
3.2.6 Intersectionalities studies	Ahmad et al. (2022), de Souza et al. (2017), Madsen et al., 2018, Sylwander et al. (2020)	Intersectionalities studies.

Caption: Created by the authors based on the studies included in the systematic review (2025).

4. Discussion

The findings indicate that chronic pain in women cannot be adequately reduced to a biomedical phenomenon. Across different contexts, the reviewed studies identify recurring patterns of underdiagnosis, stigma, gender expectations, and emotional impact, alongside hormonal mechanisms, social inequalities, and subjective experiences of suffering. An integrated perspective is therefore necessary to understand pain trajectories beyond strictly clinical interpretations.

The evidence base is geographically concentrated in high-income countries, with limited representation from Latin America, Africa, and Southeast Asia. This restricts generalizability and limits understanding of how structural inequalities, cultural differences, and socioeconomic conditions shape pain. Global

research indicates that epidemiological patterns of pain incorporate gender markers differently across countries, reinforcing the need for studies in underrepresented regions (Racine et al. 2022).

Women's pain is closely intertwined with inequality, stigma, and the normalization of suffering. Women report that their pain may be dismissed by healthcare professionals, family members, and social contexts, contributing to delayed diagnoses, inappropriate treatment, and emotional distress. Gender roles — including caregiving overload, unpaid reproductive labor, and expectations of resilience—may intensify the burden of pain and interfere with its management.

The limited inclusion of transgender and non-binary individuals reveals another dimension of androcentrism, through the invisibilization of identities that do not fit traditional binary models (Stocking et al. 2025). More broadly, the absence of systematic sex and gender analyses compromises scientific rigor and may perpetuate bias across biomedical research (Tannenbaum et al. 2019). The historical predominance of males in preclinical research has likewise limited generalizability, prompting recognition of androcentric bias in health research (Clayton and Collins 2014). Identifying these biases is essential for developing more robust explanatory models and equitable clinical practices.

5. Conclusion

This review demonstrates that chronic pain in women is a complex phenomenon resulting from interactions among biological, hormonal, psychosocial, and structural factors across the life course. Although research has advanced, gender inequalities remain evident in conceptualization, diagnosis, and treatment. These inequalities may contribute to more intense pain experiences, greater functional disability, and differences in clinical responsiveness, while women's suffering continues to be shaped by stigma and structural disadvantage.

Important limitations remain in the literature, including the underrepresentation of men, transgender and non-binary individuals, conceptual inconsistencies in the use of sex and gender categories, and the scarcity of diverse populations. These gaps limit generalizability and emphasize the need for methodological rigor, conceptual precision, and more inclusive study designs.

Research and clinical practice should systematically incorporate gender perspectives so that women's pain is recognized as legitimate and complex. Interdisciplinary approaches, inclusive methodologies, and greater attention to social determinants can help reduce historical inequalities and support more sensitive and effective care. Understanding chronic pain in women therefore requires continued integration of biological mechanisms, lived experience, social determinants, clinical practice, and care policies.

Declarations

Conflicts of Interest

The authors declare no conflict of interest.

Author Contribution

Conceptualization, T.B.V., D.C.E., I.B.F., and S.G.M.; methodology, T.B.V., D.C.E., I.B.F., and S.G.M.; validation, T.B.V., D.C.E., I.B.F., and S.G.M.; formal analysis, T.B.V., D.C.E., I.B.F., and S.G.M.; investigation, T.B.V., D.C.E., I.B.F., and S.G.M.; data curation, T.B.V., D.C.E., I.B.F., and S.G.M.; writing—original draft preparation, T.B.V., I.B.F., and S.G.M.; writing—review and editing, P.E.; visualization, T.B.V. and D.C.E.; supervision, T.B.V. and P.E.; project administration, T.B.V. All authors have read and agreed to the published version of the manuscript.

