

Fibromyalgia interventions, obstacles and prospects: narrative review

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This review aims to increase awareness and improve understanding, diagnosis, and management of fibromyalgia – a complex, distressing health challenge that significantly impacts people's lives due to its variable nature and lack of clear diagnostic markers. Healthcare professionals must assist those with this condition and improve their general quality of life. Further, they can do a lot to improve the lives of people with Fibromyalgia by resolving diagnostic hurdles, promoting collaboration, supporting patient advocacy, advancing medical technology, and adopting novel approaches.

Key words: fibromyalgia, pain, risk factors, treatment outcomes, psychotropic drugs

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Introduction

Fibromyalgia is a composite chronic pain disorder that afflicts millions of people worldwide, causing widespread physical pain, soreness, and exhaustion; furthermore, it frequently presents sleep problems and cognitive challenges. Tender spots are often used to diagnose the condition, but focusing solely on tender areas may lead to a misdiagnosis. Fibromyalgia primarily affects women, with 90% of diagnosed patients being female. It affects 3-6% of the world's population and coexists with other illnesses like depression, chronic fatigue, and irritable bowel syndrome. The pathophysiology of fibromyalgia is complex, involving genetic, environmental, and neurological factors. Its management typically involves a multidisciplinary approach, combining pharmacological interventions, physical therapy, cognitive-behavioral therapy, and lifestyle modifications. Pain relief and better sleep quality may be achieved using medications such as antidepressants, analgesics, and antiepileptics. Muscle strength, flexibility, and general health can all be enhanced with physical therapy and exercise catered to a person's ability¹⁻⁶.

Methods

The search strategy follows Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) criteria⁷ to evaluate the present fibromyalgia narrative review. The inclusion criteria were based on the databases PubMed, Medline, and Web of Sciences were the databases which were exhaustively searched for ten years (2014-2023) of English-language publications. In the same way, we explored the papers' reference lists for more pertinent information. There were several key phrases in the study, including "pain",

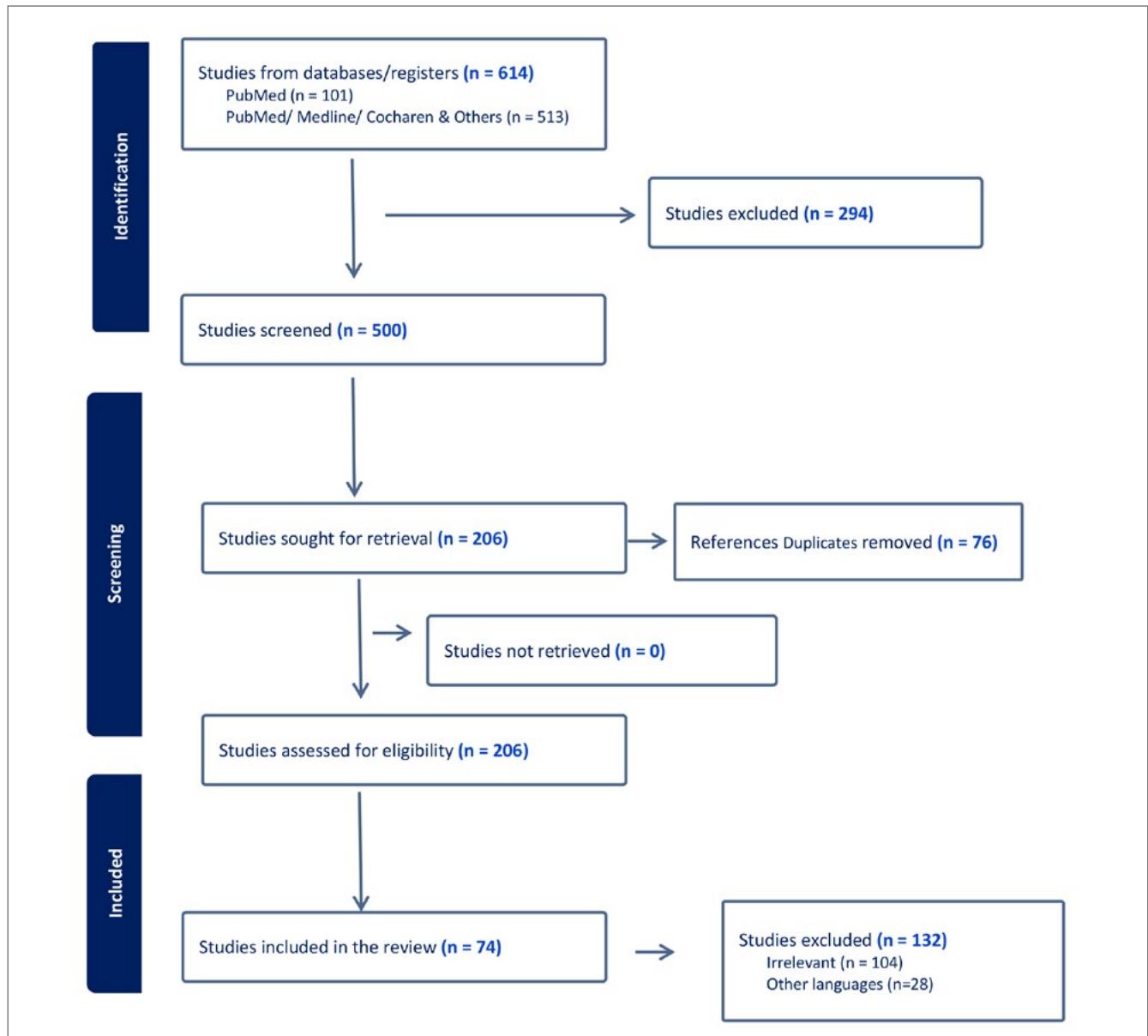


Figure 1. Methodology used in the literature review according to the PRISMA protocol ⁷.

“fibromyalgia”, “current research”, and “future research direction.”
Applied filters: Abstract, Full text, Meta-Analysis, Systematic Review, ten years.

There were 614 papers in the first search result. However, only 74 articles were included after screening and quality assessment based on abstract and full-text documents (Fig. 1).

Overcoming fibromyalgia

Fibromyalgia is a condition with no known cure, but a multimodal approach involving symptom management, lifestyle modifications, and psychological well-being can significantly improve quality of life ⁸. Below are some suggestions:

- consult a medical expert for a personalized treatment plan, including medications, physical therapies, and self-care management;
- physical therapy techniques can help with pain relief and sleep improvement;
- regularly assess and modify medications with healthcare professionals to ensure optimal symptom control ⁹. The most commonly used medications with their pharmacological classification and details are listed in Table I, while some common combinations of drugs that may be used for the treatment of fibromyalgia are represented in Table II;
- use self-care techniques to control symptoms and enhance well-being, including regular exercise to maintain joint flexibility and engage in low-impact aerobics activities like swimming, walking, or biking ¹⁰;
- eating a balanced diet rich in whole grains, lean meats, fruits,

- and vegetables will help to promote general health ¹¹;
- try relaxation techniques, deep breathing, yoga, or meditation to release tension and promote relaxation;
- enhance sleep quality by creating a relaxing sleeping environment and sticking to a regular sleep pattern ¹².

It is critical to address the psychosocial effects of fibromyalgia, such as psychotherapy or counseling ¹³. Cognitive behavioral therapy (CBT) can enhance coping mechanisms, lessen stress, and help manage

pain ¹⁴. Furthermore, join support groups online to meet struggling people and offer coping mechanisms. Mindfulness and meditation can also aid pain management, mood enhancement, and general well-being ¹⁵.

Changing a healthy routine can help relieve symptoms by avoiding overexertion and pacing yourself throughout activities to stave off flare-ups and save energy. Furthermore, adjust to manage symptoms while retaining productivity, such as ergonomic alterations and flexi-

Table 1. List of commonly used drugs for the fibromyalgia treatment, including classification, action, and side effects.