References

1. Aguiar DP, Souza CPQ, Barbosa WJM, Santos Júnior FFU, Oliveira AS (2021) Prevalence of chronic pain in Brazil: A systematic review. BrJP 4(3):257–267. https://doi.org/10.5935/2595-0118.20210043
2. Ahmad SR, Rosendale N (2022) Sex and Gender Considerations in Episodic Migraine. Curr Pain Headache Rep 26:505–516. https://doi.org/10.1007/s11916-022-01052-8
3. Al-Hassany L, Haas J, Piccininni M, Kurth T, Van Den Brink A, Rohmann JL (2020) Giving Researchers a Headache - Sex and Gender Differences in Migraine. Front Neurol 11:549038. https://doi.org/10.3389/fneur.2020.549038
4. Bartley EJ, Fillingim RB (2013) Sex differences in pain: A brief review of clinical and experimental findings. Br J Anaesth 111(1):52–58. https://doi.org/10.1093/bja/aet127
5. Buse D, Scher A, Dodick D, Reed M, Fanning K, Adams A, Lipton R (2020) The impact of migraine on the family: Perspectives of people with migraine and their partners. Headache 60(8):1414–1425. https://doi.org/10.1016/j.mayocp.2016.02.013
6. Clayton JA, Collins FS (2014) Policy: NIH to balance sex in cell and animal studies. Nature 509:282–283. https://doi.org/10.1038/509282a
7. Conversano C, Ciacchini R, Orrù G, Bazzichi ML, Gemignani A, Miniati M (2021) Gender differences on psychological factors in fibromyalgia: a systematic review on the male experience. Clin Exp Rheumatol 39(3):174–185. https://doi.org/10.55563/clinexprheumatol/73g6np. *Suppl 130*
8. Cormier S, Lavigne GL, Dionne RA (2016) Expectations predict chronic pain treatment outcomes. Pain 157(2):319–324. https://doi.org/10.1097/j.pain.0000000000000404
9. Delaruelle Z, Ivanova TA, Khan S, Negro A, Ornello R, Raffaelli B, Terrin A, Mitsikostas D, Reuter U (2018) Male and female sex hormones in primary headaches. J Headache Pain 19:117. https://doi.org/10.1186/s10194-018-0922-7
10. Edmond SN, Shelby RA, Keefe FJ, Fisher HM, Schmidt JE, Soo MS, Skinner CS, Ahrendt GM, Manculich J, Sumkin JH, Zuley ML, Bovbjerg DH (2017) Persistent Breast Pain Among Women With

Histories of Breast-conserving Surgery for Breast Cancer Compared With Women Without Histories of Breast Surgery or Cancer. Clin J Pain 33(1):51–56. https://doi.org/10.1097/AJP.0000000000000377

11. Fillingim RB, King CD, Ribeiro-Dasilva MC, Rahim-Williams B, Riley JL (2009) Sex, gender, and pain: A review of recent clinical and experimental findings. J Pain 10(5):447–485. https://doi.org/10.1016/j.jpain.2008.12.001
12. Frange C, Naufel MF, Andersen ML, Ribeiro EB, Girão MJBC, Tufik S, Hachul H (2017) Impact of insomnia on pain in postmenopausal women. Climacteric 20(3):262–267. https://doi.org/10.1080/13697137.2017.1309381
13. Friedman JK, Taylor BC, Campbell E, Allen K, Bangerter A, Branson M, Bronfort G, Calvert C, Cross L, Driscoll M, Evans R, Ferguson JE, Haley A, Hennessy S, Meis LA, Burgess DJ (2024) Gender differences in PTSD severity and pain outcomes: baseline results from the LAMP trial. PLoS ONE 19(5):e0293437. https://doi.org/10.1371/journal.pone.0293437
14. Godoi JE, Reis DRM, Carvalho JR, Deus JM (2019) Chronic pelvic pain portraits: perceptions and beliefs of 80 women / Retratos da dor pélvica crônica: percepções e crenças de 80 mulheres. BrJP – Brazilian J Pain 2(1):8–13. https://doi.org/10.5935/2595-0118.20190003
15. Guzikevits M, Choshen-Hillel S, Gileles-Hillel A, Shalvi S (2024) Gender bias in pain management decisions. *Proceedings of the National Academy of Sciences, 121*(24). https://doi.org/10.1073/pnas.2401331121
16. Horta-Baas G, Romero-Figueroa MS (2019) Self-reported disability in women with fibromyalgia from a tertiary care center. Adv Rheumatol 59:45. https://doi.org/10.1186/s42358-019-0086-4
17. Horton R, Tschudi-Madsen L (2022) Gender norms shape pain expression and reporting: A systematic review. Pain Rep 7(1):e1002. https://doi.org/10.1097/PR9.0000000000001002
18. Keogh E (2025) Sex, gender, and pain: Evidence and knowledge gaps. Curr Opin Psychol 63:102006. https://doi.org/10.1016/j.copsyc.2025.102006
19. Lin T-C, Ho S-T, Ger L-P, Liou H-H, Hwang S-L (2018) Gender difference in long-term use of opioids among Taiwan officially registered patients with chronic noncancer pain. Medicine Baltimore 97(21):e10805. http://dx.doi.org/10.1097/MD.0000000000010805
20. Madsen TE, McLean S, Zhai W, Linnstaedt S, Kurz MC, Swor R, Hendry P, Peak D, Lewandowski C, Pearson C, O'Neil B, Datner E, Lee D, Beaudoin F (2018) Gender Differences in Pain Experience and Treatment after Motor Vehicle Collisions: A Secondary Analysis of the CRASH Injury Study. Clin Ther 40(2):204–213e2. https://doi.org/10.1016/j.clinthera.2017.12.014
21. Malfliet A, Pauw R, Kregel J, Coppieters I, Meeus M, Roussel N, Danneels L, Cagnie B, Nijs J (2019) Gender Differences in the Association of Brain Gray Matter and Pain-Related Psychosocial Characteristics. Pain physician 22(3):E191–E203. https://pubmed.ncbi.nlm.nih.gov/31151342/
22. Meints SM, Edwards RR (2018) Evaluating psychosocial contributions to chronic pain outcomes. Prog Neuro-psychopharmacol Biol Psychiatry 87(Pt):168–182. https://doi.org/10.1016/j.pnpbp.2018.01.017