Medications most often used in fibromyalgia	Drug Class	Mechanism of action	Side effects	Authors/year
Amitriptyline and nortriptyline	Tricyclic antidepressants (TCAs)	TCAs treat depression, anxiety, chronic pain, and fibromyalgia by increasing serotonin and norepinephrine levels.	Dry mouth, constipation, and dizziness.	Alberti et al., 2022 ²⁰ ; Farag et al., 2022 ²¹ ; Moore et al., 2015 ²²
Duloxetine, venlafaxine and milnacipran	Serotonin-norepinephrine reuptake inhibitors (SNRIs)	SNRIs/SSRIs treat depression, anxiety, chronic pain, and fibromyalgia by increasing neurotransmitter levels.	Nausea, dizziness, and headache.	Migliorini et al., 2023 ²³ ; Alberti et al., 2022 ²⁰ ; Lian et al., 2020 ²⁴ Derry et al., 2015 ²⁵ ; Walitt et al., 2015 ²⁶ ; VanderWeide et al., 2015 ²⁷ ; Hauser et al., 2013 ²⁸ ; Lee et al., 2016 ²⁹ .
Pregabalin, gabapentin and topiramate	Anticonvulsant/ Antiepileptic drugs	Anticonvulsant drugs treat neuropathic pain and Fibromyalgia by modulating neurotransmitter release.	Dizziness, drowsiness, and weight gain.	Egunsola et al., 2019 ³⁰ ; Wiffen et al., 2013 ³¹ ; Cording et al., 2015 ³² ; Moore et al., 2015 ²² ; Cooper et al., 2016 ³³ .
Oxycodone and tramadol	Opioid analgesics	Opioid analgesics reduce pain perception by binding to brain and spinal cord receptors.	Constipation, nausea, and respiratory depression.	Gaskell et al., 2016 ³⁴ ; Rocha et al., 2020 ³⁵ ; Sola et al., 2020 ³⁶ .
Mirtazapine, quetiapine agomelatine, trazodone and amisulpride	Atypical antidepressants	Atypical antidepressants treat depression, anxiety, and sleep disorders in fibromyalgia.	Drowsiness, weight gain, and dry mouth.	Welsch et al., 2017 ³⁷ ; Migliorini et al., 2023 ²³ ; Ottman et al., 2018 ³⁸ .
Cannabis	Cannabis and Cannabinoids	Plant-based substances reduce pain and inflammation and treat chronic pain conditions.	Dry mouth, dizziness, and impaired coordination.	Strand et al., 2023 ³⁹ ; Kuryandchik et al., 2021 ⁴⁰ ; Mücke et al., 2018 ⁴¹ ; Hauser et al., 2016 ⁴² ; Fitzcharles et al., 2016 ⁴³ .
NSAIDs and lidocaine	Non-opioid analgesics	Non-opioid analgesics treat fibromyalgia by blocking prostaglandin production and reducing pain.	Stomach upset, headache, and dizziness.	Derry et al., 2016 ⁴⁴ ; de Carvalho et al., 2022 ⁴⁵ .
Olanzapine quetiapine Acetyl-L-carnitine	Antipsychotic drugs	Antipsychotic drugs are not the primary treatment for fibromyalgia, but atypical drugs like quetiapine can be used off-label for specific symptoms like sleep disturbances and anxiety.	Healthcare professionals must closely monitor antipsychotic drug use for fibromyalgia treatment to avoid adverse effects and drug interactions.	Walitt et al., 2016 ⁴⁶ ; Jimenez et al 2018 ⁴⁷ ; Calandre et al., 2014 ⁴⁸ .

* Due to potential hazards and side effects, it is crucial to emphasize that a healthcare practitioner should closely supervise the usage of these medications to treat fibromyalgia.

Table II. Combination of different drugs used to treat fibromyalgia (from Gilron et al.)⁴⁹.

1	Antidepressants (such as TCAs or SNRIs)	&	Anticonvulsants (such as gabapentin or pregabalin)
2	Opioid analgesics (such as oxycodone or tramadol)	&	Nonsteroidal anti-inflammatory drugs (NSAIDs)
3	Antidepressants (such as TCAs or SNRIs)	&	Sleep aids (such as zolpidem or trazodone)
4	Antidepressants (such as TCAs or SNRIs)	&	Muscle relaxants (such as cyclobenzaprine or tizanidine)

*The treatment of fibromyalgia involves various drug combinations, requiring healthcare professionals to monitor for adverse effects and drug interactions.

ble schedules¹⁶. Investigate complementary alternative remedies to conventional therapies, such as acupuncture¹⁷ and massage therapies¹⁸ to relieve pain and exhaustion.

Stay informed about fibromyalgia, learn from reputable sources, and set realistic goals for managing symptoms and overall well-being. Regular examinations and adaptable treatment are essential for self-progress and treatment adjustments.

Research advances in fibromyalgia

A comprehensive fibromyalgia management requires addressing sleep issues, fatigue, anxiety, and depression, so researchers are concentrating on patient-reported outcomes to evaluate the effica-

cy of therapies other than pain relief. Since fibromyalgia symptoms can manifest in various ways, experts are looking into individualized treatment plans.

Table II represents some common combinations of drugs may be used for the treatment of fibromyalgia.

A more successful and focused approach to management may result from interventions shaped by a patient's unique symptom profile, genetic predisposition, and therapeutic response¹⁹.

Fibromyalgia research has advanced significantly over time, revealing light on numerous facets of the illness and raising hopes for better detection and care. The most recent interventions depicted in Figure 2 and Table III represent the characteristics and findings of intervention-based studies included in this review²⁰⁻⁷⁰.



Figure 2. Currently focused interventions for the treatment of fibromyalgia.

Table III. Characteristics of interventions-based studies for the treatment of fibromyalgia.

Interventions	Types	Study design	Findings	Authors, year
Pharmacological interventions	Pharmacological interventions	Meta-analysis	This meta-analysis investigates the efficacy of pharmaceutical and non-pharmacological therapies and summarizes evidence on fibromyalgia response classifications. Results indicate that there is not enough information to establish firm conclusions, although circumstantial evidence points to the possibility of improvement with SNRI, NRI, and multimodal treatment.	Papadopoulou et al., 2016 ⁵⁰
	Drug therapies	Meta-analysis of RCT	The most potent painkillers were milnacipran, pregabalin, and duloxetine in 100/200, 300 and 60 mg, respectively. The placebo group had a lower probability of withdrawal due to adverse effects.	Lee et al., 2020 ²⁹
	Psycho-immunology based	Systematic review	This comprehensive review assesses psychoneuroimmunology-based therapies to slow the progression of the disease and its adverse effects. In a review of 42 studies, it was discovered that practices like yoga, meditation, tai chi, acupuncture, mindfulness, and cognitive behavior therapy lowered the levels of the stress hormones cortisol, epinephrine, and norepinephrine. Only one study, though, found a substantial impact on the development of the illness.	Moraes et al., 2018 ⁵¹
	Inflammatory biomarkers	Systematic review	This review examines non-pharmacological therapies' effects on inflammatory biomarkers in fibromyalgia patients. Results show decreased interleukin, IL-8, IL-6, and insulin-like growth factor 1 levels. However, neuropeptide and CRP levels remain conflicting. Further study is needed.	Sanada et al., 2015 ⁵²
	Homeopathy	Literature-review and meta-analysis	Homeopathy has shown potential advantages for managing fibromyalgia symptoms, with meta-analyses showing effects on tender point count, pain severity, and exhaustion compared to placebo. This review explores the use of homeopathy in treating FMS.	Boehm et al., 2014 ⁵³
Electrical interventions neuromodulation & central sensitization	Repetitive transcranial magnetic stimulation	A systematic review and meta-analysis	The evaluation of 10-Hz rTMS for treating fibromyalgia found that it significantly reduced pain and improved quality of life compared to sham stimulation. However, it did not reduce depression. No significant difference was found in pain subgroup analysis..	Zhu et al., 2023 ⁵⁴
	Electrical neuromodulation	Systematic review and meta-analysis of RCT	Electrical neuromodulation significantly improved pain, depression, and functioning in fibromyalgia patients, with active transcranial direct current stimulation affecting pain, depression, and functioning. Age-related depression effects suggest efficient treatment programs.	Cheng et al., 2023 ⁵⁵
	Central sensitization	Systematic review	A study aimed to determine popular dynamic pain metrics in fibromyalgia and evaluate Central sensitization in patients using algometry. The findings showed 28 studies had low quality, three had moderate quality, and three had high quality. Further research is needed to understand the mechanics and enhance algometry protocols.	de la Coba et al., 2022 ⁵⁶