23. Mogil JS (2020) Qualitative sex differences in pain processing. Nat Rev Neurosci 21(7):353–366. https://doi.org/10.1038/s41583-020-0310-6
24. Molin B, Sand A, Benger A-K, Georgsson S (2020) Raising awareness about chronic pain adn dyspareunia among women - a Swedish survey 8 months after childbirth. Scandinavian J Pain 20(3):565–574. https://doi.org/10.1515/sjpain-2019-0163
25. Prospero (2025) *International prospective register of systematic reviews (PROSPERO)*. University of York. https://www.crd.york.ac.uk/prospero/
26. Racine M, Tousignant-Laflamme Y, Kloda LA, Dion D, Dupuis G, Choinière M (2022) A systematic review and meta-analysis of sex/gender differences in chronic pain outcomes. J Pain 23(5):789–808. https://doi.org/10.1016/j.jpain.2021.12.004
27. Robinson ME, Wise EA (2004) Gender bias in the observation of experimental pain. Pain 111(1–2):20–26. https://doi.org/10.1016/j.pain.2004.05.003
28. Rossi MF, Tumminello A, Marconi M, Gualano MR, Santoro PE, Malorni W, Moscato U (2022) Sex and gender differences in migraines: a narrative review. Neurol Sci 43(9):5729–5734. https://doi.org/10.1007/s10072-022-06178-6
29. Samulowitz A, Gremyr I, Eriksson E, Hensing G (2017) Brave men and emotional women: A theory-guided literature review on gender bias in health care and gendered norms towards patients with chronic pain. BMC Health Serv Res 17(1):563. https://doi.org/10.1186/s12913-017-2732-0
30. Santana JM, Perissinotti DMN, Oliveira Junior JO, Correia LMF, Oliveira CM, Fonseca PRB (2020) Revised definition of pain after four decades. Brazilian J Pain 3(3):197–198. https://doi.org/10.5935/2595-0118.20200191
31. Slack MK, Chavez R, Trinh D, Dios DV, Lee J (2018) An observational study of pain self-management strategies and outcomes: does type of pain, age, or gender, matter? Scandinavian J pain 18(4):645–656. https://doi.org/10.1515/sjpain-2018-0070
32. Souza JB, Grossmann E, Perissinotti DMN, Oliveira Júnior JO, Fonseca PRB, Posso IP (2017) Prevalence of Chronic Pain, Treatments, Perception, and Interference on Life Activities: Brazilian Population-Based Survey. *Pain Research & Management, 2017*. https://doi.org/10.1155/2017/4643830
33. Stocking SQ, Webb CK, Miller GH, Thomeer MB, Goodin BR, Sorge RE (2025) Understanding risk of chronic pain development and related mental health disparities among transgender people: A review of current literature and future directions. J Pain 37., Article 104681. https://doi.org/10.1016/j.jpain.2024.104681
34. Sylwander C, Larsson I, Andersson M, Bergman S (2020) The impact of chronic widespread pain on health status and long-term health predictors: a general population cohort study. BMC Musculoskelet Disord 21:36. https://doi.org/10.1186/s12891-020-3039-5
35. Tannenbaum C, Ellis RP, Eyssel F et al (2019) Sex and gender analysis improves science and engineering. Nature 575:137–146. https://doi.org/10.1038/s41586-019-1657-6

36. Treede RD, Rief W, Barke A, Aziz Q, Bennett MI, Benoliel R et al (2015) A classification of chronic pain for ICD-11. Pain 156(6):1003–1007. https://doi.org/10.1097/j.pain.0000000000000160

Figures

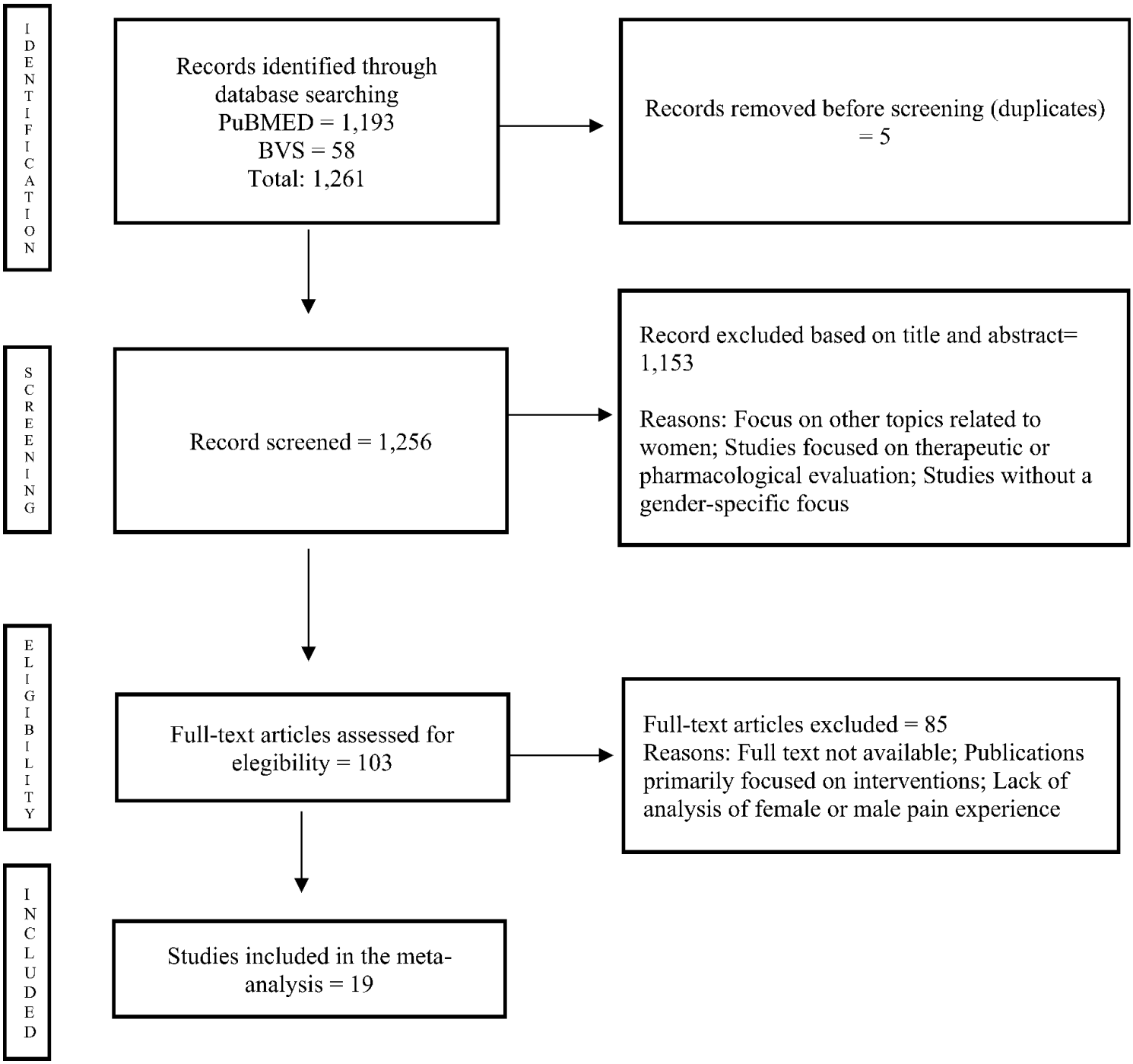


Figure 1

Flowchart of the process for identifying, screening, assessing eligibility, and including studies (PRISMA 2020)