continue ►

Table III. *Follows.*

Interventions	Types	Study design	Findings	Authors, year
Non-pharmacological interventions	Psychotherapy §	Systematic review	Recent clinical trials on psychotherapy therapies' effects on physical pain in fibromyalgia patients, mainly from Spain, revealed significant variations in outcomes. These differences can be attributed to psychotherapy modalities, evaluation instruments, and internal and external variables.	Gómez-de-Regil et al., 2020 ⁵⁷
	*Cognitive behavioral therapy	Systematic review and meta-analysis	Review shows cognitive-behavioral treatment improves pain, anxiety, sorrow, sleep quality in fibromyalgia patients, but lacks sleep efficiency; hybrid CBT or mindfulness may help.	Climent-Sanz et al., 2022 ¹⁴
	Acupuncture	Systematic review and meta-analysis	Acupuncture effects on fibromyalgia patients' pain, exhaustion, sleep quality, physical function, stiffness, well-being, and safety were examined in 13 publications. The outcomes demonstrated that acupuncture reduced pain and enhanced well-being following treatment, with long-term effects on both. There was no indication of weariness, poor sleep, impaired physical function, stiffness, or significant adverse effects. There is some evidence to suggest that acupuncture can treat FM.	Zheng et al., 2022 ¹⁷
	Occupational therapy	Systematic review	The efficacy of occupational therapy for fibromyalgia patients is investigated in this systematic study. The findings provide compelling support for cognitive-behavioral, stress-reduction, emotional honesty, physical activity, and interdisciplinary therapies. Self-management, however, has less empirical support, and few strategies help people sleep better.	Poole 2017 ⁵⁸
	Exercise-based interventions	Mapping review with meta-analysis	In this review, the effect of EBIs on fibromyalgia patients' sleep quality was evaluated. Meta-analysis of the nine systematic reviews found a moderate statistically significant effect. Exercises that included the body and mind and those done in combination had the biggest impacts; cardio and strength training alone had little impact. EBIs were superior to limited, no intervention, or standard treatment in terms of increasing sleep quality.	Cuenca-Martínez et al., 2023 ⁵⁹
	*Music	Meta-analysis	The study examined music therapy's impact on fibromyalgia patients' pain, depression, and quality of life. Results showed lower scores on the Beck Depression and Pain Visual Analog Scales, but no significant differences on the McGill Pain Scale. The study concluded that music therapy is more effective than non-music therapy.	Wang et al., 2020 ⁶⁰
	*Massage	Systematic review and meta-analysis of RCT	A systematic study evaluates massage therapy's effectiveness in treating fibromyalgia, finding that five-week massage therapy reduced pain, anxiety, and depression in patients, but not insomnia. Large-scale, randomized trials are needed for verification.	Yuan et al., 2015 ¹⁸

continue ►

Table III. *Follows.*

Interventions	Types	Study design	Findings	Authors, year
Non-pharmacological interventions	*Whole body vibration	Systematic review	The study evaluated evidence for whole-body vibration in managing pain, fatigue, and quality of life in fibromyalgia-affected women. Results showed ambiguous findings on pain and exhaustion, and a marginal difference in quality of life, suggesting no clinically significant benefits.	Moretti et al., 2018 ⁶¹
	*Tai Chi	Meta-analysis of RCT	This review includes six RCTs, found that Tai Chi significantly improves fibromyalgia therapy by reducing pain, exhaustion, and sleep and quality of life. Further research is needed.	Cheng et al., 2019 ⁶²
	Nutritional interventions	Review	A multidisciplinary strategy involving olive oil, ancient grains, low-calorie diets, gluten-free options, and Mediterranean diets is essential. Further research is needed for effective management strategies.	Pagliai et al., 2020 ¹¹
	*Dietary	Systematic review	Alternative treatments include vegan and low-FODMAP diets, supplementation with acetyl-L-carnitine, coenzyme Q10, chlorella green algae, and vitamins C and E. However, poor design, variability, small sample size, and strong bias limit interpretation.	Lowry et al., 2020 ⁶³
	*Vitamin D	Systematic review	A review of randomized controlled trials (RCTs) found a link between vitamin D insufficiency and diffuse muscle pain in FMS and chronic widespread musculoskeletal pain (CMP). Eight studies showed pain relief, suggesting vitamin D supplementation as a potential treatment.	Lombardo et al., 2022 ⁶⁴
	*Vegan diet	Systematic review	The systematic assessment of 88 studies found that plant-based dietary patterns improved biochemical indicators, quality of life, sleep, pain, and overall health condition. However, interpretation is constrained by poor methodology.	Nadal-Nicolás et al., 2021 ⁶⁵
	*Probiotics	Systematic review	Fibromyalgia syndrome and chronic fatigue syndrome may be caused by the gut flora. Anxiety levels and fecal content were reported to be decreased by <i>Lactobacillus casei</i> strain Shirota after 8 weeks in a systematic assessment of probiotic therapies in patients with FMS or CFS. Inflammatory indicators were lowered by <i>Bifidobacterium infantis</i> . To completely understand the effects of probiotics in these situations, more experimental study is necessary.	Roman et al., 2018 ⁶⁶
E-health therapeutic interventions		Systematic review	This review reviews e-health therapies targeting psychosocial outcomes and pain-related psychological factors in chronic pain syndromes, including fibromyalgia syndrome. Twenty-six publications, mostly randomized controlled trials, focus on adult female patients. However, the literature is diverse, making it difficult to draw firm conclusions.	Donisi et al., 2023 ⁶⁷ ;
	*Body awareness	Systematic review and meta-analysis	Fibromyalgia is a chronic illness with widespread pain and impairment. This study compares movement and body awareness (BA) therapy results for fibromyalgia patients. Results show mobility and BA treatments improve pain symptoms, but more investigation is needed to determine the mechanism of action.	Bravo et al., 2019 ⁶⁸

Table III. *Follows.*

Interventions	Types	Study design	Findings	Authors, year
E-health therapeutic interventions	*Mind fullness & acceptance based	Systematic review and meta-analyses	In comparison to controls after treatment, the analyses revealed minor to moderate effects in favor of mindfulness- and acceptance-based therapies. Due to limitations in individual studies, contradictory findings, and imprecision, the effects are questionable.	Haugmark et al., 2019 ¹⁵
	*Tele-Rehabilitation therapy	Systematic review and Meta-analysis of RCT	14 RCTs found tele-rehabilitation improved fibromyalgia patients' symptoms and quality of life, but safety remains unknown due to insufficient data. Further, well-planned experiments are needed to confirm its effectiveness.	Wu et al., 2023 ⁶⁹
	*Resistance training	Systematic review and meta-analysis	15 studies found that resistance training (RT) is beneficial in reducing pain intensity, functional ability, and illness severity in women with fibromyalgia. However, more clinical studies are needed to validate these findings.	Rodríguez-Domínguez et al., 2023 ⁷⁰

These interventions include: drug therapies, psycho-immunology-based treatments, and homeopathy. Further interventions include occupational therapy, exercise-based interventions, music-based therapies, massage-based techniques, whole-body vibration, acupuncture, and Tai Chi. Nutritional interventions, such as dietary supplements, vitamin D supplementation, vegan diets, and probiotics are commonly also used. E-Health therapeutic interventions, such as body awareness therapy, mind-fulfillment and acceptance-based approaches, and resistance training are increasingly used for patients with fibromyalgia. Understanding fibromyalgia biomarkers and self-care techniques can improve treatment plans, alleviate pain, reduce stress, and improve well-being. By examining blood indicators, genetic variants, and neuroimaging, researchers can develop specialized therapies targeting fundamental processes, minimizing misdiagnosis, and directing individualized treatment strategies.

Obstacles and prospects

The worldwide health issues of fibromyalgia impact people from various cultures and geographical areas. For all affected people, it is critical to recognize cultural variances in symptom expression, access to care, and treatment preferences to get inclusive and equitable care. Although this has been better understood and treated, several obstacles still remain to overcome, and the following

Fibromyalgia continues to be under diagnosed or misdiagnosed as its symptoms overlap with those of other illnesses. Diagnostic delays result from deficiencies in medical training and understanding by healthcare professionals. Faster and more accurate diagnoses could occur with improved medical education and public awareness⁷¹.

Due to the absence of objective physical symptoms, fibromyalgia patients may encounter stigma and mistrust. Raising awareness, reducing stigma and ensuring that patients receive appropriate care and support depends largely on advocacy organizations and patient-focused efforts⁷².

While immediate pain relief is essential, long-term treatment plans

that address the chronic aspect of fibromyalgia are also important. Patients can improve their quality of life by emphasizing behavioral changes, psychosocial support, and long-term pain management⁹. Effective management of fibromyalgia requires multidisciplinary collaboration between different healthcare specialties, in order to provide comprehensive care that meets the needs of each patient by collaborating with rheumatologists, pain experts, psychologists, physiotherapists and nutritionists. However, research funding is needed to advance new methods of treating fibromyalgia⁷³⁻⁷⁴. Greater understanding of the problem and better treatment options will come from researching new therapies, examining cutting-edge technologies, and improving current approaches.

Conclusion

This review examines several social, emotional, and behavioral fibromyalgia-related contributing elements, will help to improve symptom management and overall health of the patients. By supporting self-care, using digital health, and using a patient-centered approach, healthcare professionals can better manage fibromyalgia.

Conflicts of interest statement

The authors declare no conflict of interest.

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This study did not receive funds either locally or internationally.

Authors' contributions

AZW: design, write, and finalize the manuscript writeup; AMHM: data collection and critical reading; AHM: data collection and proofreading; MH: critical evaluation and proofreading. HA: Basic drafting of the manuscript. AGM: supervision & corresponding author.

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